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

6th December 2019

Your Ref: **AP13/2019**

Ms Mary O'Hara
Secretary to the Board
Aquaculture Licences Appeals Board
Kilminchy Court, Dublin Road
Portlaoise
Co. Laois.

Dear Mary

I wish to acknowledge receipt of your letter dated 21/11/19 to Mr. Michael Creed T.D., Minister for Agriculture, Food and the Marine (and copied to Mr. John Quinlan) which was received by the Department on 25/11/19, regarding the appeal against the decision to grant an Aquaculture Licence to Shamrock Shellfish Ltd in relation to site **T06/35A** in Kilmakilloge Harbour, Kenmare Bay, Co. Kerry.

I am attaching the following documentation:-

1. Copies of reports received in relation to the application,
2. Copy of the applicant's reply to the public and statutory comments,
3. Copy of the submission to Minister,
4. Copy of the notification of Minister's decision to the applicant,
5. Copies of the Draft Aquaculture and Foreshore Licences,
6. Location map of the surrounding area including the following:
    - Sites under application
    - Licensed sites
    - Sites currently under appeal.

Please also see below three hyperlinks to the Department's website where (1) the application form, maps and drawings, (2) the Appropriate Assessment of Aquaculture and Fisheries Risk Assessment in Kenmare River SAC and (3) the Conclusion statement, may be found (as these are too large to transmit by email).

An Lárionad Bia Mara Náisiúnta, An Cloichín, Cloich na Coillte, Corcaigh, P85 TX47
National Seafood Centre, Clonakilty, Co. Cork P85 TX47
T +353 (0)23 8859592 Email: Deirdre.Fitzpatrick@agriculture.gov.ie
www.agriculture.gov.ie

- The application form, maps and drawings:-

https://www.agriculture.gov.ie/media/migration/seafood/aquacultureforeshoremanagement/aquaculturelicensing/aquacultureforeshorelicenceapplications/kerry/kenmarebay/1T0635ShamrockShellfishLtdApplicationFormMapsAndDrawings220519.pdf

- The Appropriate Assessment of Aquaculture and Fisheries Risk Assessment in Kenmare River SAC:-

  https://www.agriculture.gov.ie/media/migration/seafood/aquacultureforeshoremanagement/aquaculturelicensing/aquacultureforeshorelicenceapplications/cork/2019/Approp AssessofAquacultandFisheriesRiskAssessinKenmareRiverSAC270319.pdf

- Conclusion Statement covering Kenmare Bay:-

  https://www.agriculture.gov.ie/media/migration/seafood/aquacultureforeshoremanagement/aquaculturelicensing/appropriateassessmentconclusionstatement/2019new/AppAssessmentConStatement%20AquacultureActivitiesKenmareRiverSAC090919.pdf

If you require anything further please let me know.

Yours sincerely

pp Mara Naughton
Deirdre Fitzpatrick
Aquaculture and Foreshore Management Division

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

24th September 2019

Mr Kieran Lyons
Eyeries
Beara
Co. Cork

**Our Ref: T06/364A**

**FISHERIES (AMENDMENT) ACT, 1997 (NO.23)**
**NOTICE OF MINISTERIAL DECISION TO REFUSE AN AQUACULTURE AND FORESHORE LICENCE**

Dear Sir,

I would like to inform you that the Minister for Agriculture, Food and the Marine has refused your application for an Aquaculture Licence and Foreshore Licence for the cultivation of mussels using longlines on site **T06/364A** (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 Kerryman".

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. This appeal must be lodged within one month beginning on the date of the publication of the decision.

In addition, a person may question the validity of the Foreshore Licence determination by way of an application for judicial review, under Order 84 of the Rules of the Superior Court (SI No. 15 of 1986). Practical information on the review mechanism can be obtained from the Citizens Information Board at: http://www.citizensinformation.ie/

Yours sincerely

**Deirdre Fitzpatrick**
**Aquaculture and Foreshore Management Division**

An Lárionad Bia Mara Náisiúnta, An Cloichín, Cloich na Coillte, Corcaigh, P85 TX47
National Seafood Centre, Clonakilty, Co. Cork P85 TX47
T +353 (0)23 8859592 Deirdre.Fitzpatrick@agriculture.gov.ie
www.agriculture.gov.ie

**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:** | **T06/364A** |
| **APPLICANT:** | **Mr Kieran Lyons** |
| **AQUACULTURE TO WHICH DECISION RELATES:** | Cultivation of mussels using longlines on site T06/364A on the foreshore in Kilmakilloge Harbour, Kenmare Bay, Co. Kerry. |
| **NATURE OF DECISION:** | Refusal of Aquaculture Licence. |
| **DATE OF DECISION:** | **19 September 2019** |
| **REASON FOR REFUSAL:** | The Minister for Agriculture, Food and the Marine has determined that it is not in the public interest to grant the licences sought. In making his determination the Minister considered those matters which by virtue of the Fisheries (Amendment) Act 1997, and other relevant legislation, he was required to have regard. Such matters include any submissions and observations received in accordance with the statutory provisions. In particular, the Minister had regard to the findings of the Marine Engineering report regarding the negative visual impact, the negative impact of this new site on the growth rates of the adjacent existing licensed sites within the harbour and that the new sites will restrict the flow of water, and nutrients within the harbour. The following are the reasons and considerations for the Minister's determination to refuse the licence sought:<br>• Increased negative visual impact;<br>• Negative impact on the existing licensed sites in the harbour. |

**To be inserted in** "The Kerryman".

**FISHERIES (AMENDMENT) ACT, 1997 (NO. 23) FORESHORE ACT, 1933 (NO. 12) NOTICE OF DECISION TO GRANT/REFUSE AQUACULTURE AND FORESHORE LICENCES.**

The Minister for Agriculture, Food and the Marine has decided to grant/refuse Aquaculture and Foreshore Licences to the applicants listed in the table below for sites in Kilmakilloge Harbour, Kenmare Bay, Co. Kerry;

| **Site Ref** | **Applicant** | **Location** | **Species & Cultivation** | **Grant/ Refuse** |
|---|---|---|---|---|
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| T06/364A | Mr Kieran Lyons | Western side of Kilmakilloge Harbour | Mussels using longlines | Refuse |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |

| | | | | |
|---|---|---|---|---|
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |

The reasons for these decisions are elaborated on the Department's website at: http://www.agriculture.gov.ie/seafood/aquacultureforeshoremanagement/aquaculturelicensing/aquaculturelicencedecisions/

An appeal against the Aquaculture Licence decisions 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/

A person may question the validity of the Foreshore Licence determinations by way of an application for judicial review, under Order 84 of the Rules of the Superior Court (SI No. 15 of 1986). Practical information on the review mechanism can be obtained from the Citizens Information Board at: http://www.citizensinformation.ie/

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

**Marine Engineering Division**

**Report on Aquaculture Licence Application**

| | |
|---|---|
| **Application Reference No:** | **T06/364** |
| **Report Prepared by:** | **Raphael Crowley** |
| **Date:** | 14 February 2019 |
| **Applicant:** | Kieran Lyons |
| **Location:** | Kilmakilloge Harbour, Co. Kerry |
| Applicant Type: | Aquaculture/Foreshore Licence |
| **Site:** | T06/364 |
| **Site Area (Ha):** | 6.0 |
| **Species:** | Blue Mussel (Mytilus edulis) |
| **Cultivation Method:** | Longlines |
| **Intertidal/Non-Intertidal:** | Non-Intertidal |
| **Source of Seed / Spat:** | Natural spat collection |
| **Annual Production Estimates:** | 100 Tonnes |
| **Shellfish Waters Designation:** | Yes ☒ No ☐ |
| Reference: | SI 200 of 1994 Kilmakilloge Harbour - Map XI |
| **Environmental Designation :** | Yes ☒ No ☐ |
| Reference: | Kenmare River SAC [Site Code: 002158] |
| **Development Plans:** | Yes ☒ No ☐ |
| Reference: | Kerry County Development Plan 2015 -21, Section 8.4 |
| **Pre-Consultation Meeting:** | Yes ☒ No ☐ |
| Date: | Various |

# Drawing Validation Sheet

| | | | | | | |
|---|---|---|---|---|---|---|
| **OSI Maps:** | **Yes** | ☒ | **No** | ☐ | | |
| Comment: | OSI maps to be prepared by GIS Mapping Section. | | | | | |
| **BA Chart:** | **Yes** | ☒ | **No** | ☐ | | |
| Comment: | Charts to be prepared by GIS Mapping Section. | | | | | |
| **Farm Layout Drawing:** | **Yes** | ☒ | **No** | ☐ | | |
| | Directional Arrow | | Yes | ☒ | No | ☐ |
| | Scale | | Yes | ☒ | No | ☐ |
| | Title Block | | Yes | ☒ | No | ☐ |
| | Date | | Yes | ☒ | No | ☐ |
| Comment: | Drawing provided is suitable | | | | | |
| **Drawings of structures:** | **Yes** | ☒ | **No** | ☐ | | |
| Comment: | Typical section detail of mussel longline provided | | | | | |
| **Details of Proposed Navigation Marking:** | **Yes** | ☐ | **No** | ☒ | | |
| Comment: | SUMS navigation marking scheme to be agreed | | | | | |
| **Site Access Indicated:** | **Yes** | ☒ | **No** | ☐ | | |
| Comment: | Access from Bunaw Pier (Kilmakilloge) | | | | | |
| **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**
The site is located in relatively sheltered waters at the western side of Kilmakilloge Harbour. The hydrodynamic regime is suitable for this type of aquaculture.

**Site Management**
This new application is for aquaculture activity in Kilmakilloge Harbour, Co Kerry. The site is currently not in use. This applicant operates two unauthorised 330m mussel longlines in Kilmakilloge Harbour.

**Proposed Site Layout and Structures**
The proposed site has an area of 6.0Ha. The applicant proposes to utilise the standard double head-rope method with lines at 220m in length. The site layout drawing appears to show 5 longlines, while the text in the drawing and the application indicate 6 longlines will be deployed. The site layout drawing will need to be revised if a licence is to be issued for this site.

**Land Based Facilities / Site Access**
Bunaw Pier is used by mussel farmers on a daily basis to access the sites in Kilmakilloge Harbour and carry out operations associated with the aquaculture industry. The pier is suitable as an access point for this site.

**Navigation**
There are existing navigational aids within Kilmakilloge Harbour. MED recommends that the group navigational marking scheme (SUMS) is revised to facilitate this proposed site if licenced. The scheme should provide a safe system of navigation for all marine users. This will be revised in consultation with Kerry County Council, BIM, MSO and CIL. If licenced, this site will be within the SUMS for Kilmakilloge Harbour.

**Visual Impact**
The Kerry County Development Plan (CDP) designates the scenic characteristic of the landscape adjacent to Kilmakilloge Harbour as Rural Prime Special Amenity in some parts and Rural Secondary Special Amenity in the remainder. The Kerry CDP indicates there are scenic routes surrounding Kilmakilloge Harbour. The proposed site is visible from the R571 roadway from Kenmare to Castletownbere and the R573 roadway from Lauragh to Kilmakilloge, both of which are part of the Wild Atlantic Way and designated in the Kerry CDP as routes with Views and Prospects (Both Directions). The Beara Way walking route passes to the south of Kilmakilloge Harbour.

The existing aquaculture in Kilmakilloge has been in place for some time and has become embedded in the landscape. This site will increase the level of activity in this part of the harbour and will lead to an increased visual impact. Details of the farm layout have been provided and adheres to the best practices outlined in the Guidelines for Landscape and Visual Impact Assessment of Marine Aquaculture, 2001. Any licence if issued, should contain conditions that will specify the orientation of the site, length and number of lines and colour of flotation barrels to minimise the visual impact.

**Impact / Cumulative Impact**

The Appropriate Assessment for Kenmare River concluded that there was no impact on the SAC due to aquaculture at the location of this site.

This application is for new activity which will increase the overall mussel aquaculture activity within this part of Kilmakilloge Harbour. The aquaculture in Kilmakilloge Harbour has been in existence for some time and has reached a state of equilibrium and there is a potential impact on adjacent sites due to this application.

There is fishing and marine leisure in the area. The group marking scheme reduces the impact of the aquaculture on navigation in the area. The existing mussel licence areas within the harbour have been reconfigured to improve navigation, farming operations, and visual impact within the area. This site will increase the level of activity in this part of the harbour and will lead to an increased visual impact.

There is no increase in the overall historical licenced aquaculture area within Kilmakilloge harbour due to the reconfiguration process for existing activity, however this new application within the inner part of the harbour will impact on the existing activity.

**AFMD should ensure the correct OSI map, Admiralty chart and Site Co-ordinates to be prepared by GIS Mapping for the site, and the revised site layout drawing and structure details are included in any licence issued.**

**Marine Engineering Division does not recommend the licensing of this site for the reasons outlined above.**

## OKeeffe, Therese

**From:** Crowley, Raphael
**Sent:** 01 August 2019 15:47
**To:** Hodnett, Kevin
**Cc:** Quinlan, John; OKeeffe, Therese; Clancy, Noel; Beamish, Cecil
**Subject:** RE: Kilmacillogue Aquaculture Licence Renewal applications
**Attachments:** Kilmakillogue_Aerial_AllSites_010819.pdf; Kilmakillogue_Aerial_CapacityImpact_010819.pdf; Kilmakillogue_Aerial_ExistingVisual_010819.pdf

Kevin
I refer to your email below regarding the licencing of aquaculture in Kilmakilloge Harbour.
I have reviewed your queries, the MED reports on the sites referred to below and the correspondence received from the statutory and public consultation process and would make the following comments.

The applications for the sites of the existing aquaculture activity in Kilmakilloge were reconfigured to allow for visual impact, location of existing lines and navigation. When taken with the existing salmon sites in the harbour, this accounts for approximately 54.3 hectares of activity. An additional 53.1 Hectares have been applied for as part of the current licencing process, which if licenced, would effectively double the licenced activity in the harbour. Having considered all the applications, MED recommends licencing 65.7 hectares and believes that the licencing of the remaining 41.7 hectares of mussel cultivation will have a significant negative impact on the area, in terms of navigation, visual and production capacity. Having assessed all the applications in the harbour, MED is of the opinion that the 11 sites listed below should not be licenced.

MED would disagree with your comments regarding the "positive disposition" to licencing of these sites, in particular in the public responses to the applications. There is strong resistance to the licencing of the new sites listed below on visual impact, impact on tourism, impact on other marine users including fishing, marine litter/pollution concerns and in particular the commercial or capacity impact on the existing operations in the harbour if the new sites are licenced. This feedback is in line with MED comments on the impact of licencing these sites.

With regards to visual impact, the following is of note. The existing aquaculture has become embedded in the harbour, and as such there is no new significant negative impact on the area due to the licencing of the existing licenced activity. The licencing of the new sites listed below, where no activity has taken place before, will have a negative visual impact. MED does not believe that "it would be reasonable for an applicant to potentially feel aggrieved that an additional application is not recommended in circumstances where a positive recommendation has been afforded to existing applicants who likely have a similar visual impact on the seascape."

With regards to cumulative visual impact, you must look at the harbour as a whole. Currently, there is sufficient "blue-water" space within the harbour to offset the current activity. The attached maps show the existing and recommended sites for licencing along with all the other applications that are under consideration in the harbour. It is clear that the licencing of the 11 new sites listed below will have a significant visual impact on the harbour. The "cumulative impact" of licencing a further 41.7 hectares of mussel cultivation within the harbour will have a high visual impact on the area.

In the case of the Impact/Cumulative Impact the following is of note. The Appropriate Assessment of the area does not have any significant objections to the licencing of these sites. However the AA is based on impacts on specific habitats or species and does not consider the impact on commercial activity within the harbour. As such, just because the sites pass the AA test, does not mean that they will not have a negative impact on commercial activity. The impacts of new applications on the existing activity have been identified by the operators in the harbour, with the objections to the applications supporting this. The capacity of any site is dependent on a number of factors, including the stocking density of the site, the availability of food such as phytoplankton, and hydrodynamic conditions such as wave climate and depth. The placing of extra new sites around existing sites can have a detrimental effect on the existing sites. This is well documented historically in areas such as Bantry, Killary and in

Kilmakilloge itself. Mussels filter the water and an increase in mussel activity will reduce the available food for existing adjacent operations. The licencing of the 11 new sites listed below, adjacent to existing sites, is likely to lead to a significant reduction in the growth rates of the existing sites. The attached map shows the location of the new sites and highlights those that are likely to have a significant effect on the existing activity. These new sites will restrict the flow of water, and nutrients within the harbour.

Regards
Raphael

**Raphael Crowley**
*Chartered Engineer - Marine Engineering Division*

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

**Pointe Uí Rinn, Cathair Uí Mhóráin, Trá Lí, Co. Chiarraí, V92 X2TK**
Reen Point, Blennerville, Tralee, Co. Kerry, V92 X2TK

M +353 (0)87 2336425 T +353 (0)66 7149344 www.agriculture.gov.ie

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**From:** Hodnett, Kevin
**Sent:** 19 July 2019 16:00
**To:** Crowley, Raphael
**Cc:** Quinlan, John; OKeeffe, Therese; Clancy, Noel; Beamish, Cecil
**Subject:** Kilmacillogue Aquaculture Licence Renewal applications

Hi Raphael,

The Public and Statutory Consultation phase for a significant number of Aquaculture Licence applications (both new & renewal) in Kilmacillogue has, as you are aware concluded.

This Division is currently working to prepare appropriate recommendations for the Minister in each case. The Division in making a recommendation to the Minister is required to give consideration to all comments and observations made on foot of the consultation processes and the recommendation ultimately made to the Minister will reflect this process.

In the case of a number of new applications (11 in all and set out below) the overall Consultation process appears to broadly indicate a positive disposition to the issue of aquaculture licences. The MED comments however recommend that the Minister should not licence the sites. The reasons for the recommendation appear to be twofold:

1. **Visual Impact**
2. **Impact / Cumulative Impact**

The text below is representative of the general MED comments.

> ***Visual Impact***
> *The Kerry County Development Plan (CDP) designates the scenic characteristic of the landscape adjacent to Kilmacillogue Harbour as Rural Prime Special Amenity in some parts and Rural Secondary Special Amenity in the remainder. The Kerry CDP indicates there are scenic routes surrounding Kilmacillogue Harbour. The proposed site is visible from the R571 roadway from Kenmare to Castletownbere and the R573 roadway from Lauragh to Kilmakilloge, both of which are part of the Wild Atlantic Way and designated in the Kerry CDP as routes with Views and Prospects (Both Directions). The Beara Way walking route passes to the south of Kilmakilloge Harbour.*

*The existing aquaculture in Kilmakilloge has been in place for some time and has become embedded in the landscape. This site will increase the level of activity in this part of the harbour and will lead to an increased visual impact. Details of the farm layout have not been provided so MED cannot assess if it adheres to the best practices outlined in the Guidelines for Landscape and Visual Impact Assessment of Marine Aquaculture, 2001. Any licence if* *issued, should contain conditions that will specify the orientation of the site, length and number of lines and colour of flotation barrels to minimise the visual impact.*

***Impact / Cumulative Impact***
*The Appropriate Assessment for Kenmare River should be consulted/reviewed to ensure that there was no impact on the SAC due to aquaculture at the location of this site.*
*This application is for new activity which will increase the overall mussel aquaculture activity within this part of Kilmakilloge Harbour. The aquaculture in Kilmakilloge Harbour has been in existence for some time and has reached a state of equilibrium and there is a potential impact on adjacent sites due to this application. This has been stated by the applicant himself.*
*There is fishing and marine leisure in the area. The group marking scheme reduces the impact of the aquaculture on navigation in the area. The existing mussel licence areas within the harbour have been reconfigured to improve navigation, farming operations, and visual impact within the area. This site will increase the level of activity in this part of the harbour and will lead to an increased visual impact.*
*There is no increase in the overall historical licensed aquaculture area within Kilmakilloge harbour due to the reconfiguration process for existing activity, however this new application within the inner part of the harbour will impact on the existing activity.*

Having assessed the results of the Public and Statutory Consultation processes, It appears likely that any decision to refuse the issue of an aquaculture licence in these 11 cases will hinge in the main on the MED recommendation. In such circumstances and having regard to the fact that applicants have recourse to an appeal to ALAB and/or a judicial review of procedures it is imperative that recommendations be adequately stress tested. You will recall from the recent presentation by Legal Services Division, that it is absolutely necessary that in making a determination that the Minister provide full details of the basis on which he made a decision. In the circumstances I will require additional information in relation to each of the above headings in order to:

1. Provide the Minister with the fullest detail for consideration.
2. Ensure that the applicant (& others) is furnished with adequate information on which to make a considered decision in relation to any appeal procedure.

In the case of the ***"Visual Impact"*** observations I would be grateful if you could provide supplementary I information for consideration. For example I suspect that it would be reasonable for an applicant to potentially feel aggrieved that an additional application is not recommended in circumstances where a positive recommendation has been afforded to existing applicants who likely have a similar visual impact on the seascape.

In the case of the "***Impact / Cumulative Impact***" observations I would be grateful if you could provide supplementary information for consideration. In particular I note the MED comments "*The aquaculture in Kilmakilloge Harbour has been in existence for some time and has reached a state of equilibrium and there is a potential impact on adjacent sites due to this application"*. The appropriate Assessment for the Bay appears to be supportive of the applications in question and it would be helpful therefor if you could include in your supplementary information some clarity in relation to the *"state of equilibrium"* and the *"potential impact on adjacent sites due to this application"*

Relevant Sites:

[redacted]

9. T06/364A

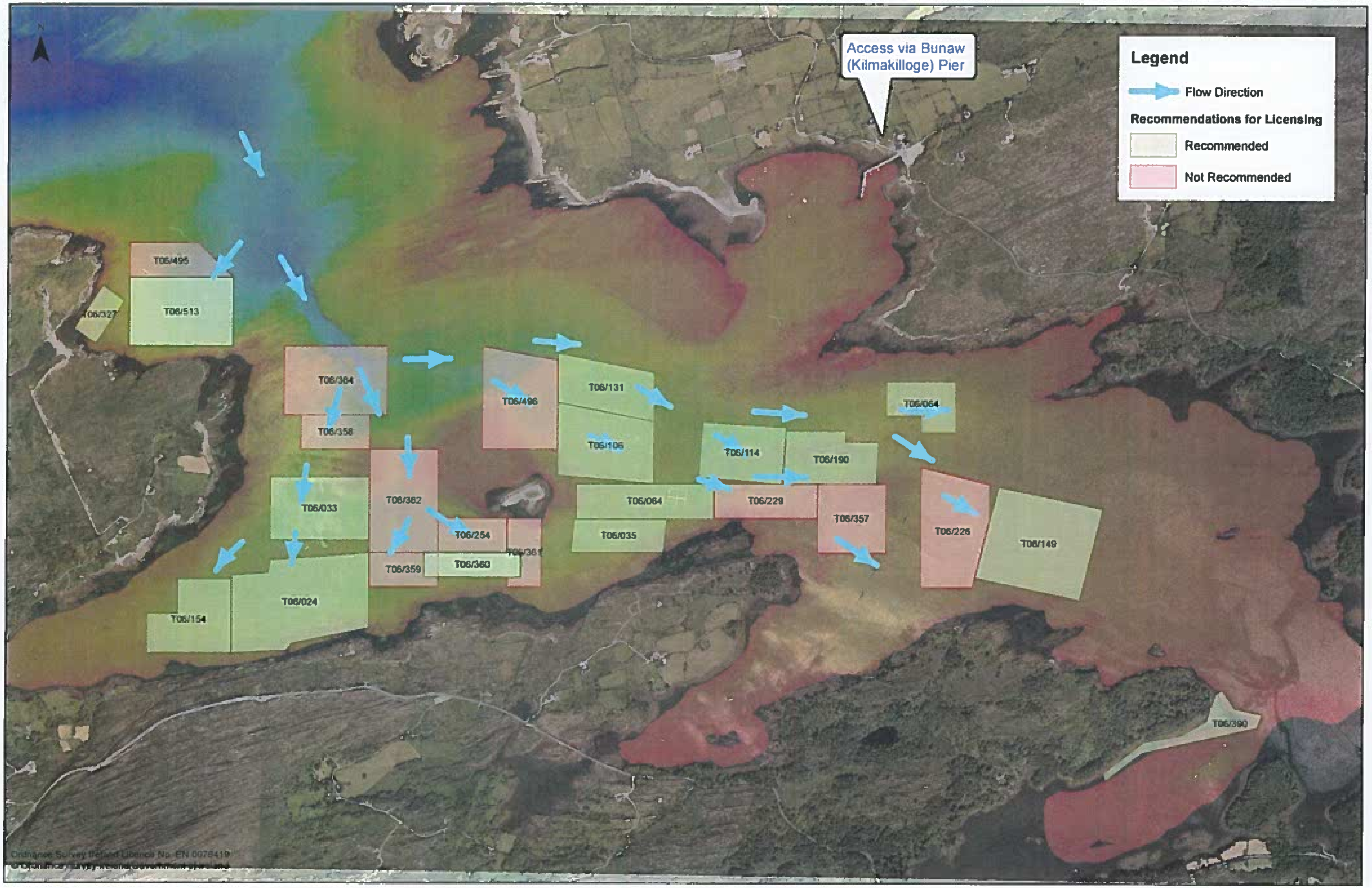
[redacted]

As these applications are at an advanced stage of consideration I would be grateful to receive your observation by COB Friday 26th July.

Regards,

Kevin Hodnett.

Desk: +353 (0)23 8859503
kevin.hodnett@agriculture.gov.ie : www.agriculture.gov.ie
Assistant Principal,
Aquaculture & Foreshore Management Division,
Department of Agriculture, Food & the Marine,
National Seafood Centre,
Clonakilty,
Co. Cork.
P85 TX47

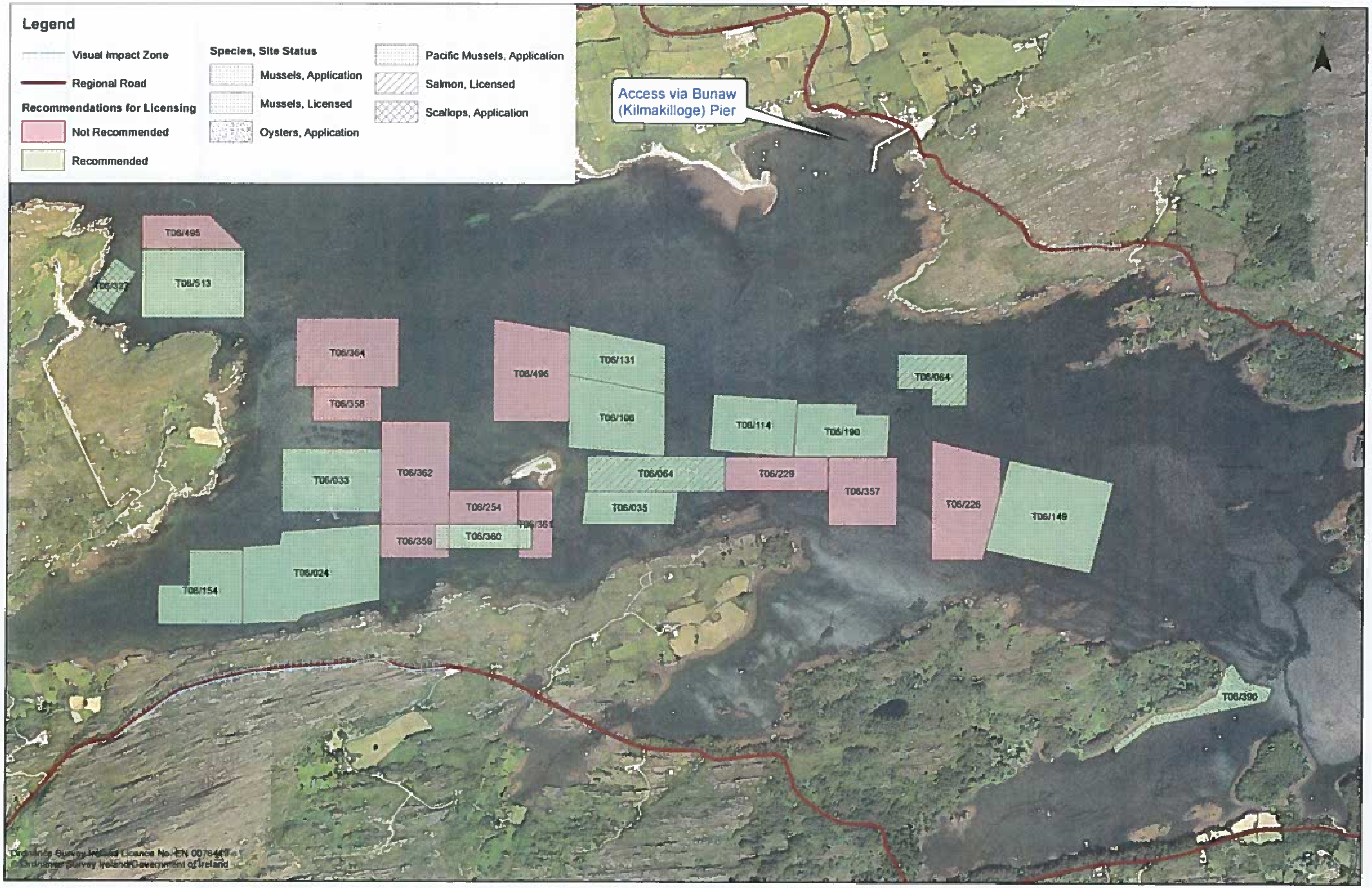



Prepared by: R Scanlon, DAFM
Date: 01/08/2019

Scale (@A3): 1:10,000

***Aquaculture Sites Kilmakilloge***

**Cumulative Capacity Impact**

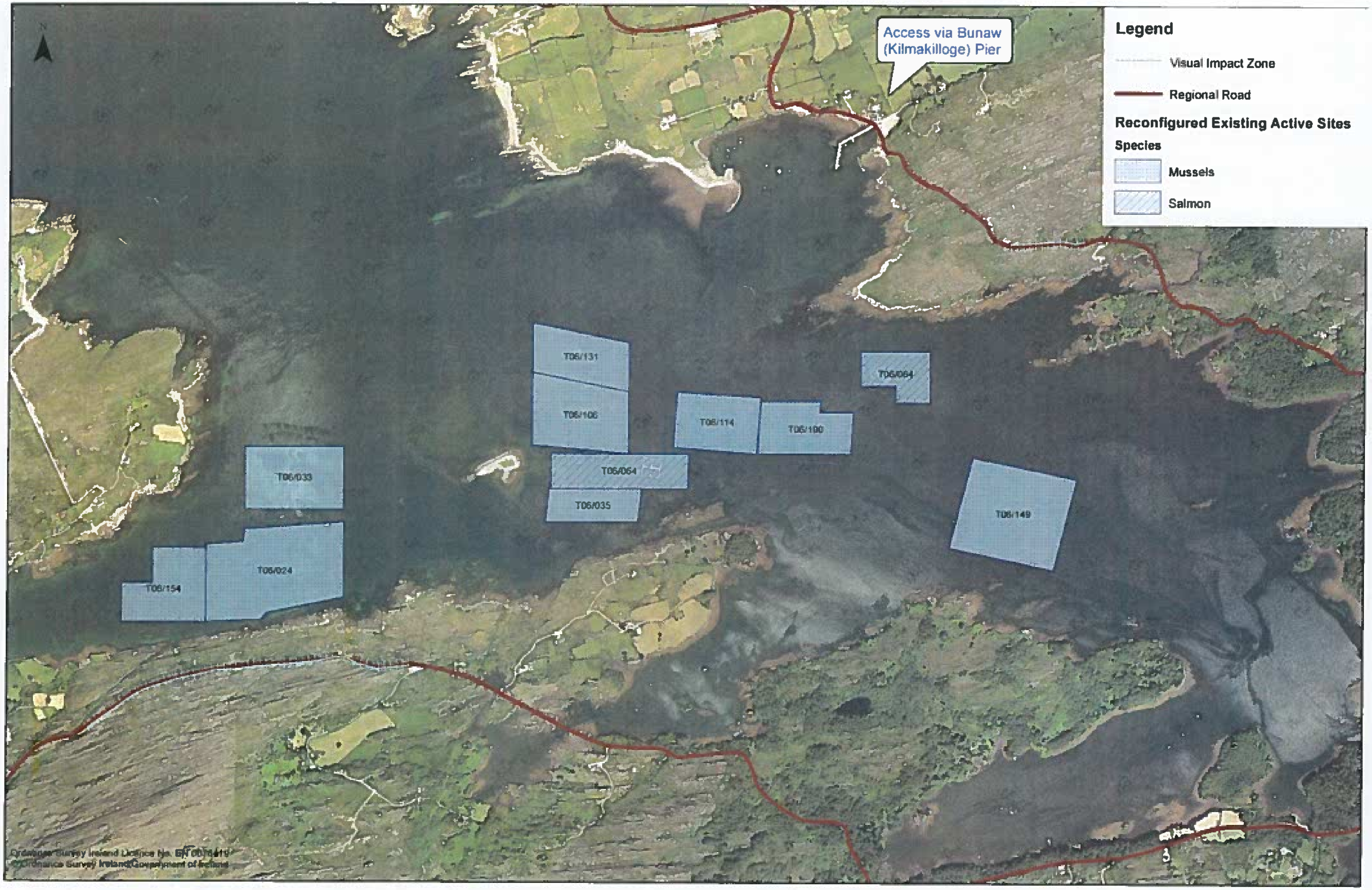



Prepared by: R Scanlon, DAFM
Date: 01/08/2019

Scale (@A3): 1:10,000

## *Aquaculture Sites Kilmakilloge*

**All Sites - Visual Impact**




Prepared by: R Scanlon, DAFM
Date: 01/08/2019

Scale (@A3): 1:10,000

***Aquaculture Sites Kilmakilloge***

**Existing Sites - Visual Impact**

## Naughton, Maria

**From:** Foley, Tina
**Sent:** 10 July 2019 14:45
**To:** Naughton, Maria; Fitzpatrick, Deirdre
**Cc:** DAFM Queries
**Subject:** Aquaculture & Foreshore Application: Kilmakillogue Harbour. Co. Kerry (17 no. sites)

Hi Maria & Deirdre,

Please see below response received from Castletownbere Port in respect of the above applications as requested.

Kind regards
Tina

**Tina Foley**
Clerical Officer
Food & Fisheries Support Unit

T +353 238859313
E tina.foley@sfpa.ie

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

An t-Údarás um Chosaint Iascaigh Mhara, Clogheen, Cloich na Coillte, Co. Chorcai
Head Office, National Seafood Centre, Park Road, Clogheen, Clonakilty, Co. Cork
Eircode: P85TX47
www.sfpa.ie

---

**From:** Falvey, John
**Sent:** 05 July 2019
**To:** Falvey, John <John.Falvey@sfpa.ie>
**Subject:** RE: REMINDER: Aquaculture & Foreshore Application: Kilmakillogue Harbour. Co. Kerry (17 no. sites)

Good Afternoon Tina

SFPA comments are the same for the following applications:

[redacted]
T6 364
[redacted]

The SFPA is of the view that these sites are for areas traditionally used for either shrimp or scallop fishing.

[redacted]

Regards

John

**Rinville,**
**Oranmore,**
**Co. Galway**
**Tel: 091 387200**
**Date: 07 May 2019**

**Deirdre Fitzpatrick**
**Aquaculture and Foreshore Management Division**
**Department of Agriculture, Food and the Marine**
**Clogheen,**
**Clonakilty**
**Co. Cork.**

**Advice on Aquaculture Licence Application**

| | |
|---|---|
| **Applicant** | **Kieran Lyons** |
| **Application type** | **New** |
| **Site Reference No** | **T06/364A** |
| **Species** | **Mussels (M. edulis) - longlines** |
| **Site Status** | **Located within the Kenmare River SAC (Site Code 002158)**<br>**Located within the Kenmare River / Sneem/ Ardgroom designated Shellfish Growing Waters Area**. |

Dear Deirdre

This is an application for aquaculture licence to cultivate mussels (M. edulis) using longlines at Site T06/364A in Kenmare Bay, Co. Kerry. The area of foreshore at Site T06/364A is circa 6.0Ha

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

The cultivation of shellfish at this site will produce faeces and pseudofaeces. Any impact will be limited to the area of the site. The build-up of excess organic matter beyond the footprint of the sites is not considered likely.

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 T06/364A is located within the Kenmare River / Sneem/ Ardgroom designated Shellfish Growing Water Area.

Under Annex II of EU Regulation 854/2004 mussels in the Kilmakillogue area currently have a seasonal "A" Classification from 1st December – 1st May and revert to a "B" Classification at all other times

Site T06/364A is located within the Kenmare River SAC (Site Code 002158)

We note the findings of the Appropriate Assessment report[1] and the Department's draft Natura conclusion statement[2] in regard to the impacts on the Conservation Objectives within the Kenmare River SAC.

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1 https://www.agriculture.gov.ie/media/migration/seafood/aquacultureforeshoremanagement/aquaculturelicensing/aquacultureforeshorelicenceapplications/cork/2019/AppropAssessofAquacultandFisheriesRiskAssessinKenmareRiverSAC270319.pdf

2 https://www.agriculture.gov.ie/media/migration/seafood/aquacultureforeshoremanagement/aquaculturelicensing/appropriateassessmentconclusionstatement/DRAFTAACONCLUSIONSTATEMENT260319.pdf

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 the proposed mitigation measures set out in the Department's Draft Natura Conclusion Statement.

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

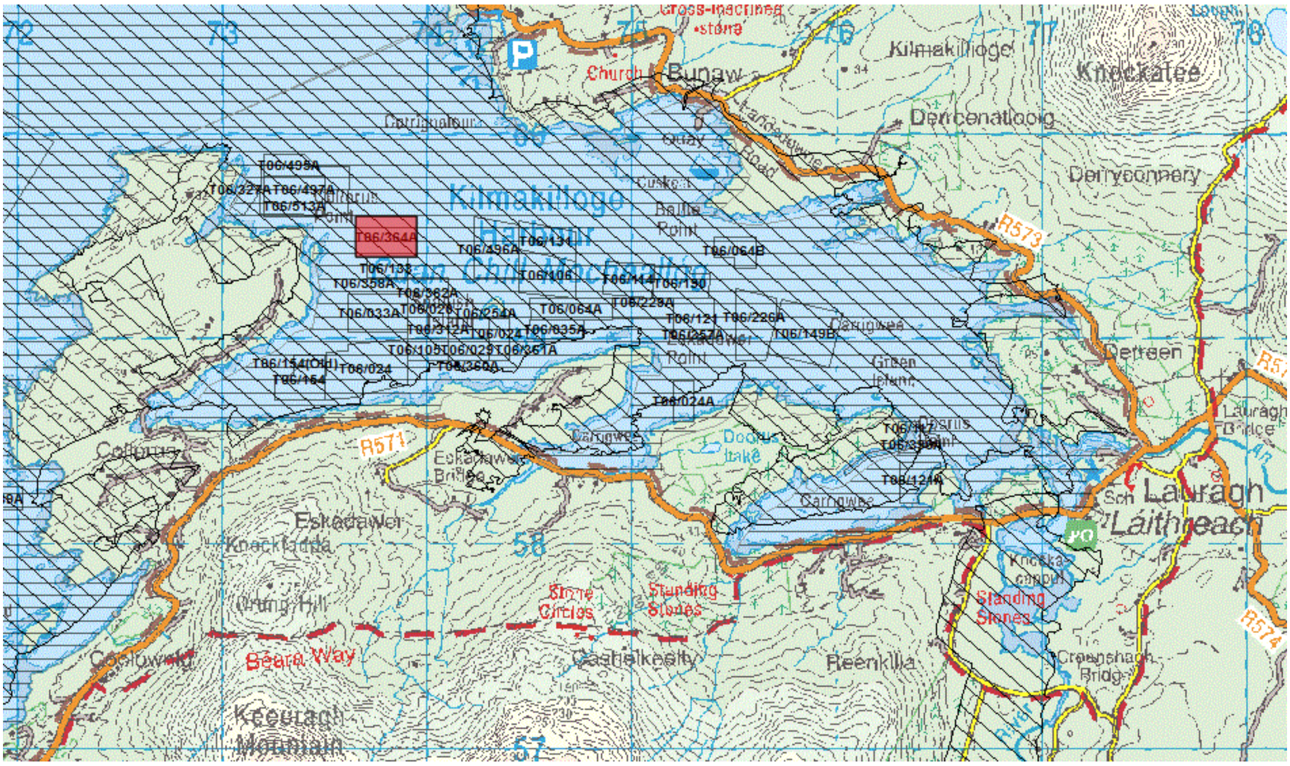
Notwithstanding the recommendation outlined above, and in the event that an Aquaculture Licence is granted, the movement of stock in and out of the site should follow best practice guidelines as they relate to the risk of introduction of invasive non-native species (e.g. Invasive Species Ireland). In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

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

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,

___________
Dr. Terry McMahon
Section Manager, Marine Environment and Food Safety Services,
The Marine Institute.




☑ Shellfish Waters Directive Area

☑ Aquaculture Site

☑ Special Area of Conservation

☑ Special Protection Areas

**Fitzpatrick, Deirdre**

| | |
|---|---|
| **From:** | Fem Dau [Fem.Dau@chg.gov.ie] |
| **Sent:** | 20 May 2019 08:43 |
| **To:** | Aquaculturelicensing |
| **Subject:** | [redacted] T06/364, [redacted] Kenmare Bay |

CAUTION: This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

A chara,

Please find the nature conservation and underwater archaeology recommendations of the Department of Culture, Heritage, and the Gaeltacht for the above mentioned licence applications.

**Nature Conservation**

The Department of Culture, Heritage and the Gaeltacht welcomes the opportunity to provide observations concerning the aquaculture licence applications at Kenmare River SAC (Site Code: 02158) for the sites referenced in your correspondence of the 9th of April 2019. The Department has offered comments on the report supporting Appropriate Assessment of Aquaculture in Kenmare Bay on 10th of December 2015. Comments were also provided on the revised Assessment report and Conclusion Statement and on the Risk Assessment of Fisheries on the 13th and 14th of April 2016, respectively.

The Department acknowledges the consideration of previous observations made by this Department in the 2019 Appropriate Assessment and the draft Conclusion Statement. However the following points are still relevant to the current licence applications. It is hoped that these observations will be considered by the Department of Agriculture, Food and the Marine in its decision-making process.

1. In relation to the Harbour seal Qualifying Interest at the site, the terms "close proximity" and "immediate vicinity", by which the likelihood of man-made disturbance is concluded, are unclear. These could usefully be better defined within the assessment and its conclusions, in order to provide an appropriate level of confidence around this Attribute and its associated Target.
2. There are no recommendations made for the Marine Community Types "Muddy fine sands dominated by polychaetes and *Amphiura filiformis* community complex" and the two subtidal reef communities given that the spatial overlap of aquaculture, when considered in-combination with fishing activity, is close to or exceeds the 15% threshold.
3. Overlap with maërl is only considered in Kilmakilloge and Ardgroom Harbours. Maërl also occurs subtidally between Glinisk, Sharky Island and Parknasilla which has sites licensed for mussel culture and scallops culture. These areas have not been considered.

The Department would also like to drawn attention to the coastal habitats of Vegetated sea cliffs of the Atlantic and Baltic coasts (1230), Atlantic salt meadows (Glauco-Puccinellietalia maritimae) (1330) and Mediterranean salt meadows (Juncetalia maritimi) (1410) which occur within the Kenmare River SAC. In some cases they occur adjacent to the aquaculture activities however no access routes are given within the Appropriate Assessment document. These habitats were screened out on the basis that there was no overlap with aquaculture activities. However it should be noted that storage of aquaculture materials and access routes for aquaculture can have negative impacts on these habitats. Therefore such activities should not be carried out either inside the Annex I habitat or in an area where it is likely to have an impact on the Annex I habitat (e.g. storing aquaculture frames on a cliff top, storage of equipment or establishing access paths in a saltmarsh). Disposal of waste from aquaculture activities should similarly take place well away from these Annex I coastal habitats.

**Underwater Archaeology**

The Department notes that cumulatively the area proposed for the applications is large, combining intertial areas and subtidal areas for longlines.
The Department therefore requires that an appropriate Underwater Archaeological Impact Assessment (UAIA) be carried out in advance to assess the totality of potential impact of the proposed applications on potential cultural heritage. The UAIA shall be carried out by a suitably qualified and suitably experienced maritime archaeologist and should be licenced by this Department. A detailed method statement should accompany the licence application.
In the first instance a detailed desktop study should be undertaken for the UAIA to inform the potential for UCH to be present in the area in tandem with an intertidal survey of the areas for the bags and trestles. Once the results of these are compiled, the resultant report should include recommendations for further archaeological mitigation in the way of underwater archaeological survey of areas to be impacted by the anchors, if deemed necessary based on the results of the desktop study in the UAIA. The report should be forwarded to the UAU for consideration and further comments.

Mise le meas,

**Connor Rooney**
*Executive Officer*

—

**An Roinn Cultúir, Oidhreachta agus Gaeltachta**
*Department of Culture, Heritage and the Gaeltacht*

**Aonad na nIarratas ar Fhorbairt**
*Development Applications Unit*

**Bóthar an Bhaile Nua, Loch Garman, Contae Loch Garman, Y35 AP90**
Newtown Road, Wexford, County Wexford, Y35 AP90

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T +353 (0)53 911 7464
manager.dau@chg.gov.ie
www.chg.gov.ie

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Commissioners of IRISH LIGHTS | Navigation and Maritime Services

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

T +353.1.271.5400
F +353.1.271.5566

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

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

*Your Reference:* T06/364

*Our Reference:* LA:0557.1305

*Date:* 10/04/2019

**LL: LA** 0557.1305
**Applicant:** Keiran Lyons
**Site:** Kilmakillogue Harbour, Co. Kerry

Dear Ms. Fitzpatrick,

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,

**Neil Askew**
***for* Director of Operations and Navigation**

cc Capt. T. O’Callaghan, Dept. of Transport Tourism & Sport, Marine Survey Office

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

T +353.1.271.5400
F +353.1.271.5566

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

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

*Date:* 10/04/2019

**Site:** Kilmakillogue Harbour, Co. Kerry

Dear Ms. Fitzpatrick,

Thank you for your letter advising us of the applications and renewals for Kimakillogue Harbour.

Notwithstanding the individual responses for each site the proliferation of the sites within Kilmakilloge Harbour would suggest that an overall group marking scheme be devised to ensure safe passage to vessels to the anchorages and inner bays and harbours. Existing licences should not be renewed nor new licences issued until such a marking scheme is implemented.

Yours sincerely,

**Neil Askew**
***for* Director of Operations and Navigation**

cc Capt. T. O'Callaghan, Dept. of Transport Tourism & Sport, Marine Survey Office

# Submission AGR 00499-19: Recommendation to Refuse an Aquaculture and Foreshore Licence for 1 site (T06/364A).

| | | | |
|---|---|---|---|
| TO: | Minister | AUTHOR: | Fitzpatrick, Deirdre |
| STATUS: | Completed | OWNER: | Fitzpatrick, Deirdre |
| PURPOSE: | For Decision | REVIEWERS: | OKeeffe, Therese<br>Hodnett, Kevin<br>Quinlan, John<br>Beamish, Cecil<br>Smith, Ann |
| DIVISION: | Coastal Zone Management | | |
| DECISION BY: | | | |

## Final comment

Minister determines that the Aquaculture and Foreshore Licences be refused for the reasons outlined.

## Action required

Ministerial Determination on Aquaculture/Foreshore Licensing Application (T06/364A).

## Executive summary

The Ministers determination is requested in relation to an application for an Aquaculture Licence from Mr. Kieran Lyons, Eyeries, Beara, Co. Cork. The application is for the cultivation of mussels using longlines in relation to a 6 hectare site on an area of foreshore at the western side of Kilmakilloge Harbour, Kenmare Bay, Co. Kerry.

A submission in respect of the application for the Foreshore Licence is also set out for the Minister's consideration.
It is recommended that the Minister determines that the Aquaculture and Foreshore Licences **not be granted** for the reasons outlined in the 'Detailed Information' section below.

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

## Detailed information

**DECISION SOUGHT**

The Minister's determination is requested please in relation to an application for an Aquaculture Licence from Mr. Kieran Lyons, Eyeries, Beara, Co. Cork, for a site in Kilmakilloge Harbour, Co. Kerry.

A submission in respect of the accompanying Foreshore Licence is also set out below, for the Minister's consideration.

**BACKGROUND**

Marine aquaculture operations require separate Aquaculture and Foreshore Licences and Ministerial approval is requested in respect of this submission (Aquaculture Submission) and the submission underneath (Foreshore Submission), which refer to the same site.

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

### APPLICATION FOR AN AQUACULTURE LICENCE

An application for an Aquaculture Licence has been received from the applicant referred to above (in conjunction with an application for a Foreshore Licence), for the cultivation of mussels using longlines in relation to a 6 hectare site on an area of foreshore at the western side of Kilmakilloge Harbour, Kenmare Bay, Co. Kerry, (numbered T06/364A – see documents at **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 -** see documents at **TAB B**

**Marine Engineering Division (MED):** MED does not recommend the licensing of this site for the following reasons:

1. Negative visual impact;
2. Cumulative impact for the new sites on existing licensed sites.

In this regard MED has advised that the licensing of a number of new sites including this site "adjacent to existing sites, is likely to lead to a significant reduction in the growth rates of the existing sites" and these "new sites will restrict the flow of water, and nutrients within the harbour". Please see Tab B for detailed MED comments.

**Marine Survey Office (MSO):** Comments received in 2011 that the MSO decline to comment until such time as outstanding navigational issues are addressed. No comment received following new request for observations in 2019.

**Sea Fisheries Protection Authority (SFPA):** SFPA is of the view that this site is an area traditionally used for shrimp or scallop fishing.

**Statutory Consultation -** see documents at **TAB C**

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

Comments were received from the following statutory bodies:

**Marine Institute (MI):** No objection to the application.

The MI made the following recommendations:

- MI recommends that the initial source of seed and other sources which may be used at any point in the future should be approved by the Minister. This approval should be a specific condition of any licence that may issue.

- 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.

Following 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.

**Commissioner of Irish Lights (CIL):** Stated no objection but did suggest conditions in the licence in event of a licence being granted.

**Department of Culture, Heritage and the Gaeltacht (DCHG)**: Commented as follows;

1. The Harbour seal Qualifying Interest at the site, the terms "close proximity" and "immediate vicinity", by which the likelihood of man-made disturbance is concluded, are unclear. These could usefully be better defined within the assessment and its conclusions, in order to provide an appropriate level of confidence around this Attribute and its associated Target.

2. There are no recommendations made for the Marine Community Types "Muddy fine sands dominated by polychaetes and Amphiura filiformis community complex" and the two subtidal reef communities given that the spatial overlap of aquaculture, when considered in-combination with fishing activity, is close to or exceeds the 15% threshold.

3. Overlap with maërl is only considered in Kilmakilloge and Ardgroom Harbours. Maërl also occurs subtidally between Glinisk, Sharky Island and Parknasilla which has sites licensed for mussel culture and scallops culture. These areas have not been considered.

The Department would also like to drawn attention to the coastal habitats of Vegetated sea cliffs of the Atlantic and Baltic coasts (1230), Atlantic salt meadows (Glauco-Puccinellietalia maritimae) (1330) and Mediterranean salt meadows (Juncetalia maritimi) (1410) which occur within the Kenmare River SAC. In some cases they occur adjacent to the aquaculture activities however no access routes are given within the Appropriate Assessment document. These habitats were screened out on the basis that there was no overlap with aquaculture activities. However it should be noted that storage of aquaculture materials and access routes for aquaculture can have negative impacts on these habitats. Therefore such activities should not be carried out either inside the Annex I habitat or in an area where it is likely to have an impact on the Annex I habitat (e.g. storing aquaculture frames on a cliff top, storage of equipment or establishing access paths in a saltmarsh). Disposal of waste from aquaculture activities should similarly take place well away from these Annex I coastal habitats.

These issues are addressed in the Appropriate Assessment Conclusion Statement. See **TAB D.**

The Department requires that an appropriate Underwater Archaeological Impact Assessment (UAIA) be carried out in advance to assess the totality of potential impact of the proposed applications on potential cultural heritage. The UAIA shall be carried out by a suitably qualified and suitably experienced maritime archaeologist and should be licenced by this Department. A detailed method statement should accompany the licence application.

In the first instance a detailed desktop study should be undertaken for the UAIA to inform the potential for UCH to be present in the harbour and resultant report should include recommendations for further archaeological mitigation in the way of underwater archaeological survey (either geophysical survey and/or underwater archaeological diver survey) of areas to be impacted by the anchors, if deemed necessary based on the results of the desktop study in the UAIA. The report should be forwarded to the Department for consideration and further comments.

**Public Consultation**

The application was publicly advertised using a composite public notice covering both aquaculture and foreshore elements, in The Kerryman on 17 April, 2019. The application and supporting documentation were available for inspection at Kenmare and Killarney Garda Stations for a period of 4 weeks from the date of publication of the notice in the newspaper.

There were 14 objections received from the public consultation process. It is not possible to disaggregate the comments into aquaculture and foreshore elements. The objections can be summarised as follows:

Tourism, visual impact, pollution, other users, detrimental impact on inshore fishing, extra vehicles on local roads, micro plastics, disturbance to seals, objections from other mussel farmers in the Harbour, Harbour is at maximum capacity and effects on mussel growth.

A copy of all the observations/submissions received at the Public/Statutory consultation stage was forwarded to the applicant.

The applicant responded and refuted the objections. The applicant also committed to complying with all regulations if he was granted a licence.

**CRITERIA IN MAKING LICENSING DECISIONS**

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

a) the suitability of the place or waters

*Scientific advice is to the effect that the waters are suitable for the cultivation of mussels, however the technical advice is that this site will negatively impact the existing sites in this part of the harbour and will have a negative visual impact;*

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

*(ii)* Shellfish Waters

The site is located within the Kenmare River/Sneem/Ardgroom Shellfish Designated Waters.

The mussels in these waters currently have a have a seasonal "A" Classification from 1st December – 1st May and revert back to a "B" Classification at all other times;

d) the likely effects on the economy of the area

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

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

*No significant issues arose regarding wild fisheries. The potential ecological impacts of aquaculture activities on natural habitats, flora and fauna are addressed in the Article 6 Appropriate Assessment for Kenmare River SAC 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) DCHG requires that an underwater archaeological impact assessment is carried out in advance of licensing.*

**RECOMMENDATION**

It is recommended that the Minister:

refuses the granting of a Foreshore Licence to Mr. Kieran Lyons, Eyeries, Beara, Co. Cork for a site in Kilmakilloge Harbour.

The following are the reasons and considerations for the Minister's determination to refuse the licence sought is:

- Increased negative visual impact;
- Negative impact on the existing licensed sites in the harbour.

**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/ Foreshore Licensing application –T06/364A*

Kieran Lyons has applied for authorisation to cultivate mussels using longlines on the non-intertidal foreshore on a *6* ha site (*T06/364A*) at the western side of Kilmakilloge Harbour, Co. Kerry.

The Minister for Agriculture, Food and the Marine has determined that it is not in the public interest to grant the licences sought. In making his determination the Minister considered those matters which by virtue of the Fisheries (Amendment) Act 1997, and other relevant legislation, he was required to have regard. Such matters include any submissions and observations received in accordance with the statutory provisions. *In particular, the Minister had regard to the findings of the Marine Engineering report regarding the negative visual impact, the negative impact of this new site on the growth rates of the adjacent existing licensed sites within the harbour and that the* new sites will restrict the flow of water, and nutrients within the harbour. The following are the reasons and considerations for the Minister's determination to refuse the licence sought:

- Increased negative visual impact;
- Negative impact on the existing licensed sites in the harbour."

**Recommendation to Refuse a Foreshore Licence application (T06/364A)**

**DECISION SOUGHT**

The Minister's determination is requested please in relation to the application for a Foreshore Licence from Mr. Kieran Lyons, Eyeries, Beara, Co. Cork, for a site at the western side of Kilmakilloge Harbour, Kenmare Bay, Co. Kerry, in which it is proposed to conduct aquaculture.

**BACKGROUND**

Marine aquaculture operations require separate Aquaculture and Foreshore Licences and Ministerial approval is requested in respect of this submission (Foreshore Submission) and the submission above (Aquaculture Submission), which refer to the same site.

The Foreshore Licence allows for the occupation of the particular area of foreshore while the Aquaculture Licence defines the activity that is permitted in this area. The continuing validity of each licence is contingent on the other licence remaining in force.

**APPLICATION FOR A FORESHORE LICENCE**

An application for a Foreshore Licence has been received from the applicant referred to above (in conjunction with an Aquaculture Licence application), relating to the occupation of the foreshore associated with the Aquaculture Licence application which covers a 6 hectare site (numbered **T**06**/**364A – see **TAB A**).

## LEGISLATION

Section 3 of the Foreshore Act, 1933 gives power to the Minister to license the use of foreshore, if he is of the opinion that it is in the public interest to do so.

## CONSULTATION AND PUBLIC COMMENT

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

This application was also sent to the Department of Housing, Planning and Local Government (DHPLG) in accordance with subsection (1B) of Section 3 of the Foreshore Act, 1933, which requires consultation between the Minister for Agriculture, Food and the Marine and the Minister for Housing, Planning and Local Government. Whilst aquaculture legislation requires certain statutory bodies to be notified of an aquaculture application, no other statutory bodies are prescribed consultees under Fisheries related foreshore legislation.

DHPLG There were no comments received from a water quality or foreshore perspective.

**Technical Consultation -** see documents at **TAB B**

**Marine Engineering Division (MED):** MED does not recommend the licensing of this site for the following reasons:

1. Negative visual impact
2. Cumulative impact for the new sites on existing licensed sites

In this regard MED has advised that the licensing of a number of new sites including this site "adjacent to existing sites, is likely to lead to a significant reduction in the growth rates of the existing sites" and these "new sites will restrict the flow of water, and nutrients within the harbour". Please see Tab B for detailed MED comments.

**Marine Survey Office (MSO):** Comments received in 2011 that the MSO decline to comment until such time as outstanding navigational issues are addressed. No comment received following new request for observations in 2019.

**Sea Fisheries Protection Authority (SFPA):** SFPA is of the view that this site is an area traditionally used for shrimp or scallop fishing.

**Public Consultation**

The application was publicly advertised using a composite public notice covering both aquaculture and foreshore elements, in the Kerryman on 17th April 2019. The application and supporting documentation were available for inspection at Kenmare and Killarney Garda Stations for a period of 4 weeks from the date of publication of the notice in the newspaper.

There were 14 objections received from the public consultation process. It is not possible to disaggregate the comments into aquaculture and foreshore elements. The objections can be summarised as follows:

Tourism, visual impact, pollution, other users, detrimental impact on inshore fishing, extra vehicles on local roads, micro plastics, disturbance to seals, objections from other mussel farmers in the Harbour, Harbour is at maximum capacity and effects on mussel growth.

A copy of all the observations/submissions received at the Public/Statutory consultation stage was forwarded to the applicant.

The applicant responded and refuted the objections. The applicant also committed to complying with all regulations if he was granted a licence.

## CRITERIA IN MAKING LICENSING DECISIONS

The Minister, in considering an application for a Foreshore Licence, may, if satisfied that it is in the public interest to do so, grant such a licence.

Section 82 of the Fisheries (Amendment) Act, 1997 stipulates that the Minister, in considering an application for a licence under the Foreshore Acts, 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.

**RECOMMENDATION**

It is recommended that the Minister:

refuses the granting of a Foreshore Licence to Mr. Kieran Lyons, Eyeries, Beara, Co. Cork for a site at the western side of Kilmakilloge Harbour, Kenmare Bay, Co. Kerry, having regard to the decision in relation to an Aquaculture Licence application.

## Related submissions

There are no related submissions.

## Comments

**OKeeffe, Therese** - 13/09/2019 15:13
Recommended that the Minister refuses to grant the Aquaculture and Foreshore licences for the reasons outlined in the submission.

**Hodnett, Kevin** - 17/09/2019 10:33
Recommended that the Minister determines that the Aquaculture and Foreshore Licences applied for by Mr Kieran Lyons be refused for the reasons set out in the detailed submission.

**Quinlan, John** - 18/09/2019 12:28
Refusal is recommended in this case please.

**Beamish, Cecil** - 18/09/2019 17:15
Recommended that the Minister determines that the Aquaculture and Foreshore Licences not be granted for the reasons outlined in the submission.

**Smith, Ann** - 18/09/2019 17:16
Approved for submission to Minister. AS 18/09/2019

**Lennox, Graham** - 19/09/2019 17:07
Minister determines that the Aquaculture and Foreshore Licences be refused for the reasons outlined.

## User details

| | | | |
|---|---|---|---|
| INVOLVED: | Fitzpatrick, Deirdre | READ RECEIPT: | Fitzpatrick, Deirdre |
| | OKeeffe, Therese | | OKeeffe, Therese |
| | Hodnett, Kevin | | Hodnett, Kevin |
| | Quinlan, John | | Quinlan, John |
| | Beamish, Cecil | | Beamish, Cecil |
| | Sub Sec Gens Office | | Smith, Ann |
| | eSub Sec Gen | | Lennox, Graham |
| | eSub Ministers Office | | |
| | eSub Minister | | |

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

2011 Aquaculture and Foreshore Licence application and an updated 2018 version which includes supplemental information. These applications must be read in tandem.

[redacted]

# AQUACULTURE - LICENSING UNDER FISHERIES (AMENDMENT) ACT, 1997 and FORESHORE ACT, 1933

COASTAL ZONE MANAGEMENT DIVISION
24 MAR 2011
DEPT. OF AGRICULTURE, FISHERIES & FOOD

SHELLFISH AND FINFISH

*Aquaculture and Foreshore Licence Application Form*

**Important Note**

**Section 4 of the Fisheries and Foreshore (Amendment) Act, 1998 (No. 54) prohibits any person making an application on or after 10 December 1998 for an Aquaculture Licence from commencing aquaculture operations until duly licensed under the Fisheries (Amendment) Act, 1997 (No. 23), and provides that a breach of that prohibition will cause the application to fail.**

**Coastal Zone Management Division**
**Department of Agriculture, Fisheries & Food**
**Clogheen**
**Clonakilty, Co. Cork**

**Fax: (023) 8821782**

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

T6/364.

***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 Part 3 are confidential and are not for public disclosure.

**USE BLOCK CAPITALS IN BLACK INK**

For Office Use
Application Ref. No. T6/364
Date of receipt, (Dept. Stamp):

COASTAL ZONE MANAGEMENT DIVISION
25 MAR 2011
DEPT. OF AGRICULTURE, FISHERIES & FOOD

## PART 1: PRELIMINARY DETAILS

| | |
|---|---|
| Name(s) of Applicant(s) in full: | |
| 1.A KIERAN LYONS | |
| 1.B | |
| Address(es) of Applicant(s) in full: | |
| 1.A EYERIES | 1.B |
| BEARA | |
| W. CORK | |
| | |
| **RSI/PPS No:/CRO No:** | |
| Tel: Fax: | Tel: Fax: |

1.C TYPE OF APPLICATION — Insert X in relevant box

Indicate the relevant type of application:

| | |
|---|---|
| -(i) Aquaculture Licence | X |
| -(ii)Trial Licence KILMAKILLOGE | |
| -(iii)Review of Aquaculture Licence MUSSELS ON LONGLINES | |
| -(iv)Renewal of Aquaculture Licence | |
| -(v) Foreshore Licence | X |

(This Application Form is valid for each type of application.)

1.D TYPE OF AQUACULTURE

Indicate the relevant type of application:

| | |
|---|---|
| -(i) Land-based | |
| -(ii) Marine-based | X |
| -Shellfish | |
| (iii) - extensive | |
| (iv) – intensive | X |
| -(v) Finfish | |

1.E DOCUMENTS ENCLOSED WITH THIS APPLICATION

The following documents are enclosed with this application:

| | |
|---|---|
| (1) - Ordnance Survey Map (Scale of 1: 10,000, ie, a six inch map) *OBLIGATORY* | X |
| (2) - British Admiralty Chart (largest available scale) | X |
| (3) - Decision of planning authority under Planning Acts | |
| (4) - Copy of licence under Section 4 of Local Government Water Pollution) Act, 1977 | |
| (5) - Environmental Impact Statement | |
| (6) - Drawing of the structures to be used and/or the layout of the farm *OBLIGATORY* | X |
| (7) - Water Quality Analysis Report (required for Land-based sites only) | |
| (8) - Application Fee OBLIGATORY | X |

(9) - Other (specify):

## PART 2: DETAILS RELATING TO PROPOSED AQUACULTURE PROJECT

**2.A Employment, Qualifications, Experience, Etc.**

(i) Details of Applicant's qualifications and experience in aquaculture: I have been working in this Sector For the Past 20 years

(ii) Other relevant experience (courses attended, etc):

(iii) Details of projected employment creation during first four years of proposed development: 2 Full TIME and 4 Part time

(iv) Projected employment (number of persons):

| Year 1: | | Year 2: | | Year 3: | | Year 4: | |
|---|---|---|---|---|---|---|---|

2.B Aquaculture Site Details

Indicate type of site:

- (i) Land-based ☐
- (ii) Marine-based ☒

2.C .Land-Based Site

(To be completed if appropriate)

(i) State species to be farmed: ______________________________

______________________________

(ii) State proposed system of culture e.g., pond, raceway, circular tank or other method: ______________

______________________________

______________________________

(iii) Full address of proposed site including Townland and County: ______________

______________________________

(iv) Tonnage to be produced:

| Year 1: | | Year 2: | | Year 3: | | Year 4: | |
|---|---|---|---|---|---|---|---|

(v) Proposed source of stock: ______________________________

(vi) Name of river(s) supplying site with water: ______________________________

______________________________

(vii) Estimate drought flow in gallons per minute: ______________________________

(viii) Is there a fall of 1.5 metres in the water level at this site or can this be obtained by damming the river without giving rise to flooding of your own or neighbour's land upstream of the site? ______________

______________________________

(ix) Area of proposed site (hectares): ______________________________

(x) Details of services available on the site e.g., main road access, electricity: ______________

______________________________

______________________________

(xi) Are there at present any possible sources of pollution upstream of the site, e.g. discharge from sewerage plant, farmyard, sheep dip facility, silage effluent, quarry, sandpit or factory? YES ☐ NO ☐

(xii) If yes, supply details: ______________________________

______________________________

______________________________

Land-based Site (continued)

2.D The following must be supplied:

- (i) Sketch of the layout of the site in relation to the river(s), road(s) and buildings;
- (ii) Water quality Analysis Report, which should be drawn up in accordance with the parameters set out in Annex C of the Guidance Notes.

2.E The following conditions must be met in order to allow for consideration of licensing of land-based aquaculture:

- (i) the buildings and equipment must be put in place to the Department's satisfaction; an
- (i) the operation must comply with Local Authority requirements.

2.F Marine-based Site(s)
(To be completed if appropriate)

Location -(i) Bay: Kilmacalogue

-(ii) County: KERRY

(iii) OS Map No:

(iv) Site Co-ordinates 6 hectares

(v) Size (hectares): MUSSELS

(vi) Species (common and scientific name):

-Aquatic Plant(s)
-Any form of aquatic food suitable for the nutrition of fish

(vi) Method of culture (e.g., nets, ropes, tanks, trestles, etc.) SPat Collected From NATuRAL Settlement, And on growen onto 6 220m Longlines

(vii) Drawings of structures to be used in method of culture should be enclosed.

(viii) If cages or tanks are proposed, state:

-(a) Number:

-(b) Type and shape:

-(c) Cubic Capacity:

-(d) Depth:

(ix) Proposed specific site locations (with reasons):

(x) Describe proposed purification facilities to be used, where appropriate: Product will be Purified by Purchaser before Public CONSUMPTION

Marine-based Site(s) (continued)

2.G Give details of any special requirements relating to the health of the proposed project and the wider matters of public health and safety:

None

2.H Tonnage to be produced:

| Species (To state) | Year 1: | Year 2: | Year 3: | Year 4: |
|---|---|---|---|---|
| Blue MuSSEL | / | 180T | 180T | 180T |

2.I Reasons for selection of site(s): good water depth, Some Shelter, no Conflict with others, no Visual impact, no Navigation hazard

***Note: The proposed access route to the site(s) from public road across tidal foreshore area Must be indicated on the OS map accompanying the application.***

2.J Environmental Impact Statement (EIS).

A copy of an EIS, if required, should be enclosed with the application. The EIS should contain the information specified in Annex B of the Guidance Notes.

2.K Trial Licence.
(To be completed if appropriate)

Describe experimental or investigative nature of the proposed project:

*[Use separate page if required – to be signed and dated]*

[redacted]

I/We hereby declare the information provided in Parts 1, 2 and 3 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): Thevan Lyons

Date: 23/3/11

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

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

Aquaculture Licensing
Coastal Zone Management Division
Clogheen
Clonakilty,
Co. Cork

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

# UPDATE/ADDITIONAL INFORMATION FORM

# FILL IN THE YELLOW HIGHLIGHTED SECTIONS

# 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, P85 TX47**
**Telephone: (023) 8859500**
**Fax: (023) 8821782**

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.__T6/364________

Date of Receipt (Dept. Stamp):

Agriculture & Foreshore Management Division
28 MAR 2018
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) | KIERAN LYONS |
|---|---|
| 1. | |
| Address: | Eyeries, BEARA W. CORK |
| 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: Kilmacalogue

(ii) County: Kerry

(iii) OS Map No: Discovery Series 84

(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.]

Irish national GRid

73650 59600, 73950 59600, 73950 59400 73650 59400

(v) Size of Site (hectares): 6

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

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

(viii) Please supply details of (a) source of seed e.g. wild hatchery and location and (b) means of collection and introduction to culture. SPAT collected From Natural Settlement, growen then to Market size

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)

(x) Proposed number of lines/ropes/trestles as per site layout drawing 6 X 220m Longlines

(xi) Proposed Production Tonnage:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Year 1 | / | Year 2 | 100T | Year 3 | 100T | Year 4 | 100T | Year 5 | 100T |

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

Good Depth And water Flow

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

______________________________________________

______________________________________________

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

Fully Grown, direct human consumpiton

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

uniformed Grey Color

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

Yes ☑ No ☐

If **yes** give details.

MaP 2, Kenmore River, Sneem, Kilmacalogue

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

______________________________________________

______________________________________________

(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, B And Partial A From Dec - FEb

(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 Kenmore River SAC

______________________________________________

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

NO

(xix) Methods used to harvest the shellfish and details of any subsequent processing of shellfish

by boAT

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

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

Starfish – Picked by hand

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

**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:

28 YEARS MUSSEL FARMING

(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:

**FULLTIME JOBS**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Year 1: | 1 | Year 2: | 1 | Year 3: | 1 | Year 4: | 1 |

**PART TIME JOBS**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Year 1: | 4 | Year 2: | 4 | Year 3: | 4 | Year 4: | 4 |

CONFIDENTIAL

## PART 3: APPLICANT DETAILS

### PART 3 A. INDIVIDUAL(S)/SOLE TRADER(S)

(If necessary continue with extra page(s)

1. Name: KIERAN LYONS

Personal Public Service No. [redacted]

Date of Birth: [redacted]

Telephone No. [redacted]

Mobile No. [redacted]

E-mail Address [redacted]

2. Name:________________________________

Personal Public Service No. ____________________

Date of Birth: ______________________________

Telephone No. ______________________________

Mobile No. ________________________________

E-mail Address ______________________________

3. Name:________________________________

Personal Public Service No. ____________________

Date of Birth: ______________________________

Telephone No. ______________________________

Mobile No. ________________________________

E-mail Address ______________________________

4. Name:________________________________

Personal Public Service No. ____________________

Date of Birth: ______________________________

Telephone No. ______________________________

Mobile No. ________________________________

E-mail Address ______________________________

## PART 5: APPLICATION DOCUMENTATION

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

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

## PART 5: DECLARATION AND SIGNING

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

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

________________________________________

________________________________________

________________________________________

________________________________________

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

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

Date: 27/3/18

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

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

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

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

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

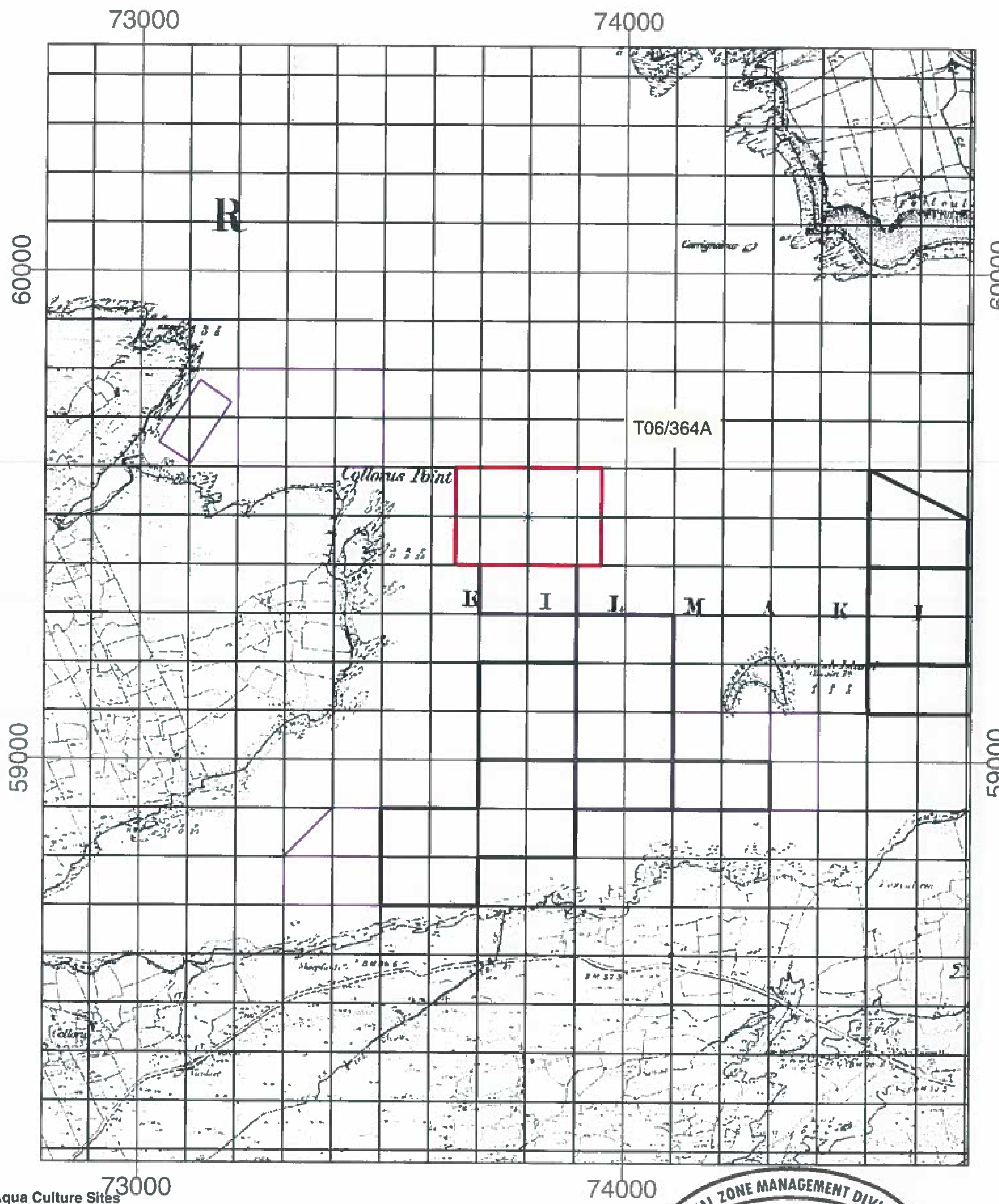
## 1 NO. SITE AT KILMAKILLOGE HARBOUR CO.KERRY

**Co-ordinates & Area**

**Site T06/364A (6 Ha)**

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

073650, 059600 to Irish National Grid Reference point
073950, 059600 to Irish National Grid Reference point
073950, 059400 to Irish National Grid Reference point
073650, 059400 to the first mentioned point.




**Aqua Culture Sites**

**Site_Status**

Application
Application Lapsed
Application Refused
Application Renewal
Application Withdrawn
License Altered
License Revoked
License Surrendered
Licensed
Unknown
Unlicensed
100 Meter Reference Grid

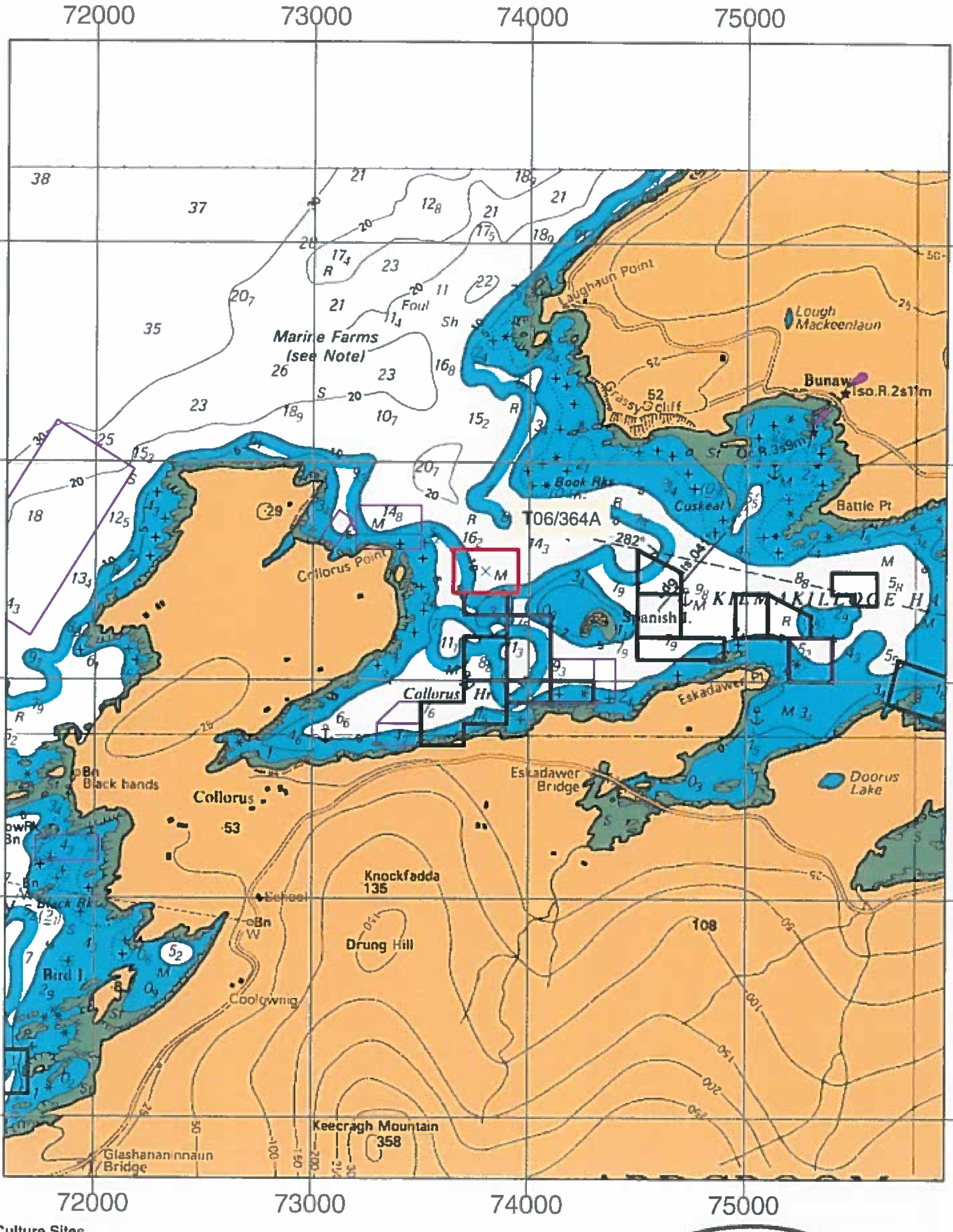
**1:10,560**

Site Highlighted in red denotes application

COASTAL ZONE MANAGEMENT DIVISION
11 APR 2011
DEPT. OF AGRICULTURE, FISHERIES & FOOD



Department of Agriculture, Fisheries and Food
An Roinn Talmhaíochta, Iascaigh agus Bia




Aqua Culture Sites

Site_Status

- Application
- Application Lapsed
- Application Refused
- Application Renewal
- Application Withdrawn
- License Altered
- License Revoked
- License Surrendered
- Licensed
- Unknown
- Unlicensed

**1:24,000**

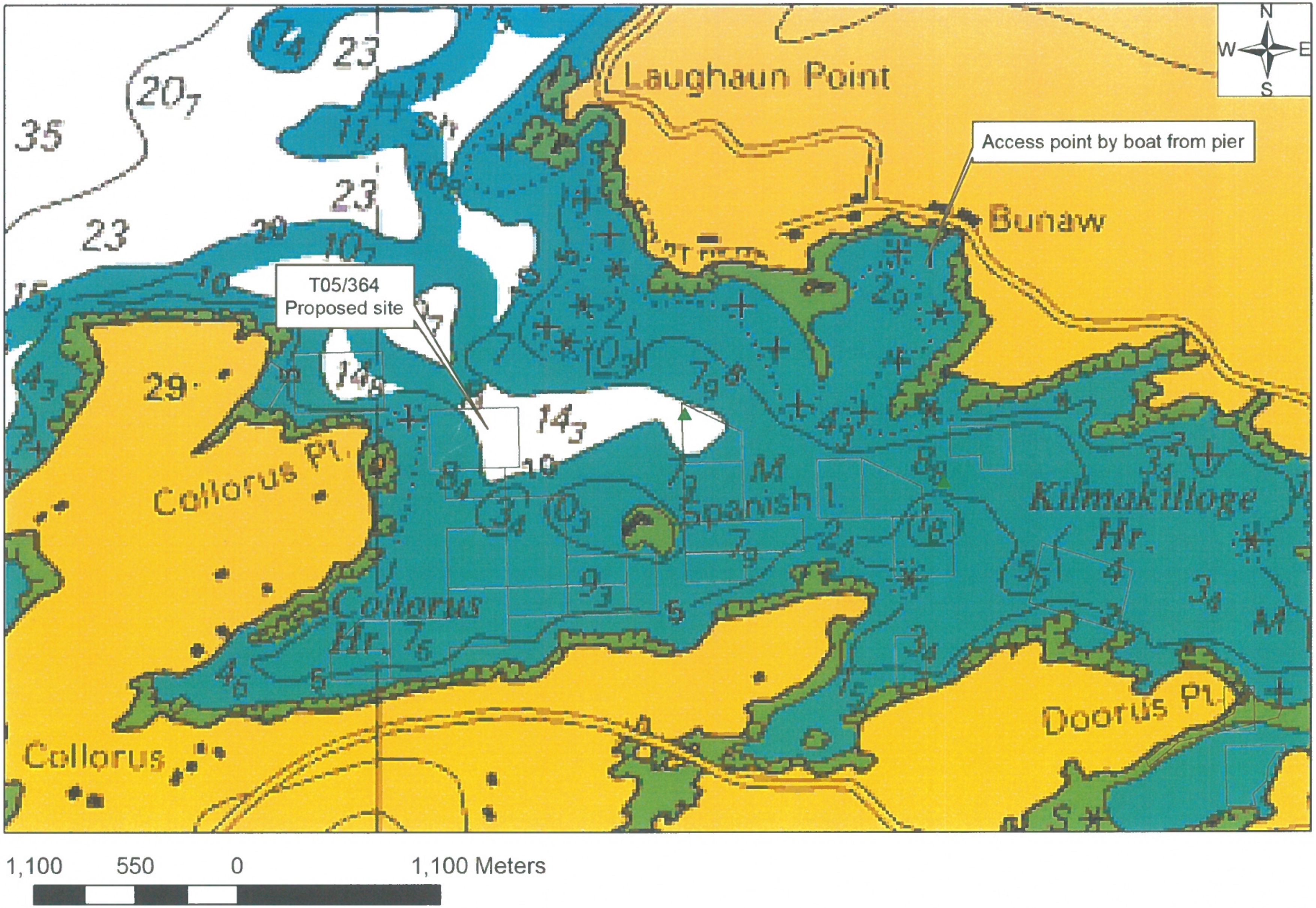
Site Highlighted in red denotes application

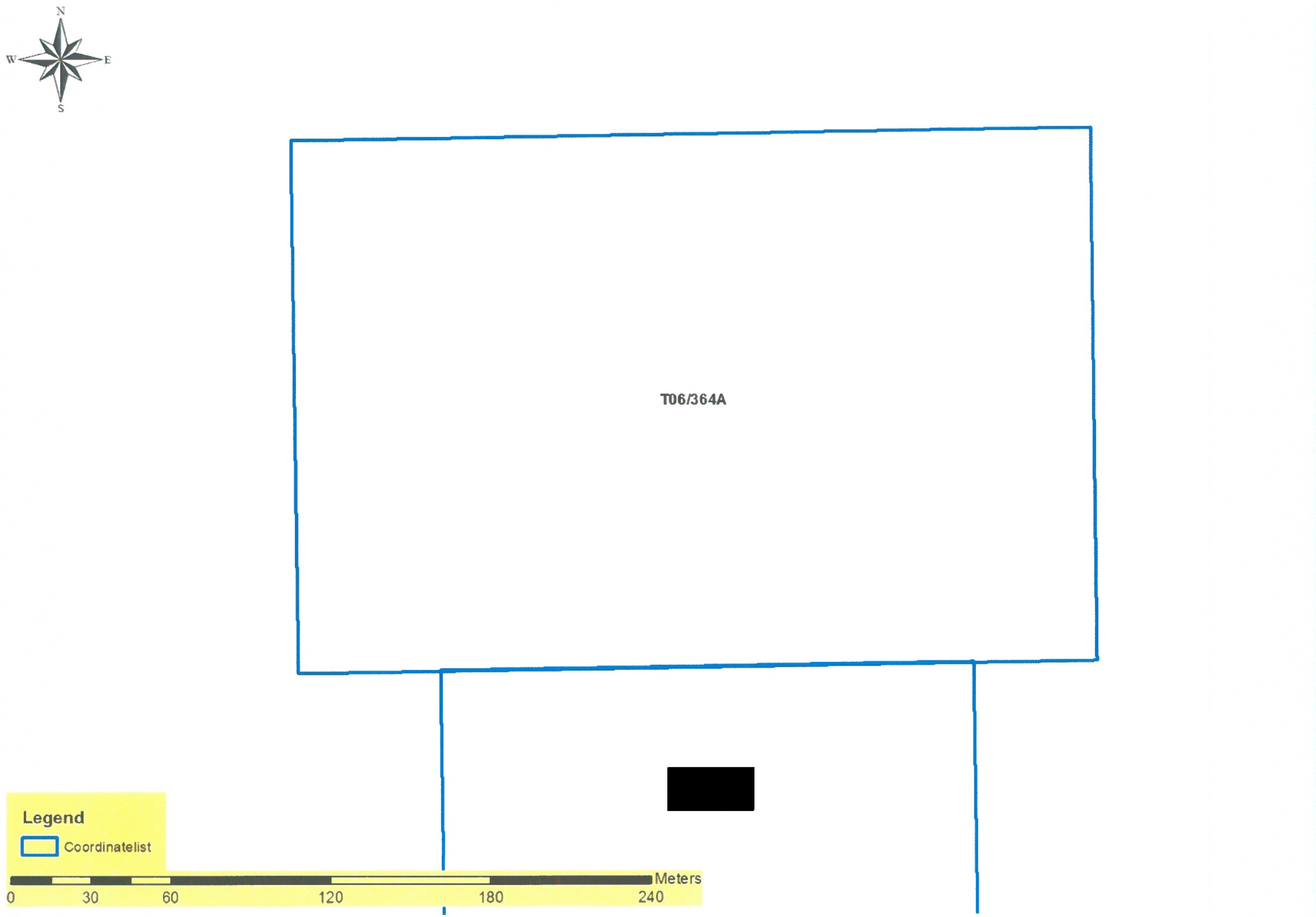
Part of Admiralty Chart No. 2495-3
Not to be used for Navigation.

COASTAL ZONE MANAGEMENT DIVISION
11 APR 2011
DEPT. OF AGRICULTURE, FISHERIES & FOOD

Department of Agriculture, Fisheries and Food
Talmhaíochta, Iascaigh agus Bia

## Kieran Lyons T6/364
## Access route map




N
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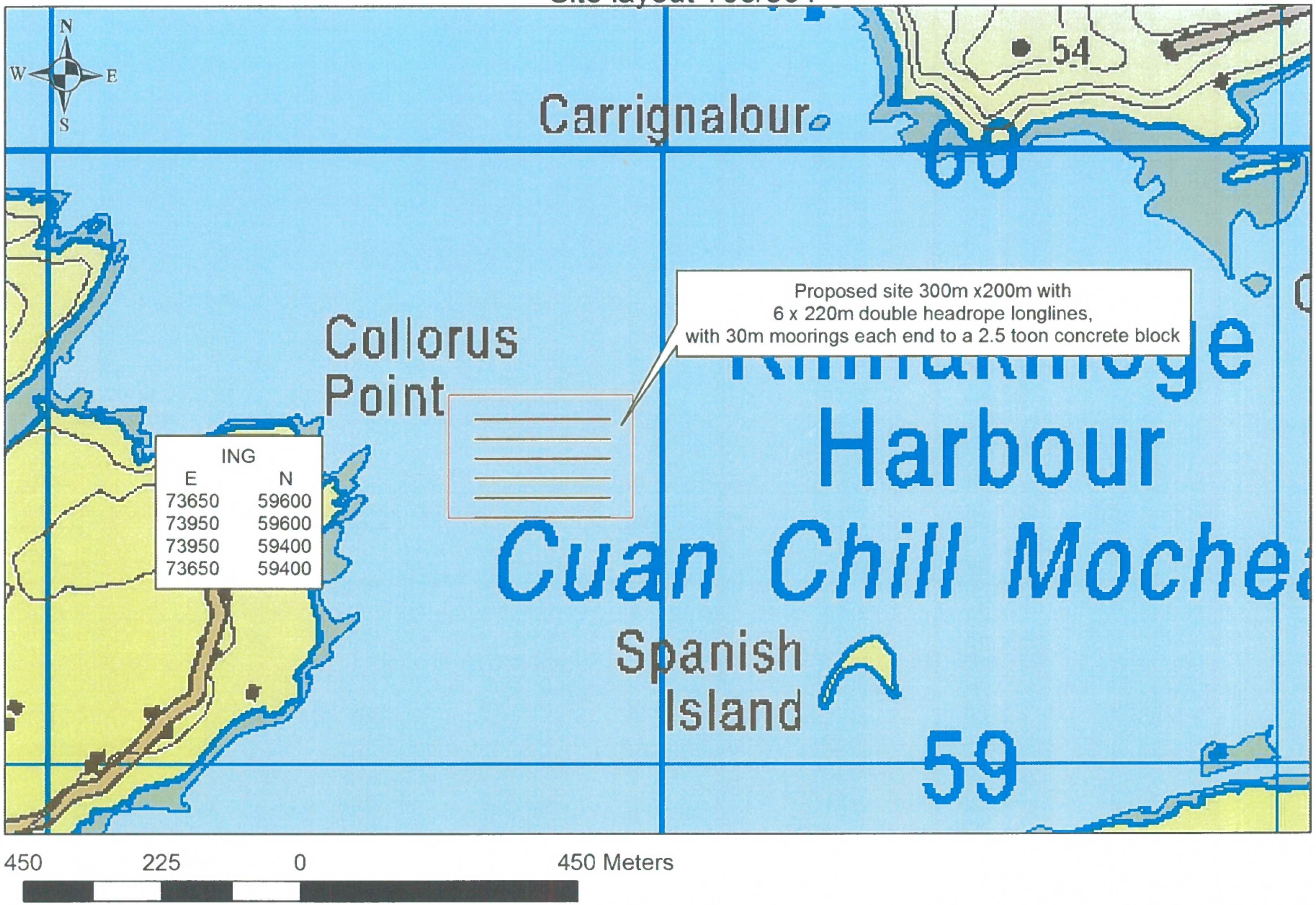
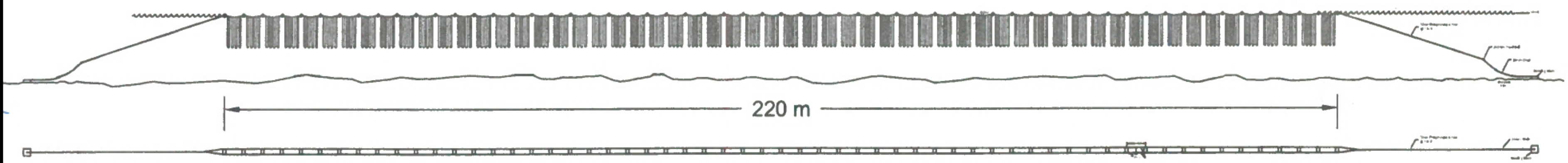
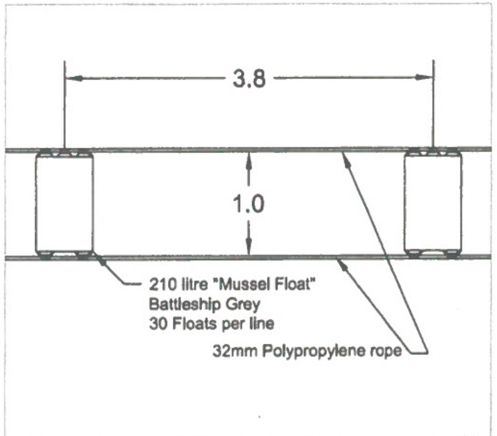
T06/364A
Legend
Coordinatelist
0
30
60
120
180
240
Meters

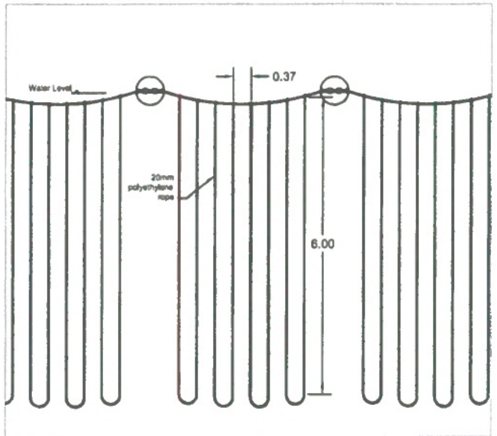
Kieran Lyons
Site layout T06/364

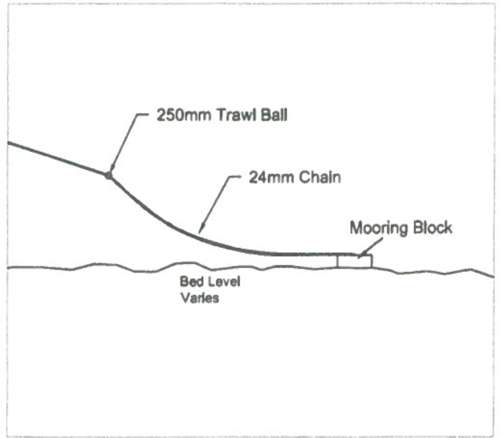


[redacted]




| | | |
|---|---|---|
| Notes: | Project: Aquaculture Drawings<br>Mytilus Edulis<br>Title: Inshore Mussel Farm Line Layout<br>220 metre Longline | KIERAN LYONS<br>EYERIES<br>BEARA<br>W. CORK<br>23/3/11 |

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

6th December 2019

Your Ref: **AP12/2019**

Ms Mary O'Hara
Secretary to the Board
Aquaculture Licences Appeals Board
Kilminchy Court, Dublin Road
Portlaoise
Co. Laois.

Dear Mary

I wish to acknowledge receipt of your letter dated 21/11/19 to Mr. Michael Creed T.D., Minister for Agriculture, Food and the Marine (and copied to Mr. John Quinlan) which was received by the Department on 25/11/19, regarding the appeal against the decision to refuse to grant an Aquaculture Licence to Shamrock Shellfish Ltd in relation to site **T06/364A** at the western side of the entrance to Kilmakilloge Harbour, Kenmare Bay, Co. Kerry.

I am attaching the following documentation:-

1. Copies of reports received in relation to the application,
2. Copy of the applicant's reply to the public and statutory comments,
3. Copy of the submission to the Minister,
4. Copy of the notification of Minister's decision to the applicant,
5. Location map of the surrounding area including the following:
    - Sites under application
    - Licensed sites
    - Sites currently under appeal.

Please also see below three hyperlinks to the Department's website where (1) the application form, maps and drawings, (2) the Appropriate Assessment of Aquaculture and Fisheries Risk Assessment in Kenmare River SAC and (3) the Conclusion statement, may be found (as these are too large to transmit by email).

An Lárionad Bia Mara Náisiúnta, An Cloichín, Cloich na Coillte, Corcaigh, P85 TX47
National Seafood Centre, Clonakilty, Co. Cork P85 TX47
T +353 (0)23 8859592 Email: Deirdre.Fitzpatrick@agriculture.gov.ie
www.agriculture.gov.ie

- The application form, maps and drawings:-

  https://www.agriculture.gov.ie/media/migration/seafood/aquacultureforeshoremanagement/aquaculturelicensing/aquacultureforeshorelicenceapplications/kerry/kenmarebay/27T06364AKieranLyonsApplication080419.pdf

- The Appropriate Assessment of Aquaculture and Fisheries Risk Assessment in Kenmare River SAC:-

  https://www.agriculture.gov.ie/media/migration/seafood/aquacultureforeshoremanagement/aquaculturelicensing/aquacultureforeshorelicenceapplications/cork/2019/AppropAssessofAquacultandFisheriesRiskAssessinKenmareRiverSAC270319.pdf

- Conclusion Statement covering Kenmare Bay:-

  https://www.agriculture.gov.ie/media/migration/seafood/aquacultureforeshoremanagement/aquaculturelicensing/appropriateassessmentconclusionstatement/2019new/AppAssessmentConStatement%20AquacultureActivitiesKenmareRiverSAC090919.pdf

If you require anything further please let me know.

Yours sincerely

pp Mary Naylor
Deirdre Fitzpatrick
Aquaculture and Foreshore Management Division

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

24th September 2019

Mr Kieran Lyons
Eyeries
Beara
Co. Cork

**Our Ref: T06/364A**

**FISHERIES (AMENDMENT) ACT, 1997 (NO.23)**
**NOTICE OF MINISTERIAL DECISION TO REFUSE AN AQUACULTURE AND FORESHORE LICENCE**

Dear Sir,

I would like to inform you that the Minister for Agriculture, Food and the Marine has refused your application for an Aquaculture Licence and Foreshore Licence for the cultivation of mussels using longlines on site **T06/364A** (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 Kerryman".

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. This appeal must be lodged within one month beginning on the date of the publication of the decision.

In addition, a person may question the validity of the Foreshore Licence determination by way of an application for judicial review, under Order 84 of the Rules of the Superior Court (SI No. 15 of 1986). Practical information on the review mechanism can be obtained from the Citizens Information Board at: http://www.citizensinformation.ie/

Yours sincerely

______________________________________

**Deirdre Fitzpatrick**
**Aquaculture and Foreshore Management Division**

An Lárionad Bia Mara Náisiúnta, An Cloichín, Cloich na Coillte, Corcaigh, P85 TX47
National Seafood Centre, Clonakilty, Co. Cork P85 TX47
T +353 (0)23 8859592 Deirdre.Fitzpatrick@agriculture.gov.ie
www.agriculture.gov.ie

**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:** | **T06/364A** |
| **APPLICANT:** | **Mr Kieran Lyons** |
| **AQUACULTURE TO WHICH DECISION RELATES:** | Cultivation of mussels using longlines on site T06/364A on the foreshore in Kilmakilloge Harbour, Kenmare Bay, Co. Kerry. |
| **NATURE OF DECISION:** | Refusal of Aquaculture Licence. |
| **DATE OF DECISION:** | **19 September 2019** |
| **REASON FOR REFUSAL:** | The Minister for Agriculture, Food and the Marine has determined that it is not in the public interest to grant the licences sought. In making his determination the Minister considered those matters which by virtue of the Fisheries (Amendment) Act 1997, and other relevant legislation, he was required to have regard. Such matters include any submissions and observations received in accordance with the statutory provisions. In particular, the Minister had regard to the findings of the Marine Engineering report regarding the negative visual impact, the negative impact of this new site on the growth rates of the adjacent existing licensed sites within the harbour and that the new sites will restrict the flow of water, and nutrients within the harbour. The following are the reasons and considerations for the Minister's determination to refuse the licence sought:<br>• Increased negative visual impact;<br>• Negative impact on the existing licensed sites in the harbour. |

**To be inserted in** "The Kerryman".

**FISHERIES (AMENDMENT) ACT, 1997 (NO. 23) FORESHORE ACT, 1933 (NO. 12) NOTICE OF DECISION TO GRANT/REFUSE AQUACULTURE AND FORESHORE LICENCES.**

The Minister for Agriculture, Food and the Marine has decided to grant/refuse Aquaculture and Foreshore Licences to the applicants listed in the table below for sites in Kilmakilloge Harbour, Kenmare Bay, Co. Kerry;

| **Site Ref** | **Applicant** | **Location** | **Species & Cultivation** | **Grant/ Refuse** |
|---|---|---|---|---|
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| T06/364A | Mr Kieran Lyons | Western side of Kilmakilloge Harbour | Mussels using longlines | Refuse |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |

| | | | | |
|---|---|---|---|---|
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
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| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |

The reasons for these decisions are elaborated on the Department's website at:
http://www.agriculture.gov.ie/seafood/aquacultureforeshoremanagement/aquaculturelicensing/aquaculturelicencedecisions/

An appeal against the Aquaculture Licence decisions 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/

A person may question the validity of the Foreshore Licence determinations by way of an application for judicial review, under Order 84 of the Rules of the Superior Court (SI No. 15 of 1986). Practical information on the review mechanism can be obtained from the Citizens Information Board at: http://www.citizensinformation.ie/

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

**Marine Engineering Division**

**Report on Aquaculture Licence Application**

| | |
|---|---|
| **Application Reference No:** | **T06/364** |
| **Report Prepared by:** | **Raphael Crowley** |
| **Date:** | 14 February 2019 |
| **Applicant:** | Kieran Lyons |
| **Location:** | Kilmakilloge Harbour, Co. Kerry |
| Applicant Type: | Aquaculture/Foreshore Licence |
| **Site:** | T06/364 |
| **Site Area (Ha):** | 6.0 |
| **Species:** | Blue Mussel (Mytilus edulis) |
| **Cultivation Method:** | Longlines |
| **Intertidal/Non-Intertidal:** | Non-Intertidal |
| **Source of Seed / Spat:** | Natural spat collection |
| **Annual Production Estimates:** | 100 Tonnes |
| **Shellfish Waters Designation:** | Yes ☒ No ☐ |
| Reference: | SI 200 of 1994 Kilmakilloge Harbour - Map XI |
| **Environmental Designation :** | Yes ☒ No ☐ |
| Reference: | Kenmare River SAC [Site Code: 002158] |
| **Development Plans:** | Yes ☒ No ☐ |
| Reference: | Kerry County Development Plan 2015 -21, Section 8.4 |
| **Pre-Consultation Meeting:** | Yes ☒ No ☐ |
| Date: | Various |

# Drawing Validation Sheet

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **OSI Maps:** | **Yes** | ☒ | **No** | ☐ | | | |
| Comment: | OSI maps to be prepared by GIS Mapping Section. | | | | | | |
| **BA Chart:** | **Yes** | ☒ | **No** | ☐ | | | |
| Comment: | Charts to be prepared by GIS Mapping Section. | | | | | | |
| **Farm Layout Drawing:** | **Yes** | ☒ | **No** | ☐ | | | |
| | Directional Arrow | | | Yes | ☒ | No | ☐ |
| | Scale | | | Yes | ☒ | No | ☐ |
| | Title Block | | | Yes | ☒ | No | ☐ |
| | Date | | | Yes | ☒ | No | ☐ |
| Comment: | Drawing provided is suitable | | | | | | |
| **Drawings of structures:** | **Yes** | ☒ | **No** | ☐ | | | |
| Comment: | Typical section detail of mussel longline provided | | | | | | |
| **Details of Proposed Navigation Marking:** | **Yes** | ☐ | **No** | ☒ | | | |
| Comment: | SUMS navigation marking scheme to be agreed | | | | | | |
| **Site Access Indicated:** | **Yes** | ☒ | **No** | ☐ | | | |
| Comment: | Access from Bunaw Pier (Kilmakilloge) | | | | | | |
| **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**
The site is located in relatively sheltered waters at the western side of Kilmakilloge Harbour. The hydrodynamic regime is suitable for this type of aquaculture.

**Site Management**
This new application is for aquaculture activity in Kilmakilloge Harbour, Co Kerry. The site is currently not in use. This applicant operates two unauthorised 330m mussel longlines in Kilmakilloge Harbour.

**Proposed Site Layout and Structures**
The proposed site has an area of 6.0Ha. The applicant proposes to utilise the standard double head-rope method with lines at 220m in length. The site layout drawing appears to show 5 longlines, while the text in the drawing and the application indicate 6 longlines will be deployed. The site layout drawing will need to be revised if a licence is to be issued for this site.

**Land Based Facilities / Site Access**
Bunaw Pier is used by mussel farmers on a daily basis to access the sites in Kilmakilloge Harbour and carry out operations associated with the aquaculture industry. The pier is suitable as an access point for this site.

**Navigation**
There are existing navigational aids within Kilmakilloge Harbour. MED recommends that the group navigational marking scheme (SUMS) is revised to facilitate this proposed site if licenced. The scheme should provide a safe system of navigation for all marine users. This will be revised in consultation with Kerry County Council, BIM, MSO and CIL. If licenced, this site will be within the SUMS for Kilmakilloge Harbour.

**Visual Impact**
The Kerry County Development Plan (CDP) designates the scenic characteristic of the landscape adjacent to Kilmakilloge Harbour as Rural Prime Special Amenity in some parts and Rural Secondary Special Amenity in the remainder. The Kerry CDP indicates there are scenic routes surrounding Kilmakilloge Harbour. The proposed site is visible from the R571 roadway from Kenmare to Castletownbere and the R573 roadway from Lauragh to Kilmakilloge, both of which are part of the Wild Atlantic Way and designated in the Kerry CDP as routes with Views and Prospects (Both Directions). The Beara Way walking route passes to the south of Kilmakilloge Harbour.

The existing aquaculture in Kilmakilloge has been in place for some time and has become embedded in the landscape. This site will increase the level of activity in this part of the harbour and will lead to an increased visual impact. Details of the farm layout have been provided and adheres to the best practices outlined in the Guidelines for Landscape and Visual Impact Assessment of Marine Aquaculture, 2001. Any licence if issued, should contain conditions that will specify the orientation of the site, length and number of lines and colour of flotation barrels to minimise the visual impact.

**Impact / Cumulative Impact**
The Appropriate Assessment for Kenmare River concluded that there was no impact on the SAC due to aquaculture at the location of this site.

This application is for new activity which will increase the overall mussel aquaculture activity within this part of Kilmakilloge Harbour. The aquaculture in Kilmakilloge Harbour has been in existence for some time and has reached a state of equilibrium and there is a potential impact on adjacent sites due to this application.

There is fishing and marine leisure in the area. The group marking scheme reduces the impact of the aquaculture on navigation in the area. The existing mussel licence areas within the harbour have been reconfigured to improve navigation, farming operations, and visual impact within the area. This site will increase the level of activity in this part of the harbour and will lead to an increased visual impact.

There is no increase in the overall historical licenced aquaculture area within Kilmakilloge harbour due to the reconfiguration process for existing activity, however this new application within the inner part of the harbour will impact on the existing activity.

**AFMD should ensure the correct OSI map, Admiralty chart and Site Co-ordinates to be prepared by GIS Mapping for the site, and the revised site layout drawing and structure details are included in any licence issued.**

**Marine Engineering Division does not recommend the licensing of this site for the reasons outlined above.**

## OKeeffe, Therese

| | |
|---|---|
| **From:** | Crowley, Raphael |
| **Sent:** | 01 August 2019 15:47 |
| **To:** | Hodnett, Kevin |
| **Cc:** | Quinlan, John; OKeeffe, Therese; Clancy, Noel; Beamish, Cecil |
| **Subject:** | RE: Kilmacillogue Aquaculture Licence Renewal applications |
| **Attachments:** | Kilmakillogue_Aerial_AllSites_010819.pdf; Kilmakillogue_Aerial_CapacityImpact_010819.pdf; Kilmakillogue_Aerial_ExistingVisual_010819.pdf |

Kevin
I refer to your email below regarding the licencing of aquaculture in Kilmakilloge Harbour.
I have reviewed your queries, the MED reports on the sites referred to below and the correspondence received from the statutory and public consultation process and would make the following comments.

The applications for the sites of the existing aquaculture activity in Kilmakilloge were reconfigured to allow for visual impact, location of existing lines and navigation. When taken with the existing salmon sites in the harbour, this accounts for approximately 54.3 hectares of activity. An additional 53.1 Hectares have been applied for as part of the current licencing process, which if licenced, would effectively double the licenced activity in the harbour. Having considered all the applications, MED recommends licencing 65.7 hectares and believes that the licencing of the remaining 41.7 hectares of mussel cultivation will have a significant negative impact on the area, in terms of navigation, visual and production capacity. Having assessed all the applications in the harbour, MED is of the opinion that the 11 sites listed below should not be licenced.

MED would disagree with your comments regarding the "positive disposition" to licencing of these sites, in particular in the public responses to the applications. There is strong resistance to the licencing of the new sites listed below on visual impact, impact on tourism, impact on other marine users including fishing, marine litter/pollution concerns and in particular the commercial or capacity impact on the existing operations in the harbour if the new sites are licenced. This feedback is in line with MED comments on the impact of licencing these sites.

With regards to visual impact, the following is of note. The existing aquaculture has become embedded in the harbour, and as such there is no new significant negative impact on the area due to the licencing of the existing licenced activity. The licencing of the new sites listed below, where no activity has taken place before, will have a negative visual impact. MED does not believe that "it would be reasonable for an applicant to potentially feel aggrieved that an additional application is not recommended in circumstances where a positive recommendation has been afforded to existing applicants who likely have a similar visual impact on the seascape."

With regards to cumulative visual impact, you must look at the harbour as a whole. Currently, there is sufficient "blue-water" space within the harbour to offset the current activity. The attached maps show the existing and recommended sites for licencing along with all the other applications that are under consideration in the harbour. It is clear that the licencing of the 11 new sites listed below will have a significant visual impact on the harbour. The "cumulative impact" of licencing a further 41.7 hectares of mussel cultivation within the harbour will have a high visual impact on the area.

In the case of the Impact/Cumulative Impact the following is of note. The Appropriate Assessment of the area does not have any significant objections to the licencing of these sites. However the AA is based on impacts on specific habitats or species and does not consider the impact on commercial activity within the harbour. As such, just because the sites pass the AA test, does not mean that they will not have a negative impact on commercial activity. The impacts of new applications on the existing activity have been identified by the operators in the harbour, with the objections to the applications supporting this. The capacity of any site is dependent on a number of factors, including the stocking density of the site, the availability of food such as phytoplankton, and hydrodynamic conditions such as wave climate and depth. The placing of extra new sites around existing sites can have a detrimental effect on the existing sites. This is well documented historically in areas such as Bantry, Killary and in

Kilmakilloge itself. Mussels filter the water and an increase in mussel activity will reduce the available food for existing adjacent operations. The licencing of the 11 new sites listed below, adjacent to existing sites, is likely to lead to a significant reduction in the growth rates of the existing sites. The attached map shows the location of the new sites and highlights those that are likely to have a significant effect on the existing activity. These new sites will restrict the flow of water, and nutrients within the harbour.

Regards
Raphael

**Raphael Crowley**
*Chartered Engineer - Marine Engineering Division*

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

**Pointe Uí Rinn, Cathair Uí Mhóráin, Trá Lí, Co. Chiarraí, V92 X2TK**
Reen Point, Blennerville, Tralee, Co. Kerry, V92 X2TK

M +353 (0)87 2336425 T +353 (0)66 7149344 www.agriculture.gov.ie

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**From:** Hodnett, Kevin
**Sent:** 19 July 2019 16:00
**To:** Crowley, Raphael
**Cc:** Quinlan, John; OKeeffe, Therese; Clancy, Noel; Beamish, Cecil
**Subject:** Kilmacillogue Aquaculture Licence Renewal applications

Hi Raphael,

The Public and Statutory Consultation phase for a significant number of Aquaculture Licence applications (both new & renewal) in Kilmacillogue has, as you are aware concluded.

This Division is currently working to prepare appropriate recommendations for the Minister in each case. The Division in making a recommendation to the Minister is required to give consideration to all comments and observations made on foot of the consultation processes and the recommendation ultimately made to the Minister will reflect this process.

In the case of a number of new applications (11 in all and set out below) the overall Consultation process appears to broadly indicate a positive disposition to the issue of aquaculture licences. The MED comments however recommend that the Minister should not licence the sites. The reasons for the recommendation appear to be twofold:

1. **Visual Impact**
2. **Impact / Cumulative Impact**

The text below is representative of the general MED comments.

> ***Visual Impact***
> *The Kerry County Development Plan (CDP) designates the scenic characteristic of the landscape adjacent to Kilmacillogue Harbour as Rural Prime Special Amenity in some parts and Rural Secondary Special Amenity in the remainder. The Kerry CDP indicates there are scenic routes surrounding Kilmacillogue Harbour. The proposed site is visible from the R571 roadway from Kenmare to Castletownbere and the R573 roadway from Lauragh to Kilmakilloge, both of which are part of the Wild Atlantic Way and designated in the Kerry CDP as routes with Views and Prospects (Both Directions). The Beara Way walking route passes to the south of Kilmakilloge Harbour.*

*The existing aquaculture in Kilmakilloge has been in place for some time and has become embedded in the landscape. This site will increase the level of activity in this part of the harbour and will lead to an increased visual impact. Details of the farm layout have not been provided so MED cannot assess if it adheres to the best practices outlined in the Guidelines for Landscape and Visual Impact Assessment of Marine Aquaculture, 2001. Any licence if* *issued, should contain conditions that will specify the orientation of the site, length and number of lines and colour of flotation barrels to minimise the visual impact.*

***Impact / Cumulative Impact***
*The Appropriate Assessment for Kenmare River should be consulted/reviewed to ensure that there was no impact on the SAC due to aquaculture at the location of this site.*
*This application is for new activity which will increase the overall mussel aquaculture activity within this part of Kilmakilloge Harbour. The aquaculture in Kilmakilloge Harbour has been in existence for some time and has reached a state of equilibrium and there is a potential impact on adjacent sites due to this application. This has been stated by the applicant himself.*
*There is fishing and marine leisure in the area. The group marking scheme reduces the impact of the aquaculture on navigation in the area. The existing mussel licence areas within the harbour have been reconfigured to improve navigation, farming operations, and visual impact within the area. This site will increase the level of activity in this part of the harbour and will lead to an increased visual impact.*
*There is no increase in the overall historical licensed aquaculture area within Kilmakilloge harbour due to the reconfiguration process for existing activity, however this new application within the inner part of the harbour will impact on the existing activity.*

Having assessed the results of the Public and Statutory Consultation processes, It appears likely that any decision to refuse the issue of an aquaculture licence in these 11 cases will hinge in the main on the MED recommendation. In such circumstances and having regard to the fact that applicants have recourse to an appeal to ALAB and/or a judicial review of procedures it is imperative that recommendations be adequately stress tested. You will recall from the recent presentation by Legal Services Division, that it is absolutely necessary that in making a determination that the Minister provide full details of the basis on which he made a decision. In the circumstances I will require additional information in relation to each of the above headings in order to:

1. Provide the Minister with the fullest detail for consideration.
2. Ensure that the applicant (& others) is furnished with adequate information on which to make a considered decision in relation to any appeal procedure.

In the case of the ***"Visual Impact"*** observations I would be grateful if you could provide supplementary I information for consideration. For example I suspect that it would be reasonable for an applicant to potentially feel aggrieved that an additional application is not recommended in circumstances where a positive recommendation has been afforded to existing applicants who likely have a similar visual impact on the seascape.

In the case of the "***Impact / Cumulative Impact***" observations I would be grateful if you could provide supplementary information for consideration. In particular I note the MED comments "*The aquaculture in Kilmakilloge Harbour has been in existence for some time and has reached a state of equilibrium and there is a potential impact on adjacent sites due to this application"*. The appropriate Assessment for the Bay appears to be supportive of the applications in question and it would be helpful therefor if you could include in your supplementary information some clarity in relation to the *"state of equilibrium"* and the *"potential impact on adjacent sites due to this application"*

Relevant Sites:

[redacted]

9. T06/364A

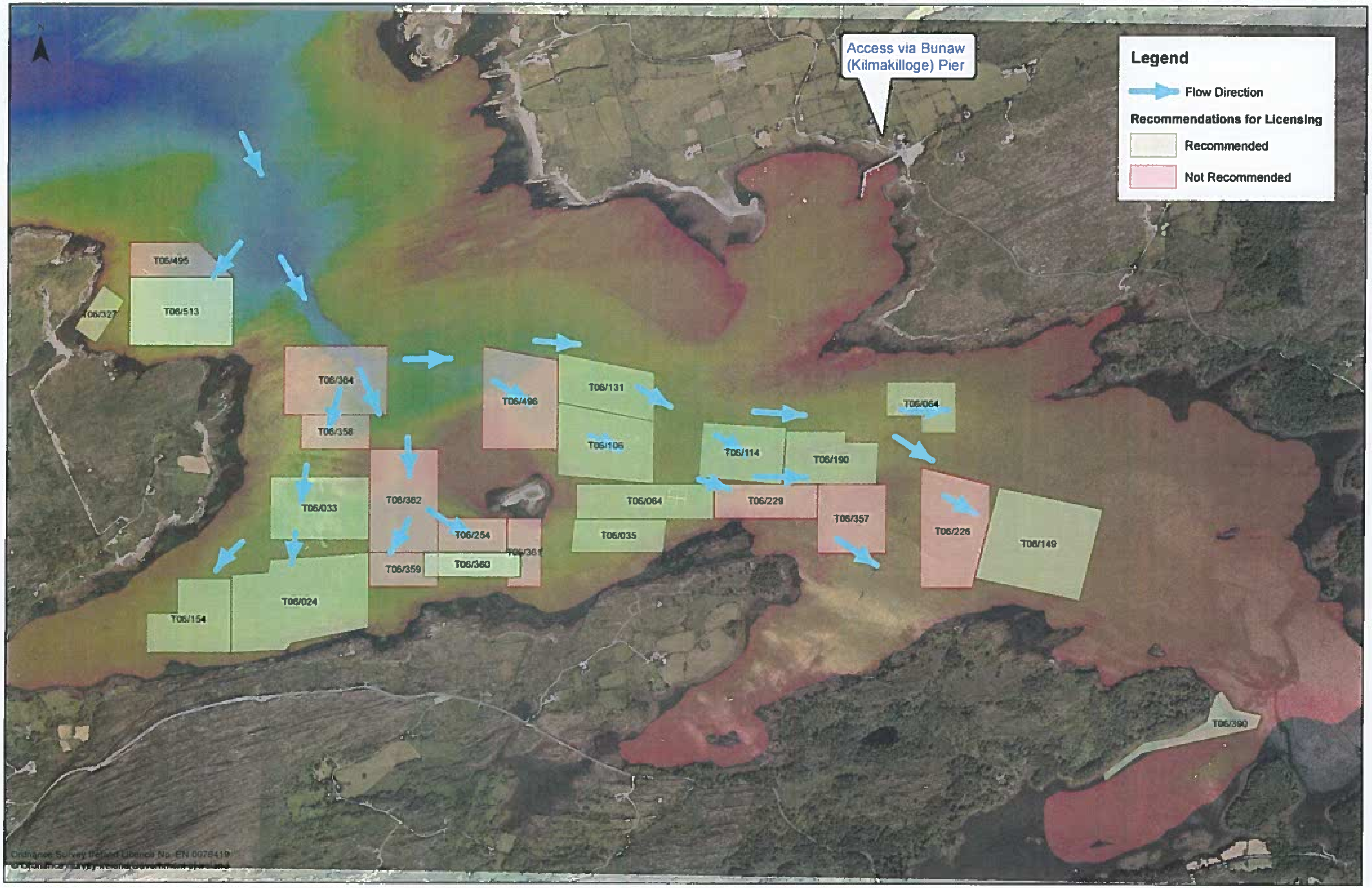
[redacted]

As these applications are at an advanced stage of consideration I would be grateful to receive your observation by COB Friday 26th July.

Regards,

Kevin Hodnett.

Desk: +353 (0)23 8859503
kevin.hodnett@agriculture.gov.ie : www.agriculture.gov.ie
Assistant Principal,
Aquaculture & Foreshore Management Division,
Department of Agriculture, Food & the Marine,
National Seafood Centre,
Clonakilty,
Co. Cork.
P85 TX47

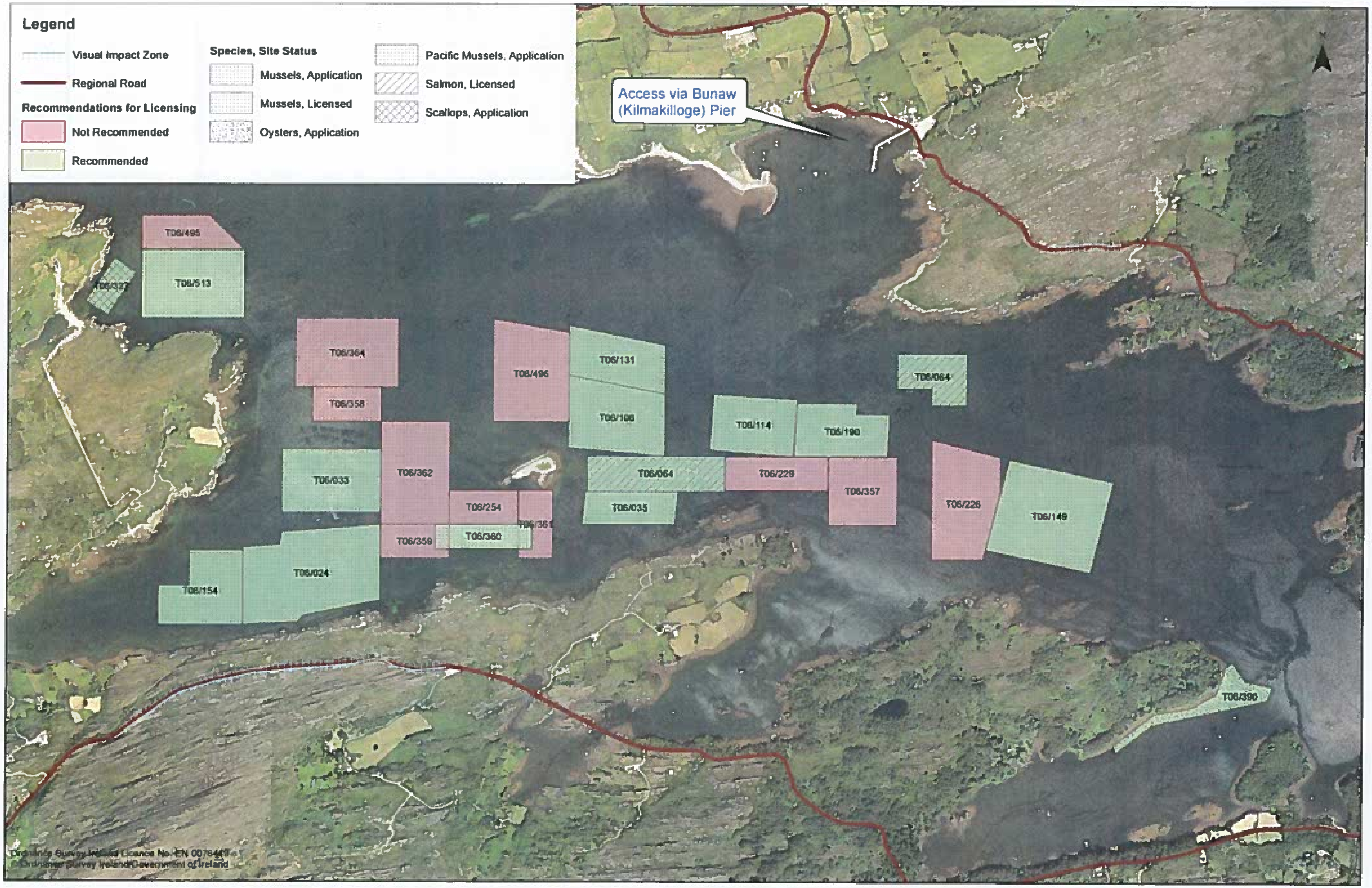



Prepared by: R Scanlon, DAFM
Date: 01/08/2019

Scale (@A3): 1:10,000

***Aquaculture Sites Kilmakilloge***

**Cumulative Capacity Impact**

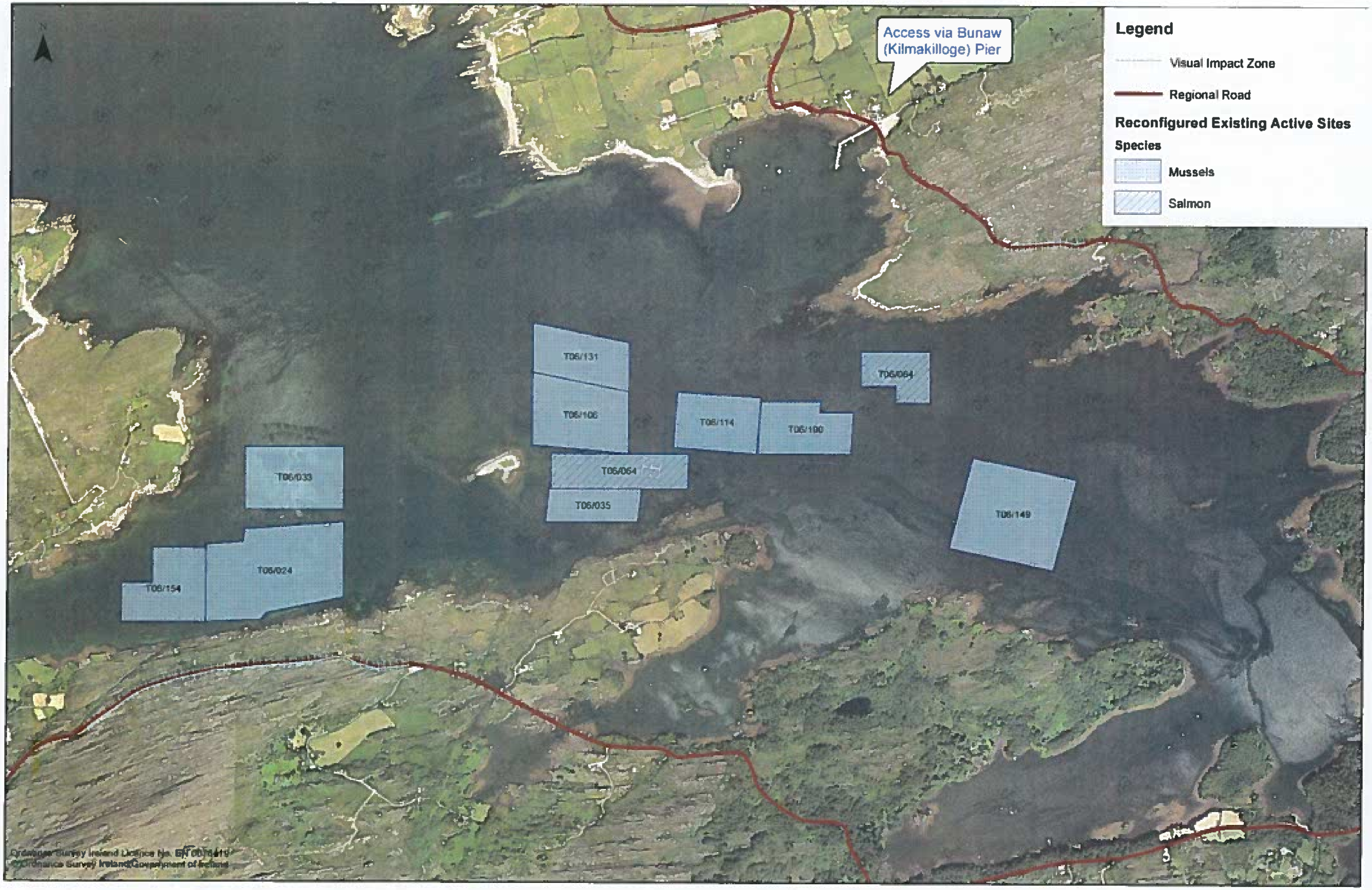



Prepared by: R Scanlon, DAFM
Date: 01/08/2019

Scale (@A3): 1:10,000

**_Aquaculture Sites Kilmakilloge_**

**All Sites - Visual Impact**




Prepared by: R Scanlon, DAFM
Date: 01/08/2019

Scale (@A3): 1:10,000

## *Aquaculture Sites Kilmakilloge*

**Existing Sites - Visual Impact**

## Naughton, Maria

**From:** Foley, Tina
**Sent:** 10 July 2019 14:45
**To:** Naughton, Maria; Fitzpatrick, Deirdre
**Cc:** DAFM Queries
**Subject:** Aquaculture & Foreshore Application: Kilmakillogue Harbour. Co. Kerry (17 no. sites)

Hi Maria & Deirdre,

Please see below response received from Castletownbere Port in respect of the above applications as requested.

Kind regards
Tina

**Tina Foley**
Clerical Officer
Food & Fisheries Support Unit

T +353 238859313
E tina.foley@sfpa.ie

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

An t-Údarás um Chosaint Iascaigh Mhara, Clogheen, Cloich na Coillte, Co. Chorcai
Head Office, National Seafood Centre, Park Road, Clogheen, Clonakilty, Co. Cork
Eircode: P85TX47
www.sfpa.ie

---

**From:** Falvey, John
**Sent:** 05 July 2019
**To:** Falvey, John <John.Falvey@sfpa.ie>
**Subject:** RE: REMINDER: Aquaculture & Foreshore Application: Kilmakillogue Harbour. Co. Kerry (17 no. sites)

Good Afternoon Tina

SFPA comments are the same for the following applications:

[redacted]
T6 364
[redacted]

The SFPA is of the view that these sites are for areas traditionally used for either shrimp or scallop fishing.

[redacted]

Regards

John

**Rinville,**
**Oranmore,**
**Co. Galway**
**Tel: 091 387200**
**Date: 07 May 2019**

**Deirdre Fitzpatrick**
**Aquaculture and Foreshore Management Division**
**Department of Agriculture, Food and the Marine**
**Clogheen,**
**Clonakilty**
**Co. Cork.**

**Advice on Aquaculture Licence Application**

| | |
|---|---|
| **Applicant** | **Kieran Lyons** |
| **Application type** | **New** |
| **Site Reference No** | **T06/364A** |
| **Species** | **Mussels (M. edulis) - longlines** |
| **Site Status** | **Located within the Kenmare River SAC (Site Code 002158)** **Located within the Kenmare River / Sneem/ Ardgroom designated Shellfish Growing Waters Area**. |

Dear Deirdre

This is an application for aquaculture licence to cultivate mussels (M. edulis) using longlines at Site T06/364A in Kenmare Bay, Co. Kerry. The area of foreshore at Site T06/364A is circa 6.0Ha

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

The cultivation of shellfish at this site will produce faeces and pseudofaeces. Any impact will be limited to the area of the site. The build-up of excess organic matter beyond the footprint of the sites is not considered likely.

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 T06/364A is located within the Kenmare River / Sneem/ Ardgroom designated Shellfish Growing Water Area.

Under Annex II of EU Regulation 854/2004 mussels in the Kilmakillogue area currently have a seasonal "A" Classification from 1st December – 1st May and revert to a "B" Classification at all other times

Site T06/364A is located within the Kenmare River SAC (Site Code 002158)

We note the findings of the Appropriate Assessment report[1] and the Department's draft Natura conclusion statement[2] in regard to the impacts on the Conservation Objectives within the Kenmare River SAC.

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1 https://www.agriculture.gov.ie/media/migration/seafood/aquacultureforeshoremanagement/aquaculturelicensing/aquacultureforeshorelicenceapplications/cork/2019/ApropAssessofAquacultandFisheriesRiskAssessinKenmareRiverSAC270319.pdf

2 https://www.agriculture.gov.ie/media/migration/seafood/aquacultureforeshoremanagement/aquaculturelicensing/appropriateassessmentconclusionstatement/DRAFTAACONCLUSIONSTATEMENT260319.pdf

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 the proposed mitigation measures set out in the Department's Draft Natura Conclusion Statement.

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

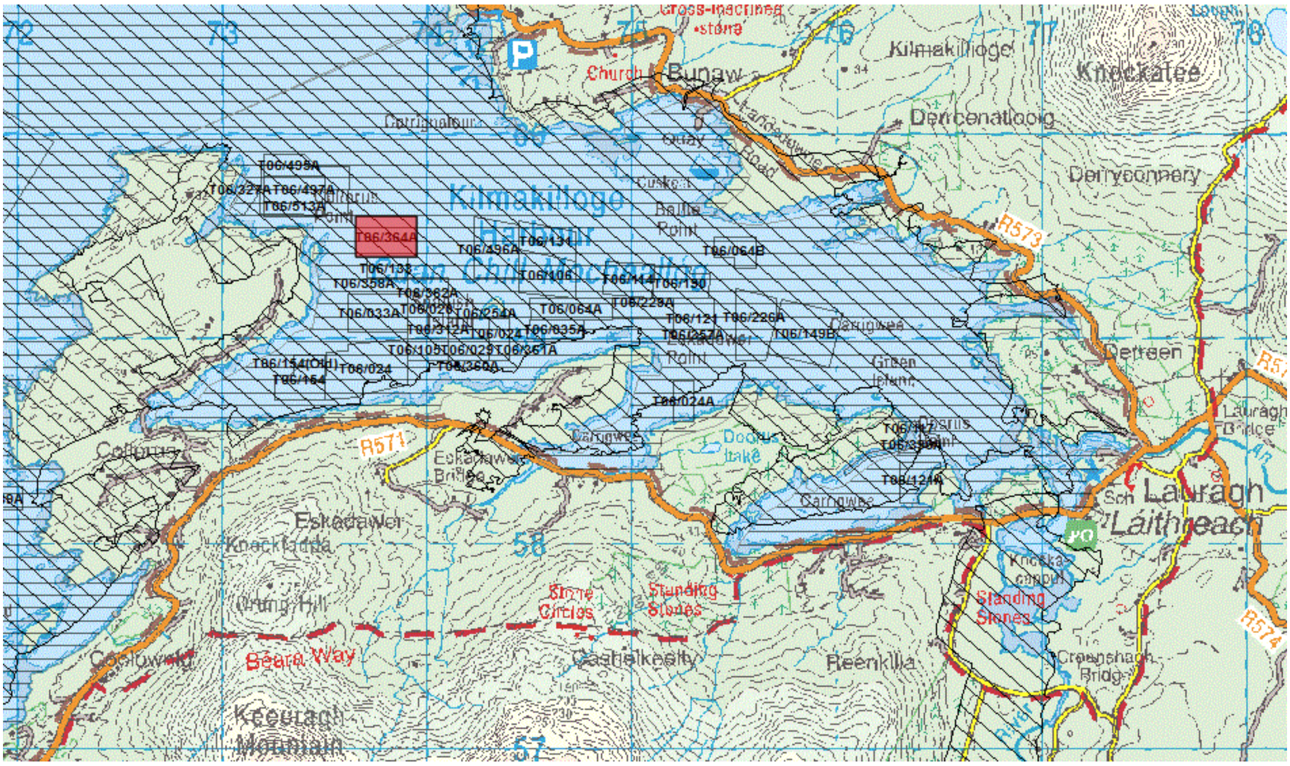
Notwithstanding the recommendation outlined above, and in the event that an Aquaculture Licence is granted, the movement of stock in and out of the site should follow best practice guidelines as they relate to the risk of introduction of invasive non-native species (e.g. Invasive Species Ireland). In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

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

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,

Dr. Terry McMahon
Section Manager, Marine Environment and Food Safety Services,
The Marine Institute.




Shellfish Waters Directive Area

Aquaculture Site

Special Area of Conservation

Special Protection Areas

## Fitzpatrick, Deirdre


**From:** Fem Dau [Fem.Dau@chg.gov.ie]
**Sent:** 20 May 2019 08:43
**To:** Aquaculturelicensing

**Subject:** [redacted] T06/364, [redacted] Kenmare Bay

**CAUTION:** This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

A chara,

Please find the nature conservation and underwater archaeology recommendations of the Department of Culture, Heritage, and the Gaeltacht for the above mentioned licence applications.

**Nature Conservation**

The Department of Culture, Heritage and the Gaeltacht welcomes the opportunity to provide observations concerning the aquaculture licence applications at Kenmare River SAC (Site Code: 02158) for the sites referenced in your correspondence of the 9th of April 2019. The Department has offered comments on the report supporting Appropriate Assessment of Aquaculture in Kenmare Bay on 10th of December 2015. Comments were also provided on the revised Assessment report and Conclusion Statement and on the Risk Assessment of Fisheries on the 13th and 14th of April 2016, respectively.

The Department acknowledges the consideration of previous observations made by this Department in the 2019 Appropriate Assessment and the draft Conclusion Statement. However the following points are still relevant to the current licence applications. It is hoped that these observations will be considered by the Department of Agriculture, Food and the Marine in its decision-making process.

1. In relation to the Harbour seal Qualifying Interest at the site, the terms "close proximity" and "immediate vicinity", by which the likelihood of man-made disturbance is concluded, are unclear. These could usefully be better defined within the assessment and its conclusions, in order to provide an appropriate level of confidence around this Attribute and its associated Target.
2. There are no recommendations made for the Marine Community Types “Muddy fine sands dominated by polychaetes and *Amphiura filiformis* community complex” and the two subtidal reef communities given that the spatial overlap of aquaculture, when considered in-combination with fishing activity, is close to or exceeds the 15% threshold.
3. Overlap with maërl is only considered in Kilmakilloge and Ardgroom Harbours. Maërl also occurs subtidally between Glinisk, Sharky Island and Parknasilla which has sites licensed for mussel culture and scallops culture. These areas have not been considered.

The Department would also like to drawn attention to the coastal habitats of Vegetated sea cliffs of the Atlantic and Baltic coasts (1230), Atlantic salt meadows (Glauco-Puccinellietalia maritimae) (1330) and Mediterranean salt meadows (Juncetalia maritimi) (1410) which occur within the Kenmare River SAC. In some cases they occur adjacent to the aquaculture activities however no access routes are given within the Appropriate Assessment document. These habitats were screened out on the basis that there was no overlap with aquaculture activities. However it should be noted that storage of aquaculture materials and access routes for aquaculture can have negative impacts on these habitats. Therefore such activities should not be carried out either inside the Annex I habitat or in an area where it is likely to have an impact on the Annex I habitat (e.g. storing aquaculture frames on a cliff top, storage of equipment or establishing access paths in a saltmarsh). Disposal of waste from aquaculture activities should similarly take place well away from these Annex I coastal habitats.

**Underwater Archaeology**

The Department notes that cumulatively the area proposed for the applications is large, combining intertial areas and subtidal areas for longlines.
The Department therefore requires that an appropriate Underwater Archaeological Impact Assessment (UAIA) be carried out in advance to assess the totality of potential impact of the proposed applications on potential cultural heritage. The UAIA shall be carried out by a suitably qualified and suitably experienced maritime archaeologist and should be licenced by this Department. A detailed method statement should accompany the licence application.
In the first instance a detailed desktop study should be undertaken for the UAIA to inform the potential for UCH to be present in the area in tandem with an intertidal survey of the areas for the bags and trestles. Once the results of these are compiled, the resultant report should include recommendations for further archaeological mitigation in the way of underwater archaeological survey of areas to be impacted by the anchors, if deemed necessary based on the results of the desktop study in the UAIA. The report should be forwarded to the UAU for consideration and further comments.

Mise le meas,

**Connor Rooney**
*Executive Officer*

—

**An Roinn Cultúir, Oidhreachta agus Gaeltachta**
*Department of Culture, Heritage and the Gaeltacht*

**Aonad na nIarratas ar Fhorbairt**
*Development Applications Unit*

**Bóthar an Bhaile Nua, Loch Garman, Contae Loch Garman, Y35 AP90**
Newtown Road, Wexford, County Wexford, Y35 AP90

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T +353 (0)53 911 7464
manager.dau@chg.gov.ie
www.chg.gov.ie

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Commissioners of IRISH LIGHTS | Navigation and Maritime Services

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

T +353.1.271.5400
F +353.1.271.5566

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

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

*Your Reference:* T06/364

*Our Reference:* LA:0557.1305

*Date:* 10/04/2019

**LL: LA** 0557.1305
**Applicant:** Keiran Lyons
**Site:** Kilmakillogue Harbour, Co. Kerry

Dear Ms. Fitzpatrick,

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,

**Neil Askew**
***for* Director of Operations and Navigation**

cc Capt. T. O'Callaghan, Dept. of Transport Tourism & Sport, Marine Survey Office

Commissioners of IRISH LIGHTS | Navigation and Maritime Services

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

T +353.1.271.5400
F +353.1.271.5566

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

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

*Date:* 10/04/2019

**Site:** Kilmakillogue Harbour, Co. Kerry

Dear Ms. Fitzpatrick,

Thank you for your letter advising us of the applications and renewals for Kimakillogue Harbour.

Notwithstanding the individual responses for each site the proliferation of the sites within Kilmakilloge Harbour would suggest that an overall group marking scheme be devised to ensure safe passage to vessels to the anchorages and inner bays and harbours. Existing licences should not be renewed nor new licences issued until such a marking scheme is implemented.

Yours sincerely,

**Neil Askew**
***for* Director of Operations and Navigation**

cc Capt. T. O'Callaghan, Dept. of Transport Tourism & Sport, Marine Survey Office

# Submission AGR 00499-19: Recommendation to Refuse an Aquaculture and Foreshore Licence for 1 site (T06/364A).

| | | | |
|---|---|---|---|
| TO: | Minister | AUTHOR: | Fitzpatrick, Deirdre |
| STATUS: | Completed | OWNER: | Fitzpatrick, Deirdre |
| PURPOSE: | For Decision | REVIEWERS: | OKeeffe, Therese<br>Hodnett, Kevin<br>Quinlan, John<br>Beamish, Cecil<br>Smith, Ann |
| DIVISION: | Coastal Zone Management | | |
| DECISION BY: | | | |

## Final comment

Minister determines that the Aquaculture and Foreshore Licences be refused for the reasons outlined.

## Action required

Ministerial Determination on Aquaculture/Foreshore Licensing Application (T06/364A).

## Executive summary

The Ministers determination is requested in relation to an application for an Aquaculture Licence from Mr. Kieran Lyons, Eyeries, Beara, Co. Cork. The application is for the cultivation of mussels using longlines in relation to a 6 hectare site on an area of foreshore at the western side of Kilmakilloge Harbour, Kenmare Bay, Co. Kerry.

A submission in respect of the application for the Foreshore Licence is also set out for the Minister's consideration.
It is recommended that the Minister determines that the Aquaculture and Foreshore Licences **not be granted** for the reasons outlined in the 'Detailed Information' section below.

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

## Detailed information

**DECISION SOUGHT**

The Minister's determination is requested please in relation to an application for an Aquaculture Licence from Mr. Kieran Lyons, Eyeries, Beara, Co. Cork, for a site in Kilmakilloge Harbour, Co. Kerry.

A submission in respect of the accompanying Foreshore Licence is also set out below, for the Minister's consideration.

**BACKGROUND**

Marine aquaculture operations require separate Aquaculture and Foreshore Licences and Ministerial approval is requested in respect of this submission (Aquaculture Submission) and the submission underneath (Foreshore Submission), which refer to the same site.

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

## APPLICATION FOR AN AQUACULTURE LICENCE

An application for an Aquaculture Licence has been received from the applicant referred to above (in conjunction with an application for a Foreshore Licence), for the cultivation of mussels using longlines in relation to a 6 hectare site on an area of foreshore at the western side of Kilmakilloge Harbour, Kenmare Bay, Co. Kerry, (numbered T06/364A – see documents at **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 -** see documents at **TAB B**

**Marine Engineering Division (MED):** MED does not recommend the licensing of this site for the following reasons:

1. Negative visual impact;
2. Cumulative impact for the new sites on existing licensed sites.

In this regard MED has advised that the licensing of a number of new sites including this site "adjacent to existing sites, is likely to lead to a significant reduction in the growth rates of the existing sites" and these "new sites will restrict the flow of water, and nutrients within the harbour". Please see Tab B for detailed MED comments.

**Marine Survey Office (MSO):** Comments received in 2011 that the MSO decline to comment until such time as outstanding navigational issues are addressed. No comment received following new request for observations in 2019.

**Sea Fisheries Protection Authority (SFPA):** SFPA is of the view that this site is an area traditionally used for shrimp or scallop fishing.

**Statutory Consultation -** see documents at **TAB C**

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

Comments were received from the following statutory bodies:

**Marine Institute (MI):** No objection to the application.

The MI made the following recommendations:

- MI recommends that the initial source of seed and other sources which may be used at any point in the future should be approved by the Minister. This approval should be a specific condition of any licence that may issue.

- 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.

Following 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.

**Commissioner of Irish Lights (CIL):** Stated no objection but did suggest conditions in the licence in event of a licence being granted.

**Department of Culture, Heritage and the Gaeltacht (DCHG)**: Commented as follows;

1. The Harbour seal Qualifying Interest at the site, the terms "close proximity" and "immediate vicinity", by which the likelihood of man-made disturbance is concluded, are unclear. These could usefully be better defined within the assessment and its conclusions, in order to provide an appropriate level of confidence around this Attribute and its associated Target.

2. There are no recommendations made for the Marine Community Types "Muddy fine sands dominated by polychaetes and Amphiura filiformis community complex" and the two subtidal reef communities given that the spatial overlap of aquaculture, when considered in-combination with fishing activity, is close to or exceeds the 15% threshold.

3. Overlap with maërl is only considered in Kilmakilloge and Ardgroom Harbours. Maërl also occurs subtidally between Glinisk, Sharky Island and Parknasilla which has sites licensed for mussel culture and scallops culture. These areas have not been considered.

The Department would also like to drawn attention to the coastal habitats of Vegetated sea cliffs of the Atlantic and Baltic coasts (1230), Atlantic salt meadows (Glauco-Puccinellietalia maritimae) (1330) and Mediterranean salt meadows (Juncetalia maritimi) (1410) which occur within the Kenmare River SAC. In some cases they occur adjacent to the aquaculture activities however no access routes are given within the Appropriate Assessment document. These habitats were screened out on the basis that there was no overlap with aquaculture activities. However it should be noted that storage of aquaculture materials and access routes for aquaculture can have negative impacts on these habitats. Therefore such activities should not be carried out either inside the Annex I habitat or in an area where it is likely to have an impact on the Annex I habitat (e.g. storing aquaculture frames on a cliff top, storage of equipment or establishing access paths in a saltmarsh). Disposal of waste from aquaculture activities should similarly take place well away from these Annex I coastal habitats.

These issues are addressed in the Appropriate Assessment Conclusion Statement. See **TAB D.**

The Department requires that an appropriate Underwater Archaeological Impact Assessment (UAIA) be carried out in advance to assess the totality of potential impact of the proposed applications on potential cultural heritage. The UAIA shall be carried out by a suitably qualified and suitably experienced maritime archaeologist and should be licenced by this Department. A detailed method statement should accompany the licence application.

In the first instance a detailed desktop study should be undertaken for the UAIA to inform the potential for UCH to be present in the harbour and resultant report should include recommendations for further archaeological mitigation in the way of underwater archaeological survey (either geophysical survey and/or underwater archaeological diver survey) of areas to be impacted by the anchors, if deemed necessary based on the results of the desktop study in the UAIA. The report should be forwarded to the Department for consideration and further comments.

**Public Consultation**

The application was publicly advertised using a composite public notice covering both aquaculture and foreshore elements, in The Kerryman on 17 April, 2019. The application and supporting documentation were available for inspection at Kenmare and Killarney Garda Stations for a period of 4 weeks from the date of publication of the notice in the newspaper.

There were 14 objections received from the public consultation process. It is not possible to disaggregate the comments into aquaculture and foreshore elements. The objections can be summarised as follows:

Tourism, visual impact, pollution, other users, detrimental impact on inshore fishing, extra vehicles on local roads, micro plastics, disturbance to seals, objections from other mussel farmers in the Harbour, Harbour is at maximum capacity and effects on mussel growth.

A copy of all the observations/submissions received at the Public/Statutory consultation stage was forwarded to the applicant.

The applicant responded and refuted the objections. The applicant also committed to complying with all regulations if he was granted a licence.

**CRITERIA IN MAKING LICENSING DECISIONS**

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

a) the suitability of the place or waters

*Scientific advice is to the effect that the waters are suitable for the cultivation of mussels, however the technical advice is that this site will negatively impact the existing sites in this part of the harbour and will have a negative visual impact;*

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

*(ii)* Shellfish Waters

The site is located within the Kenmare River/Sneem/Ardgroom Shellfish Designated Waters.

The mussels in these waters currently have a have a seasonal "A" Classification from 1st December – 1st May and revert back to a "B" Classification at all other times;

d) the likely effects on the economy of the area

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

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

*No significant issues arose regarding wild fisheries. The potential ecological impacts of aquaculture activities on natural habitats, flora and fauna are addressed in the Article 6 Appropriate Assessment for Kenmare River SAC 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) DCHG requires that an underwater archaeological impact assessment is carried out in advance of licensing.*

**RECOMMENDATION**

It is recommended that the Minister:

refuses the granting of a Foreshore Licence to Mr. Kieran Lyons, Eyeries, Beara, Co. Cork for a site in Kilmakilloge Harbour.

The following are the reasons and considerations for the Minister's determination to refuse the licence sought is:

- Increased negative visual impact;
- Negative impact on the existing licensed sites in the harbour.

**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/ Foreshore Licensing application –T06/364A*

Kieran Lyons has applied for authorisation to cultivate mussels using longlines on the non-intertidal foreshore on a *6* ha site (*T06/364A*) at the western side of Kilmakilloge Harbour, Co. Kerry.

The Minister for Agriculture, Food and the Marine has determined that it is not in the public interest to grant the licences sought. In making his determination the Minister considered those matters which by virtue of the Fisheries (Amendment) Act 1997, and other relevant legislation, he was required to have regard. Such matters include any submissions and observations received in accordance with the statutory provisions. *In particular, the Minister had regard to the findings of the Marine Engineering report regarding the negative visual impact, the negative impact of this new site on the growth rates of the adjacent existing licensed sites within the harbour and that the* new sites will restrict the flow of water, and nutrients within the harbour. The following are the reasons and considerations for the Minister's determination to refuse the licence sought:

- Increased negative visual impact;
- Negative impact on the existing licensed sites in the harbour."

**Recommendation to Refuse a Foreshore Licence application (T06/364A)**

**DECISION SOUGHT**

The Minister's determination is requested please in relation to the application for a Foreshore Licence from Mr. Kieran Lyons, Eyeries, Beara, Co. Cork, for a site at the western side of Kilmakilloge Harbour, Kenmare Bay, Co. Kerry, in which it is proposed to conduct aquaculture.

**BACKGROUND**

Marine aquaculture operations require separate Aquaculture and Foreshore Licences and Ministerial approval is requested in respect of this submission (Foreshore Submission) and the submission above (Aquaculture Submission), which refer to the same site.

The Foreshore Licence allows for the occupation of the particular area of foreshore while the Aquaculture Licence defines the activity that is permitted in this area. The continuing validity of each licence is contingent on the other licence remaining in force.

**APPLICATION FOR A FORESHORE LICENCE**

An application for a Foreshore Licence has been received from the applicant referred to above (in conjunction with an Aquaculture Licence application), relating to the occupation of the foreshore associated with the Aquaculture Licence application which covers a 6 hectare site (numbered **T**06**/**364A – see **TAB A**).

## LEGISLATION

Section 3 of the Foreshore Act, 1933 gives power to the Minister to license the use of foreshore, if he is of the opinion that it is in the public interest to do so.

## CONSULTATION AND PUBLIC COMMENT

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

This application was also sent to the Department of Housing, Planning and Local Government (DHPLG) in accordance with subsection (1B) of Section 3 of the Foreshore Act, 1933, which requires consultation between the Minister for Agriculture, Food and the Marine and the Minister for Housing, Planning and Local Government. Whilst aquaculture legislation requires certain statutory bodies to be notified of an aquaculture application, no other statutory bodies are prescribed consultees under Fisheries related foreshore legislation.

DHPLG There were no comments received from a water quality or foreshore perspective.

**Technical Consultation -** see documents at **TAB B**

**Marine Engineering Division (MED):** MED does not recommend the licensing of this site for the following reasons:

1. Negative visual impact
2. Cumulative impact for the new sites on existing licensed sites

In this regard MED has advised that the licensing of a number of new sites including this site "adjacent to existing sites, is likely to lead to a significant reduction in the growth rates of the existing sites" and these "new sites will restrict the flow of water, and nutrients within the harbour". Please see Tab B for detailed MED comments.

**Marine Survey Office (MSO):** Comments received in 2011 that the MSO decline to comment until such time as outstanding navigational issues are addressed. No comment received following new request for observations in 2019.

**Sea Fisheries Protection Authority (SFPA):** SFPA is of the view that this site is an area traditionally used for shrimp or scallop fishing.

**Public Consultation**

The application was publicly advertised using a composite public notice covering both aquaculture and foreshore elements, in the Kerryman on 17th April 2019. The application and supporting documentation were available for inspection at Kenmare and Killarney Garda Stations for a period of 4 weeks from the date of publication of the notice in the newspaper.

There were 14 objections received from the public consultation process. It is not possible to disaggregate the comments into aquaculture and foreshore elements. The objections can be summarised as follows:

Tourism, visual impact, pollution, other users, detrimental impact on inshore fishing, extra vehicles on local roads, micro plastics, disturbance to seals, objections from other mussel farmers in the Harbour, Harbour is at maximum capacity and effects on mussel growth.

A copy of all the observations/submissions received at the Public/Statutory consultation stage was forwarded to the applicant.

The applicant responded and refuted the objections. The applicant also committed to complying with all regulations if he was granted a licence.

## CRITERIA IN MAKING LICENSING DECISIONS

The Minister, in considering an application for a Foreshore Licence, may, if satisfied that it is in the public interest to do so, grant such a licence.

Section 82 of the Fisheries (Amendment) Act, 1997 stipulates that the Minister, in considering an application for a licence under the Foreshore Acts, 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.

**RECOMMENDATION**

It is recommended that the Minister:

refuses the granting of a Foreshore Licence to Mr. Kieran Lyons, Eyeries, Beara, Co. Cork for a site at the western side of Kilmakilloge Harbour, Kenmare Bay, Co. Kerry, having regard to the decision in relation to an Aquaculture Licence application.

## Related submissions

There are no related submissions.

## Comments

**OKeeffe, Therese** - 13/09/2019 15:13
Recommended that the Minister refuses to grant the Aquaculture and Foreshore licences for the reasons outlined in the submission.

**Hodnett, Kevin** - 17/09/2019 10:33
Recommended that the Minister determines that the Aquaculture and Foreshore Licences applied for by Mr Kieran Lyons be refused for the reasons set out in the detailed submission.

**Quinlan, John** - 18/09/2019 12:28
Refusal is recommended in this case please.

**Beamish, Cecil** - 18/09/2019 17:15
Recommended that the Minister determines that the Aquaculture and Foreshore Licences not be granted for the reasons outlined in the submission.

**Smith, Ann** - 18/09/2019 17:16
Approved for submission to Minister. AS 18/09/2019

**Lennox, Graham** - 19/09/2019 17:07
Minister determines that the Aquaculture and Foreshore Licences be refused for the reasons outlined.

## User details

| INVOLVED: | | READ RECEIPT: | |
|---|---|---|---|
| | Fitzpatrick, Deirdre | | Fitzpatrick, Deirdre |
| | OKeeffe, Therese | | OKeeffe, Therese |
| | Hodnett, Kevin | | Hodnett, Kevin |
| | Quinlan, John | | Quinlan, John |
| | Beamish, Cecil | | Beamish, Cecil |
| | Sub Sec Gens Office | | Smith, Ann |
| | eSub Sec Gen | | Lennox, Graham |
| | eSub Ministers Office | | |
| | eSub Minister | | |

2011 Aquaculture and Foreshore Licence application and an updated 2018 version which includes supplemental information. These applications must be read in tandem.

[redacted]

# AQUACULTURE - LICENSING UNDER FISHERIES (AMENDMENT) ACT, 1997 and FORESHORE ACT, 1933



SHELLFISH AND FINFISH

*Aquaculture and Foreshore Licence Application Form*

**Important Note**

**Section 4 of the Fisheries and Foreshore (Amendment) Act, 1998 (No. 54) prohibits any person making an application on or after 10 December 1998 for an Aquaculture Licence from commencing aquaculture operations until duly licensed under the Fisheries (Amendment) Act, 1997 (No. 23), and provides that a breach of that prohibition will cause the application to fail.**

**Coastal Zone Management Division**
**Department of Agriculture, Fisheries & Food**
**Clogheen**
**Clonakilty, Co. Cork**

**Fax: (023) 8821782**

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

T6/364.

***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 Part 3 are confidential and are not for public disclosure.

**USE BLOCK CAPITALS IN BLACK INK**

For Office Use
Application Ref. No. T6/364
Date of receipt, (Dept. Stamp):

COASTAL ZONE MANAGEMENT DIVISION
25 MAR 2011
DEPT. OF AGRICULTURE, FISHERIES & FOOD

## PART 1: PRELIMINARY DETAILS

| | |
|---|---|
| Name(s) of Applicant(s) in full: | |
| 1.A KIERAN LYONS | |
| 1.B | |
| Address(es) of Applicant(s) in full: | |
| 1.A EYERIES | 1.B |
| BEARA | |
| W. CORK | |
| | |
| **RSI/PPS No:/CRO No:** | |
| Tel: Fax: | Tel: Fax: |

1.C TYPE OF APPLICATION — Insert X in relevant box
Indicate the relevant type of application:

| | |
|---|---|
| -(i) Aquaculture Licence | X |
| -(ii)Trial Licence KILMAKILLOGE | |
| -(iii)Review of Aquaculture Licence MUSSELS ON LONGLINES | |
| -(iv)Renewal of Aquaculture Licence | |
| -(v) Foreshore Licence | X |

(This Application Form is valid for each type of application.)

1.D TYPE OF AQUACULTURE
Indicate the relevant type of application:

| | |
|---|---|
| -(i) Land-based | |
| -(ii) Marine-based | X |
| -Shellfish | |
| (iii) - extensive | |
| (iv) – intensive | X |
| -(v) Finfish | |

## 1.E DOCUMENTS ENCLOSED WITH THIS APPLICATION

The following documents are enclosed with this application:

| | |
|---|---|
| (1) - Ordnance Survey Map (Scale of 1: 10,000, ie, a six inch map) *OBLIGATORY* | X |
| (2) - British Admiralty Chart (largest available scale) | X |
| (3) - Decision of planning authority under Planning Acts | |
| (4) - Copy of licence under Section 4 of Local Government Water Pollution) Act, 1977 | |
| (5) - Environmental Impact Statement | |
| (6) - Drawing of the structures to be used and/or the layout of the farm *OBLIGATORY* | X |
| (7) - Water Quality Analysis Report (required for Land-based sites only) | |
| (8) - Application Fee OBLIGATORY | X |

(9) - Other (specify): ______

## PART 2: DETAILS RELATING TO PROPOSED AQUACULTURE PROJECT

**2.A Employment, Qualifications, Experience, Etc.**

(i) Details of Applicant's qualifications and experience in aquaculture: I have been working in this Sector For the Past 20 years

(ii) Other relevant experience (courses attended, etc): ______

(iii) Details of projected employment creation during first four years of proposed development: 2 Full TIME and 4 Part time

(iv) Projected employment (number of persons):

| Year 1: | | Year 2: | | Year 3: | | Year 4: | |
|---|---|---|---|---|---|---|---|

## 2.B Aquaculture Site Details

Indicate type of site:

- (i) Land-based ☐
- (ii) Marine-based ☒

## 2.C .Land-Based Site

(To be completed if appropriate)

(i) State species to be farmed: ____________________

(ii) State proposed system of culture e.g., pond, raceway, circular tank or other method: ____________________

(iii) Full address of proposed site including Townland and County: ____________________

(iv) Tonnage to be produced:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Year 1: | | Year 2: | | Year 3: | | Year 4: | |

(v) Proposed source of stock: ____________________

(vi) Name of river(s) supplying site with water: ____________________

(vii) Estimate drought flow in gallons per minute: ____________________

(viii) Is there a fall of 1.5 metres in the water level at this site or can this be obtained by damming the river without giving rise to flooding of your own or neighbour's land upstream of the site? ____________________

(ix) Area of proposed site (hectares): ____________________

(x) Details of services available on the site e.g., main road access, electricity: ____________________

(xi) Are there at present any possible sources of pollution upstream of the site, e.g. discharge from sewerage plant, farmyard, sheep dip facility, silage effluent, quarry, sandpit or factory? YES ☐ NO ☐

(xii) If yes, supply details: ____________________

Land-based Site (continued)

2.D The following must be supplied:

- (i) Sketch of the layout of the site in relation to the river(s), road(s) and buildings;
- (ii) Water quality Analysis Report, which should be drawn up in accordance with the parameters set out in Annex C of the Guidance Notes.

2.E The following conditions must be met in order to allow for consideration of licensing of land-based aquaculture:

- (i) the buildings and equipment must be put in place to the Department's satisfaction; an
-(i) the operation must comply with Local Authority requirements.

2.F Marine-based Site(s)
(To be completed if appropriate)
Location -(i) Bay: Kilmacalogue

-(ii) County: KERRY

(iii) OS Map No:

(iv) Site Co-ordinates 6 hectares

(v) Size (hectares): MUSSELS

(vi) Species (common and scientific name):

-Aquatic Plant(s)
-Any form of aquatic food suitable for the nutrition of fish

(vi) Method of culture (e.g., nets, ropes, tanks, trestles, etc.) SPat Collected From NATuRAL Settlement, And on growen onto 6 220m Longlines

(vii) Drawings of structures to be used in method of culture should be enclosed.

(viii) If cages or tanks are proposed, state:

-(a) Number:

-(b) Type and shape:

-(c) Cubic Capacity:

-(d) Depth:

(ix) Proposed specific site locations (with reasons):

(x) Describe proposed purification facilities to be used, where appropriate: Product will be Purified by Purchaser before Public CONSUMPTION

Marine-based Site(s) (continued)

2.G Give details of any special requirements relating to the health of the proposed project and the wider matters of public health and safety:

None

2.H Tonnage to be produced:

| Species (To state) | Year 1: | Year 2: | Year 3: | Year 4: |
|---|---|---|---|---|
| Blue MUSSEL | / | 180T | 180T | 180T |

2.I Reasons for selection of site(s): good water depth, some shelter, no conflict with others, no visual impact, no navigation hazard

***Note: The proposed access route to the site(s) from public road across tidal foreshore area Must be indicated on the OS map accompanying the application.***

2.J Environmental Impact Statement (EIS).

A copy of an EIS, if required, should be enclosed with the application. The EIS should contain the information specified in Annex B of the Guidance Notes.

2.K Trial Licence.
(To be completed if appropriate)

Describe experimental or investigative nature of the proposed project:

*[Use separate page if required – to be signed and dated]*

[redacted]

I/We hereby declare the information provided in Parts 1, 2 and 3 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): Thevan Lyons

Date: 23/3/11

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

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

Aquaculture Licensing
Coastal Zone Management Division
Clogheen
Clonakilty,
Co. Cork

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

# UPDATE/ADDITIONAL INFORMATION FORM

## FILL IN THE YELLOW HIGHLIGHTED SECTIONS

# 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, P85 TX47**
**Telephone: (023) 8859500**
**Fax: (023) 8821782**

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.__T6/364_______

Date of Receipt (Dept. Stamp):

Agriculture & Foreshore Management Division
28 MAR 2018
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)** | KIERAN LYONS |
| 1. | |
| Address: | Eyeries, BEARA W. CORK |
| 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: Kilmacalogue

(ii) County: Kerry

(iii) OS Map No: Discovery Series 84

(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.]

Irish national GRid

73650 59600, 73950 59600, 73950 59400 73650 59400

(v) Size of Site (hectares): 6

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

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

(viii) Please supply details of (a) source of seed e.g. wild hatchery and location and (b) means of collection and introduction to culture. SPAT collected From Natural Settlement, growen then to Market size

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)

(x) Proposed number of lines/ropes/trestles as per site layout drawing 6 X 220m Longlines

(xi) Proposed Production Tonnage:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Year 1 | / | Year 2 | 100T | Year 3 | 100T | Year 4 | 100T | Year 5 | 100T |

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

Good Depth And Water Flow

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

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

Fully Grown, direct human consumpiton

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

uniformed Grey Color

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

Yes ✓ No ☐

If **yes** give details.

MaP 2, Kenmore River, Sneem, Kilmacalogue

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

(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, B And Partial A From Dec - FEb

(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 Kenmore River SAC

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

NO

(xix) Methods used to harvest the shellfish and details of any subsequent processing of shellfish

by boAT

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

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

Starfish – Picked by hand

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

**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:

28 YEARS MUSSEL FARMING

(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:

**FULLTIME JOBS**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Year 1: | 1 | Year 2: | 1 | Year 3: | 1 | Year 4: | 1 |

**PART TIME JOBS**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Year 1: | 4 | Year 2: | 4 | Year 3: | 4 | Year 4: | 4 |

CONFIDENTIAL

## PART 3: APPLICANT DETAILS

### PART 3 A. INDIVIDUAL(S)/SOLE TRADER(S)

(If necessary continue with extra page(s)

1. Name: KIERAN LYONS

Personal Public Service No. [redacted]

Date of Birth: [redacted]

Telephone No. [redacted]

Mobile No. [redacted]

E-mail Address [redacted]

2. Name: ______________________________

Personal Public Service No. __________________

Date of Birth: ____________________________

Telephone No. ____________________________

Mobile No. ______________________________

E-mail Address ____________________________

3. Name: ______________________________

Personal Public Service No. __________________

Date of Birth: ____________________________

Telephone No. ____________________________

Mobile No. ______________________________

E-mail Address ____________________________

4. Name: ______________________________

Personal Public Service No. __________________

Date of Birth: ____________________________

Telephone No. ____________________________

Mobile No. ______________________________

E-mail Address ____________________________

## PART 5: APPLICATION DOCUMENTATION

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

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

## PART 5: DECLARATION AND SIGNING

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

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

________________________________________

________________________________________

________________________________________

________________________________________

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

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

Date: 27/3/18

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

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

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

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

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

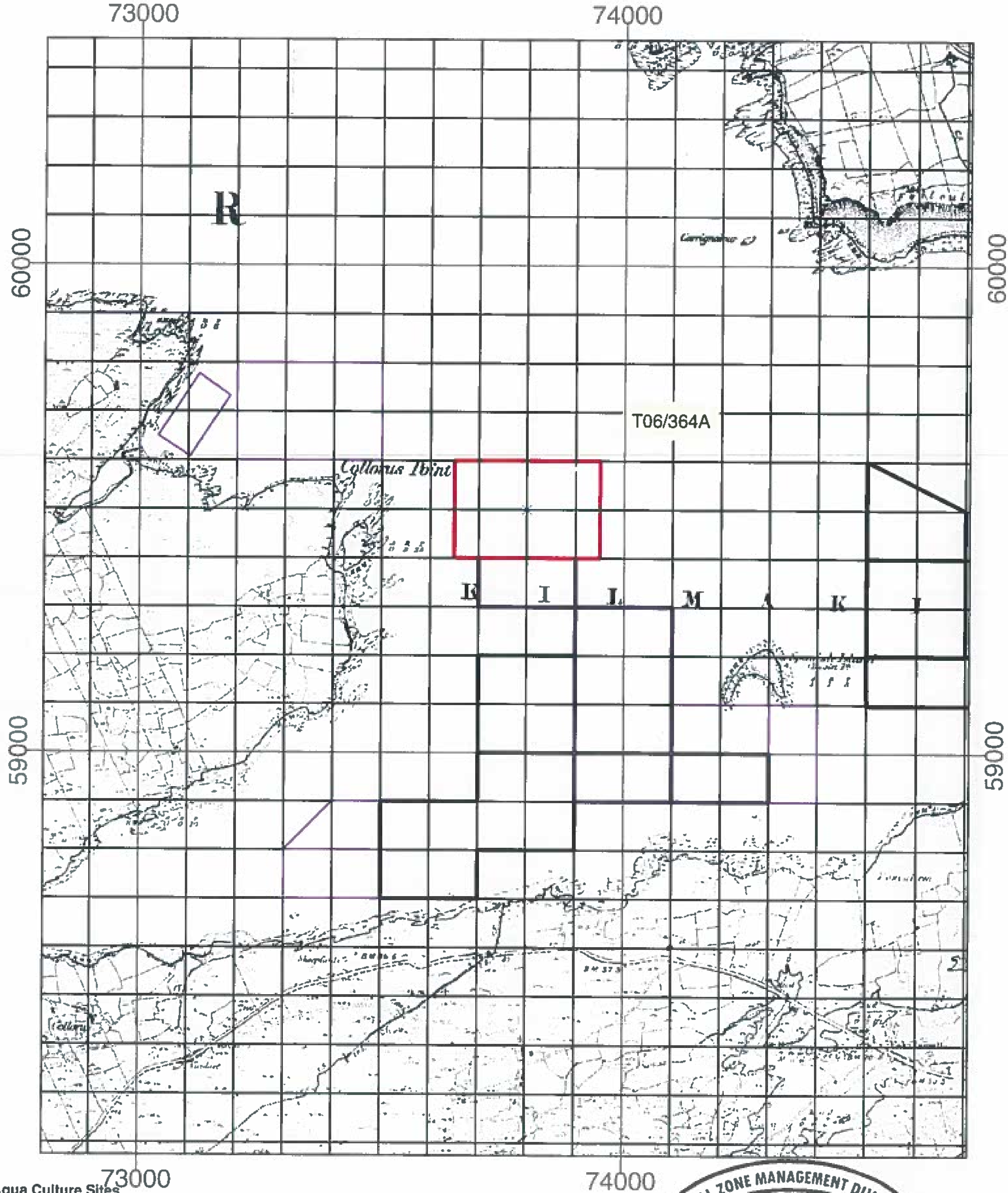
**1 NO. SITE AT KILMAKILLOGE HARBOUR CO.KERRY**

**Co-ordinates & Area**

**Site T06/364A (6 Ha)**

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

| | |
|---|---|
| 073650, 059600 | to Irish National Grid Reference point |
| 073950, 059600 | to Irish National Grid Reference point |
| 073950, 059400 | to Irish National Grid Reference point |
| 073650, 059400 | to the first mentioned point. |




**Aqua Culture Sites**
**Site_Status**

Application
Application Lapsed
Application Refused
Application Renewal
Application Withdrawn
License Altered
License Revoked
License Surrendered
Licensed
Unknown
Unlicensed
100 Meter Reference Grid

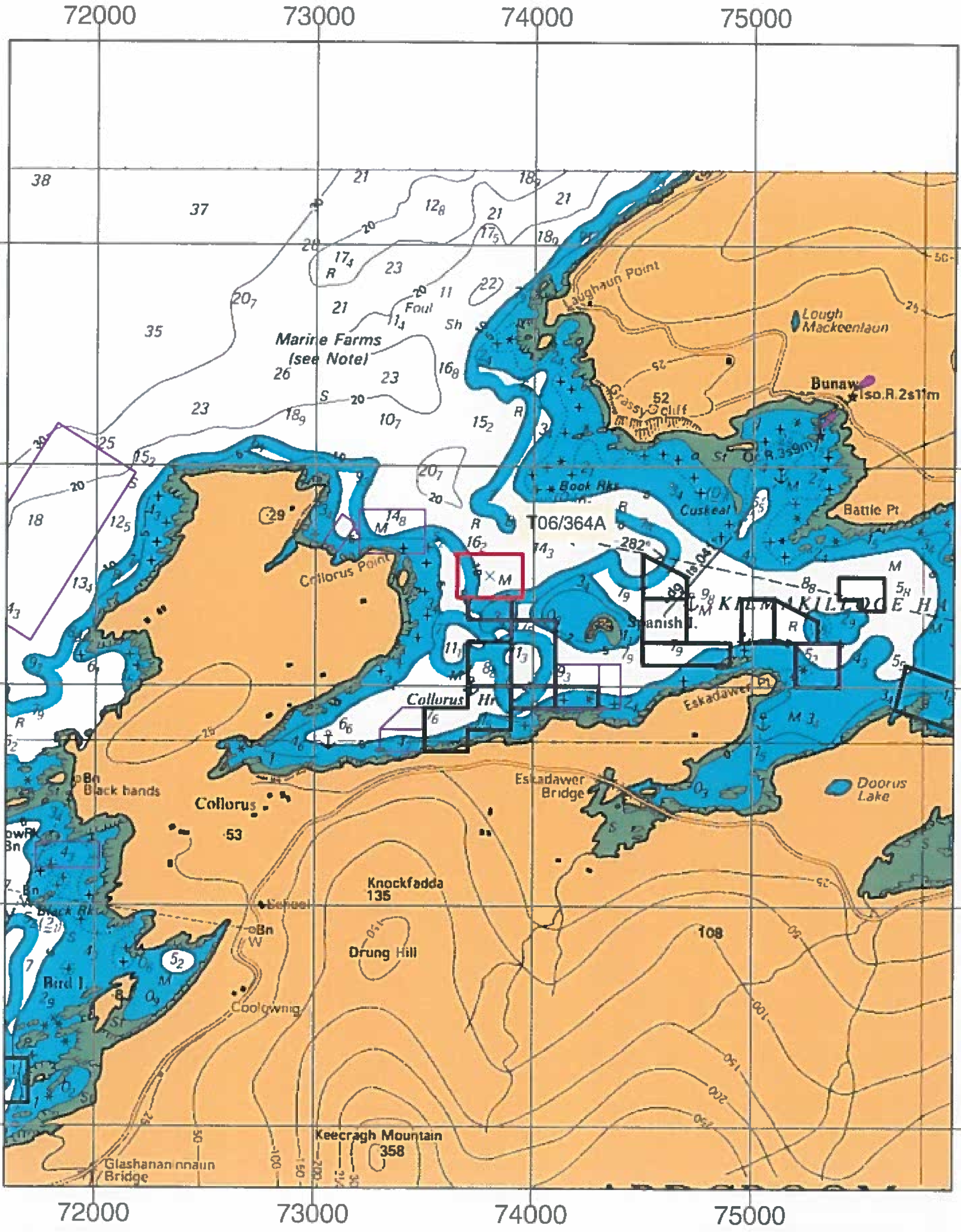
**1:10,560**

Site Highlighted in red denotes application

**Printed under License No:6155**
**From The Ordnance Survey.**


COASTAL ZONE MANAGEMENT DIVISION
11 APR 2011
DEPT. OF AGRICULTURE, FISHERIES & FOOD

Department of Agriculture, Fisheries and Food
An Roinn Talmhaíochta, Iascaigh agus Bia




**Aqua Culture Sites**

**Site_Status**

- Application
- Application Lapsed
- Application Refused
- Application Renewal
- Application Withdrawn
- License Altered
- License Revoked
- License Surrendered
- Licensed
- Unknown
- Unlicensed

**1:24,000**

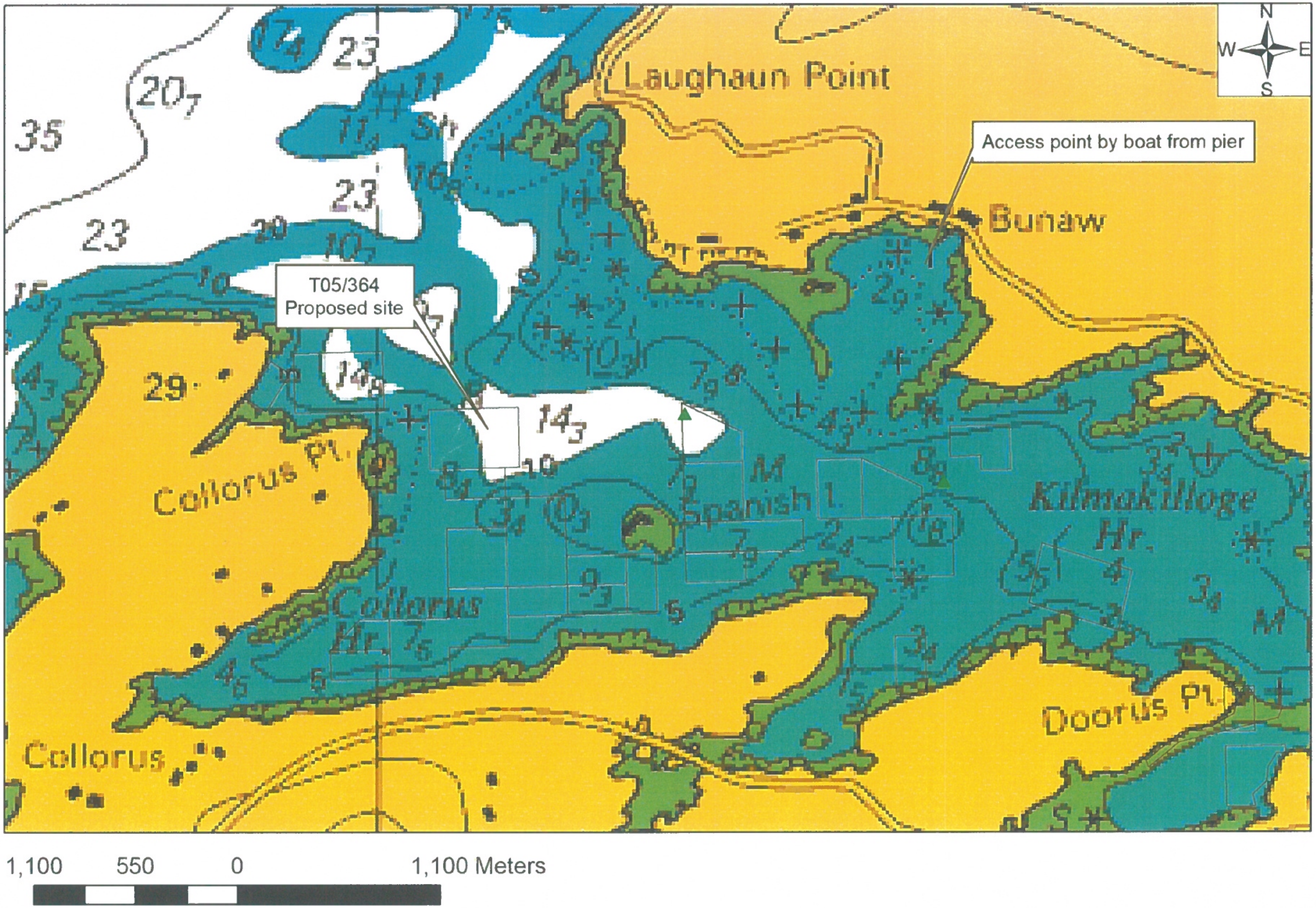
Site Highlighted in red denotes application

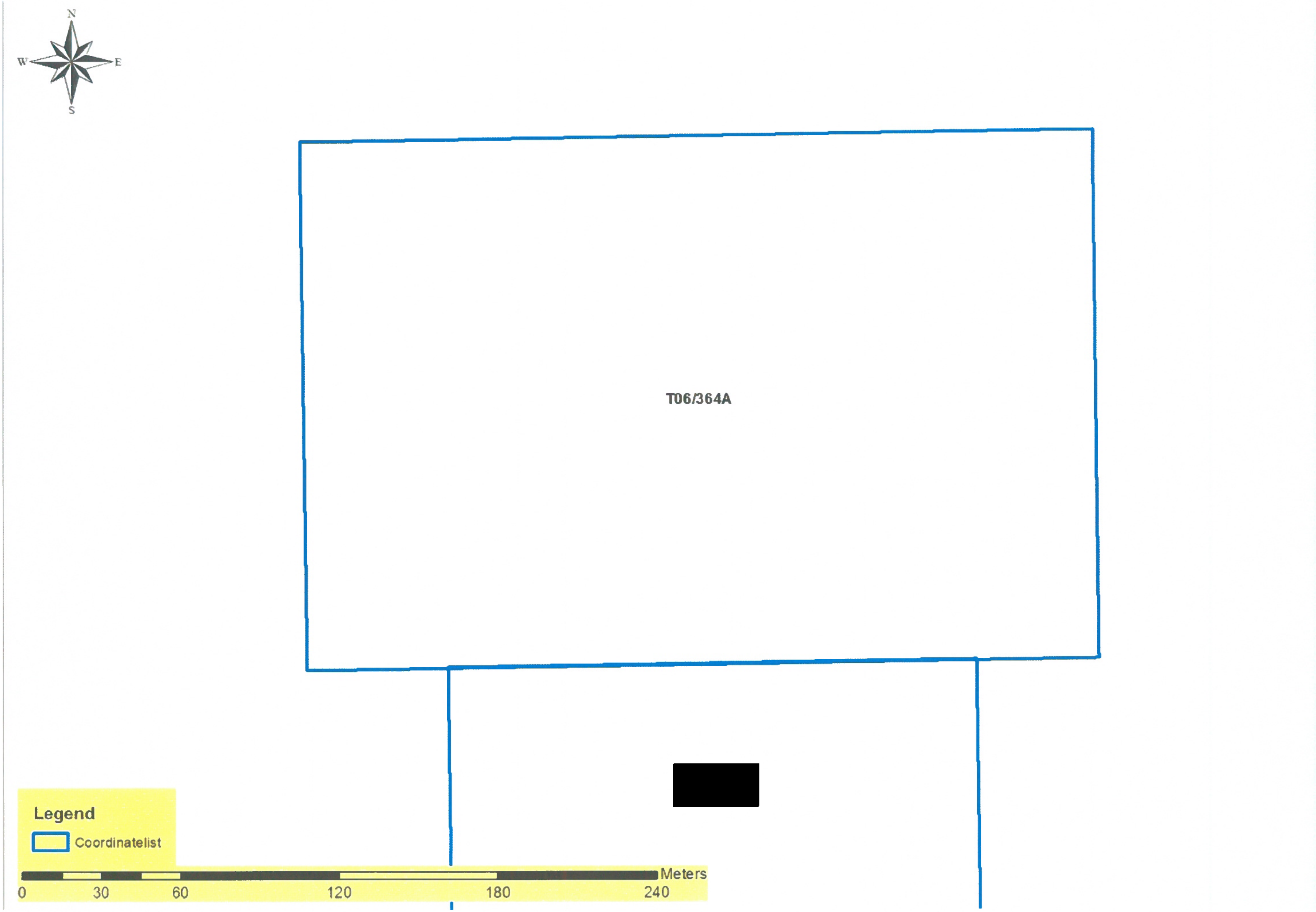
Part of Admiralty Chart No. 2495-3
Not to be used for Navigation.

COASTAL ZONE MANAGEMENT DIVISION
11 APR 2011
DEPT. OF AGRICULTURE, FISHERIES & FOOD

Department of Agriculture, Fisheries and Food
Talmhaíochta, Iascaigh agus Bia

# Kieran Lyons T6/364
## Access route map

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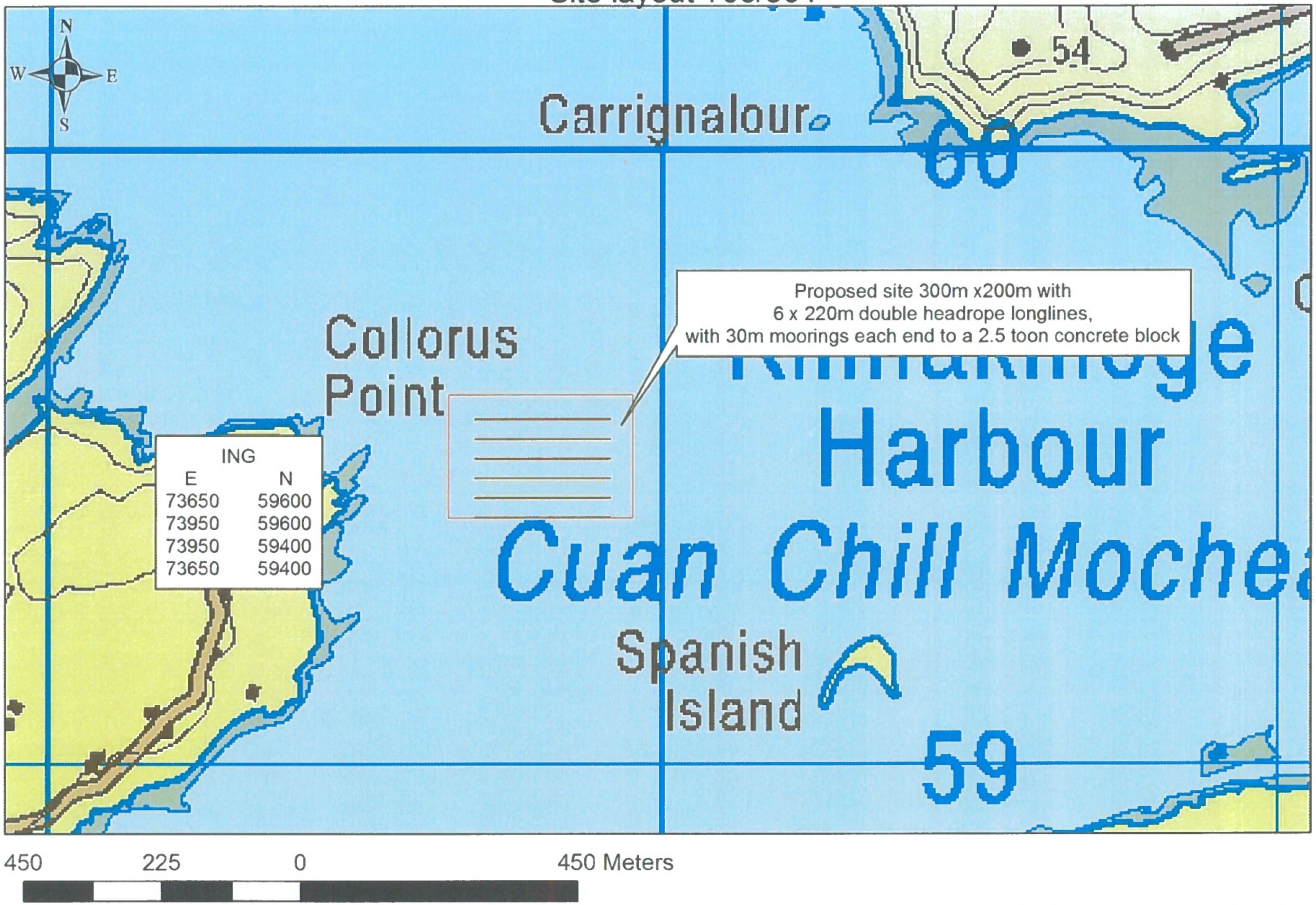
Kieran Lyons
Site layout T06/364



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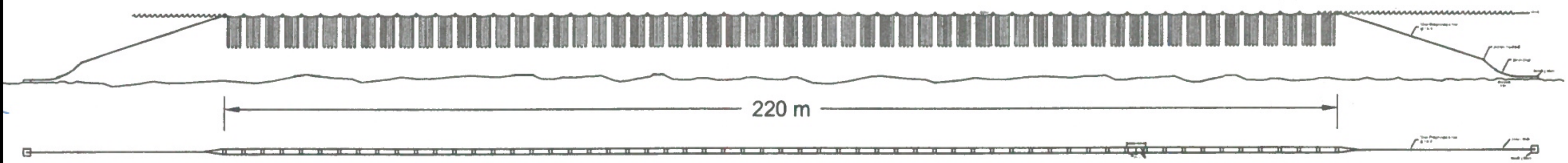


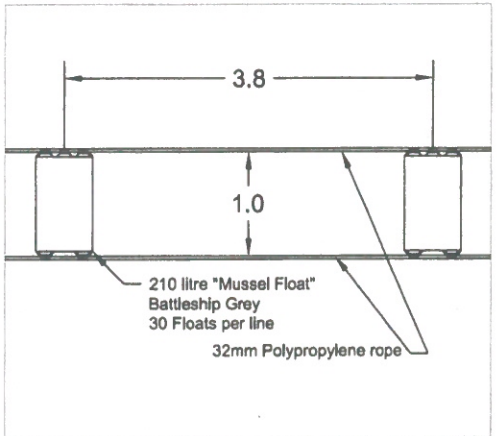


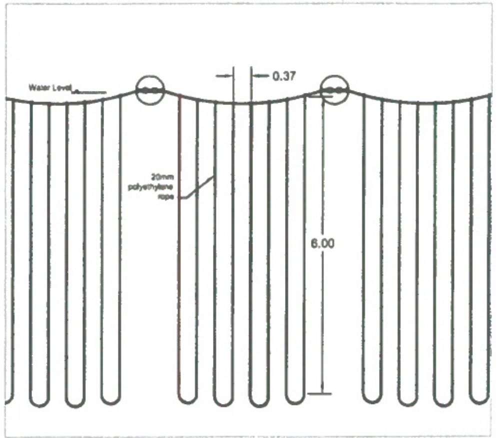


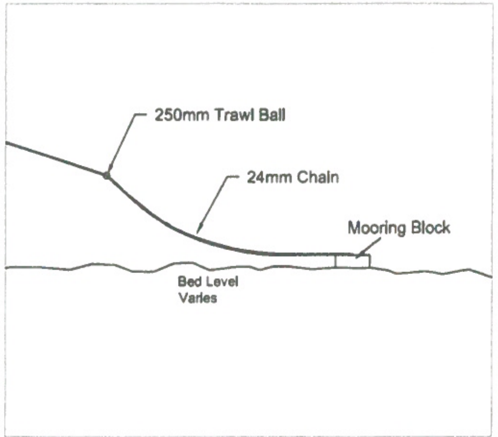


Notes:

| | |
|---|---|
| Project | Aquaculture Drawings<br>Mytilus Edulis |
| Title | Inshore Mussel Farm Line Layout<br>220 metre Longline |

KIERAN LYONS
EYERIES
BEARA
W. CORK
23/3/11

**Appropriate Assessment Conclusion Statement by Licensing Authority for aquaculture activities in Kenmare River Special Area of Conservation (SAC) (site code 2158)**

This Conclusion Statement outlines how it is proposed to licence and manage aquaculture activities in the above Natura site in compliance with the EU Habitats Directive. Aquaculture in this Natura Site will be licensed in accordance with the standard terms and conditions as set out in the aquaculture licence templates. These are available for inspection on the Department's website at: https://www.agriculture.gov.ie/seafood/aquacultureforeshoremanagement/aquaculturelicensing/aquacultureandforeshorelicencetemplates/
The licences will also incorporate specific conditions so as to accommodate Natura requirements, as appropriate, in accordance with the principles set out in this document.

An Appropriate Assessment report of aquaculture in Kenmare River Special Area of Conservation (SAC) (Site Code: 02158) has been prepared by the Marine Institute on behalf of the Department of Agriculture, Food and the Marine. This report assessed the potential ecological interactions of aquaculture and fisheries activities on the Conservation Objectives of the site. From an aquaculture perspective the information upon which the Appropriate Assessment is based is the definitive list of applications and extant licences for aquaculture available at the time of assessment.

**Description of the aquaculture projects**

The projects involve the renewal of existing aquaculture activity and the licensing of new aquaculture activity within the SAC. Aquaculture is practiced in a number of locations within the SAC with a focus on shellfish species (mussels, oysters, scallops and clams) and finfish (salmon). Mussels are the predominant shellfish species cultured within the SAC, for example, Killmakilloge and Ardgroom Harbours produce significant amounts of mussel utilising suspended long-lines. There are also a number of sites dedicated to the culture of Atlantic Salmon.

**Conservation Features for Kenmare River SAC**

Kenmare River is designated as a SAC under the Habitats Directive. This SAC is designated for the habitats Large Shallow Inlet and Bay (1160), Reefs (1170) and Submerged Caves (8330). A number of coastal community types can also be found in the SAC, including those that are sensitive to pressures, which might arise from aquaculture, such as Maerl, seagrass and kelp reefs. The SAC is also considered an important site for two mammal species, Harbour Seal and the Otter.

## Appropriate Assessment

The function of the Appropriate Assessment is to determine if the ongoing and proposed aquaculture activities are consistent with the Conservation Objectives for the site. The National Parks and Wildlife Service (NPWS) provide guidance on interpretation of the Conservation Objectives which are, in effect, management targets for habitats and species in 'Natura' sites. The assessment of activities was informed by this guidance, which is scaled relative to the anticipated sensitivity of the habitats and species to disturbance by the proposed activities. Some activities are deemed to be wholly inconsistent with the 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.

## Findings and Recommendations of the Article 6(3) Appropriate Assessment

### *Aquaculture and Habitats:*

The appropriate assessment finds that the majority of activities, at the current and proposed or likely future scale and frequency of activity are consistent with the Conservation Objectives for the Annex 1 Habitats, with the following exceptions:

1. Within the Kenmare River SAC there is an expired licence (no renewal received) for the culture of Scallops on the seabed. This overlapped three keystone communities, '*Zostera* dominated community', '*Maerl* dominated community' and '*Pachycerianthus multiplicatus* community'. Culture of Scallop on the seabed is deemed disturbing to such community types. As key contributors to biodiversity and being sensitive to disturbance these community types must be afforded a high degree of protection and no overlap with a disturbing activity can be tolerated.

2. 'Maerl dominated community' occurs in certain areas (Ardgroom and Killmakilloge Harbours) which are outside of the Qualifying Interests for which the Kenmare River SAC was designated but are still within the SAC

boundary. Maerl, the characterising species of this community, is listed as an Annex V species and as it is within the SAC boundary it must be afforded protection. Suspended mussel culture in Ardgroom Harbour spatially overlaps (1.84%) this community type and is considered disturbing. As a key contributor to biodiversity and being sensitive to disturbance this community type is afforded a high degree of protection and no overlap with a disturbing activity can be tolerated.

3. ‘*Zostera*-dominated community’, as a key contributor to biodiversity and which is sensitive to disturbance should be afforded a high degree of protection i.e. thresholds for impact on these habitats is low and any significant anthropogenic disturbance should be avoided.

***Aquaculture and Species:***

The appropriate assessment acknowledges that the favourable conservation status of the Harbour Seal has been achieved given the current levels of aquaculture production within the SAC. On this basis the current levels of licensed aquaculture are considered non-disturbing to harbour seal conservation features. The following are the exceptions:

- In Coongar Harbour an oyster farm (licensed) and an application site for mussel culture is in very close proximity to a seal moulting site. The seal site in question has multiple recordings of seals and, therefore, would be considered an important location. The aquaculture site in question has structures confined to the northern portion of the site and cannot expand beyond this immediate area based on the topography of the site. This ensures that the activity will not occur in close proximity to the seal haul-out location. An expansion of intertidal aquaculture activity to areas in the immediate vicinity of the haul out locations would likely increase the risk of disturbance of the seals during the moulting period. The mussel culture site application is an expansion of existing operations and it is likely that seals will be habituated or tolerant of disturbance from this activity;

- In Ardgroom Harbour a mussel farm overlaps a seal site (breeding). A single sighting was recorded at the mussel culture site during 2000 and 2001 – it is assumed, given the lack of natural structures at the site in question, that the seal was hauled out on mussel rafts. The site in question has been licensed (and active) since 1992.

The appropriate assessment found that the aquaculture activities proposed do not pose a threat to the Otter or migrating salmon in the Kenmare River SAC.

***<u>Mitigation</u>***

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

- The overlap of 'scallop culture' with sensitive communities identified in the assessment report is noted. While the scallop culture had been licensed, the licence has expired and no renewal application has been received. The principles that will apply to any further applications for aquaculture in this area are as follows:
    i. No overlap with sensitive habitats will be permitted
    ii. There will be an additional requirement for a sufficient buffer zone to allow for mapping resolution and/or visual enforcement of exclusion

- With one exception, the AA found that the current levels of licensed shellfish and finfish culture and proposed applications are considered non-disturbing to harbour seal conservation features. The exception is the intertidal oyster culture site in Coongar Harbour. If licensing is to be considered for this site, it will be necessary to redraw the site boundaries to exclude the area overlapping the seal haul-out locations to mitigate any disturbance risk to seals.

- A finfish culture site within Kilmakilloge Harbour is in close proximity to designated seal sites. Seal interactions with marine finfish cages have been identified. The risk to seals (as predators) result from their interaction with netting if incorrectly configured. In terms of mitigation and in order to minimise the risk the operator will be instructed to employ a range of management actions including stock management (density control, regular removal of mortalities from cages), use of seal blinds and appropriate net tensioning.

- Aquaculture activity (suspended mussel culture) within Ardgroom Harbour spatially overlaps (1.84%) with the Maerl dominated community and may have negative effects on the distribution and quality of this community type. If licensing is to be considered for this site, it will be necessary to redraw the site boundaries to exclude the area overlapping the Maerl dominated community, allowing for a suitable buffer zone.

- The location of an intertidal oyster cultivation operation over a *Zostera* bed is considered disturbing. This activity overlaps 18.05% of this community type within the SAC. Given the highly sensitive nature of this community type any activity is likely to have impact either by shading by trestles on seagrass or compaction by transport routes to/through the trestles and increased organic enrichment. It is not proposed to licence this site.

- A licence condition requiring strict adherence to the identified access routes over intertidal habitat in order to minimise species/ habitat disturbance will be required for all relevant sites.

- A licence condition requiring that the licensed and adjoining areas shall be kept clear of all redundant structures (including apparatus, equipment and/or uncontained stock), waste products and operational litter or debris, with provisions for the prompt removal and proper disposal of such material will be required for all relevant sites.

- A licence condition requiring full implementation of the measures set out in the draft Marine Aquaculture Code of Practice prepared by Invasive Species Ireland (e.g. http://invasivespeciesireland.com/cops/aquaculture) will be required for all relevant sites .

- The movement of stock in and out of the Kenmare River SAC should adhere to relevant fish health legislation will be required for all relevant sites.

- The use of updated and enhanced Aquaculture and Foreshore Licences containing terms and conditions which reflect the environmental protection required under EU and National law will be required for all relevant sites;

**Conclusion**

The Licensing Authority is satisfied that, given the conclusions and recommendations of the Appropriate Assessment process, a decision can be taken in favour of licensing existing and proposed aquaculture operations in Kenmare River SAC, subject to the implementation of the mitigation measures outlined above and other licensing related considerations.

Accordingly, the Licensing Authority is satisfied that by not licensing overlaps with *Zostera* and *Maerl* and other sensitive communities the proposed licensing is not likely to have a significant effect on the integrity of Kenmare River SAC.

September 2019

Kieran Lyons
Cnocan
Eyeries
Beara
Co Cork

13th June 2019

**Ref: T06/364**

Ms Deirdre Fitzpatrick
Aquaculture and Foreshore Management Division,
National Seafood Centre,
Clonakilty,
Co. Cork

**Application for an Aquaculture Licence for a site in Kilmakillogue Harbour, Kenmare Bay, Co Kerry**

Dear Ms Fitzpatrick,

Thank you for your letter of 28th May.

I would like to respond to the submissions and observations attached.

I have had an application for a licence submitted to the Department since 2004 and have been working with other mussel farmers in Kilmakillogue harbour for over 30 years.

I applied for a site in 2015 in Kilcatherine, Kenmare Bay, but was advised that the site was too exposed to be sustainable.

BIM advised me to apply for this site in Kilmakillogue. If granted this site I commit to following all recommendations by the Commissioner of Irish Lights, all structures will be clearly marked and adhering to an overall group marking scheme with navigational aids. I commit to comply with all recommendations and regulations from the Marine Institute.

I commit to following recommendations from the Dept of Culture, Heritage and the Gaeltacht to ensure the preservation of coastal habitats. I will never store equipment or establish access paths in an area which could in any way damage coastal habitats.

The seed used for the cultivation of mussels will be realised from a natural spat fall collection.

If the Department of Marine does not grant a licence for this site, I trust they will grant me a licence for a different site in the harbour, for example the site that I am currently farming.

I have been farming an area in Kilmakillogue and have invested considerable funds and time in building a sustainable farm including the building of a raft with specialised equipment for harvesting.

I give part time employment in harvesting season. I have three sons who gain employment from working on the farm as well as other locals living in the area. One of my sons is interested in taking over the farm in the future.

This application is not a hypothetical business idea or a grandiose expansion of an existing business. This is my actual livelihood. I only harvest between 40 and 50 tonnes of mussels a year, a fraction of the tonnage of most farms in the harbour, but it amounts to 60% of my income.

I have proven that the licence if granted will be used, currently and into the future by my son.

Of the 9 mussel farmers in the harbour, two have objected to my application, none of the submissions and observations object to my farming in the site that I currently farm. Two of the objectors are people who I have worked closely with for many years.

I acknowledge the submission by Carl Daly (and those by his wife Angela and son Peter) as someone with whom I have farmed and fished with for the last 20 years. I understand his concern about the location of the site applied for as it adjoins his farm. However, with 30 years of mussel farming experience, I feel that realistically his concern about a lack of spat fall and slow growth is unfounded. I firmly believe that there will be a plentiful supply of food for both his farm and mine if the licence is granted. Spat fall has always been sporadic, it's the nature of natural mussel farming. I have been producing mussels for a niche market, the secret to my successful growth of mussels in a very small area is low density farming. The reason mussels don't reach market size is because of high density farming, over-crowding the mussels within the site, too many ropes hung too close together.

With regards to the submission from Raymond Ross, his main objection is against Kush Sea Farms. Raymond has employed me to help improve his farm in the last few years as it has been running at well under its potential. Since his focus on the 'Seafari' tourism business his mussel farm has been neglected and lines have been left to tangle. Ray Ross's farm has roughly ten times the capacity for farming than the area I've been working, but very little of the potential yield from his farm has been realised due to poor management and neglect. When Ray Ross speaks of un-licenced farmers whose lines have been 'removed' at night, he doesn't refer to me as my lines have never been removed.

With regards to the letter from Mr John O'Sullivan of Carrignahilan, his objection is based on a disagreement from 12 years ago where myself and Eugene McCarthy ( with whom I was fishing shrimp at the time) had to take him to court to prevent him from cutting our buoys and tampering with our shrimp pots. He was subsequently bound to the peace by the presiding judge. John O'Sullivan is a plasterer by trade, he doesn't rely fully on fishing in the harbour for his livelihood.

Likewise, Eugene McCarthy who made a submission, (along with his wife Mag) is a sheep farmer primarily. I fished shrimp with Eugene McCarthy for 8 years. I gave up fishing with him as he is not committed to fishing, this can be seen from his very occasional landings to the buyers in Castletownbere. He states that I am 'not from the area' when in fact I live 20 minutes' drive from Kilmakillogue harbour.

I am a shrimp fisherman and a mussel farmer, so I have experience of both and know the benefits of fishing around the mussel farms, where there is in fact enhanced shrimp fishing. There is plenty of room for fishing and aquaculture in Kilmakillogue harbour, one can complement the other.

I work solely as a shrimp fisherman and mussel farmer; I have no other source of income.

As regards the various submissions about the detritus of fishing materials littering the shores of the harbour, I am fully in agreement that regulations should be imposed to clean up the shoreline caused by aquafarming. Last year in response to an initiative by BIM I collected 360 barrels which had been washed up on the shore in the harbour and brought them to be recycled. As far as I know I am the only farmer in the harbour to have taken up the initiative.

Many of the submissions refer to tourism. Never has food and travel been so closely linked. In my experience of bringing visitors to see the mussel farms, tourists enjoy seeing the process of natural mussel farming and enjoy eating locally produced food in situ. The mussel business is a big asset to tourism. Food tourism is growing rapidly especially in the area of locally grown naturally farmed food. Mussel farming is a perfect example of this.

With regards to the submissions claiming a disruption to water-sports in the harbour, these activities have been going on for more than 35 years at the same time as mussel farming and there is no reason for that not to continue. Seals have been thriving in the harbour for all the years that the mussel farms have been in operation.

There are very few businesses around Kilmakillogue serving tourism, the aquaculture business provides at least four times the amount of employment than tourism in the immediate area, but if the food tourism was to be taken seriously this could be greatly enhanced with significant employment potential.

I am a small farmer farming sensitively in the harbour. This is the kind of enterprise that flourishes with tourism. Naturally grown sea food of the highest quality being produced with sensitivity in an area of natural beauty makes that destination more attractive to tourists than places that are solely surviving on tourism, which is only viable for part of the year.

I look forward to having the issue of a licence resolved and a licence finally granted.

Yours sincerely,

Kieran Lyons

# Report supporting Appropriate Assessment of Aquaculture and Fisheries Risk Assessment in Kenmare River SAC

(Site Code: 02158)

Marine Institute

Rinville

Oranmore, Co. Galway

Version: March 2019

**List of Figures**

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# 1. Preface

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

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

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

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

# 2. Executive summary

## 2.1 The SAC

Kenmare River is designated as a Special Area of Conservation (SAC) under the Habitats Directive. The marine area is designated for the habitats Large Shallow Inlet and Bay, Reef and Submerged Caves. The bay supports a variety of sub-tidal and intertidal sedimentary and reef habitats including habitats that are sensitive to pressures, which might arise from fishing and aquaculture, such as Maërl (corraline algae), seagrass and kelp reefs. The area is also designated for and supports significant numbers of Harbour Seal and Otter. Conservation Objectives for these habitats and species were identified by NPWS (2013a) and relate to the requirement to maintain habitat distribution, structure and function, as defined by characterizing (dominant) species in these habitats. For designated species the objective is to maintain various attributes of the populations including population size, cohort structure and the distribution of the species in the Bay. Guidance on the conservation objectives is provided by NPWS (2013b).

## 2.2 Activities in the SAC

Aquaculture includes the production of shellfish and finfish. The main aquaculture activity is suspended long-line mussel (*Mytilus edulis*) culture. Oyster culture involves the culture of the Pacific oyster (*Crassostrea gigas*) on trestles in intertidal areas. Clam and Scallop culture are both licensed in the area but are not currently active. There are four finfish (*Salmo salar*) farm sites currently active within the SAC.

The profile of the aquaculture industry in the Kenmare River, used in this assessment, was prepared by BIM and is derived from the list of licence applications received by DAFM and provided to the Marine Institute for assessment in March 2019.

A range of fishing activities occur in Kenmare River including potting, dredging and trawling for shellfish, demersal fish and pelagic fish. Other activities include, intertidal seaweed harvesting as well as seal watching tourism activity.

## 2.3 The Appropriate Assessment Process

The function of an appropriate assessment and risk assessment is to determine if the ongoing and proposed aquaculture and fisheries activities are consistent with the Conservation Objectives for the Natura site or if such activities will lead to deterioration in the attributes of the habitats and species over time and in relation to the scale, frequency and intensity of the activities. NPWS (2013b) provide guidance on interpretation of the Conservation Objectives which are, in effect, management targets for habitats and species in the SAC. This guidance is scaled relative to the anticipated sensitivity of habitats and species to disturbance by the proposed activities. Some activities are deemed to be wholly inconsistent with long term maintenance of certain sensitive habitats while other habitats can tolerate a range of activities. For the practical purpose of management of sedimentary habitats a 15% threshold of overlap between a disturbing activity and a habitat is given in the NPWS guidance. Below this threshold disturbance is deemed to be non-significant. Disturbance is defined as that which leads to a change in the characterizing species of the habitat (which may also indicate change in structure and function). Such disturbance may be temporary or persistent in the sense that change in characterizing species may recover to pre-disturbed state or may persist and accumulate over time.

The appropriate assessment and risk assessment process is divided into a number of stages consisting of a preliminary risk identification, and subsequent assessment (allied with mitigation measures if necessary) which are covered in this report. The first stage of the process is an initial screening wherein activities which cannot have, because they do not spatially overlap with a given habitat or have a clear pathway for interaction, any impact on the conservation features and are therefore excluded from further consideration. The next phase is the Natura Impact Statement (NIS) where interactions (or risk of) are identified. Further to this, an assessment on the significance of the likely interactions between activities and conservation features is conducted. Mitigation measures (if necessary) will be introduced in situations where the risk of significant disturbance is identified. In situations where there is no obvious mitigation to reduce the risk of significant impact, it is advised that caution should be applied in licencing decisions. Overall the Appropriate Assessment is both the process and the assessment undertaken by the competent authority to effectively validate this Screening Report and/or NIS. It is important to note that the screening process is considered conservative, in that other activities which may overlap with habitats but which may have very benign effects are retained for full assessment. In the case or 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

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

## 2.5 Findings

**Aquaculture and Habitats:**

The appropriate assessment and risk assessment finds that the majority of activities, at the current and proposed or likely future scale and frequency of activity are consistent with the Conservation Objectives for the Annex 1 habitats. The following are the exceptions:

1. Within the Kenmare River SAC the culture (licensed) of Scallops (*Pecten maximus*) on the seabed overlaps with three keystone communities, *Zostera* dominated community, Maerl dominated community and *Pachycerianthus multiplicatus* community. This activity is deemed disturbing to such community types. As key contributors to biodiversity and being sensitive to

[1] NPWS Geodatabase Ver: September 2013 - http://www.npws.ie/mapsanddata/habitatspeciesdata/

disturbance these community types are afforded a high degree of protection and no overlap with a disturbing activity can be tolerated.

2. Maerl dominated community occurs in certain areas (Ardgroom and Killmakilloge Harbours) which are outside of the Qualifying Interests for which the Kenmare River SAC was designated but are still within the SAC boundary. Maerl, the characterising species of this community, is listed as an Annex V species and as it is within the SAC boundary it must be afforded protection. Suspended mussel culture in Ardgroom Harbour overlaps this community type and is considered disturbing. As a key contributor to biodiversity and being sensitive to disturbance this community types is afforded a high degree of protection and no overlap with a disturbing activity can be tolerated.

**Aquaculture and Species:**

- It is acknowledged in this assessment that the favourable conservation status of the Harbour seal (*Phoca vitulina*) has been achieved given current levels of aquaculture production within the SAC. On this basis, the current levels of licenced aquaculture (existing) are considered non-disturbing to harbour seal conservation features. The following is one exception:
    - Aquaculture activity (oyster farm) overlapping Harbour Seal moulting site in Coongar Harbour. It is recommended that the site boundaries be redrawn to exclude the harbour seal haul-out location.
- The aquaculture activities proposed do not pose a threat to the Otter or migrating salmon in the Kenmare River SAC.

**Fisheries and Habitats:**

- Pot fisheries may pose a high risk to sensitive habitats (Zostera and Maerl) in Kenmare Bay and a low-moderate risk (depending on level of activity) to kelp communities
- Depending on intensity of activity demersal trawling may impact muddy sand communities in outer Kenmare Bay
- Scallop dredging poses a risk to faunal reef communities in Kenmare Bay.

**Fisheries and Species:**

- Although there is a risk of by-catch of harbour seal in set net fisheries in outer Kenmare Bay and in midwater trawl fisheries in the inner Bay this is unlikely to impact the Harbour Seal population in Kenmare. Sprat fisheries occur sporadically in Kenmare Bay and may temporarily reduce prey availability for Harbour Seal. This is unlikely to have significant effects on the Harbour Seal population
- Otters may occur as by-catch in trammel nets and pots fished in shallow water (<5m depth). As pots are usually deployed in waters deeper than 5m the risk of by-catch is thought to be very low and insignificant to otter populations in Kenmare

# 3. Introduction

This document assesses the potential ecological interactions of aquaculture and fisheries activities within the Kenmare River SAC (site code 2158) on the Conservation Objectives (COs) of the site.
The information upon which this assessment is based is a list of applications and extant licences for aquaculture activities administered by the Department of Agriculture Food and Marine (DAFM) and forwarded to the Marine Institute as of August 2013; as well as aquaculture and fishery profiling information provided on behalf of the operators by Bord Iascaigh Mara. The spatial extent of aquaculture licences is derived from a database managed by the DAFM[2] and shared with the Marine Institute.

# 4. Conservation Objectives for Kenmare River SAC (002158)

The appropriate assessment of aquaculture in relation to the Conservation Objectives for Kenmare River SAC is based on Version 1.0 of the objectives (NPWS 2013a - Version 1 April 2013) and supporting documentation (NPWS 2013b - Version 1 March 2013). The spatial data for conservation features was provided by NPWS[3].

## 4.1 The SAC Extent

Kenmare River is a long and narrow south-west facing bay situated in the south west of Ireland. Kenmare River has an exceptional complement of marine and terrestrial habitats associated with exposed coasts and ultra-sheltered bays. Numerous islands and inlets along the length of the bay provide areas of additional shelter in which a variety of habitats occur. Kenmare River SAC is designated for the marine Annex I qualifying interests of Large hallow inlets and bays (1160), Reefs (1170) and Submerged or partially submerged seacaves (8330). The Annex I habitat Large shallow inlets and bays is a large physiographic feature that may wholly or partly incorporate other Annex I habitats including Reefs and Submerged Seacaves within its area. A number of coastal habitats can also be found in the SAC, including Fixed coastal dunes with herbaceous vegetation (grey dunes), Vegetated sea cliffs of the Atlantic and Baltic coasts and shifting dunes along the shoreline with *Ammophilia arenaria* ("white dunes"). The SAC is also considered an important site for the two mammal species Harbour Seal (*Phoca vitulina*) and the Otter (*Lutra lutra*). The extent of the SAC is shown in Figure 1 below.

## 4.2 Qualifying Interests (SAC)

The SAC is designated for the following habitats and species (NPWS 2013a), as listed in Annex I and Annex II of the Habitats Directive:

- 1014 Marsh Snail *Vertigo angustior*

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[2] DAFM Aquaculture Database version Aquaculture: 11th Nov, 2013
[3] NPWS Geodatabase Ver: September 2013 - http://www.npws.ie/mapsanddata/habitatspeciesdata/

- 1160 Large shallow inlets and bays
- 1170 Reefs
- 1220 Perennial vegetation of stony banks
- 1230 Vegetated sea cliffs of the Atlantic and Baltic coasts
- 1303 Lesser Horseshoe Bat *Rhinolophus hipposideros*
- 1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
- 1355 Otter *Lutra lutra*
- 1365 Harbour seal *Phoca vitulina*
- 1410 Mediterranean salt meadows (*Juncetalia maritimi*)
- 2120 Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")
- 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)
- 4030 European dry heaths
- 6130 Calaminarian grasslands of the *Violetalia calaminariae*
- 8330 Submerged or partially submerged sea caves

Constituent communities and community complexes recorded within the qualifying interest Annex 1 habitats (i.e. 1160 - Large Shallow inlets and Bays, 1170 - Reefs) are listed in NPWS (2013b) and illustrated in Figure 2 and consist of:

- Intertidal mobile sand community complex
- *Zostera*-dominated community
- Maërl-dominated community
- *Pachycerianthus multiplicatus* community
- Muddy fine sands dominated by polychaetes and *Amphiura filiformis* community complex
- Fine to medium sand with crustaceans and polychaetes community complex
- Coarse sediment dominated by polychaetes community complex
- Shingle
- Intertidal reef community complex
- *Laminaria*-dominated community complex
- Subtidal reef with echinoderms and faunal turf community complex

The Kenmare River SAC is designated for the Harbour seal (*Phoca vitulina*) and has been the subject of annual monitoring surveys during the moulting season (August-September) from 2009-2011 (NPWS 2010, 2011, 2012). Recent estimates of harbour seal populations at the site (inner Kenmare River) are 310 in 2009, 324 in 2010, and 309 in 2011. Two sites located in outer Kenmare River, Illaunsillagh and Cove Harbour/West Cove, were also surveyed. Estimates of seal populations at these outer sites rose from 21 (2009) to 37 (2011) and from 31 (2010) to 50 (2011) respectively.

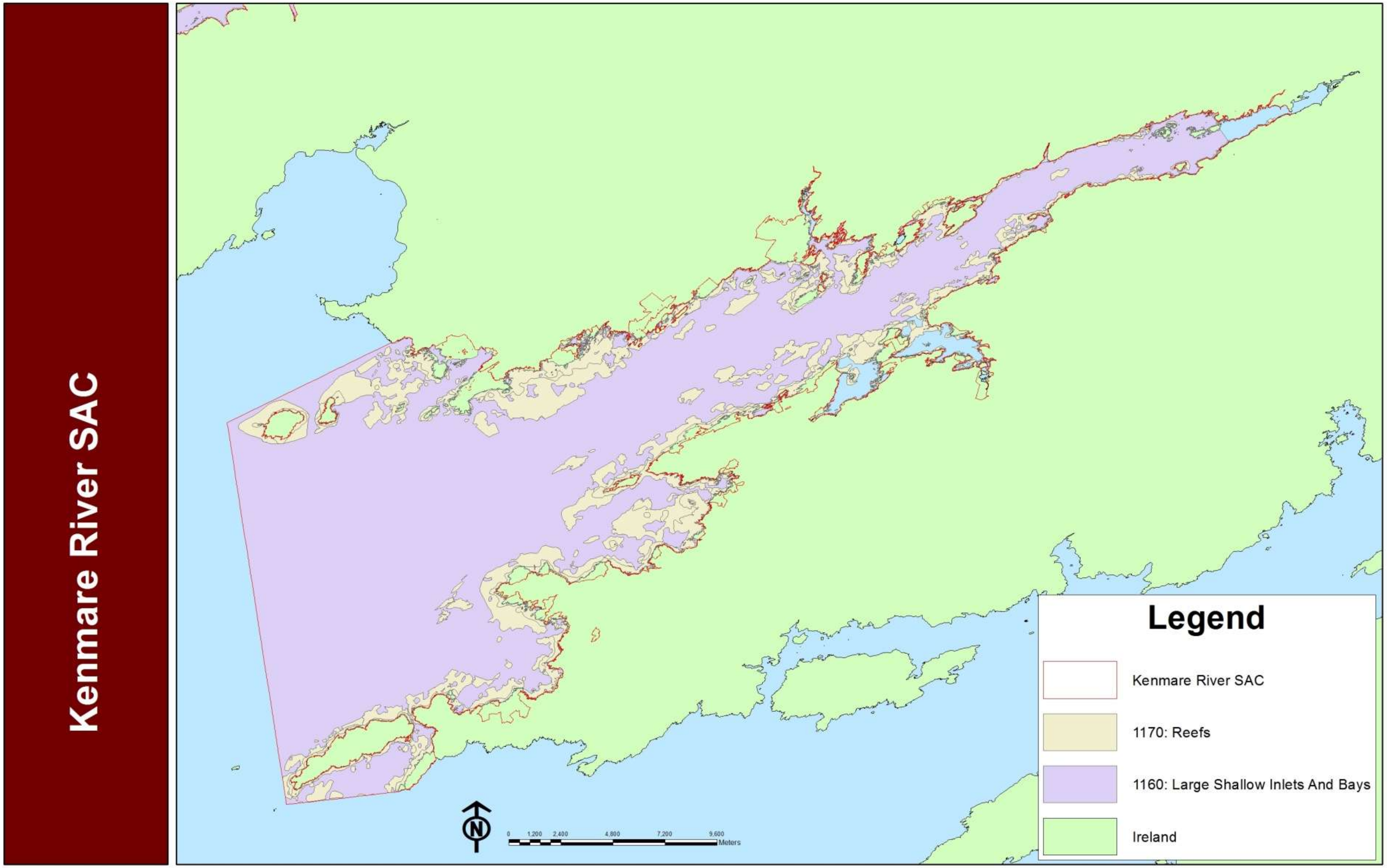


**Figure 1: The extent of the Kenmare River SAC (Site Code 002158) and qualifying interest 1170 Reef and 1160 Large Shallow Inlet and Bay.**

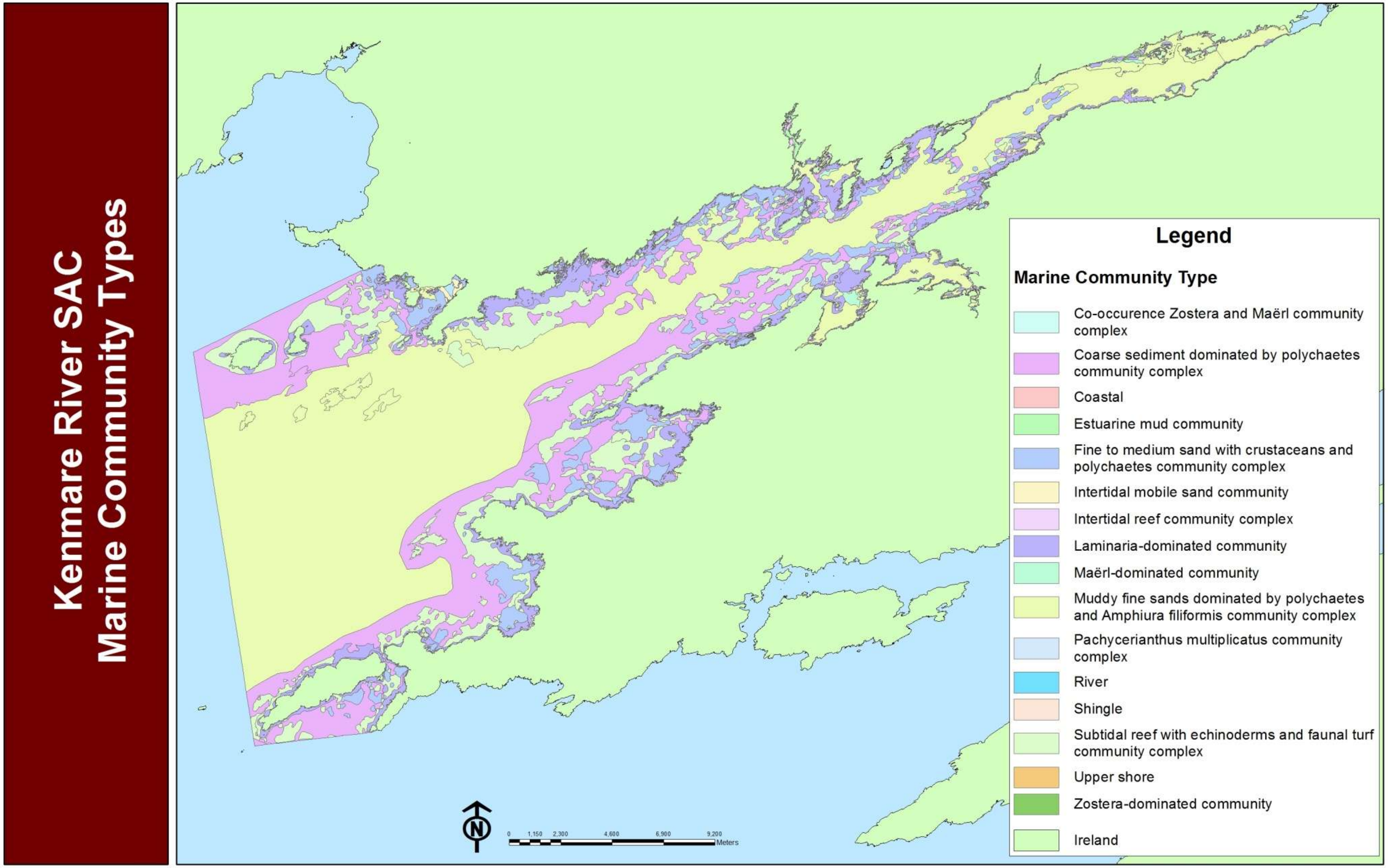


**Figure 2. Principal benthic communities recorded within the qualifying interests Large shallow inlets and bays Reefs and Submerged or partially submerged sea caves within the Kenmare River SAC (Site Code 002158) (NPWS 2013a).**

Based on recent reports (Cronin *et al*., 2004; Heardman *et al*., 2006; Cronin et al, 2008, NPWS 2010, 2011, 2012) the Kenmare River is deemed important both on a regional and on a national scale regarding its Harbour seal population.

A number of different locations have been identified within the SAC (NPWS 2013a) and are considered important to the overall welfare and health of the Harbour seal populations at the site. Figure 3 identifies these locations and distinguishes between breeding, moulting and resting sites. A site naming convention based upon designated periods in the life cycle have been identified by the competent authority, i.e. NPWS (NPWS 2011; 2013b). Important periods are the pupping season (May-July) and moulting season (August-September) and both periods and locations are considered important periods to the overall health of the population in the SAC and that any disturbance during these times should be kept to a minimum. Less information is known about resting period (October-April) and resting areas throughout the SAC. The resting locations provided in Figure 3 represent locations where seals have been observed, yet it must be noted that sheltered areas within the entire SAC are considered suitable habitat for resting seals (NPWS 2012, 2013a).

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

## 4.3 Conservation Objectives for Kenmare River SAC

The conservation objectives for the qualifying interests (SAC) were identified in NPWS (2013a). The natural condition of the designated features should be preserved with respect to their area, distribution, extent and community distribution. Habitat availability should be maintained for designated species and human disturbance should not adversely affect such species. The features, objectives and targets of each of the qualifying interests within the SAC are listed in Table 1 below.

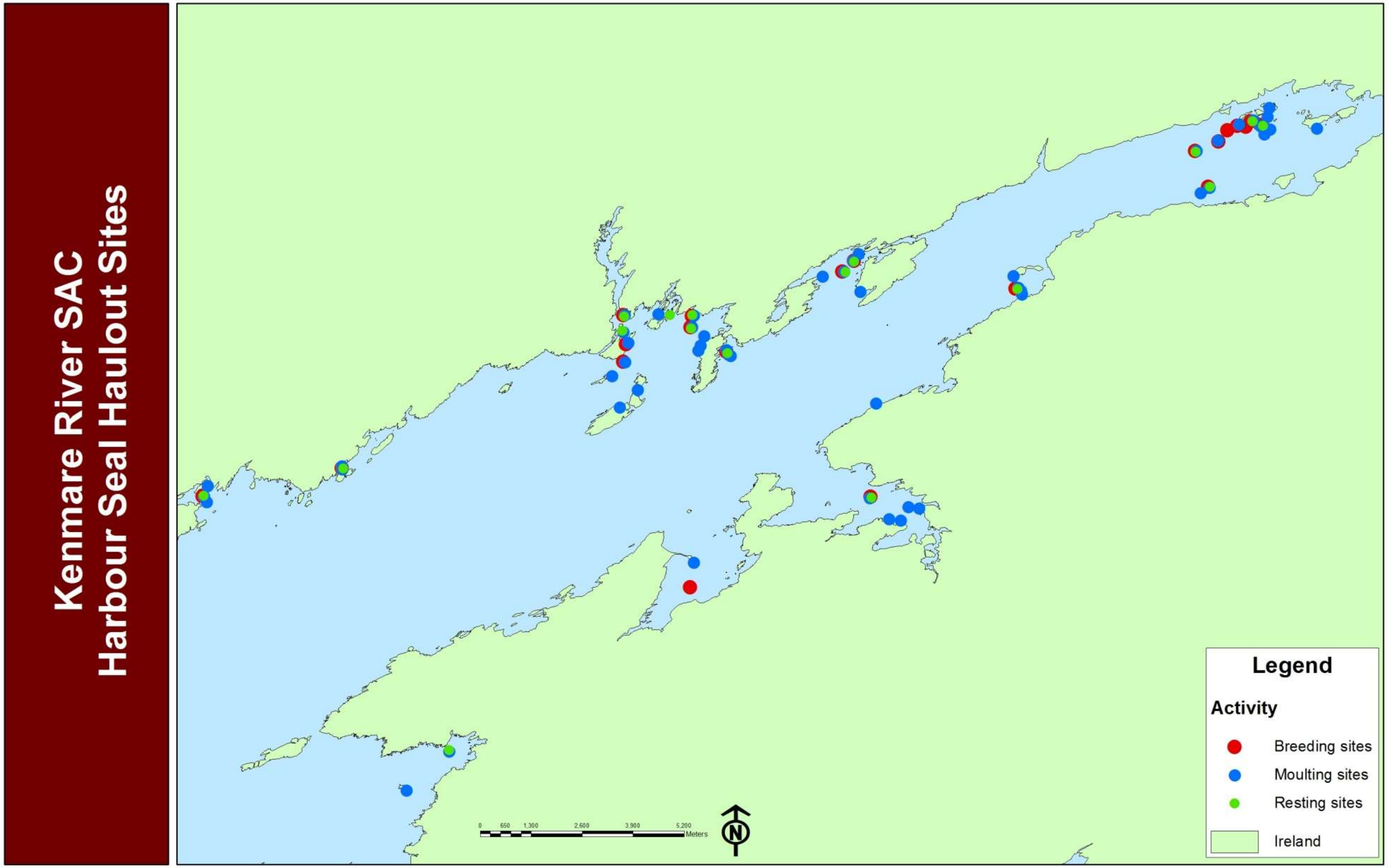


Figure 3  Harbour Seal (*Phoca vitulina*) locations in Kenmare River SAC (Site Code 002158).

**Kenmare River SAC**
**Adjacent Natura 2000 sites**

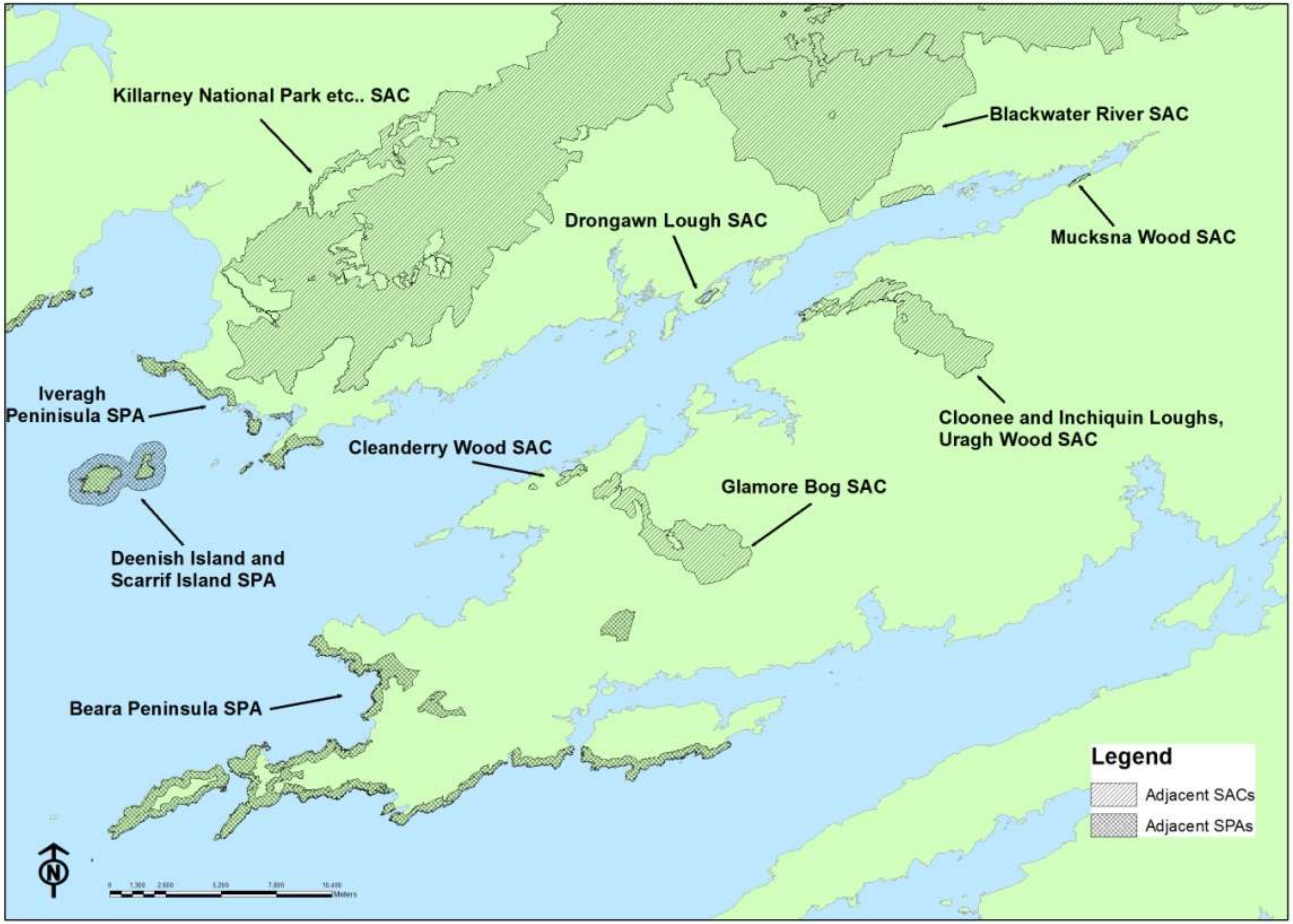


**Figure 4. Natura 2000 sites adjacent to the Kenmare River SAC.**

**Table 1: Conservation objectives and targets for marine habitats and species in Kenmare River SAC (Site Code 002158) (NPWS 2013a, 2013b). Annex I and II features listed in bold.**

| Feature (Community Type) | Objective | Target(s) |
|---|---|---|
| **Large shallow inlets and bays** | Maintain favourable conservation condition | 39,322ha;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. |
| (Intertidal mobile sand community complex) | Maintain favourable conservation condition | 63.07ha; Maintained in a natural condition |
| (*Zostera* dominated communities) | Maintain favourable conservation condition | 20.04ha; Maintain natural extent and high quality of *Zostera* dominated communities |
| (Maërl-dominated community) | Maintain favourable conservation condition | 46.82ha; Maintain natural extent and high quality of Maërl dominated communities |
| (*Pachycerianthus multiplicatus* community) | Maintain favourable conservation condition | 6.23ha; Maintain natural extent and high quality of *Pachycerianthus multiplicatus* community |
| (Muddy fine sands dominated by polychaetes and *Amphiura filiformis* community complex) | Maintain favourable conservation condition | 20,141.20ha; Maintained in a natural condition |
| (Fine to medium sand with crustaceans and polychaetes community complex) | Maintain favourable conservation condition | 1987.75ha; Maintained in a natural condition |
| (Coarse sediment dominated by polychaetes community complex) | Maintain favourable conservation condition | 8,309.80ha; Maintained in a natural condition |
| (Shingle) | Maintain favourable conservation condition | 1.42ha; Maintained in a natural condition |
| (Intertidal reef community complex) | Maintain favourable conservation condition | 525.46ha; Maintained in a natural condition |
| (*Laminaria*-dominated community complex) | Maintain favourable conservation condition | 3,356.63ha; Maintained in a natural condition |
| (Subtidal reef with echinoderms and faunal turf community complex) | Maintain favourable conservation condition | 4805.86ha; Maintained in a natural condition |
| **Reefs** | Maintain favourable conservation condition | 9,196ha; The distribution and permanent area is stable or increasing, subject to natural processes. |
| (Intertidal reef community complex) | Maintain favourable conservation condition | 680.26ha; Maintained in a natural condition |
| (Subtidal reef with echinoderms and faunal turf community complex) | Maintain favourable conservation condition | 4,835.43ha; Maintained in a natural condition |
| (*Laminaria*-dominated community complex) | Maintain favourable conservation condition | 3,676.57ha; Maintained in a natural condition |
| **Perennial vegetation of stony banks** | Maintain favourable conservation condition | Area unknown; Targets are identified that focus on a wide range of attributes with the ultimate goal of maintaining function and diversity of favourable species and managing levels of negative species. |

| **Feature (Community Type)** | **Objective** | **Target(s)** |
|---|---|---|
| **Vegetated sea cliffs of the Atlantic and Baltic coasts** | Maintain favourable conservation condition | >72.2ha; 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. |
| **Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)** | Maintain favourable conservation condition | 2.65ha; 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. |
| **Mediterranean salt meadows (*Juncetalia maritimi*)** | Maintain favourable conservation condition | 17.90ha;Targets are identified that focus on a wide range of attributes with the ultimate goal of maintaining function and diversity of favourable species and managing levels of negative species |
| **Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")** | Maintain favourable conservation condition | 1.67ha;Targets are identified that focus on a wide range of attributes with the ultimate goal of maintaining function and diversity of favourable species and managing levels of negative species |
| **Fixed coastal dunes with herbaceous vegetation (grey dunes)** | Maintain favourable conservation condition | 20.41ha; 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 |
| **European dry heaths** | Maintain favourable conservation condition | >300ha; 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 and disturbance |
| **Calaminarian grasslands of the *Vioetalia claminariae*** | Maintain favourable conservation condition | 3.1ha: 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 and disturbance (soil toxicity). |
| **Submerged or partially submerged sea caves** | Maintain favourable conservation condition | Area unknown; Targets relate to maintaining distribution and managing human activities. |
| **Marsh Snail *Vertigo angustior*** | Maintain favourable conservation condition | A single site is identified for this species and targets relate to maintaining adult and sub-adult densities and overall habitat quality. |
| **Otter *Lutra lutra*** | Restore favourable conservation conditions | Maintain distribution - 88% positive survey sites. |

| Feature (Community Type) | Objective | Target(s) |
|---|---|---|
| | | 2748ha; No significant decline in extent of marine habitat; Couching sites and holts - no significant decline and minimise disturbance: Fish biomass - No significant decline in marine fish species in otter diet. Barriers to connectivity - No significant increase. |
| **Harbour Seal *Phoca vitulina*** | Maintain favourable conservation condition | The range of use within the site should not be restricted by artificial barriers; all sites should be maintained in natural condition; human activities should occur at levels that do not adversely affect harbour seal population at the site. |
| **Lesser Horseshoe Bat (*Rhinolophus hipposideros*)** | Maintain favourable conservation condition | The range of use within the site should not be restricted by artificial barriers; all sites should be maintained in natural condition; human activities should occur at levels that do not adversely affect the Lesser Horsehoe Bay population at the site. |

## 4.4 Screening of Adjacent SACs or for *ex-situ* effects

In addition to the Kenmare River SAC there are a number of other Natura 2000 sites proximate to the proposed activities (Figure 4). The characteristic features of these sites are identified in Table 2 where a preliminary screening is carried out on the likely interaction with aquaculture activities based primarily upon the likelihood of spatial overlap. As it was deemed that there are no *ex situ* effects and no effects on features in adjacent SACs all qualifying features of adjacent Natura 2000 sites were screened out.

**Table 2 Natura Sites adjacent to Kenmare River SAC and qualifying features with initial screening assessment on likely interactions with aquaculture activities.**

| NATURA SITE | QUALIFYING FEATURES [HABITAT CODE] | AQUACULTURE INITIAL SCREENING |
|---|---|---|
| **Old Domestic Building , Dromore Wood SAC (000353)** | Lesser Horseshoe Bat (*Rhinolophus hipposideros*) [1303] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| **Cleanderry Wood SAC (001043)** | Killarney Fern *Trichomanes speciosum* [1421] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| **Cloonee and Inchiquin Loughs, Uragh Wood SAC (001342)** | Kerry slug *Geomalacus maculosus* [1024] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Lesser horseshoe bat *Rhinolophus hipposideros* [1303] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Killarney fern *Trichomanes speciosum* [1421] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Slender naiad *Najas flexilis* [1833] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |

| NATURA SITE | QUALIFYING FEATURES [HABITAT CODE] | AQUACULTURE INITIAL SCREENING |
|---|---|---|
| | Old sessile oak woods with Ilex and Blechnum in British Isles [91A0] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| **Mucksna Wood SAC (001371)** | Old sessile oak woods with Ilex and Blechnum in British Isles [91A0] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| **Glanmore Bog SAC (001879)** | Freshwater pearl mussel (*Margaritifera margaritifera*) [1029] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Killarney fern (*Trichomanes speciosum*) [1421] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Northern Atlantic wet heaths with *Erica tetralix* [4010] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Blanket bog (*active only) [7130] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| **Drongawn Lough SAC (002187)** | Coastal lagoons [1150] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |

| NATURA SITE | QUALIFYING FEATURES [HABITAT CODE] | AQUACULTURE INITIAL SCREENING |
|---|---|---|
| **Blackwater River (Kerry) SAC (002173)** | Kerry slug (*Geomalacus maculosus*) [1024] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Freshwater pearl mussel (*Margaritifera margaritifera*) [1029] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Salmon (*Salmo salar*) [1106] | Migrating salmon passing through Kenmare River SAC and could interact with activities covered in this assessment- **carry forward to Section 8.** |
| | Lesser horseshoe bat (*Rhinolophus hipposideros*) [1303] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Otter (*Lutra lutra*) [1355] | Otter may migrate into Kenmare River SAC and could interact with aquaculture and fisheries activities **– carry forward to Section 8.** |
| | European dry heaths [4030] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| **Iveragh Peninsula SPA (004154)** | Fulmar (*Fulmarus glacialis*) [A009] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis [4] |
| | Peregrine (*Falco peregrinus*) [A103] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis |

[4] http://www.npws.ie/media/npwsie/content/images/protectedsites/sitesynopsis/SY004154.pdf

| NATURA SITE | QUALIFYING FEATURES [HABITAT CODE] | AQUACULTURE INITIAL SCREENING |
|---|---|---|
| | Kittiwake (*Rissa tridactyla*) [A188] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis |
| | Guillemot (*Uria aalge*) [A199] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis |
| | Chough (*Pyrrhocorax pyrrhocorax*) [A346] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis |
| **Beara Peninsula SPA (004155)** | Fulmar (*Fulmarus glacialis*) [A009] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis [5] |
| | Chough (*Pyrrhocorax pyrrhocorax*) [A346] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis |
| **Deenish Island and Scariff Island SPA (004175)** | Fulmar (*Fulmarus glacialis*) [A009] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis [6] |
| | Manx Shearwater (*Puffinus puffinus*) [A013] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis |

[5] http://www.npws.ie/media/npwsie/content/images/protectedsites/sitesynopsis/SY004155.pdf
[6] http://www.npws.ie/media/npwsie/content/images/protectedsites/sitesynopsis/SY004175.pdf

| NATURA SITE | QUALIFYING FEATURES [HABITAT CODE] | AQUACULTURE INITIAL SCREENING |
|---|---|---|
| | Storm Petrel (*Hydrobates pelagicus*) [A014] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis |
| | Lesser Black-backed Gull (*Larus fuscus*) [A183] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis |
| | Arctic Tern (*Sterna paradisaea*) [A194] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis |

# 5. Details of the proposed plans and projects

## 5.1 Aquaculture

Aquaculture in the Kenmare River SAC focuses on shellfish species (mussels, oysters scallops and clams) and finfish (Salmon) (Figures 5 and 6). Mussels are the predominant shellfish species cultured within the SAC. Small quantities of oysters are produced; while Scallops and Clams, although licensed, are not currently produced in the area. There are also six locations dedicated to the culture of Atlantic Salmon. Descriptions of spatial extents of existing and proposed activities within the qualifying interests of the Kenmare River SAC were calculated using coordinates of activity areas in a GIS. The spatial extent of the various aquaculture activities (current and proposed) overlapping the habitat features is presented in Table 3 (data provided by DAFM).

### 5.1.1 Oyster Culture

Oyster farming within Kenmare River is a form of intensive culture which has been taking place since the early 1990s. A single species forms the basis of oyster aquaculture operation in the Kenmare River SAC, i.e. the Pacific oyster, *Crassostrea gigas.* The seed is cultivated using the bag and trestle method, either to half-grown or fully-grown size. The bag and trestle method uses steel table-like structures which rise from the shore to just above knee height on the middle to lower intertidal zone, arrayed in double rows with wide gaps between the paired rows to allow for access. The trestles hold HDPE bags approximately 1m by 0.5m by 10cm, using rubber and wire clips to close the bags and to fasten them to the trestles. When first put to sea, there may be up to 2000 oysters in a single bag, but as they grow and are graded this number is gradually reduced. Over the course of the two or three years that it takes an oyster to reach saleable size, the density is reduced until market ready oysters, of approximately 100g each (when grown to full size) are being grown in bags of approximately 100 oysters per bag. The bags need to be shaken, turned and re-secured occasionally to prevent build-up of fouling and to ensure the growing oysters maintains a good marketable shape. This usually takes place once on each tidal cycle, when maximum exposure of the shore allows safe access to all trestles. It is most important during the summer months when plankton, the oysters' food, is abundant and oyster growth rates are at their optimum. Oysters are grown on in these bags to half-grown or full grown size for up to three years, and will be graded two or three times over the course of each summer.

There are four sites in operation, three in Templenoe and one in Coongar Harbour. These operations are relatively small, currently producing less than 30 tonnes annually, they are classified as free from the herpes virus and at the moment the operators are buying in seed from Seasalter, both diploid and triploid, depending on availability. This availability means that there is currently no generalised production cycle. Sites are accessed at low tide using a tractor and trailer, by a public road near Templenoe and by boat in Coongar Harbour.

There are a number of applications for new licences for bag and trestle oyster culture, in Killmakilloge and Ardgroom Harbour, which would be accessed by boat from the local piers and one on the south shore of Kenmare River, near Killaha East which would be accessed by shore from the applicants own property. Some of these are for multi species licences, to include native oysters, mussels, but still using the bag and trestle method of cultivation.

### 5.1.2 Rope Mussels

There are a number of very productive locations for suspended long-line mussel farming in Kenmare River, namely Killmakilloge Harbour (600 – 1000 tonnes), Ardgroom Harbour, including Coosmore and Cleanderry Harbour (700 – 1100 tonnes) and Coongar Harbour, including Sneem Harbour (150 – 200 tonnes). All of the farms are locally owned, providing quite large scale local employment. The main piers in use are located close to these growing areas.

The culture method involves placing, an often re-usable, settlement media (rope, strap, mesh) in the water column, known as a 'dropper' on which natural juvenile mussels settle, depending on a number of seasonal and local factors this takes place in April, May or June, the naturally collected mussel seed is then on-grown for typically 18-24 months before being harvested as per market requirements and in line with shellfish and water quality parameters. Some of the larger farmers operate as contract service providers, carrying out the harvesting for the smaller farmers, using their purpose built work barges, although for the most part the farmers work their own farms using smaller converted fishing vessels. As these mussels grow the 'droppers' are often moved to grow-out areas, or remain in situ. Some farms grade the mussels during the 18-24 months, using the "New Zealand" continuous rope system, whereby the mussels are re-packed at a specific density using bio-degradable cotton mesh around the rope, the mesh rots away after the mussels have re-attached using their byssal threads. All of the long-lines in use are double head rope longlines, constructed from polypropylene mostly of 110m in length, with typically 30 x 210-250l floatation units (mostly grey in colour) and anchored at each end with 2.5 tonne concrete weights. In general the long-line density is no greater than 3 lines per hectare. In Ardgroom Harbour the mussel farmers, through the CLAMS process set a self-imposed stocking density of 2 longlines per hectare and a dropper limit of 406 per line.

There are a number of long-line licence applications in the traditional areas of Ardgroom, Killmakilloge and Coongar Harbours as well as an expansion into deeper, more exposed waters of Kenmare River and in Coulagh Bay. A number of these newer long-line licence applications are for multi-species licences, to include mussels, oysters and native seaweeds.

A single trial site is currently in operation to establish the technical feasibility of a novel rope cultivation system for a mussel longline system in the main body of Kenmare River (Figure 7). The experimental deployment includes 3 mussel lines of 40m (at surface) 180m (total length including full length of moorings) in the proposed site for a period of 18 months. Drop lines (per surface line) are seeded with mussels (7-10mm locally sourced) and suspended at a range of depths between 5m and 35m. Monthly measurements of growth are to be taken. Environmental monitoring will include high frequency data on wave height, current speed and direction, temperature and salinity, and periodic manual observations will also be conducted (e.g. plankton tows, water samples for chlorophyll measurements). Following the trial period of 18 months all field trial equipment will be removed from the area.

### 5.1.3 Salmon Culture

Salmon (*Salmo salar*) is currently produced at 4 sites within the Kenmare River SAC.  Five sites are licensed to produce salmon, one of which is also licensed to produce Rainbow trout (*Oncorhynchus mykiss*).  There is also one licence application for salmon production.

Marine Harvest Ireland (MHI) operates two sites, Inisfarnard and Deenish.  At both sites there is space for fourteen 128m circumference net pens, with 15m sides.  The cubic capacity of each net pen is 19,600m$^3$, leading to an overall volume of 274,400m$^3$ and at maximum allowable stocking density, a potential standing stock of 2,744 tonnes.  Each site also has a feed barge, moored on site, which can hold a maximum of 200 tonnes of feed.  The feed barge can feed the stock automatically throughout the day, each net pen has cameras installed to monitor the fish, optimising feed conversion rate and minimising waste.  The sites operate on a two year annual alternate site stocking cycle, inputting 800,000 smolts, to each site alternately and harvesting them in year two from months 16 to 22.  The site is then left fallow for two months before next smolt input.  These sites are accessed from piers in Castletownbere, Travarra and Ballycrovane.

Murphy's Irish Seafood Ltd operates the other two sites, St. Killians and Doon Point.  St Killians, in Killmakilloge Harbour, a 160 tonne licenced site (leased from St. Killian's Salmon Ltd), has three 70m net pens and is currently operating as a smolt site holding the fish for one year before being transferred to a main grower site.  The Doon Point site is currently fallow, but has a licenced capacity of similar to the MHI sites above.  These sites are accessed from Cleandra and Killmakilloge in Kenmare River and Gearhies in Bantry Bay.

The smolts for these sites come from a number of sources.  Smolt is the name given to juvenile salmon, when they would naturally travel from fresh water, where they are hatched and develop, approximately for one year, to salt water for feeding and further growth before returning to the same fresh water to breed.  The smolts for the MHI operation are currently produced in the MHI freshwater facilities in Donegal, namely Altan and Pettigoe.  Murphy's Irish Seafood Ltd, whilst producing most of their smolt requirements from their Borlin hatchery also buy in smolt from Derrylea Holdings Ltd.  All of these smolts are trucked from the freshwater facilities to a well boat for delivery to the sea sites.  Once at sea the smolts are reared in nets suspended from circular floating structures known as pens.  These are moored in groups, in locations where there are strong water flows in order to provide the stock with optimum environmental conditions, as salmon are extremely sensitive to pollution and only grow if the waters in which they live are clean and well oxygenated.  The smolts are initially fed by hand but as they grow, mechanical feed systems are used.

All sites are operating according to EU Organic Aquaculture standards[7], which include low stocking densities and the use of organically certified food. The nets are made of knotless netting and no anti-fouling treatment is allowed, nets are either cleaned *in-situ* using pressurised water systems or alternatively when the need arises the nets are changed. Regular dive inspections are carried out on the nets and moorings.

#### 5.1.4 Scallops

Within the Kenmare River SAC, there are eleven sites licensed for the production of scallops and also two applications (Ballycrovane and Killmakilloge Harbours). None of the licensed scallop sites are currently active. Scallops are dredged from the seafloor within these licensed areas. There is little or no intervention to improve stocks. The activities effectively equate to a wild fishery.

At the two application sites (Killmakillogue and Ballycrovane Harbours), juvenile scallops would be purchased either from a hatchery or from wild collection and broadcast on the seabed; these would then be left to grow, to be harvested by divers.

#### 5.1.5 Clams

There is a single licence for clam cultivation in conjunction with oysters. Clams have never been farmed on site and currently the site is being used to farm oysters on bag and trestle. If clams were to be farmed, they would be seeded in the ground, under nets, the clams would then be raked by hand for grading and harvesting.

### 5.2 Description of Fishing Activities

#### 5.2.1. Pot fisheries

Six vessels less than 8m in length fish for lobster and crab along the coast from Ballinskelligs into Kenmare River using 1500 pots and a further 8 vessels under 10m in length fish 2500 pots in inner Kenmare. A further 19 vessels fishing 9500 pots fish for shrimp (*Palaemon serratus*) in inner Kenmare. Potting for prawns (Nephrops) occurs at the edge of trawling ground in outer and mid Kenmare (Fig. 7).

#### 5.2.2. Dredge fisheries

Scallops are fished with dredges on the south shore of inner Kenmare.

#### 5.2.3. Set net fisheries

Tangle netting for crayfish occurs at the outer edges of the SAC and in coastal waters to the north and south of the site (Fig. 8).

[7] http://www.bim.ie/our-services/grow-your-business/farmedfishqualitylabelling/organicassurancelabellingschemes/

### 5.2.4. Bottom trawl fisheries

Bottom trawl fisheries, targeting *Nephrops* and mixed demersal fish, occurs on fine sedimentary habitats in outer Kenmare River.

### 5.2.5. Pelagic fisheries

Pelagic trawling for sprat occurs in winter in inner Kenmare River (Fig. 9).

### 5.2.6. Hook and line fisheries

Inshore fishing vessels fish for Mackerel and Pollack in outer Kenmare River SAC in summer and autumn (Fig. 10)

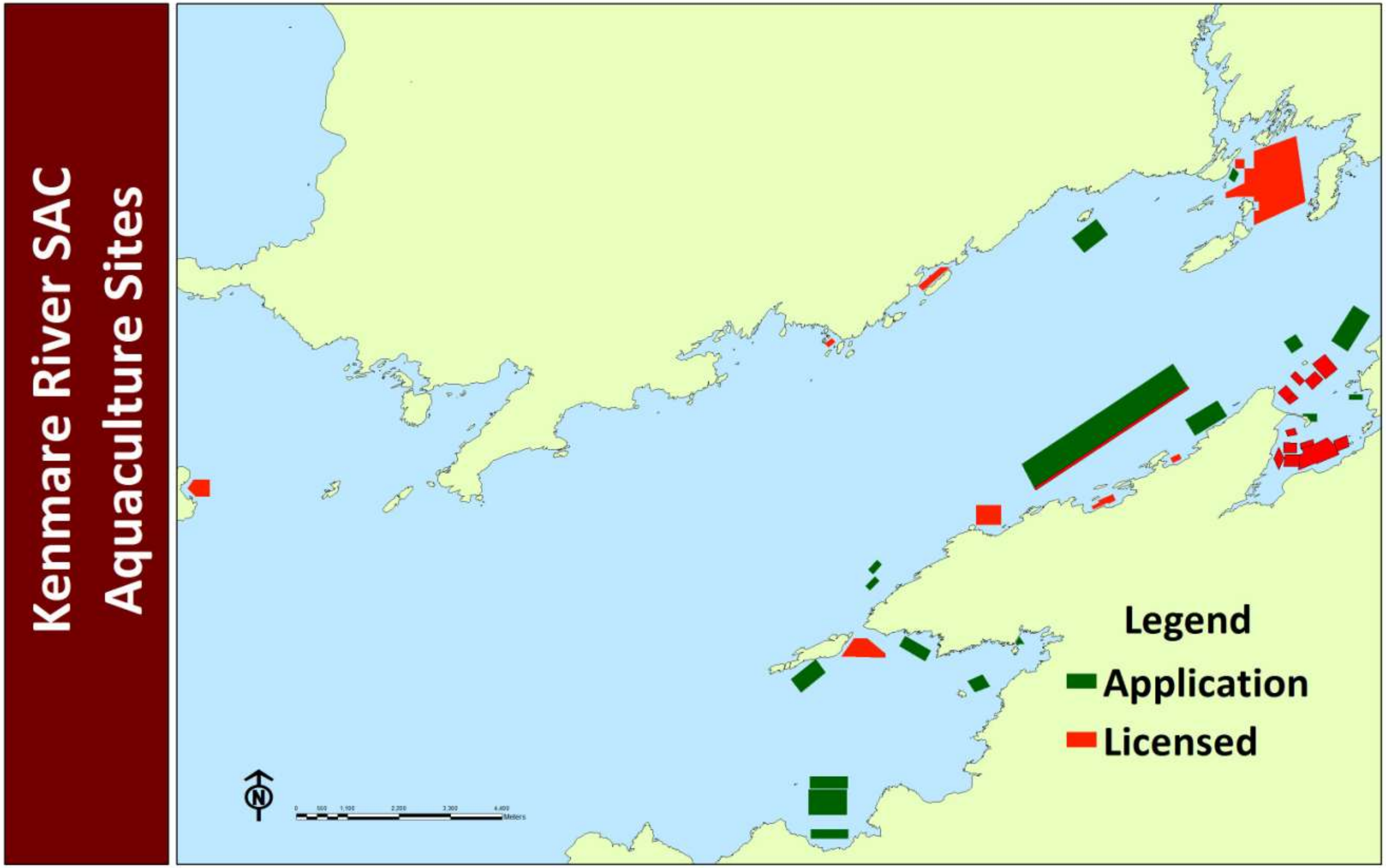


**Figure 5 Aquaculture sites (Licenced and Applications) in western portion of Kenmare River SAC (Site Code 002158).**

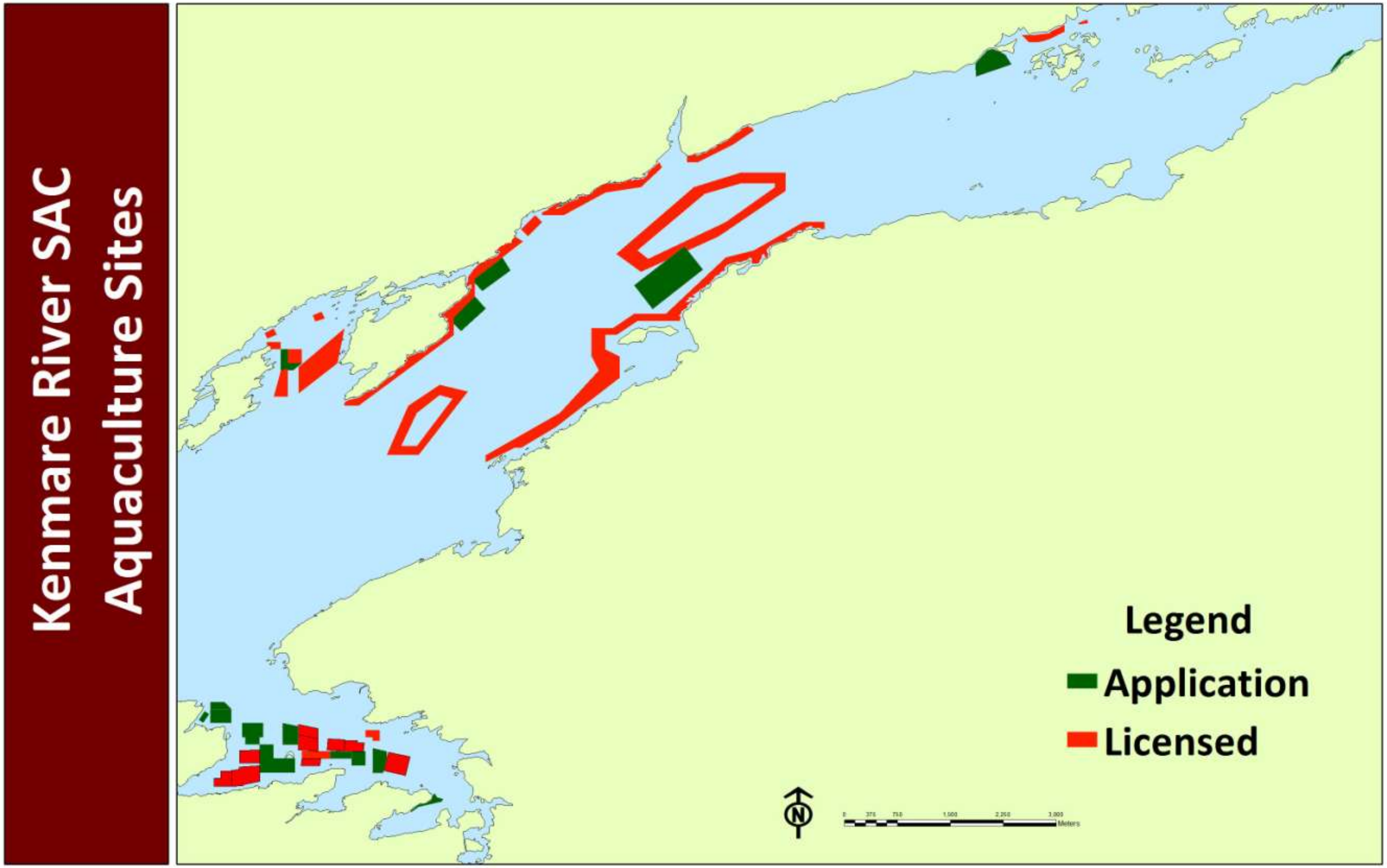


**Figure 6 Aquaculture sites (Licenced and Applications) in eastern portion of Kenmare River SAC (Site Code 002158).**

**Table 3: Spatial extent (ha) of aquaculture activities overlapping with the qualifying interest (1160 Large shallow inlets and bays and 1170 Reefs) in Kenmare River SAC (Site Code 002158), presented according to culture species, method of cultivation and license status.**

| Species | Status | Location | 1160 - Large shallow inlets and Bays 39,322ha | | 1170 – Reefs 9,196ha | |
|---|---|---|---|---|---|---|
| | | | Area (ha) | % Feature | Area (ha) | % Feature |
| Oysters | Licensed | Intertidal | 7.53 | 0.02 | 1.54 | 0.02 |
| Oysters | Application | Intertidal | 27.56 | 0.07 | 44.50 | 0.48 |
| Mussels | Licensed | Subtidal | 46.97 | 0.12 | 41.39 | 0.45 |
| Mussels | Application | Subtidal | 483.48 | 1.23 | 134.43 | 1.46 |
| Finfish | Licensed | Subtidal | 62.67 | 0.16 | 12.13 | 0.13 |
| Finfish | Application | Subtidal | 31.89 | 0.08 | 14.50 | 0.16 |
| Scallops | Licensed | Subtidal | 473.10 | 1.20 | 209.10 | 2.27 |
| Scallops | Application | Subtidal | 1.87 | 4.76E-03 | 1.84 | 0.02 |
| **Totals** | | | **1135.07ha** | **2.88%** | **459.43 ha** | **4.99%** |

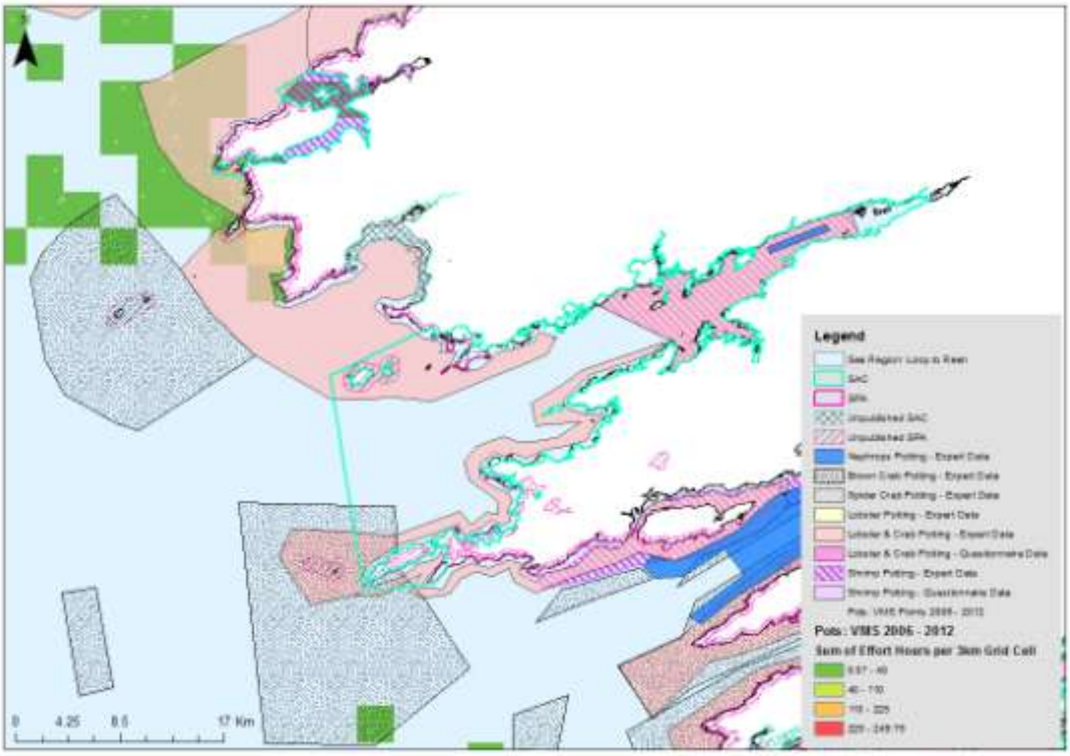


**Figure 7.** Pot fishing activity in the region of Kenmare River SAC


**Figure 8.** Set net fishing activity in the region of Kenmare River SAC

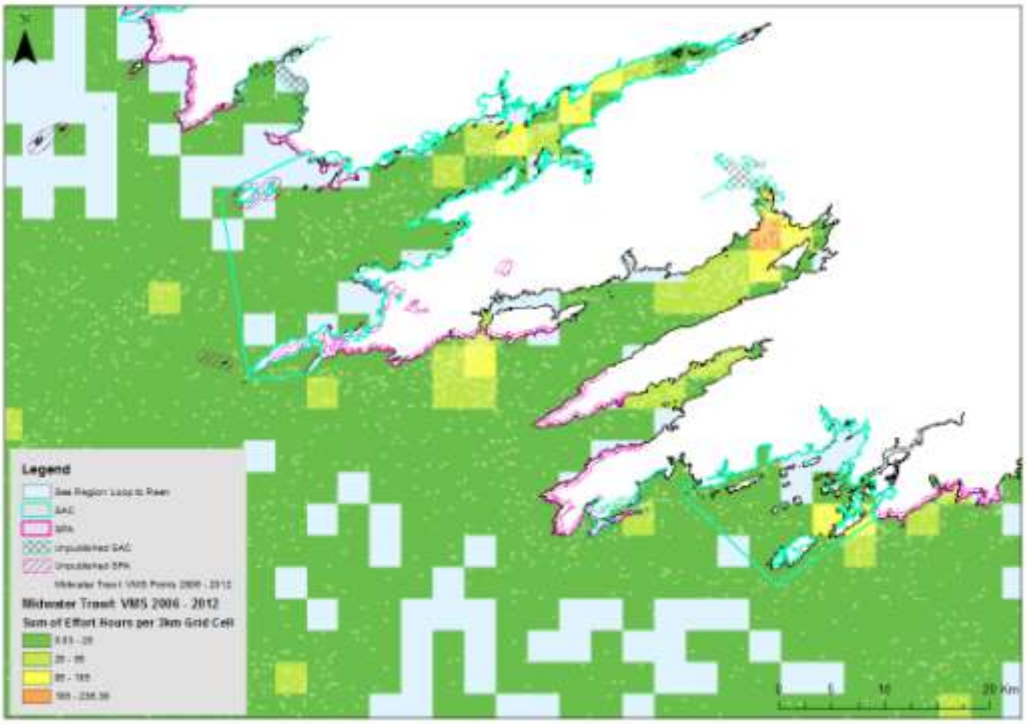


**Figure 9.** Pelagic fishing activity in the region of Kenmare River SAC

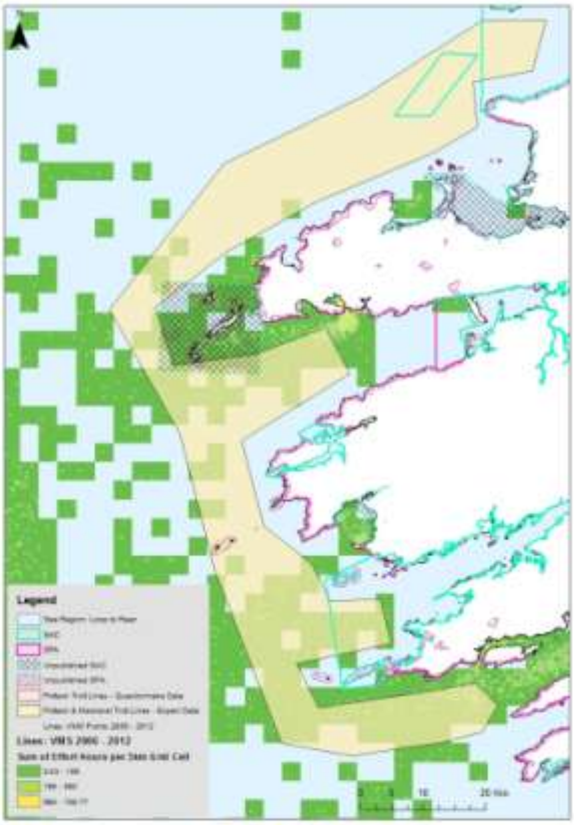


**Figure 10.** Hook and line fishing activity in the region of Kenmare River SAC

# 6. Natura Impact Statement for the Activities

The potential ecological effects of activities on the conservation objectives for the site relate to the physical and biological effects of fishing gears or aquaculture structures and human activities on designated species, intertidal and sub-tidal 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 fishing and aquaculture activities during the lifetime of the proposed plans and projects and the nature of each of these activities in conjunction with the sensitivity of the receiving environment.

## 6.1 Aquaculture

Within the qualifying interest of the Kenmare River SAC, the species cultured are:

- Mussels (*Mytilus edulis*) in suspended culture (Rope culture) in subtidal areas.
- Oysters (*Crassostrea gigas*), in suspended culture (bags & trestles) confined to intertidal areas.
- Scallops (*Pecten maxius*) subtidally on the seafloor.
- Clams (*Ruditapes philippinarum*) on the seafloor intertidally.
- Atlantic salmon (*Salmo salar*) in net pens.

Details of the potential biological and physical effects of these aquaculture activities on the habitat features, their sources and the mechanism by which the impact may occur are summarised in Table 4, below**.** The impact summaries identified in the table are derived from published primary literature and review documents that have specifically focused upon the environmental interactions of mariculture (e.g. Black 2001; McKindsey *et al*. 2007; NRC 2010; O'Beirn *et al* 2012; Cranford *et al* 2012; ABPMer 2013a-h).

Filter feeding organisms, for the most part, feed at the lowest trophic level, usually relying primarily on ingestion of phytoplankton. The process is extractive in that it does not rely on the input of feedstuffs in order to produce growth. Suspension feeding bivalves such as oysters and mussels can modify their filtration to account for increasing loads of suspended matter in the water and can increase the production of faeces and pseudofaeces (non-ingested material) which result in the transfer of both organic and inorganic particles to the seafloor. This process is a component of benthic-pelagic coupling (Table 3). The degree of deposition and accumulation of biologically derived material on the seafloor is a function of a number of factors discussed below.

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

**Suspended Shellfish Culture**: Suspended culture, may result in faecal and pseudo-faecal material falling to the seabed. In addition, the loss of culture species to the seabed is also a possibility. The degree to which the material disperses away from the location of the culture system (longlines or trestles) depends on the density of mussels on the line, the depth of water and the current regime in the vicinity. Cumulative impacts on seabed, especially in areas where assimilation or dispersion of pseudofaeces is low, may occur over time. A number of features of the site and culture practices will govern the speed at which pseudofaeces are assimilated or dispersed by the site. These relate to:

- Hydrography – will govern how quickly the wastes disperse from the culture location and the density at which they will accumulate on the seafloor.
- Turbidity in the water - the higher the turbidity the greater the production of pseudo-faeces and faeces by the filter feeding animal and the greater the risk of accumulation on the seafloor.
- Density of culture – suspended mussel culture is considered a dense culture method with high densities of culture organisms over a small area. The greater the density of organisms the greater the risk of accumulations of material. The density of culture organisms is a function of:
    - depth of the site (shallow sites have shorter droppers and hence fewer culture organisms),
    - the husbandry practices proper maintenance will result in optimum densities on the lines in order to give high growth rates as well as reducing the risk of drop-off of culture animals to the seafloor and sufficient distance among the longlines to reduce the risk of cumulative impacts in depositional areas.

In addition placement of structures associated with mussel culture can influence the degree of light penetration to the seabed. This is likely important for organisms and habitats e.g. Maërl and seagrasses which need sun light for production. Rafts or lines will to a degree limit light penetration to the sea bed and may therefore reduce production of photosynthesising species. However, such effects have not been demonstrated for seagrass.

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

- Hydrography – low current speeds (or small tidal range) may result in material being deposited directly beneath the trestles. If tidal height is high and large volumes of water moved through the culture area an acceleration of water flow can occur beneath the trestles and bags, resulting in a scouring effect or erosion and no accumulation of material.
- Turbidity of water – as with suspended mussel culture, oysters have very plastic response to increasing suspended matter in the water column with a consequent increase in faecal or pseudo-faecal production. Oysters can be cultured in estuarine areas (given their polyhaline tolerance) and as a consequence can be exposed to elevated levels of suspended matter. If currents in the vicinity are generally low, elevated suspended matter can result in increase build-up of material beneath culture structures.
- Density of culture – the density of oysters in a bag and consequently the density of bags on a trestle will increase the likelihood of accumulation on the seafloor. In addition, if the trestles are located in close proximity a greater dampening effect can be realised with resultant accumulations. Close proximity may also result in impact on shellfish performance due to competitive interactions for food.
- Exposure of sites - the degree to which the aquaculture sites are exposed to prevailing weather conditions will also dictate the level of accumulated organic material in the area. As fronts move through culture areas increased wave action will resuspend and disperse material away from the trestles.

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

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

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

**Sub-tidal shellfish culture i.e. Scallops:** This activity involves relaying shellfish on the seabed. There may be increased enrichment due to production of faeces and pseudofaeces in high density cultures. The existing in-faunal community may be changed as a result. Seabed habitat change may also result as a result of dredging during maintenance and harvesting. Uncontained sub-tidal shellfish culture will lead to change in community structure and function through the addition, at high % cover, of an epi-benthic species (living on the seabed) to an infaunal sedimentary community.

The activities associated with this culture practice (dredging of the seabed) are considered disturbing which can lead to removal and/or destruction of infaunal species and changes to sediment composition.

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

Oyster culture poses a risk in terms of the introduction of non-native species as the Pacific oyster (*Crassostrea gigas*) is a non-native species. Recruitment of *C. gigas* has been documented in a number of Bays in Ireland and appears to have become naturalised (i.e. establishment of a breeding population) in two locations (Kochmann et al 2012; 2013) and may compete with the native species for space and food. The culture of large volumes of Pacific oysters may increase the risk of successful reproduction in Kenmare River SAC. The use of triploid (non-reproducing) stock is the main method employed to mange this risk. Furthermore, the introduction of non-native species as 'hitchhikers' on and among culture stock is also considered a risk, the extent of which is dependent upon the duration the stock has spent 'in the wild' outside of Kenmare River. Half-grown stock (15-30g oysters) which would have been grown for extended periods in places (in particular outside of Ireland) present a higher risk. Oysters grown in other bays in Ireland and 'finished' in Kenmare Bay, would not appear to present a risk of introduction of non-native species assuming best practice is applied (e.g. http://invasivespeciesireland.com/cops/aquaculture/). The manila clam, *Ruditapes philippinarum*, has not been cultured in the bay as yet. No record of this species has been recorded in the wild in Ireland since its introduction in 1984.

**Finfish Culture:** Within the Kenmare River SAC there are six (5 licensed, 1 application) marine sites assigned for the culture of salmon (and other finfish). Four of these sites are currently active in the production of salmon (*Salmo salar*).

Finfish culture differs from shellfish culture in that there is an input of feed into the system and as a consequence a net input of organic matter to the system. This material will be found in the system in the form of waste feed (on the seafloor), solid waste (faeces), waste as a consequence of net-cleaning all of which usually accumulates on the seafloor and dissolved material (predominantly fractions rich in nitrogen). For the most part, the majority of organic material builds up on the seabed generally in and around the footprint of the salmon cages with a 'halo' effect evident in areas where dispersion occurs driven by local hydrographic conditions. This is typically referred to a *near-field* effects. Similar to shellfish, the quantity of material that might accumulate on the seabed will be a function of the quantity of fish held in cages, the stage of culture, the health of the fish (unhealthy fish will generally eat less), husbandry practices (are the fish fed too much too quickly?), the physical characteristic of the solid particles and, as mentioned above, hydrographic conditions.

Wildish et al. (2004) and Silvert and Cromey (2001) both summarize the factors (listed above) that govern the level of dispersion of material from the cages to the seafloor. Many of the factors are subsequently incorporated into modelling efforts which are used to predict likely levels of impact. The impact of organic matter on sedimentary seafloor habitat typically evolves after the gradient defined by Pearson-Rosenberg (1978), whereby as the level of organic enrichment increases the communities (macrofaunal species number and abundance) found within the sedimentary habitats will also change. Typically, low levels of enrichment facilitates an increase in species abundance and biomass followed by a decrease in all biological metrics as enrichment increases to a point where azoic conditions prevail and no biota are found. The impact on biota is a consequence of the decrease in oxygen and a build-up of by-products such as ammonia and sulphides brought about by the breakdown of the organic particles which are considered toxic to marine biota. The shift from an oxygenating to reducing environment in the sediment could be such that the effect is mirrored in the water column as well (i.e. reduction in oxygen levels). The output of dissolved material resulting from finfish cages is typically in the form of ammonia, phosphorous and dissolved organic carbon (DOC) originating directly from the culture organisms, or from the feed and/or faecal pellets. Similar to particulate waste, the impact of dissolved material is a function of the extent (intensity) of the activity and properties of the receiving environment (e.g., temperature, flushing time). While elevated levels of nutrient have been reported near fish farms, no significant effect on chlorophyll has been demonstrated (Pearson and Black, 2001).

**Diseases:** It is likely that the first outbreaks of infectious diseases in marine aquaculture operations were caused by pathogens originating in wild hosts and as culture extent and intensity increases the transmission of pathogens (back) to the wild fish stocks is a likely consequence. The result of such pathogen transmission back to wild fish is however unknown, as reports of clinical effects or significant mortality in wild fish populations are largely unavailable. Numerous reviews, models, risk assessments and risk analysis have been carried out or developed in order to determine the potential for disease interaction and pathogen exchange between farmed and wild finfish (OIE 2004, Bricknell *et al*. 2006, DIPNET 2006, Peeler *et al*. 2007). On foot of these outputs there is general acceptance among scientists and managers that pathogens can be transmitted between organisms used in mariculture and those found in the wild and vice-versa (ICES 2013).

The risk of infection in marine organisms, are influenced by a number of environmental factors including temperature, salinity and dissolved oxygen (Grant and Jones 2011), as well as factors particular to the biology of pathogen, e.g., replication rates, virulence. Transmission of pathogens is facilitated by one or a combination of three mechanisms, i.e., horizontal, vertical and vector-borne. Horizontal transmission refers to the direct movement through the water column of a pathogen between susceptible individuals and the open design of most mariculture cages allows the potential for bidirectional transmission of pathogens between wild and captive fish (Johansen *et al.* 2011). Vertical transmission involves the passing of a pathogen with milt or eggs, resulting in infection among offspring. Pathogens can also be spread by a third host or vector. Vectors can include other parasites, fish, piscivorous animals or inanimate objects such as clothing, vessels or equipment.

Disease transmission within culture systems is a primary concern of operators and as a consequence of monitoring and screening, a far greater knowledge base relating to disease causing organisms and their transmission is available relating to cultured stocks rather than wild stocks. As a result of the lack of empirical data relating to diseases specific to wild stocks, it has been difficult to partition population effects in wild-stocks caused by diseases from those caused by other processes (ICES 2010).

Ireland enjoys a high health status (Category 1) in relation to the fish/shellfish on farms, in rivers and lakes and remains free of many diseases that occur in other countries (www.fishhealth.ie). In Ireland, there are programmes in place that govern the movement of (fish and shellfish) stock for on-growing among sites. These movement controls are supported by a risk-based fish health surveillance programme which is operated on a nationwide basis by the Marine Institute, in co-operation with private veterinary practitioners. Ireland is currently free of the following salmonid diseases covered by (Council Directive 2006/88/EC):

- Infectious Salmon Anaemia (ISA)
- Viral Haemorrhagic Septicaemia (VHS)
- Infectious Haematopoetic Necrosis (IHN)
- Gyrodactylosis

Apart from the diseases listed under EU legislation, routine tests are carried out for other diseases found in marine salmonids in Ireland e.g. Pancreas Disease (PD), Infectious Pancreatic Necrosis (IPN), Furunculosis etc. Such diseases are present in Ireland and whilst their control is not covered by legislation, all finfish farmers in the country have agreed to comply with the parameters of a Code of Practice and Fish Health Handbook, jointly agreed between the Marine Institute and the Irish Farmers Association (IFA). These documents cover all aspects of disease prevention and control on Irish fish farms with the twin objectives of minimising disease outbreaks and of dealing with them in a timely and responsible fashion, should they arise. The net outcome should be a decrease in mortality rates on fish farms and a corresponding decrease in potential pathogen transfer to wild stocks. Ensuring the ongoing good health of farmed stocks and the regular monitoring of environmental conditions will also help to minimise the disease impacts which may be caused by infection from wild stocks in the vicinity of the cages.

**Disease Management:** Council Directive 2006/88/EC on animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals form the legislative basis that governs the monitoring and management of disease outbreaks in mariculture operations in Ireland. For diseases not listed in this Directive, a Code of Practice and Fish Health Handbook has been developed jointly by the State and industry with the primary objectives of disease prevention and control.

The adoption of chemotherapeutants and some vaccination programmes have assisted in reducing the abundance and spread of many pathogens. In addition, the principles outlined in the Fish Health Handbook mentioned above such as improved biosecurity practices on farms, fallowing sites to break transmission cycles, disease testing of fish prior to transfer, single year class stocking, coordinating treatments and harvesting within embayments etc have mitigated the transmission of pathogenic organisms.

In summary, it is clear that a number of broad factors govern the transfer of diseases between susceptible organisms. While statistical correlations have been demonstrated in terms of abundance of cultured fish and disease occurrence in wild fishes, extreme caution must apply in terms of applying causality. It is important to note that the only way to determine the link between disease outbreaks in aquaculture installations and detection in wild fish is to empirically measure or observe pathogen transfer. Furthermore, when a risk presents, it not clear if the impact on the wild fish is expressed at the individual and/or population level. While certain effects have been demonstrated at the level of individuals, research has not yet clearly identified or quantified these links at the population level. Disease management programmes operated on a statutory basis by the State and on a voluntary basis by industry *via* Codes of Practice, assist in ensuring that pathogen transfer both to and from farmed fish is kept to a minimum.

**Parasites:** Sea lice are a group of parasitic copepods found on fish worldwide. There are two species of sea lice commonly found on cultured salmonids in marine conditions around the coast of Ireland, *Caligus elongatus* Nordmann, which infests over eighty different species of marine fish, and *Lepeophtheirus salmonis* Krøyer (the salmon louse), which infests only salmon, trout and closely related salmonid species. *L. salmonis*, the salmon louse, is the more serious parasite on salmon, both in terms of its prevalence and effects. It has been reported as a common ecto-parasite of both wild and farmed salmon at sea.

Returning wild salmon have been found to carry an average of 10 or more adult egg bearing females on their return to the Irish coastline (Copley *et al.,* 2005*;* Jackson *et al.,* 2013a) from their feeding grounds in the Atlantic. Having evolved their relationship with salmon and trout over many millennia, the parasite is well adapted to target its host species and it is ubiquitous to all the coastal waters around Ireland and indeed throughout the range of the Atlantic salmon (Jackson *et al.*, 2013b).

Salmon, whether wild or cultured, go to sea from fresh water free of sea lice and only pick up the infestation after they enter the marine phase of their lives. Sea lice infestations can inflict damage to their hosts through their feeding activity on the outside of the host's body by affecting the integrity of the fish’s epithelium, which impairs its osmoregulatory ability and leaves the fish open to secondary infections. In extreme cases this can lead to a reduced growth rate and an increased morbidity in affected individuals.

Marine finfish farms are perceived by certain sectors to be problematic because of the proximity of some operations to river mouths and a concern over the possible impact on wild migratory salmonid fisheries through infestation with sea lice. The studies on the impacts of lice infestation on smolts (Jackson *et al.* 2011, 2013a) suggest that sea lice induced mortality on outwardly migrating smolts is likely a minor and irregular component of marine mortality in the stocks studied. This conclusion is further supported by the finding of no correlation between the presence of aquaculture and the performance of adjacent wild salmon stocks.

**Parasite Management:** Based on the evidence from targeted studies, the information collected as part of the National Sea Lice Monitoring and Control Programme, scientific reports published by the Marine Institute, and in-line with external advice, it is concluded that there is a robust and effective management programme in place in Ireland to control sea lice infestation on farmed fish. Furthermore, there is no empirical evidence to support the suggestion that the fisheries are being adversely affected by unusual levels of sea lice infestation, whether of farmed origin or from other sources.

**Table 4: Potential indicative environmental pressures of aquaculture activities within the qualifying interests (Large shallow inlets and bays (1160), Reefs (1170) and Submerged or partially submerged seacaves (8330)) of the Kenmare River SAC.**

| Activity | Pressure category | Pressure | Potential effects | Equipment | Duration (days) | Time of year | Factors constraining the activity |
|---|---|---|---|---|---|---|---|
| **Aquaculture** | | | | | | | |
| Rope Mussel and other suspended culture methods | Physical | Current alteration | Baffling effect resulting in a slowing of currents and increasing deposition onto seabed changing sedimentary composition | Floats, longlines, continuous ropes (New Zealand system) and droppers | 365 | All year | Location (sheltered location for year round activity) |
| | Biological | Organic enrichment | Faecal and pseudofaecal deposition on seabed potentially altering community composition. Drop-off of culture species. | | | | |
| | | 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 | | | | |
| | | Nutrient exchange | Changes in ammonium and Dissolved inorganic nitrogen | | | | |

| Activity | Pressure category | Pressure | Potential effects | Equipment | Duration (days) | Time of year | Factors constraining the activity |
|---|---|---|---|---|---|---|---|
| | | | resulting in increased primary production. Nitrogen ($N_2$) removal at harvest. | | | | |
| | | Alien species | Introduction of non-native species with culture organism transported into the site | | | | |
| 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 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 | | | | |

| Activity | Pressure category | Pressure | Potential effects | Equipment | Duration (days) | Time of year | Factors constraining the activity |
|---|---|---|---|---|---|---|---|
| | | | populations is compromised. | | | | |
| | | Organic enrichment | Faecal and pseudofaecal deposition on seabed potentially altering community composition | | | | |
| Subtidal Shellfish culture | Physical | Surface disturbance | Abrasion at the sediment surface and redistribution of sediment | Dredge | Once quarterly | Seasonal | Weather for site access. Size of shellfish and market constraints |
| | | Shallow disturbance | Sub-surface disturbance to 25mm | | | | |
| | Biological | Monoculture | Habitat dominated by single species and transformation of infaunal dominated community to epifaunal dominated community. | | | | |
| | | By-catch mortality | Mortality of organisms captured or disturbed during the harvest or process, damage to structural fauna of reefs | | | | |
| | | Non-native species introduction | 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 shellfish populations would likely be compromised. The risk | | | | |

| Activity | Pressure category | Pressure | Potential effects | Equipment | Duration (days) | Time of year | Factors constraining the activity |
|---|---|---|---|---|---|---|---|
| | | | introduction of disease causing organisms by introducing seed originating from the 'wild' in other jurisdictions | | | | |
| | | Nutrient exchange | Increased primary production. $N_2$ removal at harvest or denitrification at sediment surface. | | | | |
| Salmon | Biological | Nutrient exchange | Increased primary production. $N_2$ removal at harvest or denitrification at sediment surface. | | 365 | | Fallow periods when no fish in the cages in the water. |
| | | Organic enrichment | Faecal and waste food on seabed potentially altering community composition | | 365 | | |
| | | Disease risk | Transmission of diseases and parasites between culture organisms and wild stocks and vice-versa. | | 365 | | |
| | | Shading | Prevention of light penetration to seabed potentially impacting light sensitive species | Cages | 365 | | Fallow periods when no fish in the cages in the water. Netting generally removed. |

**Aquaculture and Harbour Seal Interactions:** In relation to Harbour seals (*Phoca vitulina*), less information is available on the potential interactions between the species and the activities in question (see NRC 2009). There has been no targeted research conducted in similar ecosystems that has directly assessed the impact of this type of aquaculture on harbor seals or indeed any other seal populations. There has, however, been considerable research on short-term responses of harbor seals to disturbance from other sources, and these can be used to inform assessments the potential impacts of disturbance from aquaculture activities currently underway and proposed in Kenmare River SAC. These disturbance studies have focused on impacts upon groups of seals that are already ashore at haul-out sites. Sources of potential disturbance have varied widely, and include people and dogs (Allen *et al.*, 1984; Brasseur & Fedak, 2003), recreational boaters (Johnson & Acevedo-Gutierrez, 2007; Lelli & Harris, 2001; Lewis & Mathews, 2000), commercial shipping (Jansen et al., 2006), industrial activity (Seuront & Prinzivalli, 2005) and aircraft (Perry et al., 2002). A harbor seal's response to disturbance may vary from an increase in alertness, movement towards the water, to actual entering into the water, i.e. flushing (Allen et al., 1984) and is typically governed by the location and nature of the disturbance activity. For example, kayaks may elicit a stronger response than power boats (Lewis & Mathews, 2000; Suryan & Harvey, 1999), and stationary boats have been shown to elicit a stronger response than boats moving along a predictable route (Johnson & Acevedo-Gutierrez, 2007). Furthermore, the mean distance at which seals are flushed into the water by small boats and people ranges between 80m and 530m, with some disturbances recorded at distances of over 1000m. In certain areas, these empirical studies have been used to inform management actions in marine protected areas, for example where a 1.5km buffer is set around harbor seal haul-out sites in the Dutch Wadden Sea to exclude recreational disturbance (Brasseur & Fedak, 2003).

Displacement from areas may also result from disturbances attributable to the activities of mariculture workers (Becker et al., 2009; 2011). This disturbance may be caused directly by the presence of workers on intertidal areas. However while disturbance from shellfish culture operations have been observed to influence the distribution of seal within a sheltered embayment, no inference was made on the effect on broader population characteristics of harbour seals from this study (Becker 2011).

Potential interactions between shellfish culture and marine mammals are broadly summarized in Table 5. It should be noted that direct demonstrations of these impacts are rare, and in most cases, potential effects are therefore predicted from the best existing information (NRC, 2010). Furthermore, none of the studies published to explore impacts on marine mammals and in particular Harbour Seals, were specifically designed to detect ecological impacts on this species (NRC 2009; Becker *et al*., 2009, 2011). Even where studies have been carried out around shellfish farms, uncertainty over spatial and temporal variation in both the location of structures (Watson-Capps and Mann, 2005) and levels of disturbance (Becker *et al*., 2009; 2011) constrain the conclusions that can be drawn about the impacts of mariculture on critical life functions such as reproduction and foraging.

Mariculture operations are considered a source of marine litter (Johnson, 2008). Ingestion of marine litter has also been shown to cause mortality in birds, marine mammals, and marine turtles (Derraik, 2002).

Mariculture structures can provide shelter, roost, or haul-out sites for birds and seals (Roycroft *et al*., 2004). This is unlikely to have negative effects on bird or seal populations, but it may increase the likelihood that these species cause faecal contamination of mollusc beds.

Seal interactions with marine finfish cages have been described (Aquaculture Stewardship Council, 2012). The seals (as predators) are attracted to the structures and their contents and have been known to tear netting in attempts to acquire prey items (i.e. cultured finfish). While a risk of entanglement in netting may present, it is not considered likely and the greatest risk is the escape of stocked fishes. In order to mitigate this risk, operators have resorted to the use of deterrent devices (Acoustic or Harassment) which have variable results based upon the location, extent of use and mammals targeted. However, deterrent devices are now considered detrimental to seals and alternative management actions are advised (Nelson 2004; Aquaculture Stewardship Council 2012). Therefore, careful stock management (density control and regular removal of mortalities from cages), use of seal blinds and appropriate net tensioning are all considered suitable methods to minimise negative interactions between seals and finfish culture. Lethal actions to remove seals are only allowed under licence, the criteria which are determined by NPWS (Section 42 of the Wildlife Act, 1976 (as amended).

The Kenmare River is deemed important both on a regional and on a national scale regarding its Harbour Seal population. The overall Harbour Seal numbers (population) has been stable or increasing between 2003 and 2012 (NPWS data) coincident with static levels of mariculture production. While no definitive conclusions can be drawn regarding the population status of harbour seals in the Kenmare River and more widely around Ireland, based upon survey reports from 2009-2011 (as no baseline reference values are provided), it would appear that the levels both regionally and nationally are stable or possibly increasing (see Figure 2 in NPWS 2012).

## 6.2 Fisheries

Fisheries using bottom contacting mobile gears cause physical abrasion and disturbance pressure to marine habitats in Kenmare River. These include bottom trawling on sedimentary habitats and dredging in mixed sediments and at the edge of reef for scallop. Pot fisheries and static net fisheries may cause localized abrasion and disturbance to habitats which may be significant for habitats that are highly sensitive to such pressures. All fisheries extract fish biomass which may reduce habitat quality for designated species such as otter and harbour seals. Harbour seals and otters may be caught as by-catch in certain gears such as pelagic trawls and trammel nets set for bait in shallow water.

## 6.3 In-combination activities

Other activities leading to potential impacts on conservation features relate to harvest of seaweed on intertidal reef communities. There is little known concerning the level of harvest from these intertidal reef communities. The impact is likely two-fold, direct impact upon the reefs by removal of a constituent species and impact upon intertidal sediments as a consequence of travel across the shore to the harvest sites.

Seal watching cruises are conducted in Kenmare. Given the nature of this activity it is unlikely that they will result in extensive disturbance to seal species.

There are a number of activities which are terrestrial in origin that might result in impacts on the conservation features of the Kenmare River SAC. Primary among these are point source discharges from municipal and industrial units (Shellfish Pollution Reduction Programme, DECLG). There are five urban waste water treatment plants in the general vicinity of the SAC. These are found in Ardgroom, Kenmare, Sneem, Kilgarvan, Eyeries. The pressure derived from these facilities is a discharge that may impact upon levels of dissolved nutrients, suspended solids and some elemental components e.g. aluminium in the case of water treatment facilities.

**Table 5: Potential interactions between aquaculture activities and the Annex II species Harbour Seal (*Phoca vitulina*) within the Kenmare River SAC.**

| Culture Method | Pressure category | Pressure | Potential effects | Equipment | Duration (days) | Time of year | Factors constraining the activity |
|---|---|---|---|---|---|---|---|
| **All Aquaculture Methods** | Physical | Habitat Exclusion | Structures may result in a barrier to movement of seals. | Net pens, Bags and trestles | 365 | All year | Spatial extent and location of structures used for culture. |
| | | Disturbance | Ancillary activities at sites increase the risk of disturbance to seals at haul out sites (resting, breeding and/or moulting) or in the water. | Site services, human, boat and vehicular traffic | 365 | All year | Seasonal levels of activity relating to seeding, grading, and harvesting. Peak activities do no coincide with more sensitive periods for seals (i.e. pupping and moulting) |
| | | Entanglement | Entanglement of seals from ropes or material used on structures or during operation of farms | Trestles, bags, ropes and/or nets used in day to day | 365 | All year | Farm management practices |
| | | Ingestion | Ingestion of waste material used on farm | Ties used to secure bags and secure bags to trestle | 365 | All year | Farm management practices |
| | | Deterrent Methods | Seals interfering with cages will result in deterrent actions, e.g. use of Acoustic deterrent or harassment Devices. If all non lethal avenues fail then lethal methods may be employed (under licence). | ADDs and lethal devices (shooting) | 365 | | Fallow periods no fish on-site |

**Table 6: Potential pressures caused by fisheries in the Kenmare River SAC.**

| METIER/ ACTIVITY | PRESSURE CATEGORY | PRESSURE | POTENTIAL EFFECTS | FISHING GEARS OR AQUACULTURE EQUIPMENT | DURATION (DAYS) | TIME OF YEAR | FACTORS CONSTRAINING THE ACTIVITY |
|---|---|---|---|---|---|---|---|
| Potting,for shrimps | Physical | Surface disturbance | Abrasion at the sediment surface | Shrimp pots | 240 | August to March | catch rate, weather, market |
| | Biological | Extraction | Removal of shrimp | | | | |
| | | By-catch | Mortality of species in by-catch | | | | |
| Lobster and crab potting | Physical | Surface disturbance | Abrasion at the sediment surface | Soft eye side entrance creels and top entrance pots | Approx 240 | Mainly March to October | catch rate, weather, market |
| | Biological | Extraction | Removal of lobster and crab | | | | |
| | | By-catch | Mortality of species in by-catch | | | | |
| Tangle netting | Physical | Surface disturbance | Abrasion at the sediment surface | Tangle nets | Unknown | Mainly May to Sept | catch rate, weather, |
| | Biological | Extraction | Removal of crayfish and other commercial fish species | | | | |
| | | By-catch | Potential by-catch of designated species grey seal, porpoise and otter. | | | | |

| METIER/ ACTIVITY | PRESSURE CATEGORY | PRESSURE | POTENTIAL EFFECTS | FISHING GEARS OR AQUACULTURE EQUIPMENT | DURATION (DAYS) | TIME OF YEAR | FACTORS CONSTRAINING THE ACTIVITY |
|---|---|---|---|---|---|---|---|
| Dredging for scallops | Physical | Surface disturbance | Abrasion at the sediment surface | Fixed toothed dredges (DRB), ICES code 04.1.1 | unknown | Mainly winter and spring | catch rate, weather, market, spatial closures |
| | | Shallow disturbance | Sub-surface disturbance to 25mm | | | | |
| | Biological | Extraction | Removal of scallops | | | | |
| | | By-catch mortality | Mortality of organisms captured or disturbed during the fishing process, damage to structural fauna of reefs | | | | |
| Midwater (pelagic) trawling | Biological | Extraction | Removal of pelagic fish (Herring and sprat) | Pelagic trawls, OTM, ICES 03.2.1. | Unknown | Sept to March | Fish biomass |
| | | By-catch | Potential by-catch of designated species harbour seal and otter. | | | | |
| Hook and line pelagic | Biological | Extraction | Removal of pelagic and demersal fish | Hooks and lines, LHP, ICES 09.1.0, LHM, ICES 09.2.0, LTL, ICES 09.6.0 | Unknown | Summer, Autumn | Quota, weather |
| Bottom set tangle nets | Physical | Surface disturbance | Abrasion at the sediment surface | Gill nets, GNS, ICES 07.1.0 | Unknown | All year | weather |

| METIER/ ACTIVITY | PRESSURE CATEGORY | PRESSURE | POTENTIAL EFFECTS | FISHING GEARS OR AQUACULTURE EQUIPMENT | DURATION (DAYS) | TIME OF YEAR | FACTORS CONSTRAINING THE ACTIVITY |
|---|---|---|---|---|---|---|---|
| | Biological | Extraction | Removal of demersal fish | | | | |
| | | By-catch | Potential by-catch of designated species harbour seal and otter. | | | | |
| Mixed fisheries demersal trawling | Physical | Surface disturbance | Abrasion at the sediment surface | Demersal single bottom otter trawls (OTB, ICES code 03.1.2 | Unknown | All year | Weather, quota restrictions |
| | | Shallow disturbance | Sub-surface abrasion by trawl doors | | | | |
| | Biological | Extraction | Removal of fish | | | | |
| | | By-catch mortality | Mortality of organisms in contact with fishing gear | | | | |
| | | | | | | | |
| Trammel nets (bait fishery) | Physical | Surface disturbance | Abrasion on sediment surface or on reefs | GTR, ICES 07.5.0 | Unknown | All year | Availability and price of bait |
| | Biological | Extraction | Removal of non-commercial fish species | | | | |
| | | By catch | Potential catch of designated species otter and harbour seal | | | | |

# 7. Screening of Aquaculture Activities

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

In this assessment screening of the qualifying interests against the proposed activities is based primarily on spatial overlap i.e. if the qualifying interests overlap spatially with the proposed activities then significant impacts due to these activities on the conservation objectives for the qualifying interests is not discounted (not screened out) except where there is absolute and clear rationale for doing so. Where there is relevant spatial overlap full assessment is warranted. Likewise if there is no spatial overlap and no obvious interaction is likely to occur, then the possibility of significant impact is discounted and further assessment of possible effects is deemed not to be necessary. Table 2 provides spatial overlap extent between designated habitat features and aquaculture activities within the qualifying interests of the Kenmare River SAC.

## 7.1 Aquaculture Activity Screening

- The marine habitat Submerged or Partially Submerged Seacaves (8330) has no spatial overlap with (existing and proposed) aquaculture activities.
- Table 2 highlights the spatial overlap between (existing and proposed) aquaculture activities and both habitat features (i.e. Large Shallow Inlet and Bay and Reefs).
- Tables 6 and 7 provide an overview of overlap of aquaculture activities and specific community types (identified from Conservation Objectives) within the broad habitat features 1160 and 1170, respectively.

Where the overlap between an aquaculture activity and a feature is zero it is screened out and not considered further. Therefore, the feature **Submerged or partially submerged sea caves (8330)** is excluded from further consideration in this assessment.

Furthermore, if the aquaculture activity occurs within the SAC but does not overlap a keystone community[8] habitat type or overlap with a feature of interest then they are excluded from further assessment.

Therefore, the following habitats and one species are also excluded from further consideration in this assessment:

- **1014 Marsh Snail *Vertigo angustior***
- **1303 Lesser Horseshoe Bat *Rhinolophus hipposideros***

[8] NPWS 2013. Kenmare River SAC (site code: 2158)-Conservation objectives supporting document - Marine habitats and species. Version 1 March 2013

- **1220 Perennial vegetation of stony banks**
- **1230 Vegetated sea cliffs of the Atlantic and Baltic coasts**
- **1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)**
- **1410 Mediterranean salt meadows (*Juncetalia maritimi*)**
- **2120 Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")**
- **2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)**
- **4030 European dry heaths**
- **6130 Calaminarian grasslands of the *Violetalia calaminariae***

Furthermore, of the 11 community types (see Table 1) listed under the two habitat features (1160 and 1170), two (**Intertidal Mobile Sand Community Complex and Shingle**) have no spatial overlap between them and any aquaculture activities. In one instance, the community type **Shingle** appears to overlap with subtidal scallop aquaculture; however, this is considered a mapping anomaly and therefore, the spatial overlap is concluded as nil. On this basis, the community types, **Intertidal Mobile Sand Community Complex** and **Shingle** are excluded from further analysis of aquaculture interactions.

A number of aquaculture operations and applications within **Ardgroom Harbour and Killmackillogue Harbour** that do not overlap with features of interest and/or keystone communities are excluded from further analysis and are considered not to have a significant impact on habitat conservation features.

When overlap was observed it was quantified in a GIS application and presented on the basis of coverage of specific activity (representing different pressure types), licence status (licenced or application) intersecting with designated conservation features and/or sub-features (community types).

**Table 6:** Habitat utilisation i.e. spatial overlap in hectares and percentage (given in parentheses) of aquaculture activity over relevant community types within the qualifying interest 1160 - Large shallow inlets and bays (Spatial data based on licence database provided by DAFM. Habitat data provided in NPWS 2013a. 2013b).

| | | | **1160 – Large shallow inlets and bays** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Culture Type | Location | Status | Coarse sediment dominated by polychaetes comm. Complex 8,314ha | Fine to medium sand with crustaceans and polychaetes comm. Complex 1,989ha | Intertidal reef comm. Complex 526ha | *Laminaria* dominated comm. Complex 3,358ha | Muddy fine sands dominated by polychaetes and *Amphiura filiformis* comm. Complex 20,150ha | Subtidal reef with echinoderms and faunal turf comm. Complex 4,808ha | *P. multiplicatus* Comm. Complex 6ha | Maerl 47ha | *Zostera* *20ha* |
| Mussel (*Mytilus edulis*) on ropes | Subtidal | L | 17.53 (0.2) | 8.08 (0.4) | 0.03 (5.05E-03) | 13.44 (0.4) | 4.29 (0.02) | 3.61 (0.08) | - | - | - |
| Mussel (*Mytilus edulis*) on ropes | Subtidal | A | 255.88 (3.1) | 45.02 (2.36) | - | 31.97 (0.95) | 57.82 (0.29) | 92.79 (1.93) | - | - | - |
| Scallops (*Pecten maximus*) on seabed | Subtidal | L | 37.85 (0.46) | 20.15 (1.01) | 0.78 (0.15) | 199.15 (5.93) | 186.21 (0.92) | 9.15 (0.19) | 6.23 (100.00) | 13.06 (27.89) | 0.50 (2.52) |
| Scallops (*Pecten maximus*) on seabed | Subtidal | A | 0.47 (0.01) | - | - | 1.39 (0.04) | - | - | - | - | - |
| Oysters (*Crassostrea gigas*) in bags & trestles | Intertidal | L | - | - | 0.80 (0.15) | 0.71 (0.02) | 5.99 (0.03) | 0.03 (5.88E-04) | - | - | - |
| Oysters (*Crassostrea gigas*) in bags & trestles | Intertidal | A | - | 4.15 (0.21) | 0.37 (0.07) | 15.47 (0.46) | 22.9 (0.11) | 1.66 (0.03) | - | - | 3.61 (18.05) |
| Salmon (*Salmo salar*) in net pens | Subtidal | L | 46.28 (0.56) | 4.31 (0.22) | - | 5.45 (0.16) | - | 6.62 (0.14) | - | - | - |
| Salmon (*Salmo salar*) in net pens | Subtidal | A | - | 1.68 (0.08) | - | 4.63 (0.14) | 15.66 (0.08) | 9.92 (0.21) | - | - | - |
| **Totals** | | | **358.01 (4.31)** | **83.39 (4.19)** | **1.98 (0.38)** | **272.75 (8.1)** | **292.87 (1.45)** | **123.78 (2.57)** | **6.23 (100.00)** | **13.06 (27.89)** | **4.11 (20.55)** |

**Table 7:** Habitat utilisation i.e. spatial overlap in hectares and percentage (given in parentheses) of Aquaculture activity over relevant community types within the qualifying interest 1170 - Reefs (Spatial data based on licence database provided by DAFM. Habitat data provided in NPWS 2013a, 2013b).

| | | | **1170 - Reefs** | | |
|---|---|---|---|---|---|
| **Culture Type** | **Location** | **Status** | **Intertidal reef community complex** 681ha | ***Laminaria* - dominated community complex** 3678ha | **Subtidal reef with echinoderms and faunal turf community complex** 4838ha |
| Mussel (*Mytilus edulis*) on ropes | Subtidal | L | - | 37.74 (1.02) | 3.59 (0.07) |
| Mussel (*Mytilus edulis*) on ropes | Subtidal | A | - | 35.92 (0.97) | 98.34 (2.03) |
| Scallops (*Pecten maximus*) on seabed | Subtidal | L | 0.78 (0.11) | 198.93 (5.41) | 9.13 (0.19) |
| Scallops (*Pecten maximus*) on seabed | Subtidal | A | - | 1.82 (0.05) | - |
| Oysters (*Crassostrea gigas*) in bags & trestles | Intertidal | L | 0.80 (0.12) | 0.71 (0.02) | - |
| Oysters (*Crassostrea gigas*) in bags & trestles | Intertidal | A | 2.94 (0.43) | 18.59 (0.51) | 1.66 (0.03) |
| Salmon (*Salmo salar*) in net pens | Subtidal | L | 0 | 5.47 (0.15) | 6.61 (0.14) |
| Salmon (*Salmo salar*) in net pens | Subtidal | A | 0 | 4.62 (0.13) | 9.91 (0.21) |
| | | | **4.52 (0.66)** | **303.8 (8.26)** | **129.24 (2.67)** |

# 8. Assessment of Aquaculture Activities

## 8.1 Determining significance

The significance of the possible effects of the proposed activities on habitats, as outlined in the Natura Impact Statement (Section 6) and subsequent screening exercise (Section 7), is determined here in the assessment. The significance of effects is determined on the basis of Conservation Objective guidance for constituent habitats and species (Figures 1, 2 and NPWS 2013a, 2013b).

Within the Kenmare River SAC the qualifying habitats/species considered subject to potential disturbance and therefore, carried further in this assessment are:

- 1160 Large shallow inlets and bays
- 1170 Reefs
- 1355 Otter - *Lutra lutra*
- 1365 Common (Harbour) seal - *Phoca vitulina*

Habitats and species that are key contributors to biodiversity and which are sensitive to disturbance should be afforded a high degree of protection i.e. thresholds for impact on these habitats is low and any significant anthropogenic disturbance should be avoided. In the Kenmare River SAC these habitats/species include:

- *Zostera* –dominated community
- Maerl – dominated community
- *Pachycerianthus multiplicatus* community

For broad habitats and community types (Figures 1 and 2) significance of impact is determined in relation to, first and foremost, spatial overlap (see Section 7; Tables 6 and 7). Subsequent disturbance and the persistence of disturbance are considered as follows:

1. <u>The degree to which the activity will disturb the qualifying interest.</u> By disturb is meant change in the characterising species, as listed in the Conservation Objective guidance (NPWS 2013b) for constituent communities. The likelihood of change depends on the sensitivity of the characterising species to the activities in question. Sensitivity results from a combination of intolerance to the activity and/or recoverability from the effects of the activity (see Section 8.2 below).

2. <u>The persistence of the disturbance in relation to the intolerance of the community</u>. 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. <u>The area of communities or proportion of populations disturbed.</u> In the case of community disturbance (continuous or ongoing) of more than 15% of the community area it is deemed

to be significant. This threshold does not apply to sensitive habitats as listed above (*Zostera*, Maerl) where any spatial overlap of activities should generally be avoided.

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

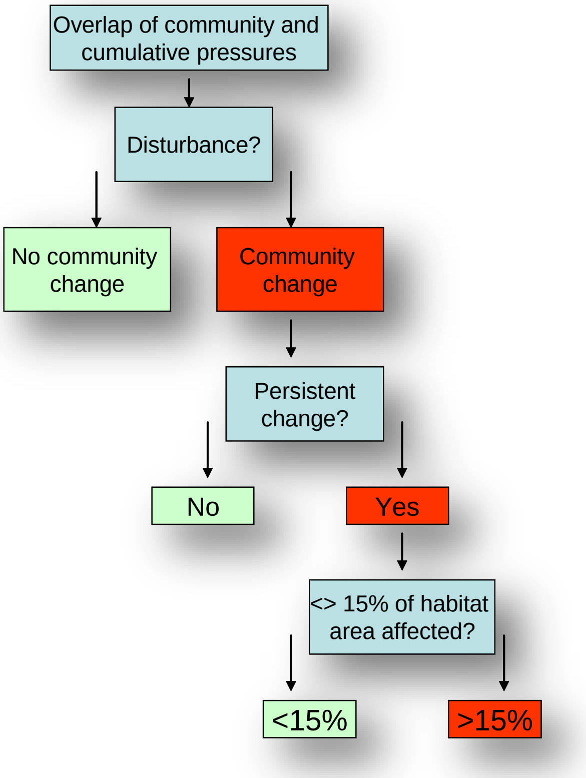


**Figure 11: Determination of significant effects on community distribution, structure and function for sedimentary habitats (following NPWS 2013b).**

In relation to designated species (Harbour Seal, Otter) the capacity of the population to maintain itself in the face of anthropogenic induced disturbance or mortality at the site will need to be taken into account in relation to the Conservation Objectives (CO's) on a case by case basis.

## 8.2 Sensitivity and Assessment Rationale

This assessment used a number of sources of information in assessing the sensitivity of the characterising species of each community recorded within the habitat features of the Kenmare River SAC. One source of information is a series of commissioned reviews by the Marine Institute which identify habitat and species sensitivity to a range of pressures likely to result from aquaculture and fishery activities (ABPMer 2013a-h). These reviews draw from the broader literature, including the MarLIN Sensitivity Assessment (Marlin.ac.uk) and the AMBI Sensitivity Scale (Borja et al., 2000) and other primary literature. It must be noted that NPWS have acknowledged that given the wide range of community types that can be found in marine environments, they application of conservation targets to these would be difficult (NPWS 2013b). On this basis, they have proposed broad community complexes as management units. These complexes (for the most part) are very broad in their description and do not have clear surrogates which might have been considered in targeted studies and thus reported in the scientific literature. On this basis, the confidence assigned to likely interactions of the community types with anthropogenic activities are by necessity relatively low, with the exception of community types dominated by sensitive taxa, e.g. Mearl and *Zostera*. Other literature cited in the assessment does provide a greater degree of confidence in the conclusions. For example, the output of a recent study has provided greater confidence in terms of assessing likely interactions between intertidal oyster culture and community types (Forde et al submitted). Sensitivity of a species to a given pressure is the product of the intolerance (the susceptibility of the species to damage, or death, from an external factor) of the species to the particular pressure and the time taken for its subsequent recovery (recoverability is the ability to return to a state close to that which existed before the activity or event caused change). Life history and biological traits are important determinants of sensitivity of species to pressures from aquaculture.

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

- For persistent pressures i.e. activities that occur frequently and throughout the year recovery capacity may be of little relevance except for species/communities 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 2013a).
- In the case of episodic pressures i.e. activities that are seasonal or discrete in time both the intolerance and recovery components of sensitivity are relevant. If sensitivity is high but recoverability is also high relative to the frequency of application of the pressure then the species/habitat/community will be in favourable conservation status for at least a proportion of time.

The sensitivities of the community types (or surrogates) found within the Kenmare River SAC to pressures similar to those caused by aquaculture (e.g. smothering, organic enrichment and physical disturbance) are identified in Table 8. The sensitivities of species which are characteristic (as listed in the Conservation Objective supporting document) of benthic communities to pressures similar to those caused by aquaculture (e.g. smothering, organic enrichment and physical disturbance) are identified, where available, in Table 9. The following guidelines broadly underpin the analysis and conclusions of the species and habitat/community type sensitivity assessment:

- Sensitivity of certain taxonomic groups such as emergent sessile epifauna to physical pressures is expected to be generally high or moderate because of their form and structure (Roberts *et al.* 2010). Also high for those with large bodies and with fragile shells/structures, but low for those with smaller body size. Body size (Bergman and van Santbrink 2000) and fragility are regarded as indicative of a high intolerance to physical abrasion caused by fishing gears (i.e. dredges). However, even species with a high intolerance may not be sensitive to the disturbance if their recovery is rapid once the pressure has ceased.
- Sensitivity of certain taxonomic groups to increased sedimentation is expected to be low for species which live within the sediment, deposit and suspension feeders; and high for those sensitive to clogging of respiratory or feeding apparatus by silt or fine material.
- Recoverability of species depends on biological traits (Tillin *et al.* 2006) such as reproductive capacity, recruitment rates and generation times. Species with high reproductive capacity, short generation times, high mobility or dispersal capacity may maintain their populations even when faced with persistent pressures; but such environments may become dominated by these (r-selected) species. Slow recovery is correlated with slow growth rates, low fecundity, low and/or irregular recruitment, limited dispersal capacity and long generation times. Recoverability, as listed by MarLIN, assumes that the impacting factor has been removed or stopped and the community type 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 & Desrocher, 2004) cited in Hall *et al*., 2008).,

## 8.3 Assessment of the effects of aquaculture production on the Conservation Objectives for habitat features in the Kenmare River SAC.

Aquaculture pressures on a given habitat are related to vulnerability (spatial overlap or exposure of the habitat to the equipment/culture organism combined with the sensitivity of the habitat) to the pressures induced by culture activities. To this end, the location and orientation of structures associated with the culture organism, the density of culture organisms, the duration of the culture activity and the type of activity are all important considerations when considering risk of disturbance to habitat features and species.

The constituent communities identified in the Annex 1 feature, **Large Shallow Inlets and Bays (1160)**) are:

1. Intertidal mobile sand community complex (No overlap with aquaculture)
2. *Zostera*-dominated community
3. Maerl-dominated community
4. *Pachycerianthus multiplicatus* community
5. Muddy fine sands dominated by polychaetes and *Amphiura filiformis* community complex
6. Fine to medium sand with crustaceans and polychaetes community complex
7. Coarse sediment dominated by polychaetes community complex

8. Shingle (No overlap with aquaculture)
9. Intertidal reef community complex
10. *Laminaria*-dominated community complex
11. Subtidal reef with echinoderms and faunal turf community complex

For Large Shallow Inlets and Bays (1160) there are a number of attributes (with associated targets) relating to this habitat feature as well as its constituent community types;

1. **Habitat Area** – it is unlikely that the activities proposed will reduce the overall extent of permanent habitat within the feature Large Shallow Inlet and Bays. The habitat area is likely to remain stable.
2. **Community Distribution - (conserve a range of community types in a natural condition).**

   This attribute considered interactions with 8 of the community types listed above and exclude three sensitive communities (i.e., *Zostera*-dominated community, Maerl-dominated community and *Pachycerianthus multiplicatus* community). Of the 8 communities, 2 have no overlap with aquaculture activities. Therefore, the following 6 community types, found within the qualifying interest 1160 of the SAC have overlap with aquaculture activities:

   1. Muddy fine sands dominated by polychaetes and *Amphiura filiformis* community complex
   2. Fine to medium sand with crustaceans and polychaetes community complex
   3. Coarse sediment dominated by polychaetes community complex
   4. Intertidal reef community complex
   5. *Laminaria*-dominated community complex
   6. Subtidal reef with echinoderms and faunal turf community complex

   The community types listed above will be exposed to differing ranges of pressures from aquaculture activities. Some of these may result in more chronic and long term changes in community composition which were considered during the assessment process. Such activities in dredging for scallop which will result in physical disturbance to infanal communities and longline mussel culture and finfish farming which results in organic loading on the seabed resulting in biogeochemical changes to sediment and a likely change in faunal compositions – whether this results in permanent change to the community type is unclear. Table 8, where possible, lists the community types (or surrogates) and Table 9 lists the constituent taxa and both provide a commentary of sensitivity to a range of pressures. The risk scores in Table 8 and 9 are derived from a range of sources identified above. The pressures are listed as those likely to result from the primary aquaculture activities carried out in the Kenmare River SAC. Aquaculture activities in the Kenmare River SAC comprises of both finfish and shellfish production. Considered in the assessment are intertidal oyster culture (bag and trestle), subtidal scallop on-bottom culture, intertidal clam on-bottom culture, subtidal (suspended) rope mussel culture, and Atlantic salmon culture in net pens.

Table 11 below identify the likely interactions between the relevant aquaculture activities and the broad habitat feature (1160) and their constituent community types, with a broad conclusion and justification on whether the activity is considered disturbing to the feature in question. It must be noted that the sequence of distinguishing disturbance is as highlighted above, whereby activities with spatial overlap on habitat features are assessed further for their ability to cause persistence disturbance on the habitat. If persistent disturbance is likely then the spatial extent of the overlap is considered further. If the proportion of the overlap exceeds a threshold of 15% disturbance of the habitat (or each constituent community type) then any further licencing should be informed by interdepartmental review and consultation (NPWS 2013b). While some activities (e.g. suspended mussel culture, intertidal clam culture and salmon cage culture) might result in long-term change to the 6 community types identified above; in all cases, no activity (individually or combined) extends beyond 15% of the community type (Tables 6 and 11). In addition, combined activities listed overlap with 2.88% of habitat feature (1160) Large Shallow Inlet and Bay (Table 3). On the basis of targeted research (Forde et al, Submitted) and the fact that intertidal oyster culture on trestles is considered non-disturbing to both sedimentary communities and intertidal reef communities, further assessment (i.e. spatial analysis) is not required.

**3. Community Extent and Structure – focusing upon Mearl, *Zostera* and *Pachycerianthus multiplicatus* communities**

The focus of these attributes are primarily upon the 3 community types, *Zostera*-dominated community, Maerl-dominated community and *Pachycerianthus multiplicatus* community. These communities are considered highly diverse and sensitive community types which host a wide range of taxa. The ‘keystone’ species in each community type (Maerl and *Zostera*) is considered important and sensitive in their own right. It should be noted that maerl beds exist within Ardgroom and Killmakilloge Harbours, which are not within the qualifying interest (i.e. 1160 Large shallow inlets and bays or 1170 Reefs). However, as these maerl beds are still within the SAC boundary and are listed in Annex V of the Habitats Directive they must be afforded protection and maintained in favourable conservation status.

The Kenmare River is one of a very small number of sites within Europe where the large tube building anthozoan *Pachycerianthus multiplicatus* is known to occur. This community is found in coarse sediment dominated by a polychaete community complex. The anthozoan itself resides in a large tube which is known to provide a variety of micro niches thus resulting in localised increases in biodiversity. *P. multiplicatus* is listed in the UK Biodiversity Action Plan as a species of conservation concern (Biodiversity Steering Group, 1995). According to (Wilding & Wilson, 2009) the species is deemed nationally rare, and due to its limited, fragmented distribution, populations are likely to be of global importance.

Given the highly sensitive natures of these community types and constituent taxa (Table 8 and 9) it is highly likely that aquaculture activities of any type which overlap these community type and the pressures may result in long-term or permanent change to the extent of these community types and the impact upon their structure and function cannot be discounted. This effect will come about by the physical removal or damage caused by the activities on any of the highly diverse taxa associated with these community types (Table 11). In addition, the impact of the placement of large numbers of scallop seed on seagrass beds and subsequent harvest by scuba diving is uncertain, in the absence of information on the nature of the diving operation (exact method of extraction).

The constituent communities identified in the Annex 1 feature **Reefs (1170)** are:

1. Intertidal reef community complex
2. *Laminaria*-dominated community complex
3. Subtidal reef with echinoderms and faunal turf community complex

Similar to Large Shallow Inlets and Bays (1160) there are a number of attributes (with associated targets) relating to Reef (1170) habitat features as well as associated constituent community types;

1. **Distribution and Habitat area:** The aquaculture activities in question will not, by virtue of the pressures associated with them, impact on the broad distribution of reef structures and reduce the area of these features within the SAC.
2. **Community Structure:** The intertidal reef community, which is extensive within the SAC, is dominated by brown algal species with red algae and a faunal aspect typical of the rocky intertidal (i.e. gastropods, anemones and sponges). The subtidal rocky communities are dominated by large macro algae (kelp) and faunal turf (anthozoans, echinoderms, hydrozoans and sponges).

   Table 8 lists the community (or surrogates) and Table 9 lists the constituent taxa and both provide a commentary of sensitivity to a range of pressures. The risk scores are derived from a range of sources identified above. The pressures are listed as those likely to result from the primary aquaculture activities carried out in the Kenmare River SAC. Aquaculture activities in the Kenmare River SAC comprises of both finfish and shellfish production. Considered in the assessment are intertidal oyster culture (bag and trestle), subtidal scallop on-bottom culture, intertidal clam on-bottom culture, subtidal (suspended) rope mussel culture, and Atlantic salmon culture in net pens.

   Suspended culture activities of finfish and rope mussel can lead to organic enrichment and exclusion of taxa on any reef community type (as well 1170), thus impacting upon community structure and hence, function. In addition, scallop culture on the seabed is unlikely to occur on the majority of reef community types, but may occur on more mixed sediments. However, the maximum cover of aquaculture activities on each of the habitats is below 15% (Table 13) and the total cover of all aquaculture activities is 4.48% of reef habitat (1170) (Table 3).

**Introduction of non-native species;** As already outlined **o**yster culture may present a risk in terms of the introduction of non-native species as the Pacific oyster (*Crassostrea gigas*) itself is a non-native species. Recruitment of *C. gigas* has been documented in a number of Bays in Ireland and appears to have become naturalised (i.e. establishment of a breeding population) in two locations (Kochmann et al 2012; 2013) and may compete with the native species for space and food. In addition to having large number of oysters in culture,  Kochmann et al (2013) identified short residence times and large intertidal areas as factors likely contributing to the successful recruitment of oysters in Irish bays. In addition, a recent study (Kochmann and Crowe, 2014) has identified heavy macroalgal cover as a potential factor governing successful recruitment, with higher cover resulting in lower recruitment. Oyster production in the Kenmare does not fulfil these criteria, as production is low (30 tonnes pa), the suitable habitat intertidally is low with high macroalgal cover and residence time is between 1.2-22.6 days. Therefore the risk of successful establishment of the pacific oyster in Kenmare River SAC is considered low.

In relation to the Manila clam (*Ruditapes philippinarum*), this species has been in culture in Ireland since 1984 and, to the best of our knowledge, no recruitment in the wild has been recorded. The operations are totally reliant on hatchery seed and are fully contained at all stages of the production cycle. The risk of naturalisation of this species is considered low, but should be kept under surveillance.

**Table 8: Matrix showing, where possible, the characterising community types (or surrogates) sensitivity scores x pressure categories in Kenmare River SAC (ABPMer 2013a-h)**. Table 9 provides the code for the various categorisation of sensitivity and confidence

| | Pressure Type | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Community Type (EUNIS code) | Surface Disturbance | Shallow Disturbance | Deep Disturbance | Extraction | Siltation (addition of fine sediments, pseudofaeces, fish food) | Smothering (addition of materials biological or non-biological to the surface) | Changes to sediment composition- increased coarseness | Changes to sediment composition- increased fine sediment proportion | Changes to water flow | Increase in turbidity/suspended sediment | Decrease in turbidity/suspended sediment | Organic enrichment-water column | Organic enrichment of sediments-sedimentation | Increased removal of primary production-phytoplankton | Decrease in oxygen levels- sediment | Decrease in oxygen levels-water column | Introduction of non-native species | Removal of Target Species | Removal of Non-target species | Introduction of antifoulants | Introduction of medicines | Introduction of hydrocarbons | Prevention of light reaching seabed/features |
| *Zostera*-dominated community (A5.533) | M-H (***) | M-VH (***) | M-VH (***) | M-VH (***) | VH (***) | VH (***) | M(*) | M (***) | M(*) | H (***) | NS (*) | H (***) | H (***) | NS (*) | H-VH (*) | H-VH (*) | H (**) | NS (*) | NS (*) | NEv | NEv | NS (***) | H-VH (**) |
| *Maerl*-dominated community (A5.51) | H (***) | H-VH (***) | H (***) | H-VH (***) | H-VH (***) | H-VH (***) | NS (*) | NS (*) | NS (*) | H(*) | NS (*) | H(*) | H (***) | NS (*) | H(**) | H(**) | H (***) | VH (***) | NS (*) | NE | NE | NE | VH (*) |
| Muddy fine sands dominated by polychaetes and *A. filiformis* community complex (Subtidal A5.33/A5.35) | NS (*) | L(*) | L(*) | L-M (*) | L(*) | L-M (*) | L-M (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | L(*) | NS (*) | L(*) | L(*) | H (*) | NS (*) | NS (*) | NS (*) | NS (*) | L(*) | NS (*) |
| Fine to medium sand with crustaceans and polychaetes community complex (Intertidal and subtidal) (A5.23) | NS (*) | L(*) | L(*) | L-M (*) | L-M (*) | L-M (*) | L-M (*) | M(*) | L-M (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | L-NS (***) | L-NS (***) | NS (***) | NS (*) | NS (*) | NS (*) | NS (*) | L(*) | NS (*) |

| | Pressure Type | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Community Type (EUNIS code) | Surface Disturbance | Shallow Disturbance | Deep Disturbance | Extraction | Siltation (addition of fine sediments, pseudofaeces, fish food) | Smothering (addition of materials biological or non-biological to the surface) | Changes to sediment composition- increased coarseness | Changes to sediment composition- increased fine sediment proportion | Changes to water flow | Increase in turbidity/suspended sediment | Decrease in turbidity/suspended sediment | Organic enrichment-water column | Organic enrichment of sediments-sedimentation | Increased removal of primary production- phytoplankton | Decrease in oxygen levels- sediment | Decrease in oxygen levels-water column | Introduction of non-native species | Removal of Target Species | Removal of Non-target species | Introduction of antifoulants | Introduction of medicines | Introduction of hydrocarbons | Prevention of light reaching seabed/features |
| Intertidal reef community complex (A3.21)** | NS (*) | NA | NA | NA | NS (*) | M-VH (*) | NA | NA | NS (*) | NS (*) | NS (*) | NS (*) | NE | NS (*) | NE | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) |
| *Laminaria*-dominated community complex (A3.21)** | NS (*) | NA | NA | NA | NS (*) | M-VH (*) | NA | NA | NS (*) | NS (*) | NS (*) | NS (*) | NE | NS (*) | NE | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) |
| Subtidal reef with echinoderms and faunal turf community complex (A4.1/4.2) | NS (*) | NA | NA | NA | NS (*) | M-VH (*) | NA | NA | NS (*) | NS (*) | NS (*) | NS (*) | NE | NS (*) | NE | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) |

**Note: *No sensitivity listed for this community type;**No sensitivity listed for this community type (3.21) so using scores for A3.22.**

**Table 9: Matrix showing the characterising species sensitivity scores x pressure categories for taxa in Kenmare River SAC (ABPMer 2013a-h).** Table 9 provides the code for the various categorisation of sensitivity and confidence

| | **Pressure Type** | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | Surface Disturbance | Shallow Disturbance | Deep Disturbance | Extraction | Siltation | Smothering (addition of materials biological or non-biological to the surface) | Changes to sediment composition- increased coarseness | Changes to sediment composition- increased fine sediment proportion | Changes to water flow | Increase in turbidity/suspended sediment | Decrease in turbidity/suspended sediment | Organic enrichment-water column | Organic enrichment of sediments- sedimentation | Increased removal of primary production- phytoplankton | Decrease in oxygen levels- sediment | Decrease in oxygen levels-water column | Introduction of non-native species | Removal of Target Species | Removal of Non-target species | Introduction of antifoulants | Introduction of medicines | Introduction of hydrocarbons | Prevention of light reaching seabed/features |
| *Abra alba* | L(*) | L (***) | L(*) | M (*) | NS (***) | M (*) | L(*) | NS (*) | NS (*) | L(*) | L(*) | NS (*) | NS (*) | NS (*) | L (***) | L-M (***) | L-M (*) | NS (*) | NS (*) | NS (***) | NEv | L (***) | NS (*) |
| *Alcyonium digitatum* | L-M (***) | NE | NE | NE | L(**) | M(*) | NA | NA | L(*) | NS (*) | NS (*) | NEv | NE | NS (*) | NE | M(*) | NEv | NS (*) | NS (*) | NEv | NEv | NS (*) | NS (*) |
| *Angulus sp. (Moerella)* | NS (*) | L(*) | L (***) | M(*) | NS (*) | H(*) | M-H (*) | NS (*) | L-M (*) | L(*) | NS (*) | NS (*) | Nev | L-NS (*) | NEv | NEv | M (*) | NS (*) | NS (*) | NS (*) | NEv | NEv | NS (*) |
| *Bathyporeia* spp. | NS (*) | L (***) | L (***) | L-M (*) | L (***) | L-M (*) | L-M (*) | L-M (*) | NS (*) | NS (*) | NS (*) | L-M (*) | L-M (*) | NS (*) | L-M (***) | L-M (***) | L-M (*) | NS (*) | NS (*) | NS (*) | NEv | NEv | NS (*) |
| *Corynactis viridis* | M-H (*) | NA | NA | NA | L(*) | H-VH (*) | NA | NA | M-H (*) | L(*) | NS (*) | NS (*) | NE | NS (*) | NE | NEv | NS (*) | NS (*) | NS (*) | NEv | NEv | NEv | NS (*) |
| *Cliona celata* | M (***) | NA | NA | NE | M (**) | L(*) | NA | NA | NEv | NS (***) | NS (*) | NS (***) | NE | NS (*) | NE | NEv | NS (*) | NS (*) | NS (*) | NEv | NEv | NEv | NS (*) |
| *Caryophyllia smithi* | H (**) | NA | NA | NE | H (***) | VH(*) | NA | NA | NS (*) | NS (*) | H(*) | NEv | NE | NS (*) | NE | NEv | NEv | NS (*) | NS (*) | NEv | NEv | NEv | MS (*) |
| *Capitella* spp. | L(*) | L (**) | L (**) | L(*) | L(*) | NS (*) | NS (*) | NS (***) | NS (*) | NS (*) | NS (*) | NS (***) | NS (***) | NS (*) | L (***) | L (***) | NS (*) | NS (*) | NS (*) | NS (***) | L (***) | NS (***) | NS (*) |
| *Corophium volutator* | L (***) | L (***) | L (***) | L(*) | L (***) | L (***) | M(*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (***) | NS (***) | NS (*) | L (***) | L (***) | Nev | NS (*) | NS (*) | NA | NEv | L (***) | NS (*) |
| *Cerastoderma edule* | L(*) | L-M (*) | L-M (***) | L-H (*) | L (***) | L-M (*) | L-H (*) | NS (*) | L(*) | NS (*) | NS (*) | NS (*) | NS (**) | L-NS (*) | L-M (*) | L-M (*) | M (*) | M (*) | NS (*) | NS (*) | NEv | L-M (*) | NS (*) |

| Species | Pressure Type | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Surface Disturbance | Shallow Disturbance | Deep Disturbance | Extraction | Siltation | Smothering (addition of materials biological or non-biological to the surface) | Changes to sediment composition- increased coarseness | Changes to sediment composition- increased fine sediment proportion | Changes to water flow | Increase in turbidity/suspended sediment | Decrease in turbidity/suspended sediment | Organic enrichment-water column | Organic enrichment of sediments- sedimentation | Increased removal of primary production- phytoplankton | Decrease in oxygen levels- sediment | Decrease in oxygen levels-water column | Introduction of non-native species | Removal of Target Species | Removal of Non-target species | Introduction of antifoulants | Introduction of medicines | Introduction of hydrocarbons | Prevention of light reaching seabed/features |
| *Echinus esculentus* | L-M (***) | NA | NA | NA | L (***) | H(*) | NA | NA | NS (*) | NS | NS (*) | NS | NE | NS (*) | NE | H(***) | NS (*) | L-M | NS | NEv | NEv | M-H | NS (*) |
| *Euclymene oerstedii* | NS (*) | NS (*) | M(*) | H(*) | NS (*) | H(*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | M(*) | M(*) | NS (*) | NS (*) | NS (*) | NS (*) | NEv | NS (*) | NS (*) |
| *Fabulina fabula* | NS (*) | L-NS (*) | L-NS (*) | M(*) | NS (*) | M(*) | M-H(*) | L(*) | L(*) | NS (*) | NS (*) | L(*) | M-H (*) | L-NS (*) | NS-L (***) | L-NS (*) | M(*) | NS (*) | NS (*) | NS (*) | NEv | L-M (*) | NS (*) |
| *Glycera* sp. | NS (*) | L-M (***) | L-M (*) | M(*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (**) | NS (***) | NS (*) | NS (***) | NS (***) | NS (*) | NS (*) | NS (*) | NA | NEv | NS (***) | NS (*) |
| *Hydrobia ulvae* | L-NS (*) | L (***) | L(*) | M (*) | NS (***) | L(*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (***) | NS (*) | L(*) | L(*) | L(*) | NS (*) | NS (*) | NEv | NEv | M (*) | NS (*) |
| *Lanice conchilega* | NS (*) | NS-L (***) | NS-L (***) | M-H (*) | NS (*) | M-H (*) | NS (*) | NS (***) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | M (*) | M (*) | M-H (*) | NS (*) | NS (*) | NS (*) | NEv | L (***) | NS (*) |
| *Nephtys hombergii* | NS (*) | L(*) | L(***) | L(*) | NS(**) | NS (*) | L(*) | NS (*) | NS(**) | NS (*) | NS (*) | NS (*) | NS(**) | NS (*) | NS (***) | NS (***) | NS (*) | M(*) | NS (*) | NS(**) | NEv | M (***) | NS (*) |
| *Nephtys cirrosa* | NS (*) | L (***) | L (***) | L(*) | NS (***) | NS (*) | L(*) | NS (*) | L(*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | M (*) | M (*) | NS (*) | NS (*) | NEv | NEv | NS (*) |
| *Nematoda* | NS (***) | NS (***) | NS (***) | L(*) | NS (*) | NS (***) | NS (***) | NS (***) | NS (*) | NS (*) | NS (*) | NS (*) | NS (***) | NS (*) | L (***) | L (***) | NS (***) | NS (*) | L(*) | NS (***) | NEv | L (***) | NS (*) |
| *Protodorvillea kefersteini* | NS (*) | NS (*) | NS (*) | L-M(*) | L(*) | L(*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (***) | NS (*) | NS (*) | NS (*) | M(*) | NS (*) | NS (*) | NS (*) | NEv | NS (*) | NS (*) |
| *Phaxas pellucidus* | NS (*) | M(*) | M(*) | H(*) | NS (***) | M(*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | L(*) | L-NS | NEv | NEv | M(*) | NS (*) | NS (*) | NS (*) | NEv | NEv | NS (*) |

| Species | Pressure Type | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Surface Disturbance | Shallow Disturbance | Deep Disturbance | Extraction | Siltation | Smothering (addition of materials biological or non-biological to the surface) | Changes to sediment composition- increased coarseness | Changes to sediment composition- increased fine sediment proportion | Changes to water flow | Increase in turbidity/suspended sediment | Decrease in turbidity/suspended sediment | Organic enrichment-water column | Organic enrichment of sediments- sedimentation | Increased removal of primary production- phytoplankton | Decrease in oxygen levels- sediment | Decrease in oxygen levels-water column | Introduction of non-native species | Removal of Target Species | Removal of Non-target species | Introduction of antifoulants | Introduction of medicines | Introduction of hydrocarbons | Prevention of light reaching seabed/features |
| | | | | | | | | | | | | | | (*) | | | | | | | | | |
| *Pygospio elegans* | L(*) | L (**) | M (***) | L-M (*) | L (***) | L-M (***) | L-M (*) | NS (**) | L-M (*) | NS (*) | NS (*) | NS (*) | NS (***) | NS (*) | L (**) | L (**) | M (*) | NS (*) | NS (*) | NS (*) | NEv | NEv | NS (*) |
| *Scoloplos armiger* | NS (*) | L(*) | L-M (*) | H (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (***) | NS (***) | NS (*) | M (***) | M (***) | M (*) | M (**) | NS (*) | NS (*) | NEv | NEv | NS (*) |
| *Tubificoides* spp. | NS (*) | NS (*) | L (**) | M (*) | NS (*) | L(*) | NS (*) | NS (*) | NS (***) | NS (*) | NS (*) | NS (***) | NS (***) | NS (*) | NS (***) | NS (***) | NS (*) | NS (*) | NS (*) | NS (**) | NEv | NEv | NS (**) |
| *Notomastus sp* | NS (*) | L (***) | L (***) | L-M (*) | L(**) | L(*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (**) | NS (*) | L(*) | L(*) | M(*) | NS (*) | NS (*) | NS (*) | NEv | NS (***) | NS (*) |
| *Melinna palmata* | NS (***) | NS (***) | NS (***) | M(*) | L (***) | M(*) | NS (*) | NS (*) | NS (*) | L(*) | NS (***) | NS (***) | NS (***) | NS (*) | NS (***) | NS (***) | L(*) | NS (*) | NS (*) | NS (***) | NEv | M (***) | NS (*) |
| *Mysella bidentata* | NS (*) | NS (*) | L-M (*) | M(*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (**) | NS (**) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | L-M (*) | NS (*) | NEv | NA | NS (*) |
| *Prionospio spp.* | NS (*) | NS (***) | NS (*) | L(*) | L (***) | L(*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (***) | NS (***) | NS (*) | NS (***) | NS (***) | L(*) | NS (*) | NS (*) | NS (***) | NEv | NS (***) | NS (*) |
| *Scalibregma inflatum* | NS (*) | L(*) | M(*) | M(*) | NS (***) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (***) | NS (*) | NS (***) | NS (***) | NA | NS (*) | NS (*) | NS (*) | NS (*) | NEv | NS (*) |
| *Spiophanes bombyx* | L(*) | L (***) | L(*** ) | L(*) | NS (*) | L(*) | L(*) | L(*) | NS (*) | NS (*) | NS (*) | NS (***) | NS (***) | NS (*) | L (***) | L (***) | L(*) | NS (*) | NS (*) | NS (*) | NEv | L (***) | NS (*) |
| *Thyasira flexuosa* | L(*) | L (***) | L(*) | M-H (*) | NS (*) | M-H (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (***) | NS (*) | M (***) | M (***) | M (*) | NS (*) | NS (*) | NS (***) | NEv | NS (***) | NS (*) |

**Table 10: Codes of sensitivity and confidence applying to species and pressure interactions presented in Tables 8 and 9.**

| **Species x Pressure Interaction Codes for Tables 8 and 9** | |
|---|---|
| **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 |

**Conclusion 1**: It is concluded that, with three exceptions, the aquaculture activities individually and in-combination do not pose a risk of significant disturbance to the conservation features for habitats (and community types) in Kenmare River based primarily upon the spatial overlap and sensitivity analysis (Tables 11 and 12). The exceptions are the activity (**scallop culture**) occurring over **Maerl dominated community,** ***Pachycerianthus multiplicatus*** **community complex** and ***Zostera*** **dominated community**. In spite of the relatively benign nature of the culture proposed (placement of scallop seed on seafloor) it is still considered potentially disturbing to these extremely sensitive community types types, primarily by virtue of the dredging activity associated with the culture practice and the uncertain nature of the placement of large quantities of scallop seed upon seagrass beds and subsequent scuba diving activities. The location of an intertidal oyster cultivation operation (T06/500A) over a *Zostera* bed is considered disturbing.

**Table 11: Interactions between the relevant aquaculture activities and the habitat feature Large shallow inlets and bays (1160) constituent communities with a broad conclusion on the nature of the interactions.**

| | | | **1160 – Large shallow inlets and bays** | | | | |
|---|---|---|---|---|---|---|---|
| **Culture Type** | **Location** | **Method** | ***Zostera*-dominated community** | ***Maerl*-dominated community** | ***P. multiplicatus* community** | **Muddy fine sands dominated by polychaetes and *Amphiura filiformis* community** | **Fine to medium sand with crustaceans and polychaetes community complex** |
| Mussel (*Mytilus edulis)* on ropes | Subtidal | Intensive | **N/A** | **N/A** | **N/A** | **Disturbing: Yes**<br><br>**Justification:** The high density of stock will impact on seafloor due to organic enrichment (faeces and pseudofaeces) and stock drop off. However the species have high recoverability and are tolerant.<br><br>This activity overlaps 0.31% of this community type. | **Disturbing: Yes**<br><br>**Justification:** The high density of stock will impact on seafloor due to organic enrichment (faeces and pseudofaeces) and stock drop off. However the species have high recoverability and are tolerant.<br><br>This activity overlaps 2.76% of this community type |
| Oysters (*Crassostrea gigas*) in bags & trestles | Intertidal | Intensive | **Disturbing: Yes**<br><br>**Justification:** Given the highly sensitive nature of this community type any activity is likely to have some impact either by shading by trestles on grass or compaction by transport routes to/through the trestles and increased organic enrichment.<br><br>This activity overlaps 18.05% of this community type | **N/A** | **N/A** | **Disturbing: No**<br><br>**Justification:** Published literature (Forde et al., 2015) suggests that activities occurring at trestle culture sites are not disturbing. The stock is confined in bags, is sourced from hatcheries and is diploid/triploid. | **Disturbing: No**<br><br>**Justification:** Published literature (Forde et al., 2015) suggests that activities occurring at trestle culture sites are not disturbing. The stock is confined in bags, is sourced from hatcheries and is diploid/triploid. |
| Scallops (*Pecten maximus*) on seabed | Subtidal | Extensive | **Disturbing: Yes**<br><br>**Justification:** Given the highly sensitive nature of this community type any activity is likely to have some impact either by increasing species (albeit native) biomass/density and the disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 2.52% of this community type. | **Disturbing: Yes**<br><br>**Justification:** Given the highly sensitive nature of the community type in question any activity is likely to have some impact either by increasing species (albeit native) biomass/density and the disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 27.89% of this community type.. | **Disturbing: Yes**<br><br>**Justification:** Given the highly sensitive nature of the community type in question any activity is likely to have some impact mainly due to disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 100% of this community type. | **Disturbing: No**<br><br>**Justification:** The activities associated with this culture type is likely to have some impact mainly due to disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 0.92% of this community type. | **Disturbing: No**<br><br>**Justification:** The activities associated with this culture type is likely to have some impact mainly due to disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 1.01% of this community type. |
| Salmon (*Salmo salar)* in net pens | Subtidal | Intensive | **N/A** | **N/A** | **N/A** | **Disturbing: Yes**<br><br>**Justification:** The community and species would be sensitive to the activity by virtue of persistent organic enrichment on the seafloor.<br><br>This activity overlaps 0.08% of this community type | **Disturbing: Yes**<br><br>**Justification:** The community and species would be sensitive to the activity by virtue of persistent organic enrichment on the seafloor.<br><br>This activity overlaps 0.31% of this community type |
| **Cumulative Impact Aquaculture** | | | **Disturbing: Yes**<br><br>**Justification:** This community type is not tolerant of any overlap of any activity. The cumulative pressure of likely impacting activities on this community type is 20.55%**.** | **Disturbing: Yes**<br><br>**Justification:** This community type is not tolerant of any overlap of any activity. The cumulative pressure of likely impacting activities on this community type is significant at 27.89%**.** | **Disturbing: Yes**<br><br>**Justification:** The cumulative pressure of likely impacting activities on this community type is significant at 100%**.** | **Disturbing: No**<br><br>**Justification:** The cumulative pressure of likely impacting activities is 0.39% on this community type. (<15% threshold). | **Disturbing: No**<br><br>**Justification:** the cumulative pressure of likely impacting activities is 3.07% on this community type. (<15% threshold). |

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**Table 12** cont'd**: Interactions between the relevant aquaculture activities and the habitat feature Large shallow inlets and bays (1160) constituent communities with a broad conclusion on the nature of the interactions.**

| | | | **1160 – Large shallow inlets and bays** | | | |
|---|---|---|---|---|---|---|
| **Culture Type** | **Location** | **Method** | **Coarse sediment dominated by polychaetes community complex** | **Intertidal reef community complex** | ***Laminaria*-dominated community complex** | **Subtidal reef with echinoderms and faunal turf community complex** |
| Mussel (*Mytilus edulis)* on ropes | Subtidal | Intensive | **Disturbing: Yes**<br><br>**Justification:** The high density of stock will impact on seafloor due to organic enrichment (faeces and pseudofaeces) and stock drop off.<br><br>This activity overlaps 3.31% of this community type | **Disturbing: Yes**<br><br>**Justification:** The community type is sensitive to shaing, stock drop off, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 5.05E-03% of this community type | **Disturbing: Yes**<br><br>**Justification**: The community type is sensitive to shaing, stock drop off, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 1.35% of this community type. | **Disturbing: Yes**<br><br>**Justification:** The community type is sensitive to shaing, stock drop off, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 2.01% of this community type |
| Oysters (*Crassostrea gigas*) in bags & trestles | Intertidal | Intensive | **N/A** | **Disturbing: Yes**<br><br>**Justification:** The community type is sensitive to shading, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 0.22% this community type. | **Disturbing: Yes**<br><br>**Justification:** The community type is sensitive to shading, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 0.48% this community type. | **Disturbing: Yes**<br><br>**Justification:** The community type is sensitive to shading, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 0.03% this community type. |
| Scallops (*Pecten maximus*) on seabed | Subtidal | Extensive | **Disturbing: Yes**<br><br>**Justification:** The activities associated with this culture type is likely to have some impact mainly due to disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 0.47% of this community type. | **Disturbing: Yes**<br><br>**Justification:** It is unlikely that the culture operation will occur over this community type given the difficulty likely to be encountered operating a dredge. However, the activities associated with this culture type are likely to have some impact mainly due to disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 0.15% of this community type. | **Disturbing: Yes**<br><br>**Justification:** It is unlikely that the culture operation will occur over this community type given the difficulty likely to be encountered operating a dredge. However, the activities associated with this culture type is likely to have some impact mainly due to disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 5.97% of this community type. | **Disturbing: Yes**<br><br>**Justification:** It is unlikely that the culture operation will occur over this community type given the difficulty likely to be encountered operating a dredge. However, the activities associated with this culture type is likely to have some impact mainly due to disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 0.19% of this community type. |
| Salmon (*Salmo salar)* in net pens | Subtidal | Intensive | **Disturbing: Yes**<br><br>**Justification:** The community type and species would be sensitive to the activity by virtue of persistent organic enrichment on the seafloor.<br><br>This activity overlaps 0.56% of this community type. | **N/A** | **Disturbing: Yes**<br><br>**Justification:** The community type is considered tolerant to pressures from activity. The species would be sensitive to the activity by virtue of persistent organic enrichment on the seafloor.<br><br>This activity overlaps 0.30% of this community type. | **Disturbing: Yes**<br><br>**Justification:** The community type is considered tolerant to pressures from activity. The species would be sensitive to the activity by virtue of persistent organic enrichment on the seafloor.<br><br>This activity overlaps 0.35% of this community type. |
| **Cumulative Impact Aquaculture** | | | **Disturbing: No**<br><br>**Justification:** the cumulative pressure of likely impacting activities is 4.34% on this community type. (<15% threshold). | **Disturbing: No**<br><br>**Justification:** the cumulative pressure of likely impacting activities is 0.37% on this community type. (<15% threshold). | **Disturbing: No**<br><br>**Justification:** the cumulative pressure of likely impacting activities is 8.60% on this community type. (<15% threshold). | **Disturbing: No**<br><br>**Justification:** the cumulative pressure of likely impacting activities is 2.58% on this community type. (<15% threshold). |

**Table 13: Interactions between the relevant aquaculture activities and the community type feature Reefs (1170) constituent communities with a broad conclusion on the nature of the interactions.**

| | | | **1170 – Reef** | | |
|---|---|---|---|---|---|
| **Culture Type** | **Location** | **Method** | **Intertidal reef community complex** | ***Laminaria*-dominated community complex** | **Subtidal reef with echinoderms and faunal turf community complex** |
| Mussel (*Mytilus edulis)* on ropes | *Subtidal* | *Intensive* | - | **Disturbing: Yes**<br><br>**Justification**: The community type is sensitive to shading, stock drop off, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 1.99% of this community type. | **Disturbing: Yes**<br><br>**Justification:** The community type is sensitive to shaing, stock drop off, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 2.1% of this community type |
| Oysters (*Crassostrea gigas*) in bags & trestles | *Intertidal* | *Intensive* | **Disturbing: Yes**<br><br>**Justification:** The community type is sensitive to shading, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 0.55% this community type. | **Disturbing: Yes**<br><br>**Justification:** The community type is sensitive to shading, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 0.53% this community type. | **Disturbing: Yes**<br><br>**Justification:** The community type is sensitive to shading, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 0.03% this community type. |
| Scallops (*Pecten maximus*) on seabed | *Subtidal* | *Extensive* | **Disturbing: Yes**<br><br>**Justification:** It is unlikely that the culture operation will occur over this community type given the difficulty likely to be encountered operating a dredge. However, the activities associated with this culture type are likely to have some impact mainly due to disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 0.11% of this community type. | **Disturbing: Yes**<br><br>**Justification:** It is unlikely that the culture operation will occur over this community type given the difficulty likely to be encountered operating a dredge. However, the activities associated with this culture type is likely to have some impact mainly due to disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 5.46% of this community type. | **Disturbing: Yes**<br><br>**Justification:** It is unlikely that the culture operation will occur over this community type given the difficulty likely to be encountered operating a dredge. However, the activities associated with this culture type is likely to have some impact mainly due to disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 0.19% of this community type. |
| Salmon (*Salmo salar)* in net pens | *Subtidal* | *Intensive* | - | **Disturbing: Yes**<br><br>**Justification:** The community type is considered tolerant to pressures from activity. The species would be sensitive to the activity by virtue of persistent organic enrichment on the seafloor.<br><br>This activity overlaps 0.28% of this community type. | **Disturbing: Yes**<br><br>**Justification:** The community type is considered tolerant to pressures from activity. The species would be sensitive to the activity by virtue of persistent organic enrichment on the seafloor.<br><br>This activity overlaps 0.35% of this community type. |
| **Cumulative Impact Aquaculture** | | | **Disturbing: No**<br><br>**Justification:** the cumulative pressure of likely impacting activities is 0.66% on this community type. (<15% Threshold) | **Disturbing: No**<br><br>**Justification:** the cumulative pressure of likely impacting activities is 8.26% on this community type. (<15% Threshold) | **Disturbing: No**<br><br>**Justification:** the cumulative pressure of likely impacting activities is 2.67% on this community type. (<15% Threshold) |

## 8.4 Assessment of the effects of shellfish production on the Conservation Objectives for Harbour Seal in Kenmare River SAC.

Kenmare River SAC is designated for the Harbour Seal (*Phoca vitulina*). The distribution of the harbour seal and site use within the Kenmare River SAC are provided in Figure 3. The conservation objectives for this species are listed in Table 1 and can be found in detail in NPWS (2013a; 2013b). Recent harbour seal surveys (NPWS 2010, 2011, 2012) show the Kenmare River has maintained its importance on a regional and national scale in terms of Harbour Seal numbers, as indicated in earlier surveys (Cronin *et al*., 2004; Heardman *et al.,* 2006). While the conservation status of the species is therefore considered favourable at the site, the interactions between harbour seals and the features and aquaculture activities carried out in the SAC must be ascertained.

The interactions between aquaculture operations and aquatic mammal species are a function of:

1. The location and type of structures used in the culture operations - is there a risk of entanglement or physical harm to the animals from the structures or is access to locations restricted?

2. The schedule of operations on the site – is the frequency such that they can cause disturbance to the animals?

The proposed activities must be considered in light of the following attributes and measures for the Harbour Seal:

- Access to suitable habitat – number of artificial barriers
- Disturbance – frequency and level of impact
- Harbour Seal Sites:
  - Breeding sites
  - Moulting sites
  - Resting sites

Restriction to suitable habitats and levels of disturbance are important pressures that must be considered to ensure the maintenance of favourable conservation status of the harbour seal and implies that the seals must be able to move freely within the site and to access locations considered important to the maintenance of a healthy population. They are categorised according to various life history stages (important to the maintenance of the population) during the year. Specifically they are breeding, moulting and resting sites (Figure 3). It is important that the access to these sites is not restricted and that disturbance, when at these sites, is kept to a minimum. The structures used in culture of oysters (bags on trestles) may form a physical barrier to seals when both submerged and exposed on the shoreline such that the access to haul-out locations might be blocked. Activities at sites and during movement to and from culture sites may also result a disturbance events such that the seals may note an activity (head turn), move towards the water or actually flush into the water. While such disturbance events might have been documented, the impact of these disturbances at the population level has not been studied more broadly (National Research Council, 2009).

Intertidal oyster culture using bags and trestles has been conducted within the Kenmare River since the early 1990's. The current level of production, which remains quite small (<30 tonnes) is represented as licenced activities in Figure 4. It is considered that, given the favourable conservation status of Harbour Seals within the SAC represented by stable numbers since 2009 (NPWS 2012) that the current production levels (and activities associated with them) are conducive with favourable conservation status. However, some shellfish culture activities do physically overlap with designated seal sites identified in the SAC. In Coongar Harbour an oyster farm (licensed) and an application site for mussel culture is in very close proximity to a seal moulting site and in Ardgroom Harbour a mussel farm (licensed) overlaps a seal site (breeding). In Coonger Harbour, the seal site in question has multiple recordings of seals and therefore, would be considered an important location (Oliver O'Cadhla, NPWS - personal communication). The aquaculture site in question, has structures confined to the northern portion of the site and cannot expand beyond immediate areas based upon the topography of the site. This ensures that the activity will not occur in close proximity to the seal haul-out location. An expansion of intertidal aquaculture activity to areas in the immediate vicinity of the haul out locations would likely increase the risk of disturbance of the seals during the moulting period. The mussel application appears to be an expansion of existing operations it is therefore, likely the seals will be habituated or tolerant of disturbance from this activity.

In Ardgroom Harbour a single sighting was recorded at a mussel culture site during 2000 and 2001 (Lyons, 2003) – it is assumed, given the lack of natural structures at the site in question, that seal was hauled out on mussel rafts. The site in question has been licenced (and active) since 1992.

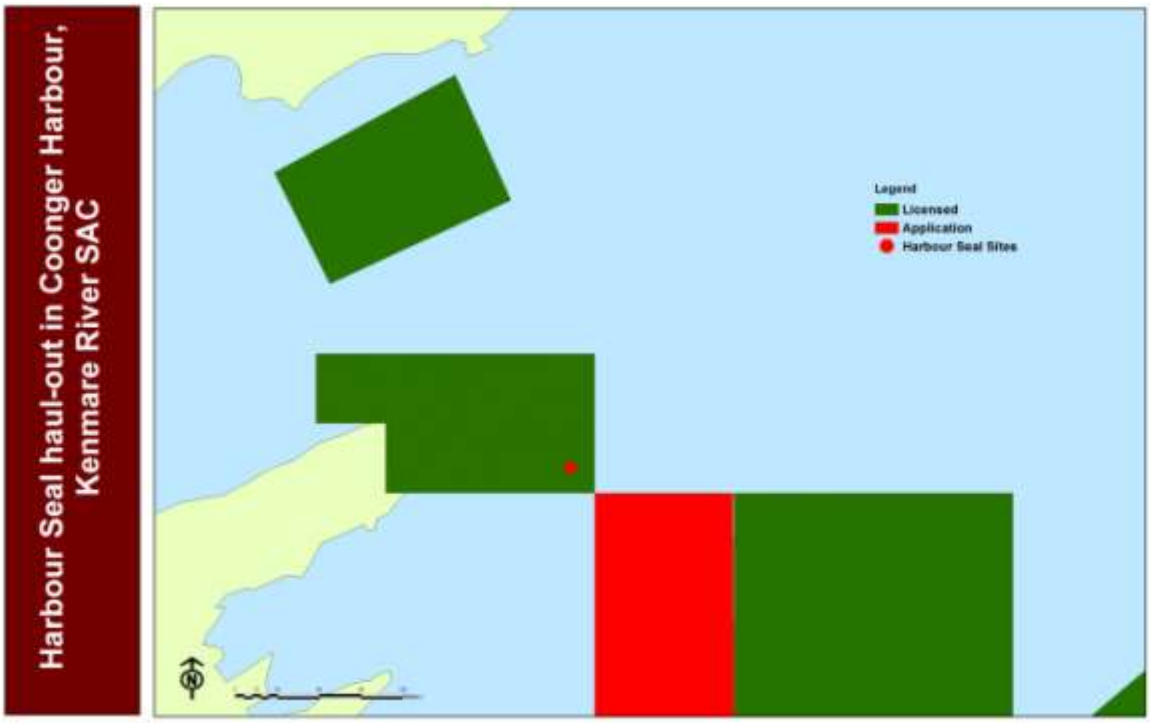
It should be noted that a finfish culture site within Killmakilloge Harbour is in close proximity to designated seal sites (breeding, moulting and haul out). As indicated previously, seal interactions with marine finfish cages have been identified (Aquaculture Stewardship Council, 2012). The risk to seals (as predators) result from their interaction with netting where if incorrectly configured (loose) the risk of drowning due to being entangled is increased. While a risk of entanglement in netting may present, it is not considered likely given that slack netting also presents a risk to culture organism in that it reduces the containment area. In terms of mitigation and in order to minimise risk to seals, the operators should employ a range of management actions including stock management (density control, regular removal of mortalities from cages), use of seal blinds and appropriate net tensioning. These practices are all considered suitable methods to minimise negative interactions between seals and finfish culture (Aquaculture Stewardship Council 2012). The use of Acoustic Deterrent Devices (ADDs) is not considered practical. Lethal actions to remove seals are only allowed under licence, the criteria which are determined by NPWS (Section 42 of the Wildlife Act, 1976 (as amended)).

Notwithstanding this, it would appear that the current level of activity at the sensitive times of the year (breeding and moulting, i.e. May to September) is sufficient to maintain stable seal counts at the site.

**Conclusion 1: With one exception, the current levels of licenced shellfish and finfish culture and proposed applications are considered non-disturbing to harbour seal conservation features.**

One exceptions to this conclusion is outlined above in Coonger Harbour (refer Figure 8). It is recommended that the boundaries for this intertidal oyster culture site be redrawn to exclude the area overlapping the seal haul-out locations which will mitigate further any disturbance risk to seals.

**Figure 12: Aquaculture activity (oyster farm) overlapping Harbour Seal moulting site in Coongar Harbour.**




**Conclusion 2: Under the conditions described above, finfish culture is not considered disturbing to the Harbour Seal.**

## 8.5 Assessment of the effects of aquaculture production on the Conservation Objectives for Otter and migrating Salmon in Kenmare River SAC.

**<u>Otter</u>**

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

The Kenmare River SAC is designated for the otter (*Lutra lutra*); the conservation objectives for such are listed in Table 1. The risk of negative interactions between aquaculture operations and aquatic mammal species is a function of:

1. The location and type of structures used in the culture operations- is there a risk of entanglement or physical harm to the animals from the structures?

2. The schedule of operations on the site – is the frequency such that they can cause disturbance to the animals?

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

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

- Extent of terrestrial habitat,
- Extent of marine habitat or
- Extent of freshwater habitat.
- The activity involves net input rather than extraction of fish biomass so that no negative impact on the essential food base (fish biomass) is expected
- The number of couching sites and holts or, therefore, the distribution, will not be directly affected by aquaculture and fisheries activities.
- Shellfish production activities are unlikely to pose any risk to otter populations through entrapment or direct physical injury.
- The structures and activities associated this form of oyster culture structures are raised from the seabed (0.5m -1m) and are oriented in rows, thus allowing free movement through and within the site.
- Disturbance associated with vessel and foot traffic could potentially affect the distribution of otters at the site. However, the level of disturbance is likely to be very low given the likely encounter rates will be low dictated primarily by tidal state and in daylight hours.

**Conclusion 3: The current levels of licenced shellfish culture and applications are considered non-disturbing to otter conservation features.**

**Finfish Culture:** The structures (nets) involved in finfish culture may pose an entanglement hazard to otters. However if site conditions as outlined in the seal section above (Section 8.4) are maintained this risk will be greatly mitigated.

**Conclusion 4: The current levels of licenced finfish culture and applications are considered non-disturbing to otter conservation features.**

**Salmon (*Salmo salar*)**

The Blackwater River runs into the north shore of Kenmare River SAC and is designated as an SAC for salmon (Blackwater River (Kerry) SAC).

Significant declines in sea survival and reduced returns to the coast and rivers of Atlantic salmon in recent decades have been recorded in Ireland (Salmon Management Task Force Report (Anon., 1996); O'Maoileidigh *et al*., 2004; Jackson *et al*., 2011). The reasons for the reduced sea survival remain unclear and speculation has covered such issues as global warming effects (Friedland *et al*., 2000; Friedland *et al*., 2005), changes in locations or availability of prey species, loss of post-smolts as by-catch in pelagic fisheries, increased fishing pressure, riverine habitat changes and sea lice infestation (Finstad et al., 2007; SSCWSS 2013). However, despite many years of study, processes contributing to the high mortality of juvenile Atlantic salmon between ocean entry and the first winter at sea remain poorly understood (Jones, 2009).

The results of a long term study carried out in the Burrishoole system in Co. Mayo (Jackson *et al*., 2011) show a strong and significant trend in increasing marine mortality of Atlantic salmon originating from the Burrishoole system. They would also point to infestation of outwardly migrating salmon smolts with the salmon louse (*L. salmonis*) as being a minor and irregular component of marine mortality in the stocks studied and not being implicated in the observed decline in overall survival rate. The results of this study have been corroborated by studies carried out by the Marine Institute as part of a detailed investigation into the potential impacts of sea lice on a number of other river systems, including the Newport River (Jackson *et al*., 2013a).

The Irish State has developed a comprehensive control and management strategy for sea lice infestations on farmed salmonids. This systems is underpinned by research dating back to the early 1990s and was the basis for the introduction of the original lice monitoring programme (Jackson and Minchen, 1993). Subsequent research (Jackson *et al.,* 2000; Jackson *et al.,* 2002) informed the development of a set of management protocols published by the Department of Marine in 2000 (Anon., 2000). The full implementation of these protocols resulted in improved sea lice control on farmed salmon (O'Donohoe *et al*., 2013). There has been a policy of utilising research to ensure that the most up to date and effective treatment and management regimes are in place to control sea lice on Irish farms and this has included research into techniques to assess the most effective treatment regimes (Sevatdal *et al*., 2005) and the sources of sea lice infestation in the marine environment (Jackson *et al.*, 1997; Copley *et al*., 2005; Copley *et al.,* 2007).

The monitoring and control system in place is comprehensive, transparent and independent. The Irish management and control system is widely regarded as best international practice because it has low treatment trigger levels, is based on independent inspection regimes, has a robust follow-up on problem areas and Ireland is the only country in the world to publish the results of the independent state run inspection programme in full each year (O'Donohoe *et al.,* 2013). Following the introduction of the "S*trategy for improved pest control on Irish salmon farms*" in 2008 by the Department of Agriculture Fisheries and Food there were significant improvements in sea lice management in Ireland (Jackson, 2011).

The control strategy is aimed at implementing a more strategic approach to lice control at a bay level and targeting efforts on the spring period where there is a potential for impacts on wild smolts embarking on their outward migration. The effectiveness of the system is witnessed by trends in sea lice infestation on farmed fish in the peak period for wild salmon smolt migration having shown a strong downward trend since the introduction of the new management strategy (Jackson *et al.,* 2013). As indicated previously, in relation to **disease interactions**, any risks of disease transfer between cultured finfish and wild fish are mitigated by the management systems currently in place. In summary, Council Directive 2006/88/EC on animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals form the legislative basis that governs the monitoring and management of disease outbreaks in mariculture operations in Ireland. For diseases not listed in this Directive, a Code of Practice and Fish Health Handbook has been developed jointly by the State and industry with the primary objectives of disease prevention and control.

Active veterinary surveillance and intervention has assisted in reducing the prevalence and spread of many pathogens. In addition, the principles outlined in the Fish Health Handbook mentioned above such as improved biosecurity practices on farms, fallowing sites to break transmission cycles, veterinary inspection of fish prior to transfer, single year class stocking, coordinating treatments and harvesting within embayments etc have mitigated the transmission of pathogenic organisms.

**Notwithstanding the issues highlighted above, it is concluded that aquaculture production in the Kenmare River SAC does not pose any risk to the following salmon attributes:**

- **Distribution (in freshwater)**
- **Fry abundance (freshwater)**
- **Population size of spawners (fish will not be impeded or captured by the proposed activity)**
- **Smolt abundance (out migrating smolts will not be impeded or captured by the proposed activity)**
- **Water quality (freshwater)**

## 8.6 Assessment of the effects of shellfish production on the Conservation Objectives for Maerl in the Kenmare River SAC.

Maerl dominated community occurs in certain areas (Ardgroom and Killmakilloge Harbours) which are outside of the Qualifying Interests for which the Kenmare River SAC was designated but are still within the SAC boundary. Maerl, the characterising species of this community, is listed as an Annex V species and as it is within the SAC boundary it must be afforded protection.

Aquaculture activity (suspended mussel culture) within Ardgroom harbour spatially overlaps (1.84%) with the Maerl dominated community and may have negative effects on the distribution and quality of this community type (Figure 13). The potential effects of this aquaculture type which are listed in Table 5, include current alteration, increased deposition and shading. Table 8 lists the sensitivities of community types to various pressure types according to ABPMer (2013b). According to ABPMer (2013b) Maerl habitats are restricted to shallow coastal waters by requirements for light penetration hence this species has a high sensitivity to increased turbidity, is sensitive to decrease in water flow speed and organic enrichment of sediments. Based on the findings of the later report the proposed activity (suspended mussel culture) will therefore have an adverse effect on the species for the following reasons:

Maerl is very highly sensitive to the following which may result as a consequence of suspended culture operations:

- Shading (due to structures at the surface and/or in water column)
- Siltation (addition of fine sediments, pseudofaeces).
- Smothering (addition of materials biological or non-biological to the surface).
- Change in water flow due to permanent/semi-permanent structures placed in the water column).
- Change in turbidity/suspended sediment/Increased suspended sediment turbidity.

**Conclusion 5: Suspended mussel culture in Ardgroom Harbour is potentially disturbing to Maerl dominated community.**

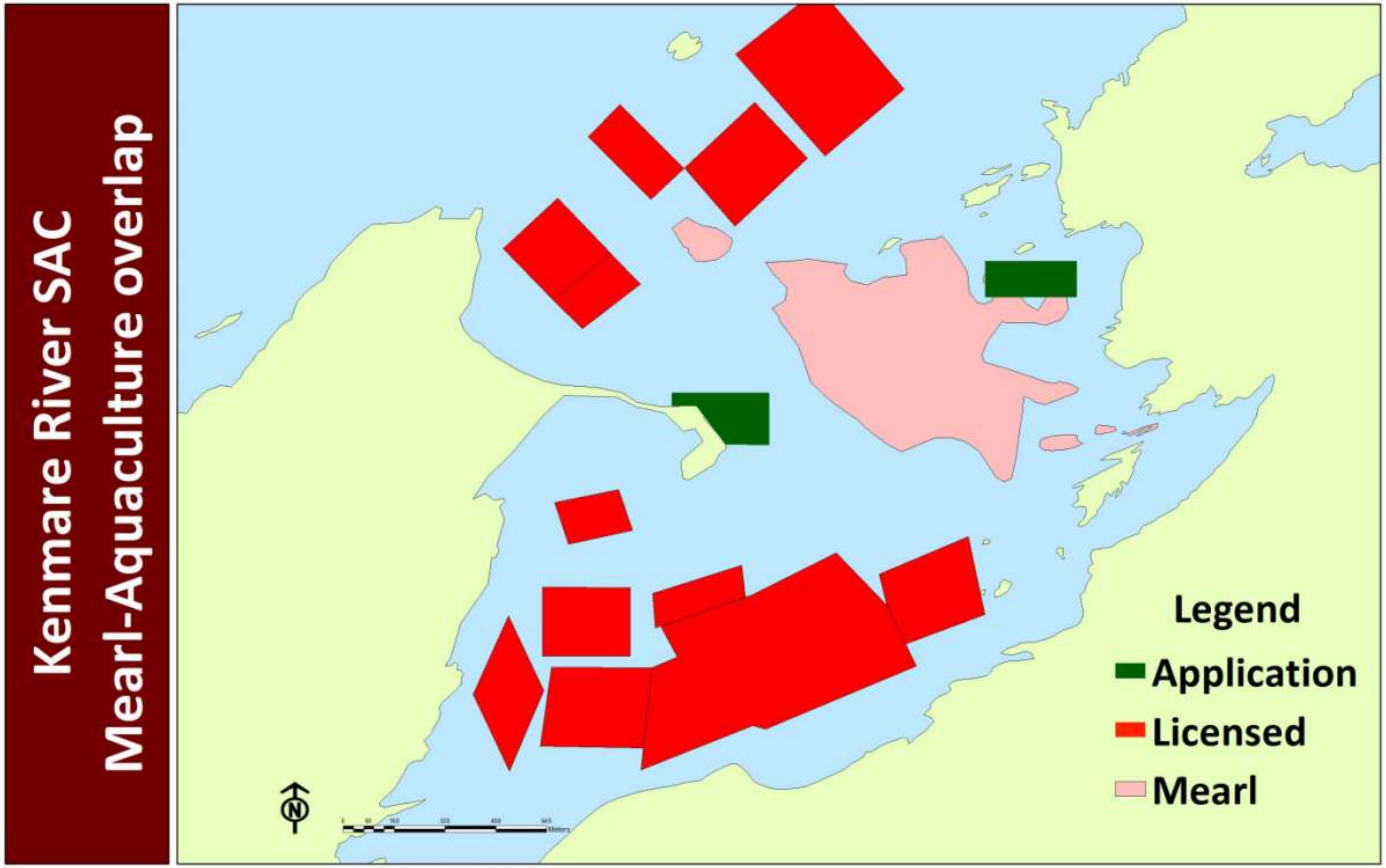



**Figure 13. Aquaculture activities overlapping Mearl habitat in Kenmare River SAC.**

# 9. Assessment of Fisheries Activities

## 9.1. Fisheries:

The risk assessment framework for fisheries follows, where feasible, EC guidance (2012) and includes elements of risk assessment from Fletcher (2002, 2005). The qualitative and semi-quantitative framework is described in Marine Institute (2013) and criteria for risk categorization is shown in Tables 14 and 15 below.

The framework uses categorical conditional probability matrices of likelihood and consequence to assess the risk of an activity to a conservation feature. Categorical likelihood and consequence scores for each such 'incident' (fishery-designated feature interactions) are provided by expert judgment and a base literature resource which has been pre-compiled for each habitat type defined in the COs.

Separate conditional probability matrices for habitats and designated species are used to assess risk. In the case of habitats the consequence criteria largely follow the definitions and methodologies used for AA of projects and plans. In the case of species the consequence categories relate to the degree to which populations and their supporting habitats may be negatively affected by the given activity.

### 9.1.2. Sensitivity of characterizing species and marine communities to physical disturbance by fishing gears

- The approach and rationale to assessment of the sensitivity of species and habitats to fishing activities and the information used in this assessment is similar to that outlined for aquaculture

- NPWS (2012b) provide lists of species characteristic of the habitats that are defined in the Conservation Objectives. The sensitivity of these species to various types of pressures varies and the species list varies across habitats.

- Pressures due to fishing are mainly physical in nature i.e. the physical contact between the fishing gear and the habitat and fauna in the habitat causes an effect.

- Physical abrasive/disturbing pressures due to fishing activity of each metier maybe classified broadly as causing disturbance at the seabed surface and/or at the sub-surface.

- Fishing pressures on a given habitat is related to vulnerability (spatial overlap or exposure of the habitat to the gear), to gear configuration and action, frequency of fishing and the intensity of the activity. In the case of mobile gears intensity of activity is less relevant than frequency as the first pass of the gear across a given habitat is expected to have the dominant effect (Hiddink *et al.*. 2007).

- Sensitivity of a species or habitat to a given pressure is the product of the resilience of the species to the particular pressure and the recovery capacity (rate at which the species can recover if it has been affected by the pressure) of the species. Morphology, life history and biological traits are important determinants of sensitivity of species to pressures from fishing and aquaculture.

- The separate components of sensitivity (resilience, recoverability) are relevant in relation to the persistence of the pressure
    - For persistent pressures, i.e. fishing 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 reduction caused by fishing. In all but these cases, and if resilience is moderate or low, then the species may be negatively affected and will exist in a modified state. Such interactions between fisheries and species/habitats represent persistent disturbance. They become significantly disturbing if more than 15% of the community is thus exposed (NPWS 2012b).
    - In the case of episodic pressures i.e. fishing activities that are seasonal or discrete in time both the resilience and recovery components of sensitivity are relevant. If resilience is low but recovery is high, relative to the frequency of application of the pressure, than the species/community will be in favourable conservation status for a given proportion of time
- The sensitivities of some species, which are characteristic (as listed in the COs) of benthic communities, to physical pressures similar to that caused by fishing gears, are described above.
- In cases where the sensitivity of a characterising species (NPWS 2011b) has not been reported this risk assessment adopts the following guidelines
    - Resilience of certain taxonomic groups such as emergent sessile epifauna to physical pressures due to all fishing gears is expected to be generally low or moderate because of their form and structure (Roberts *et al.* 2010).
    - Resilience of benthic infauna (eg bivalves, polychaetes) to surface pressures, caused by pot fisheries for instance, is expected to be generally high as such fisheries do not cause sub-surface disturbance
    - Resilience of benthic infauna to sub-surface pressures, caused by toothed dredges and to a lesser extent bottom otter trawls using doors, may be high in the case of species with smaller body sizes but lower in large bodied species which have fragile shells or structures. Body size (Bergman and van Santbrink 2000) and fragility are regarded as indicative of resilience to physical abrasion caused by fishing gears
    - Recovery 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

**Table 14.** Risk categorization for fisheries and designated habitat interactions (see: Marine Institute 2013). Colours indicate risk category. Disturbance is defined as that which leads to a change in characterising species. Such disturbance may be temporary or persistent depending on the frequency of impact and the sensitivity of the receiving environment. Colours indicate the probable need for mitigation of effects from green (no mitigation needed), to yellow (mitigation unlikely to be needed but review on a case by case basis), orange (mitigation probably needed) and red (mitigation required)

| **Habitats** | | | **Consequence criteria** | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Activity is not present or has no contact with habitat | Activity occurs and is in contact with habitat | Up to 15% overlap of fishery and habitat seasonally. | Over 15% overlap of fishery and habitat seasonally. | Over 15% of habitat disturbed persistently leading to cumulative impacts | Impact is effectively permanent due to severe habitat alteration. |
| | | | No change due to fishing activity can occur | Individual effects on characterising species but this is undetectable relative to background natural variability | Seasonal change in characterising species and community structure and function | Seasonal change in characterising species and structure and function | Persistent change in characterising species, structure and function | Biodiversity reduction associated with impact on key structural species |
| | | | | | | Frequency of disturbance < recovery time. Non-cumulative | Frequency of disturbance> recovery time. Cumulative | No recovery or effectively no recovery |
| **Likelihood** | **%** | Level | **0** | **1** | **2** | **3** | **4** | **5** |
| Highly likely | >95 | **5** | 0 | 5 | 10 | 15 | 20 | 25 |
| Probable | 50-95 | **4** | 0 | 4 | 8 | 12 | 16 | 20 |
| Possible | 20-50 | **3** | 0 | 3 | 6 | 9 | 12 | 15 |
| Unlikely | 1-20 | **2** | 0 | 2 | 4 | 6 | 8 | 10 |
| Remote | 1 | **1** | 0 | 1 | 2 | 3 | 4 | 5 |

**Table 15.** Risk categorization for fisheries and designated species interactions (Marine Institute 2013)

| Species | | | **Consequence criteria** | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Activity is not present and individuals or population cannot be affected | Activity present. Individuals in the population affected but effect not detectable against background natural variability | Direct or indirect mortality or sub-lethal effects caused to individuals by the activity but population remains self-sustaining | In site population depleted by the activity but regularly sub-vented by immigration. No significant pressure on the population from activities outside the site | Population depleted by the activity both in the site and outside of the site. No immigration or reduced immigration | Population depleted and supporting habitat significantly depleted and unable to continue to support the population |
| **Likelihood** | **%** | Level | **0** | **1** | **2** | **3** | **4** | **5** |
| Highly likely | >95 | **5** | **0** | **5** | **10** | **15** | **20** | **25** |
| Probable | 50-95 | **4** | **0** | **4** | **8** | **12** | **16** | **20** |
| Possible | 20-50 | **3** | **0** | **3** | **6** | **9** | **12** | **15** |
| Unlikely | 1-20 | **2** | **0** | **2** | **4** | **6** | **8** | **10** |
| Remote | 1 | **1** | **0** | **1** | **2** | **3** | **4** | **5** |

### 9.1.3. Spatial overlap of fisheries and qualifying interests

Percentage spatial overlap of fisheries on marine community types within each Qualifying Interest is shown below in Table 16. The footprint of each fishery is the area of the polygon within which the fishery takes place and is an exaggeration of the actual area over which gear is deployed, especially in the case of static gears (Traps, Gill nets, Tangle nets, Trammel Nets). In some cases (Hooks and Lines) there is overlap with the marine community type but no pressure or footprint as the gear is not in contact with the seabed.

**Table 16. Spatial overlap of fisheries and marine community types in Kenmare River SAC. There are no fisheries on intertidal mobile sands or on shingle communities. Spatial overlap of demersal and pelagic trawls, as shown by Vessel Monitoring System data, is not quantified and is presented as absent or present. Overlap of multiple fisheries occur on community types making the calculation of cumulative spatial overlap impractical.**

| QI/SCI | Marine Community Type | Fishing current | Trap - lobster | Trap - crab | Trap - shrimp | Trap - Nephrops | Dredge - scallop | Gill net | Tangle net crayfish | Trammel netting bait | Otter trawl - demersal | Mid-water trawl | Hooks and Lines | Hand gathering winkles |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Large shallow inlets and bays [1160] | Intertidal mobile sand community complex | Yes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Large shallow inlets and bays [1160] | Zostera dominated community | Yes | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Large shallow inlets and bays [1160] | Co-occurrence Zostera and maerl community complex | Yes | 100 | 100 | 100 | 0 | 0 | 0 | | 100 | 0 | 0 | 0 | |
| Large shallow inlets and bays [1160] | Maërl-dominated community | Yes | 95 | 95 | 98 | 0 | 0 | 0 | 0 | 95 | 0 | 0 | 0 | |
| Large shallow inlets and bays [1160] | Pachycerianthus multiplicatus community | Yes | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Large shallow inlets and bays [1160] | Muddy fine sands dominated by polychaetes and Amphiura filiformis community complex | Yes | 20 | 20 | 17 | 1 | 1 | 1 | 14 | 20 | 1 | 1 | 33 | |
| Large shallow inlets and bays [1160] | Fine to medium sand with crustaceans and polychaetes community complex | Yes | 55 | 55 | 28 | 2 | 9 | 1 | 0 | 55 | 1 | 1 | 0 | |
| Large shallow inlets and bays [1160] | Coarse sediment dominated by polychaetes community complex | Yes | 36 | 36 | 7 | 0 | 6 | 1 | 18 | 36 | 1 | 1 | 2 | |
| Large shallow inlets and bays [1160] | Shingle | Yes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Large shallow inlets and bays [1160] | Intertidal reef community complex | Yes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Large shallow inlets and bays [1160] | Laminaria-dominated community | Yes | 34 | 34 | 30 | 1 | 0 | 1 | 3 | 34 | 1 | 1 | 0 | |
| Large shallow inlets and bays [1160] | Subtidal reef with echinoderms and faunal turf community complex | Yes | 30 | 30 | 11 | 0 | 6 | 1 | 12 | 30 | 1 | 1 | 1 | |
| Reefs [1170] | Intertidal reef community complex | Yes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Reefs [1170] | Laminaria-dominated community | Yes | 38 | 38 | 35 | 1 | 0 | 1 | 2 | 38 | 1 | 1 | 0 | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reefs [1170] | Subtidal reef with echinoderms and faunal turf community complex | Yes | 37 | 37 | 12 | 0 | 0 | 1 | 12 | 37 | 1 | 1 | 1 | |

### 9.1.3. Risk assessment of the impact of fishing gears on marine benthic communities

- The list of fishing activities (métiers) operating in Kenmare Bay is described above
- The sensitivity of marine communities, which are the subject of the COs to physical disturbance that may be caused by fishing gears is in Table 8.
- The risk assessment framework outlined in Table 14 and Table 15 for habitats and species respectively provides a rationale for assessing and scoring risk posed by fishing activities to the conservation objectives. More detailed explanation is provided in Marine Institute (2013).
- One of the risk assessment criteria for habitats is the % overlap of the activity and each habitat. The overlap of fisheries and marine community types within those habitats is in presented in Table 16.
- Risk scores for effects of individual fisheries on marine community types and species are in Table 17.

## 9.2 Fisheries Risk profile

### 9.2.1. Marine Community types

9.2.1.1. Trap fisheries for lobster, crab, shrimp and *Nephrops*

- Trap fisheries may pose a risk to sensitive habitats such as Zostera and Maerl due to abrasion and disturbance caused by pots, ropes and anchors. The effect will depend on the intensity and frequency of the activity and the gear configuration in terms of pot spacing, number of anchors used, type of rope etc. Trap fisheries for *Nephrops* will not occur on this ground. Shrimp fisheries may occur on the *Pachycerianthus* community and there is a low risk of impact to this species.
- Trap fisheries may pose some risk to kelp reef communities and to sub-tidal faunal turf reefs depending on the intensity of the potting activity. This risk is likely to be low however against background variability in these communities.
- Pot fisheries pose no risk to sedimentary habitats

9.2.1.1. Dredge fisheries for scallop

- Dredge fisheries for scallop occurs on sub-tidal reef community and may have an impact on this community. There is some uncertainty as to the location of this fishery and its relation to aquaculture applications for bottom culture of scallop
- Dredging for surf clams may occur in sedimentary habitats in Kenmare River (spatial analysis not shown). They are not currently fished, no surveys of their distribution have been undertaken and the site is not a classified production area for this species. The risk posed to sedimentary habitats from a surf clam fishery is low.

9.2.1.2. Set net fisheries

- Gill net, tangle nets and trammel nets are used to capture mixed fish, crayfish and bait respectively
- The extent of trammel netting is unknown and here it is assumed to have the same footprint of the lobster fishery as trammel nets are used primarily to catch bait species for lobster pots. If they are used the associated anchors and footropes may impact Zostera and Maerl beds and may have lesser impacts on kelp reefs which are less sensitive to disturbance than Zoster or Maerl.
- Tangle nets and gill nets are likely to be used in deeper waters away from kelp reefs or Zostera and Maerl beds.

9.2.1.3. Bottom trawl fisheries

- Bottom trawling in Kenmare Bay occurs mainly in the outer part of the site in the muddy fine sand community complex. Fishing in the eastern part of the site by vessels >15m is close to zero. It also occurs on medium fine sand. Annual VMS effort for vessels >15m, between 2006-2012 in the site was approximately 350 hrs. The distribution of VMS points indicates that over 15% of the muddy fine sand community is fished. Fishing occurs in all months of the year
- Muddy fine sand communities, particularly suspension feeders and crustaceans, are sensitive to fishing pressure from trawls but this depends on intensity of the fishing pressure. The community is not sensitive to low levels of trawling (a single pass for instance). Recovery time is prolonged compared to coarser substrates due to the fact that such habitats are mediated by a combination of biological, chemical and physical processes compared to coarse substrates which are dominated by physical processes (ABPMer 2013. Muddy sands. Appendix F, ). Recovery times from impacts may take years.
- The intensity of trawling by vessels over 15m in length in outer Kenmare River could be classed as medium (using scales provided by the Beaumaris approach to sensitivity assessment, ABPMer 2012. Muddy sands. Appendix F, p. 71) and some of the habitat probably experiences more than a single pass of the gear per annum. Activity by vessels under 15m is unquantified. The community therefore may be impacted. Impact would increase if fishing effort escalated.
- In Kenmare the anthozoan *Virgularia mirabilis* occurs in the muddy fine sand community but is unlikely to be affected by trawling as it occurs in the inner Bay.

9.2.1.3. Mid-water trawl fisheries and hook and line fisheries

- These fisheries are not expected to impact marine habitats in Kenmare Bay

9.2.1.3. Hand gathering of periwinkles

- Hand gathering of periwinkles occurs on intertidal reef communities. There is a low risk of impact in such communities due to trampling pressure. However, although the intensity of the activity is unknown it is unlikely to be such that significant effects would occur.

**Table 17. Risk assessment for fisheries-marine community type interactions in Kenmare River SAC.**

| QI/SCI | Marine Community Type | Trap - lobster | Trap - crab | Trap - shrimp | Trap - Nephrops | Dredge - scallop | Gill net | Tangle net crayfish | Trammel netting bait | Otter trawl - demersal | Mid-water trawl | Hand gathering winkles | Hooks and Lines |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Large shallow inlets and bays [1160] | Co-occurrence Zostera and maerl community complex | 16 | 16 | 16 | | | | | 16 | | | | |
| Large shallow inlets and bays [1160] | Zostera dominated community | | | 12 | | | | | | | | | |
| Large shallow inlets and bays [1160] | Maërl-dominated community | 16 | 16 | 16 | | | | | 16 | | | | |
| Large shallow inlets and bays [1160] | Pachycerianthus multiplicatus community | | | 9 | | | | | | | | | |
| Large shallow inlets and bays [1160] | Muddy fine sands dominated by polychaetes and Amphiura filiformis community complex | 4 | 4 | 4 | 4 | | 4 | 4 | 4 | 12 | 4 | | 2 |
| Large shallow inlets and bays [1160] | Fine to medium sand with crustaceans and polychaetes community complex | 4 | 4 | 4 | 4 | | 4 | | 4 | 12 | 4 | | |
| Large shallow inlets and bays [1160] | Coarse sediment dominated by polychaetes community complex | 4 | 4 | 4 | | | 4 | 4 | 4 | 12 | 4 | | 2 |
| Large shallow inlets and bays [1160] | Intertidal reef community complex | | | | | | | | | | | 6 | |
| Large shallow inlets and bays [1160] | Laminaria-dominated community | 9 | 9 | 9 | 9 | | 4 | 4 | 9 | 4 | 4 | | |
| Large shallow inlets and bays [1160] | Subtidal reef with echinoderms and faunal turf community complex | 9 | 9 | 9 | | 8 | 4 | 4 | 9 | 4 | 4 | | 2 |
| Reefs [1170] | Laminaria-dominated community | 9 | 9 | 9 | 9 | | 4 | 4 | 9 | 4 | 4 | | |
| Reefs [1170] | Subtidal reef with echinoderms and faunal turf community complex | 9 | 9 | 9 | | | 4 | 4 | 9 | 4 | 4 | | 2 |
| Large shallow inlets and bays [1160] | Intertidal reef community complex | | | | | | | | | | | 6 | |

### 9.2.2. Species

9.2.2.1. Harbour Seal

- Harbour seals haul out in sheltered waters, typically on sandbanks and in estuaries, but also in rocky areas and may swim upstream into freshwater. They undertake smaller scale foraging movements (30km from the haul out site) and migrations than grey seal. Pups remain in their natal area after weaning (Wilson *et al*. 2003, Cronin *et al*. 2008). Space use maps for Harbour seals tagged in Kenmare River shows very limited movement outside of Kenmare River SAC (Figure 14).

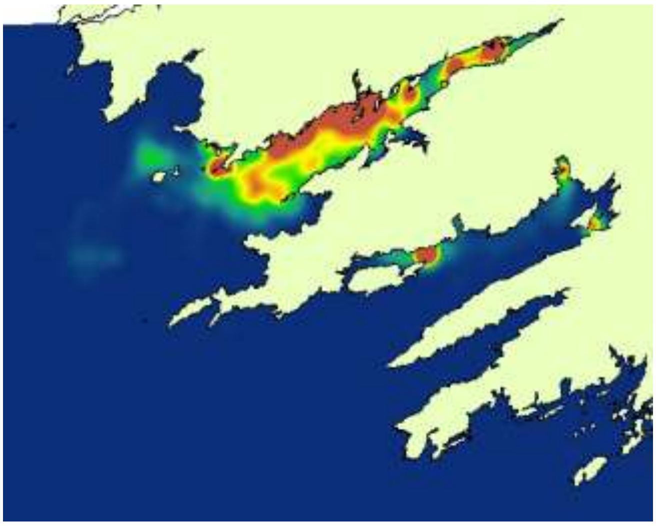


**Figure 14. Space use maps for tagged Harbour seals in Kenmare river (source: Cronin *et al*. 2008)**

- Number of Harbour seals in Kenmare River declined slightly from 413 to 390 between Census counts in 2003 and 2011
- Tangle nets are used at the mouth of Kenmare River within the foraging range of seals at the site.
- Gill net use is reported by vessels over 15m in Kenmare River within the foraging range of seals from Kenmare River
- Pelagic trawling for sprat (with herring by-catch) occurs in Kenmare River and east to the upper reaches of the Bay.
- Demersal trawling occurs in outer Kenmare River but within the Kenmare River SAC.
- Potting for shrimp occurs in inner Kenmare river while lobster and crab potting, with the possible use of trammel nets for bait, occurs along the south and north shores of the outer Bay.
- By-catch risk is highest for gill net fishing and pelagic fishing in inner Kenmare River. There may be a by-catch in trammel nets. The pelagic fishery for sprat and pot fisheries may cause disturbance at haul out locations which are mainly in the inner Bay on north and south shores.

Cumulative risk posed by fisheries may result in sub-lethal and lethal effects on individual seals but the risk to the population may be relatively low. However, total annual by-catch of Harbour Seal in Kenmare River is unknown.

- Risk of by catch, prey depletion and disturbance does not exceed a value of 6 and is considered to be low.

9.2.2.1. Otter

- Otter (*Lutra lutra*) is listed in Annex II of the Habitats Directive. Otter is common throughout freshwater systems in Ireland and also occurs in coastal marine habitats.
- There is a low risk of capture of otters in lobster pots and trammel nets set in shallow water (<5m). Such mortality has been documented elsewhere.
- Because of the intensity of pot fishing, unknown levels of associated use of trammel nets and documented accounts of mortality of otter in parlour creels in particular there is some likelihood of capture of individual otters. As creels and trammels are unlikely to be deployed within the preferred dive range of otters in the Irish lobster fishery the likelihood of capture is thought to be unlikely

# 10. In-combination effects of aquaculture, fisheries and other activities

Given the uncertainty in relation to scallop fishing the assessment of in-combination effects of this activity and scallop culture (which is in-effect a type of fishery activity) are difficult to estimate. It is likely that the 'wild' fishery activities will not occur in the aquaculture plots if they are actively maintained. Conservative estimates of percentage overlap of wild-fishery activities on Marine Community Types are provided in Table 16. Notwithstanding the difficulty estimating the extent of fishery activities, the likely in-combination of potentially disturbing fishery (Table 16) and aquaculture activities on Marine Community types (Tables 12, 13) do not exceed the 15% threshold identified in guidance documents (NPWS 2013b).

Those fishery activities that overlap with sensitive community types or represent a risk identified in Table 17 should be subject to mitigation measures the extent of which are beyond the scope of this report. Other fishery activities have little or no overlap with aquaculture activities and are subject to separate management actions.

Other activities leading to potential impacts on conservation features relate to harvest of seaweed on intertidal reef communities. There is little known concerning the level of harvest from these intertidal reef communities. The impact is likely two-fold, direct impact upon the reefs by removal of a constituent species and impact upon intertidal sediments as a consequence of travel across the shore to the harvest sites. The likely overlap between these activities and intertidal shellfish culture is considered small as the (reef) habitat is not considered suitable for shellfish culture and low levels of this culture method overlaps this habitat. Seaweed harvesting requires a foreshore licence administered by the Department of Environment, Community and Local Government. The level of transport across the intertidal area is unknown, but it is presumed that the routes are well defined.

Seal watching cruises are conducted in Kenmare. The extent of these activities are confined to the inner portions of Kenmare River SAC and do not overlap with the aquaculture operations. It is assumed that these activities are subject to a separate AA process?

There are a number of activities which are terrestrial in origin that might result in impacts on the conservation features of the Kenmare River SAC. Primary among these are point source discharges from municipal and industrial units (Shellfish Pollution Reduction Programme, DECLG). There are five urban waste water treatment plants in the general vicinity of the SAC. These are found in Ardgroom, Kenmare, Sneem, Kilgarvan, Eyeries. The pressure derived from these facilities is a discharge that may impact upon levels of dissolved nutrients, suspended solids and some elemental components e.g. aluminium in the case of water treatment facilities. It should be noted that the pressures resulting from fisheries and aquaculture activities are primarily morphological in nature. It was, therefore, concluded that given the pressure resulting from say, a point discharge location (e.g. urban waste-water treatment plant or combined sewer overflow) would likely impact on physico-chemical parameters in the water column, any in-combination effects with aquaculture or fisheries activities are considered to be minimal or negligible.

No other activities resulting in morphological and/or disturbance pressures were identified or could be quantified.

# 11. SAC Aquaculture Appropriate Assessment Concluding Statement and Recommendations

In the Kenmare River SAC there are a range of aquaculture activities currently being carried out or proposed. Based upon this and the information provided in the aquaculture profiling (Section 5), the likely interaction between this aquaculture and conservation features (habitats and species) of the site were considered.

An initial screening exercise resulted in a number of habitat features and species being excluded from further consideration by virtue of the fact that no spatial overlap of the culture activities was expected to occur. The habitats and species excluded from further consideration were1014 Marsh Snail *Vertigo angustior*, 1220 Perennial vegetation of stony banks, 1230 Vegetated sea cliffs of the Atlantic and Baltic coasts, 1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae), 1410 Mediterranean salt meadows (*Juncetalia maritimi*), 2120 Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes"), 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes), 4030 European dry heaths and 6130 Calaminarian grasslands of the *Violetalia calaminariae* and Submerged or partially submerged sea caves (8330).

## 9.1 Habitats

A full assessment was carried out on the likely interactions between aquaculture operations (as proposed) and the Annex 1 habitats 1160 (Large Shallow Inlets and Bay), and 1170 (Reefs). The likely effects of the aquaculture activities (Species, structures) were considered in light of the sensitivity of the constituent community types and species of the Annex 1 habitats.

**Conclusion and Recommendation - Aquaculture Activities:** Of the 11 community types listed under the remaining habitat features (1160 and 1170) two (Intertidal mobile sand community complex and Shingle) were also excluded from further analysis as they had no overlap with aquaculture activities.

Based upon the scale of spatial overlap and the relatively high tolerance levels of the habitats and species therein, the general conclusions relating to the interaction between current and proposed aquaculture activities with habitats is that consideration can be given to licencing (existing and applications) in the Annex 1 habitats – 1160 (Large Shallow Inlets and Bays and 1170 (Reefs) with the exception of activities overlapping the following community types:

1. **Zostera-dominated community**- This habitat is not tolerant of any overlap of any activity. The cumulative pressure of likely impacting activities on this habitat is 20.55%**.**
2. **Maerl-dominated community -** This habitat is not tolerant of any overlap of any activity. The cumulative pressure of likely impacting activities on this habitat is significant at 27.89%**.**
3. ***Pachycerianthus multiplicatus* community -** The cumulative pressure of likely impacting activities on this habitat is significant at 100%**.**

It is important to note that licenced areas impacted by aquaculture that might be redrawn to exclude any overlap with sensitive habitats should include a sufficient buffer zone to allow for mapping resolution and/or visual enforcement of exclusion. Furthermore, there is still the risk that wild fishery interests might still dredge for scallop in these areas; therefore, it is recommended that some understanding should be arrived at between aquaculture management and fishery management interests in relation to these areas.

Also, it might be worth discussing whether the scallop culture activities as described (i.e., with harvest by dredging) can be considered an 'aquaculture' activity as distinct from a wild fishery, given that seeding is questionable and that 'culture' areas are very large.

Finally, the likely interaction between the proposed aquaculture activities and the Annex V species Maerl was assessed in areas where the maerl habitat did not fall under the Qualifying Interests but was still within the SAC boundary. It is **also concluded** that the aquaculture activity (suspended mussel culture) in Ardgroom Harbour is disturbing to this community type.

## 9.2 Species

The likely interactions between the proposed aquaculture activities and the Annex II Species Harbour Seal (*Phoca vitulina*) and Otter (*Lutra lutra*) were also assessed. The objectives for these species in the SAC focus upon maintaining the good conservation status of the population and consider certain uses of intertidal habitats as important indicators of status. The aspect of the culture activities that could potentially disturb the Harbour seal status relates to movement of people and vehicles within the sites as well as accessing the sites over intertidal areas and via water.

**Conclusion and Recommendation:** It is acknowledged in this assessment that the favourable conservation status of the Harbour seal (*Phoca vitulina*) has been achieved given current levels of aquaculture production within the SAC. On this basis, the current levels of licenced aquaculture (existing and renewals) are considered non-disturbing to harbour seal conservation features. However, there is one exception:

- Aquaculture activity (oyster farm) overlaps a Harbour Seal moulting site in Coongar Harbour and is recommended that the site boundaries be redrawn to exclude the overlap of harbour seal haul-out site.

In relation to new applications, given the lack of spatial overlap or the fact that applications which are adjacent to haul-out sites represent expansion of existing activities (and tolerance or acclimatisation has occurred) it is considered that the aquaculture activities proposed (applications) do not pose a threat to the harbour seal in the Kenmare River SAC.

The current levels of licenced aquaculture operations and applications are considered non-disturbing to Otter (*Lutra lutra)* conservation features.

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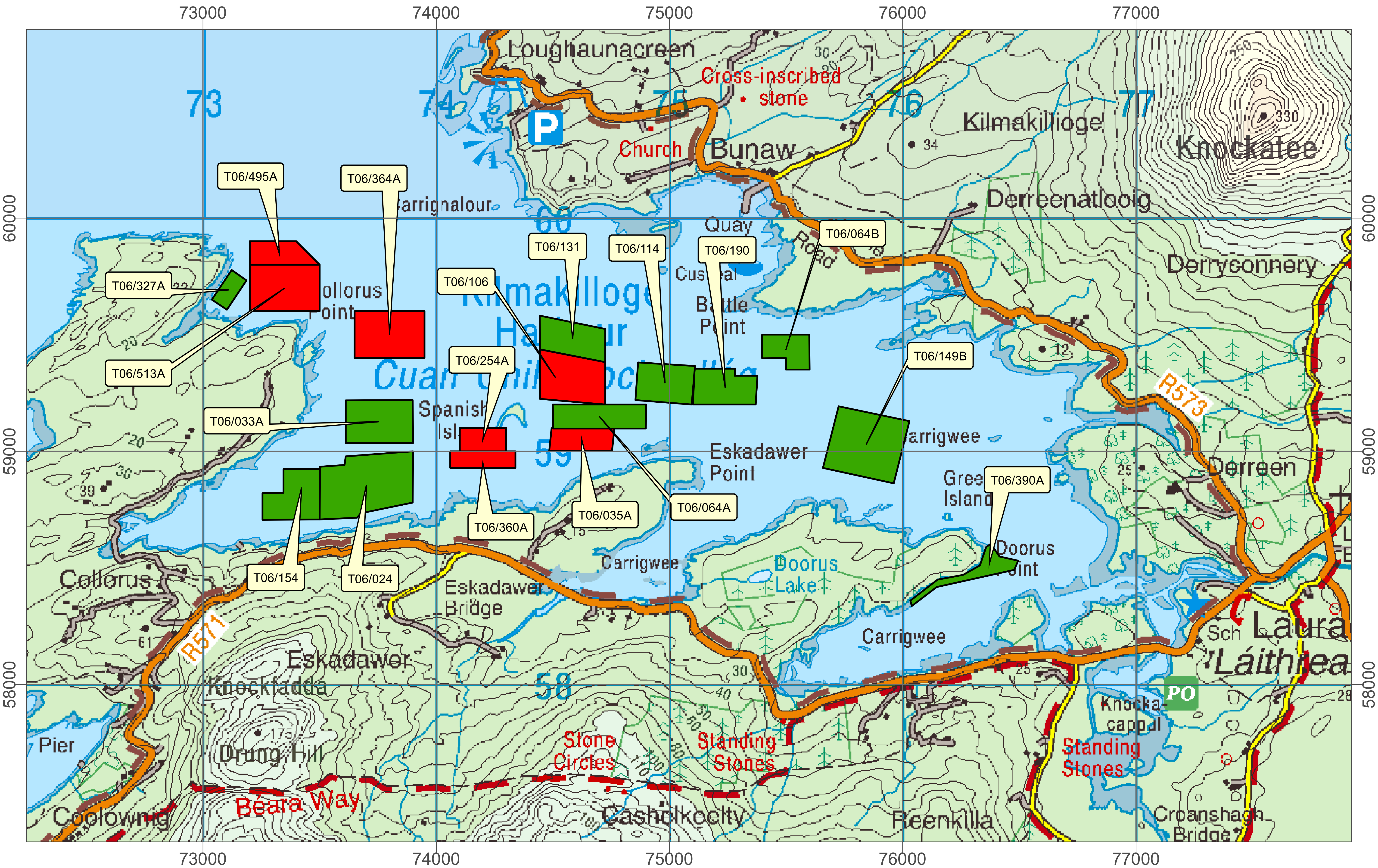


**Aqua Culture Sites**

<all other values>

**Site_Status**

- Under Appeal
- Application
- Licensed

**Drawn : 06-12-2019**

**Kilmackillogе Harbour**
**Co. Kerry.**
**Aquaculture Sites.**



**Scale = 1:15,000**

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

**Appropriate Assessment Conclusion Statement by Licensing Authority for aquaculture activities in Kenmare River Special Area of Conservation (SAC) (site code 2158)**

This Conclusion Statement outlines how it is proposed to licence and manage aquaculture activities in the above Natura site in compliance with the EU Habitats Directive. Aquaculture in this Natura Site will be licensed in accordance with the standard terms and conditions as set out in the aquaculture licence templates. These are available for inspection on the Department's website at: https://www.agriculture.gov.ie/seafood/aquacultureforeshoremanagement/aquaculturelicensing/aquacultureandforeshorelicencetemplates/
The licences will also incorporate specific conditions so as to accommodate Natura requirements, as appropriate, in accordance with the principles set out in this document.

An Appropriate Assessment report of aquaculture in Kenmare River Special Area of Conservation (SAC) (Site Code: 02158) has been prepared by the Marine Institute on behalf of the Department of Agriculture, Food and the Marine. This report assessed the potential ecological interactions of aquaculture and fisheries activities on the Conservation Objectives of the site. From an aquaculture perspective the information upon which the Appropriate Assessment is based is the definitive list of applications and extant licences for aquaculture available at the time of assessment.

**Description of the aquaculture projects**

The projects involve the renewal of existing aquaculture activity and the licensing of new aquaculture activity within the SAC. Aquaculture is practiced in a number of locations within the SAC with a focus on shellfish species (mussels, oysters, scallops and clams) and finfish (salmon). Mussels are the predominant shellfish species cultured within the SAC, for example, Killmakilloge and Ardgroom Harbours produce significant amounts of mussel utilising suspended long-lines. There are also a number of sites dedicated to the culture of Atlantic Salmon.

**Conservation Features for Kenmare River SAC**

Kenmare River is designated as a SAC under the Habitats Directive. This SAC is designated for the habitats Large Shallow Inlet and Bay (1160), Reefs (1170) and Submerged Caves (8330). A number of coastal community types can also be found in the SAC, including those that are sensitive to pressures, which might arise from aquaculture, such as Maerl, seagrass and kelp reefs. The SAC is also considered an important site for two mammal species, Harbour Seal and the Otter.

**Appropriate Assessment**

The function of the Appropriate Assessment is to determine if the ongoing and proposed aquaculture activities are consistent with the Conservation Objectives for the site. The National Parks and Wildlife Service (NPWS) provide guidance on interpretation of the Conservation Objectives which are, in effect, management targets for habitats and species in 'Natura' sites. The assessment of activities was informed by this guidance, which is scaled relative to the anticipated sensitivity of the habitats and species to disturbance by the proposed activities. Some activities are deemed to be wholly inconsistent with the 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.

**Findings and Recommendations of the Article 6(3) Appropriate Assessment**

***Aquaculture and Habitats:***

The appropriate assessment finds that the majority of activities, at the current and proposed or likely future scale and frequency of activity are consistent with the Conservation Objectives for the Annex 1 Habitats, with the following exceptions:

1. Within the Kenmare River SAC there is an expired licence (no renewal received) for the culture of Scallops on the seabed. This overlapped three keystone communities, '*Zostera* dominated community', '*Maerl* dominated community' and '*Pachycerianthus multiplicatus* community'. Culture of Scallop on the seabed is deemed disturbing to such community types. As key contributors to biodiversity and being sensitive to disturbance these community types must be afforded a high degree of protection and no overlap with a disturbing activity can be tolerated.

2. 'Maerl dominated community' occurs in certain areas (Ardgroom and Killmakilloge Harbours) which are outside of the Qualifying Interests for which the Kenmare River SAC was designated but are still within the SAC

boundary. Maerl, the characterising species of this community, is listed as an Annex V species and as it is within the SAC boundary it must be afforded protection. Suspended mussel culture in Ardgroom Harbour spatially overlaps (1.84%) this community type and is considered disturbing. As a key contributor to biodiversity and being sensitive to disturbance this community type is afforded a high degree of protection and no overlap with a disturbing activity can be tolerated.

3. '*Zostera*-dominated community', as a key contributor to biodiversity and which is sensitive to disturbance should be afforded a high degree of protection i.e. thresholds for impact on these habitats is low and any significant anthropogenic disturbance should be avoided.

***Aquaculture and Species:***

The appropriate assessment acknowledges that the favourable conservation status of the Harbour Seal has been achieved given the current levels of aquaculture production within the SAC. On this basis the current levels of licensed aquaculture are considered non-disturbing to harbour seal conservation features. The following are the exceptions:

- In Coongar Harbour an oyster farm (licensed) and an application site for mussel culture is in very close proximity to a seal moulting site. The seal site in question has multiple recordings of seals and, therefore, would be considered an important location. The aquaculture site in question has structures confined to the northern portion of the site and cannot expand beyond this immediate area based on the topography of the site. This ensures that the activity will not occur in close proximity to the seal haul-out location. An expansion of intertidal aquaculture activity to areas in the immediate vicinity of the haul out locations would likely increase the risk of disturbance of the seals during the moulting period. The mussel culture site application is an expansion of existing operations and it is likely that seals will be habituated or tolerant of disturbance from this activity;

- In Ardgroom Harbour a mussel farm overlaps a seal site (breeding). A single sighting was recorded at the mussel culture site during 2000 and 2001 – it is assumed, given the lack of natural structures at the site in question, that the seal was hauled out on mussel rafts. The site in question has been licensed (and active) since 1992.

The appropriate assessment found that the aquaculture activities proposed do not pose a threat to the Otter or migrating salmon in the Kenmare River SAC.

***Mitigation***

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

- The overlap of 'scallop culture' with sensitive communities identified in the assessment report is noted. While the scallop culture had been licensed, the licence has expired and no renewal application has been received. The principles that will apply to any further applications for aquaculture in this area are as follows:
    - i. No overlap with sensitive habitats will be permitted
    - ii. There will be an additional requirement for a sufficient buffer zone to allow for mapping resolution and/or visual enforcement of exclusion

- With one exception, the AA found that the current levels of licensed shellfish and finfish culture and proposed applications are considered non-disturbing to harbour seal conservation features. The exception is the intertidal oyster culture site in Coongar Harbour. If licensing is to be considered for this site, it will be necessary to redraw the site boundaries to exclude the area overlapping the seal haul-out locations to mitigate any disturbance risk to seals.

- A finfish culture site within Kilmakilloge Harbour is in close proximity to designated seal sites. Seal interactions with marine finfish cages have been identified. The risk to seals (as predators) result from their interaction with netting if incorrectly configured. In terms of mitigation and in order to minimise the risk the operator will be instructed to employ a range of management actions including stock management (density control, regular removal of mortalities from cages), use of seal blinds and appropriate net tensioning.

- Aquaculture activity (suspended mussel culture) within Ardgroom Harbour spatially overlaps (1.84%) with the Maerl dominated community and may have negative effects on the distribution and quality of this community type. If licensing is to be considered for this site, it will be necessary to redraw the site boundaries to exclude the area overlapping the Maerl dominated community, allowing for a suitable buffer zone.

- The location of an intertidal oyster cultivation operation over a *Zostera* bed is considered disturbing. This activity overlaps 18.05% of this community type within the SAC. Given the highly sensitive nature of this community type any activity is likely to have impact either by shading by trestles on seagrass or compaction by transport routes to/through the trestles and increased organic enrichment. It is not proposed to licence this site.

- A licence condition requiring strict adherence to the identified access routes over intertidal habitat in order to minimise species/ habitat disturbance will be required for all relevant sites.

- A licence condition requiring that the licensed and adjoining areas shall be kept clear of all redundant structures (including apparatus, equipment and/or uncontained stock), waste products and operational litter or debris, with provisions for the prompt removal and proper disposal of such material will be required for all relevant sites.

- A licence condition requiring full implementation of the measures set out in the draft Marine Aquaculture Code of Practice prepared by Invasive Species Ireland (e.g. http://invasivespeciesireland.com/cops/aquaculture) will be required for all relevant sites .

- The movement of stock in and out of the Kenmare River SAC should adhere to relevant fish health legislation will be required for all relevant sites.

- The use of updated and enhanced Aquaculture and Foreshore Licences containing terms and conditions which reflect the environmental protection required under EU and National law will be required for all relevant sites;

**Conclusion**

The Licensing Authority is satisfied that, given the conclusions and recommendations of the Appropriate Assessment process, a decision can be taken in favour of licensing existing and proposed aquaculture operations in Kenmare River SAC, subject to the implementation of the mitigation measures outlined above and other licensing related considerations.

Accordingly, the Licensing Authority is satisfied that by not licensing overlaps with *Zostera* and *Maerl* and other sensitive communities the proposed licensing is not likely to have a significant effect on the integrity of Kenmare River SAC.

September 2019

Kieran Lyons
Cnocan
Eyeries
Beara
Co Cork

13th June 2019

**Ref: T06/364**

Ms Deirdre Fitzpatrick
Aquaculture and Foreshore Management Division,
National Seafood Centre,
Clonakilty,
Co. Cork

**Application for an Aquaculture Licence for a site in Kilmakillogue Harbour, Kenmare Bay, Co Kerry**

Dear Ms Fitzpatrick,

Thank you for your letter of 28th May.

I would like to respond to the submissions and observations attached.

I have had an application for a licence submitted to the Department since 2004 and have been working with other mussel farmers in Kilmakillogue harbour for over 30 years.

I applied for a site in 2015 in Kilcatherine, Kenmare Bay, but was advised that the site was too exposed to be sustainable.

BIM advised me to apply for this site in Kilmakillogue. If granted this site I commit to following all recommendations by the Commissioner of Irish Lights, all structures will be clearly marked and adhering to an overall group marking scheme with navigational aids. I commit to comply with all recommendations and regulations from the Marine Institute.

I commit to following recommendations from the Dept of Culture, Heritage and the Gaeltacht to ensure the preservation of coastal habitats. I will never store equipment or establish access paths in an area which could in any way damage coastal habitats.

The seed used for the cultivation of mussels will be realised from a natural spat fall collection.

If the Department of Marine does not grant a licence for this site, I trust they will grant me a licence for a different site in the harbour, for example the site that I am currently farming.

I have been farming an area in Kilmakillogue and have invested considerable funds and time in building a sustainable farm including the building of a raft with specialised equipment for harvesting.

I give part time employment in harvesting season. I have three sons who gain employment from working on the farm as well as other locals living in the area. One of my sons is interested in taking over the farm in the future.

This application is not a hypothetical business idea or a grandiose expansion of an existing business. This is my actual livelihood. I only harvest between 40 and 50 tonnes of mussels a year, a fraction of the tonnage of most farms in the harbour, but it amounts to 60% of my income.

I have proven that the licence if granted will be used, currently and into the future by my son.

Of the 9 mussel farmers in the harbour, two have objected to my application, none of the submissions and observations object to my farming in the site that I currently farm. Two of the objectors are people who I have worked closely with for many years.

I acknowledge the submission by Carl Daly (and those by his wife Angela and son Peter) as someone with whom I have farmed and fished with for the last 20 years. I understand his concern about the location of the site applied for as it adjoins his farm. However, with 30 years of mussel farming experience, I feel that realistically his concern about a lack of spat fall and slow growth is unfounded. I firmly believe that there will be a plentiful supply of food for both his farm and mine if the licence is granted. Spat fall has always been sporadic, it's the nature of natural mussel farming. I have been producing mussels for a niche market, the secret to my successful growth of mussels in a very small area is low density farming. The reason mussels don't reach market size is because of high density farming, over-crowding the mussels within the site, too many ropes hung too close together.

With regards to the submission from Raymond Ross, his main objection is against Kush Sea Farms. Raymond has employed me to help improve his farm in the last few years as it has been running at well under its potential. Since his focus on the 'Seafari' tourism business his mussel farm has been neglected and lines have been left to tangle. Ray Ross's farm has roughly ten times the capacity for farming than the area I've been working, but very little of the potential yield from his farm has been realised due to poor management and neglect. When Ray Ross speaks of un-licenced farmers whose lines have been 'removed' at night, he doesn't refer to me as my lines have never been removed.

With regards to the letter from Mr John O'Sullivan of Carrignahilan, his objection is based on a disagreement from 12 years ago where myself and Eugene McCarthy ( with whom I was fishing shrimp at the time) had to take him to court to prevent him from cutting our buoys and tampering with our shrimp pots. He was subsequently bound to the peace by the presiding judge. John O'Sullivan is a plasterer by trade, he doesn't rely fully on fishing in the harbour for his livelihood.

Likewise, Eugene McCarthy who made a submission, (along with his wife Mag) is a sheep farmer primarily. I fished shrimp with Eugene McCarthy for 8 years. I gave up fishing with him as he is not committed to fishing, this can be seen from his very occasional landings to the buyers in Castletownbere. He states that I am 'not from the area' when in fact I live 20 minutes' drive from Kilmakillogue harbour.

I am a shrimp fisherman and a mussel farmer, so I have experience of both and know the benefits of fishing around the mussel farms, where there is in fact enhanced shrimp fishing. There is plenty of room for fishing and aquaculture in Kilmakillogue harbour, one can complement the other.

I work solely as a shrimp fisherman and mussel farmer; I have no other source of income.

As regards the various submissions about the detritus of fishing materials littering the shores of the harbour, I am fully in agreement that regulations should be imposed to clean up the shoreline caused by aquafarming. Last year in response to an initiative by BIM I collected 360 barrels which had been washed up on the shore in the harbour and brought them to be recycled. As far as I know I am the only farmer in the harbour to have taken up the initiative.

Many of the submissions refer to tourism. Never has food and travel been so closely linked. In my experience of bringing visitors to see the mussel farms, tourists enjoy seeing the process of natural mussel farming and enjoy eating locally produced food in situ. The mussel business is a big asset to tourism. Food tourism is growing rapidly especially in the area of locally grown naturally farmed food. Mussel farming is a perfect example of this.

With regards to the submissions claiming a disruption to water-sports in the harbour, these activities have been going on for more than 35 years at the same time as mussel farming and there is no reason for that not to continue. Seals have been thriving in the harbour for all the years that the mussel farms have been in operation.

There are very few businesses around Kilmakillogue serving tourism, the aquaculture business provides at least four times the amount of employment than tourism in the immediate area, but if the food tourism was to be taken seriously this could be greatly enhanced with significant employment potential.

I am a small farmer farming sensitively in the harbour. This is the kind of enterprise that flourishes with tourism. Naturally grown sea food of the highest quality being produced with sensitivity in an area of natural beauty makes that destination more attractive to tourists than places that are solely surviving on tourism, which is only viable for part of the year.

I look forward to having the issue of a licence resolved and a licence finally granted.

Yours sincerely,

Kieran Lyons

# Report supporting Appropriate Assessment of Aquaculture and Fisheries Risk Assessment in Kenmare River SAC

(Site Code: 02158)

Marine Institute

Rinville

Oranmore, Co. Galway

Version: March 2019

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# 1. Preface

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

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

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

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

# 2. Executive summary

## 2.1 The SAC

Kenmare River is designated as a Special Area of Conservation (SAC) under the Habitats Directive. The marine area is designated for the habitats Large Shallow Inlet and Bay, Reef and Submerged Caves. The bay supports a variety of sub-tidal and intertidal sedimentary and reef habitats including habitats that are sensitive to pressures, which might arise from fishing and aquaculture, such as Maërl (corraline algae), seagrass and kelp reefs. The area is also designated for and supports significant numbers of Harbour Seal and Otter. Conservation Objectives for these habitats and species were identified by NPWS (2013a) and relate to the requirement to maintain habitat distribution, structure and function, as defined by characterizing (dominant) species in these habitats. For designated species the objective is to maintain various attributes of the populations including population size, cohort structure and the distribution of the species in the Bay. Guidance on the conservation objectives is provided by NPWS (2013b).

## 2.2 Activities in the SAC

Aquaculture includes the production of shellfish and finfish. The main aquaculture activity is suspended long-line mussel (*Mytilus edulis*) culture. Oyster culture involves the culture of the Pacific oyster (*Crassostrea gigas*) on trestles in intertidal areas. Clam and Scallop culture are both licensed in the area but are not currently active. There are four finfish (*Salmo salar*) farm sites currently active within the SAC.

The profile of the aquaculture industry in the Kenmare River, used in this assessment, was prepared by BIM and is derived from the list of licence applications received by DAFM and provided to the Marine Institute for assessment in March 2019.

A range of fishing activities occur in Kenmare River including potting, dredging and trawling for shellfish, demersal fish and pelagic fish. Other activities include, intertidal seaweed harvesting as well as seal watching tourism activity.

## 2.3 The Appropriate Assessment Process

The function of an appropriate assessment and risk assessment is to determine if the ongoing and proposed aquaculture and fisheries activities are consistent with the Conservation Objectives for the Natura site or if such activities will lead to deterioration in the attributes of the habitats and species over time and in relation to the scale, frequency and intensity of the activities. NPWS (2013b) provide guidance on interpretation of the Conservation Objectives which are, in effect, management targets for habitats and species in the SAC. This guidance is scaled relative to the anticipated sensitivity of habitats and species to disturbance by the proposed activities. Some activities are deemed to be wholly inconsistent with long term maintenance of certain sensitive habitats while other habitats can tolerate a range of activities. For the practical purpose of management of sedimentary habitats a 15% threshold of overlap between a disturbing activity and a habitat is given in the NPWS guidance. Below this threshold disturbance is deemed to be non-significant. Disturbance is defined as that which leads to a change in the characterizing species of the habitat (which may also indicate change in structure and function). Such disturbance may be temporary or persistent in the sense that change in characterizing species may recover to pre-disturbed state or may persist and accumulate over time.

The appropriate assessment and risk assessment process is divided into a number of stages consisting of a preliminary risk identification, and subsequent assessment (allied with mitigation measures if necessary) which are covered in this report. The first stage of the process is an initial screening wherein activities which cannot have, because they do not spatially overlap with a given habitat or have a clear pathway for interaction, any impact on the conservation features and are therefore excluded from further consideration. The next phase is the Natura Impact Statement (NIS) where interactions (or risk of) are identified. Further to this, an assessment on the significance of the likely interactions between activities and conservation features is conducted. Mitigation measures (if necessary) will be introduced in situations where the risk of significant disturbance is identified. In situations where there is no obvious mitigation to reduce the risk of significant impact, it is advised that caution should be applied in licencing decisions. Overall the Appropriate Assessment is both the process and the assessment undertaken by the competent authority to effectively validate this Screening Report and/or NIS. It is important to note that the screening process is considered conservative, in that other activities which may overlap with habitats but which may have very benign effects are retained for full assessment. In the case or 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

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

## 2.5 Findings

**Aquaculture and Habitats:**

The appropriate assessment and risk assessment finds that the majority of activities, at the current and proposed or likely future scale and frequency of activity are consistent with the Conservation Objectives for the Annex 1 habitats. The following are the exceptions:

1. Within the Kenmare River SAC the culture (licensed) of Scallops (*Pecten maximus*) on the seabed overlaps with three keystone communities, *Zostera* dominated community, Maerl dominated community and *Pachycerianthus multiplicatus* community. This activity is deemed disturbing to such community types. As key contributors to biodiversity and being sensitive to

[1] NPWS Geodatabase Ver: September 2013 - http://www.npws.ie/mapsanddata/habitatspeciesdata/

disturbance these community types are afforded a high degree of protection and no overlap with a disturbing activity can be tolerated.

2. Maerl dominated community occurs in certain areas (Ardgroom and Killmakilloge Harbours) which are outside of the Qualifying Interests for which the Kenmare River SAC was designated but are still within the SAC boundary. Maerl, the characterising species of this community, is listed as an Annex V species and as it is within the SAC boundary it must be afforded protection. Suspended mussel culture in Ardgroom Harbour overlaps this community type and is considered disturbing. As a key contributor to biodiversity and being sensitive to disturbance this community types is afforded a high degree of protection and no overlap with a disturbing activity can be tolerated.

**Aquaculture and Species:**

- It is acknowledged in this assessment that the favourable conservation status of the Harbour seal (*Phoca vitulina*) has been achieved given current levels of aquaculture production within the SAC. On this basis, the current levels of licenced aquaculture (existing) are considered non-disturbing to harbour seal conservation features. The following is one exception:
    - Aquaculture activity (oyster farm) overlapping Harbour Seal moulting site in Coongar Harbour. It is recommended that the site boundaries be redrawn to exclude the harbour seal haul-out location.
- The aquaculture activities proposed do not pose a threat to the Otter or migrating salmon in the Kenmare River SAC.

**Fisheries and Habitats:**

– Pot fisheries may pose a high risk to sensitive habitats (Zostera and Maerl) in Kenmare Bay and a low-moderate risk (depending on level of activity) to kelp communities

– Depending on intensity of activity demersal trawling may impact muddy sand communities in outer Kenmare Bay

– Scallop dredging poses a risk to faunal reef communities in Kenmare Bay.

**Fisheries and Species:**

– Although there is a risk of by-catch of harbour seal in set net fisheries in outer Kenmare Bay and in midwater trawl fisheries in the inner Bay this is unlikely to impact the Harbour Seal population in Kenmare. Sprat fisheries occur sporadically in Kenmare Bay and may temporarily reduce prey availability for Harbour Seal. This is unlikely to have significant effects on the Harbour Seal population

– Otters may occur as by-catch in trammel nets and pots fished in shallow water (<5m depth). As pots are usually deployed in waters deeper than 5m the risk of by-catch is thought to be very low and insignificant to otter populations in Kenmare

# 3. Introduction

This document assesses the potential ecological interactions of aquaculture and fisheries activities within the Kenmare River SAC (site code 2158) on the Conservation Objectives (COs) of the site.
The information upon which this assessment is based is a list of applications and extant licences for aquaculture activities administered by the Department of Agriculture Food and Marine (DAFM) and forwarded to the Marine Institute as of August 2013; as well as aquaculture and fishery profiling information provided on behalf of the operators by Bord Iascaigh Mara. The spatial extent of aquaculture licences is derived from a database managed by the DAFM[2] and shared with the Marine Institute.

# 4. Conservation Objectives for Kenmare River SAC (002158)

The appropriate assessment of aquaculture in relation to the Conservation Objectives for Kenmare River SAC is based on Version 1.0 of the objectives (NPWS 2013a - Version 1 April 2013) and supporting documentation (NPWS 2013b - Version 1 March 2013). The spatial data for conservation features was provided by NPWS[3].

## 4.1 The SAC Extent

Kenmare River is a long and narrow south-west facing bay situated in the south west of Ireland. Kenmare River has an exceptional complement of marine and terrestrial habitats associated with exposed coasts and ultra-sheltered bays. Numerous islands and inlets along the length of the bay provide areas of additional shelter in which a variety of habitats occur. Kenmare River SAC is designated for the marine Annex I qualifying interests of Large hallow inlets and bays (1160), Reefs (1170) and Submerged or partially submerged seacaves (8330). The Annex I habitat Large shallow inlets and bays is a large physiographic feature that may wholly or partly incorporate other Annex I habitats including Reefs and Submerged Seacaves within its area. A number of coastal habitats can also be found in the SAC, including Fixed coastal dunes with herbaceous vegetation (grey dunes), Vegetated sea cliffs of the Atlantic and Baltic coasts and shifting dunes along the shoreline with *Ammophilia arenaria* ("white dunes"). The SAC is also considered an important site for the two mammal species Harbour Seal (*Phoca vitulina*) and the Otter (*Lutra lutra*). The extent of the SAC is shown in Figure 1 below.

## 4.2 Qualifying Interests (SAC)

The SAC is designated for the following habitats and species (NPWS 2013a), as listed in Annex I and Annex II of the Habitats Directive:

- 1014 Marsh Snail *Vertigo angustior*

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[2] DAFM Aquaculture Database version Aquaculture: 11th Nov, 2013
[3] NPWS Geodatabase Ver: September 2013 - http://www.npws.ie/mapsanddata/habitatspeciesdata/

- 1160 Large shallow inlets and bays
- 1170 Reefs
- 1220 Perennial vegetation of stony banks
- 1230 Vegetated sea cliffs of the Atlantic and Baltic coasts
- 1303 Lesser Horseshoe Bat *Rhinolophus hipposideros*
- 1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
- 1355 Otter *Lutra lutra*
- 1365 Harbour seal *Phoca vitulina*
- 1410 Mediterranean salt meadows (*Juncetalia maritimi*)
- 2120 Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")
- 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)
- 4030 European dry heaths
- 6130 Calaminarian grasslands of the *Violetalia calaminariae*
- 8330 Submerged or partially submerged sea caves

Constituent communities and community complexes recorded within the qualifying interest Annex 1 habitats (i.e. 1160 - Large Shallow inlets and Bays, 1170 - Reefs) are listed in NPWS (2013b) and illustrated in Figure 2 and consist of:

- Intertidal mobile sand community complex
- *Zostera*-dominated community
- Maërl-dominated community
- *Pachycerianthus multiplicatus* community
- Muddy fine sands dominated by polychaetes and *Amphiura filiformis* community complex
- Fine to medium sand with crustaceans and polychaetes community complex
- Coarse sediment dominated by polychaetes community complex
- Shingle
- Intertidal reef community complex
- *Laminaria*-dominated community complex
- Subtidal reef with echinoderms and faunal turf community complex

The Kenmare River SAC is designated for the Harbour seal (*Phoca vitulina*) and has been the subject of annual monitoring surveys during the moulting season (August-September) from 2009-2011 (NPWS 2010, 2011, 2012). Recent estimates of harbour seal populations at the site (inner Kenmare River) are 310 in 2009, 324 in 2010, and 309 in 2011. Two sites located in outer Kenmare River, Illaunsillagh and Cove Harbour/West Cove, were also surveyed. Estimates of seal populations at these outer sites rose from 21 (2009) to 37 (2011) and from 31 (2010) to 50 (2011) respectively.

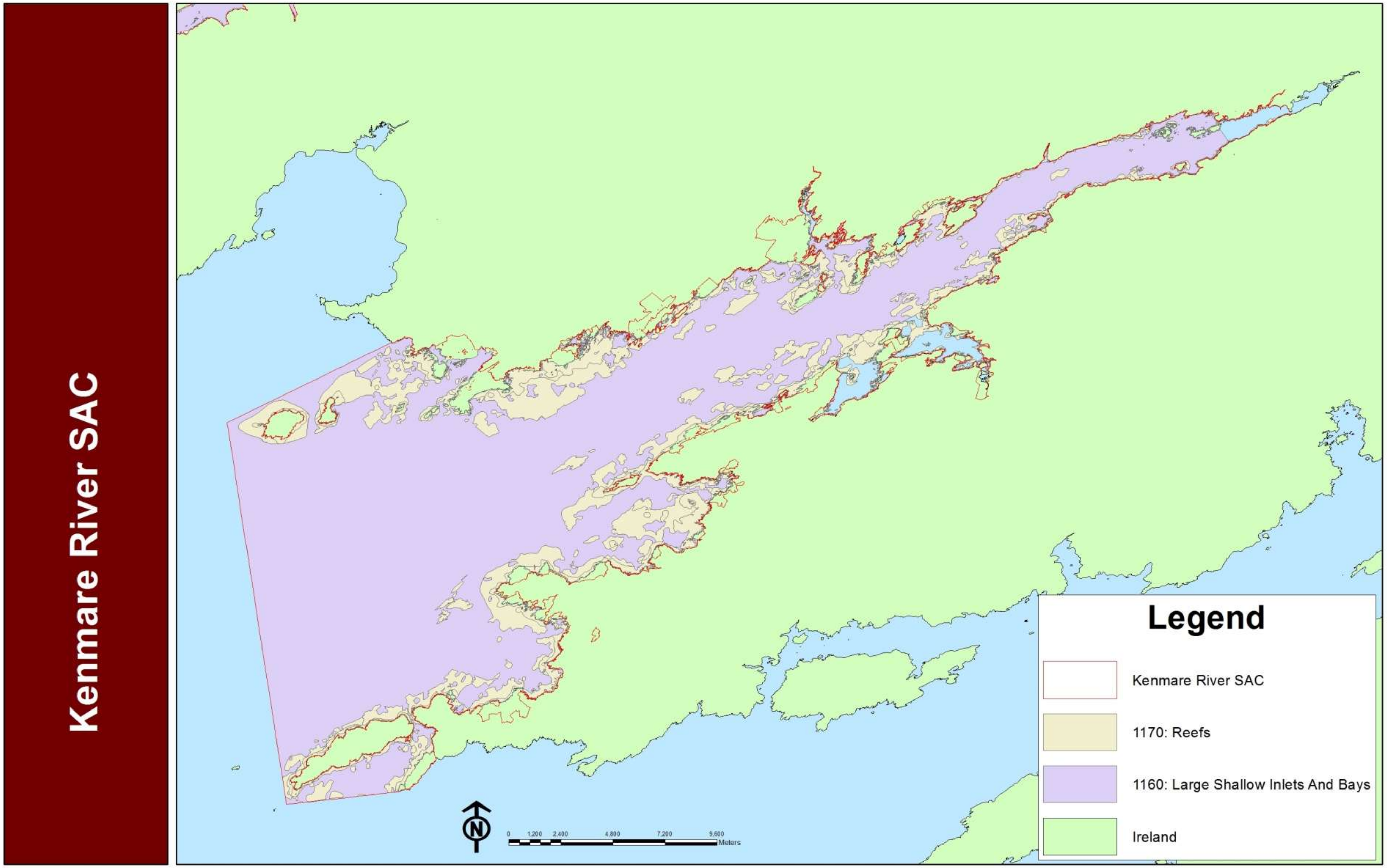


**Figure 1: The extent of the Kenmare River SAC (Site Code 002158) and qualifying interest 1170 Reef and 1160 Large Shallow Inlet and Bay.**

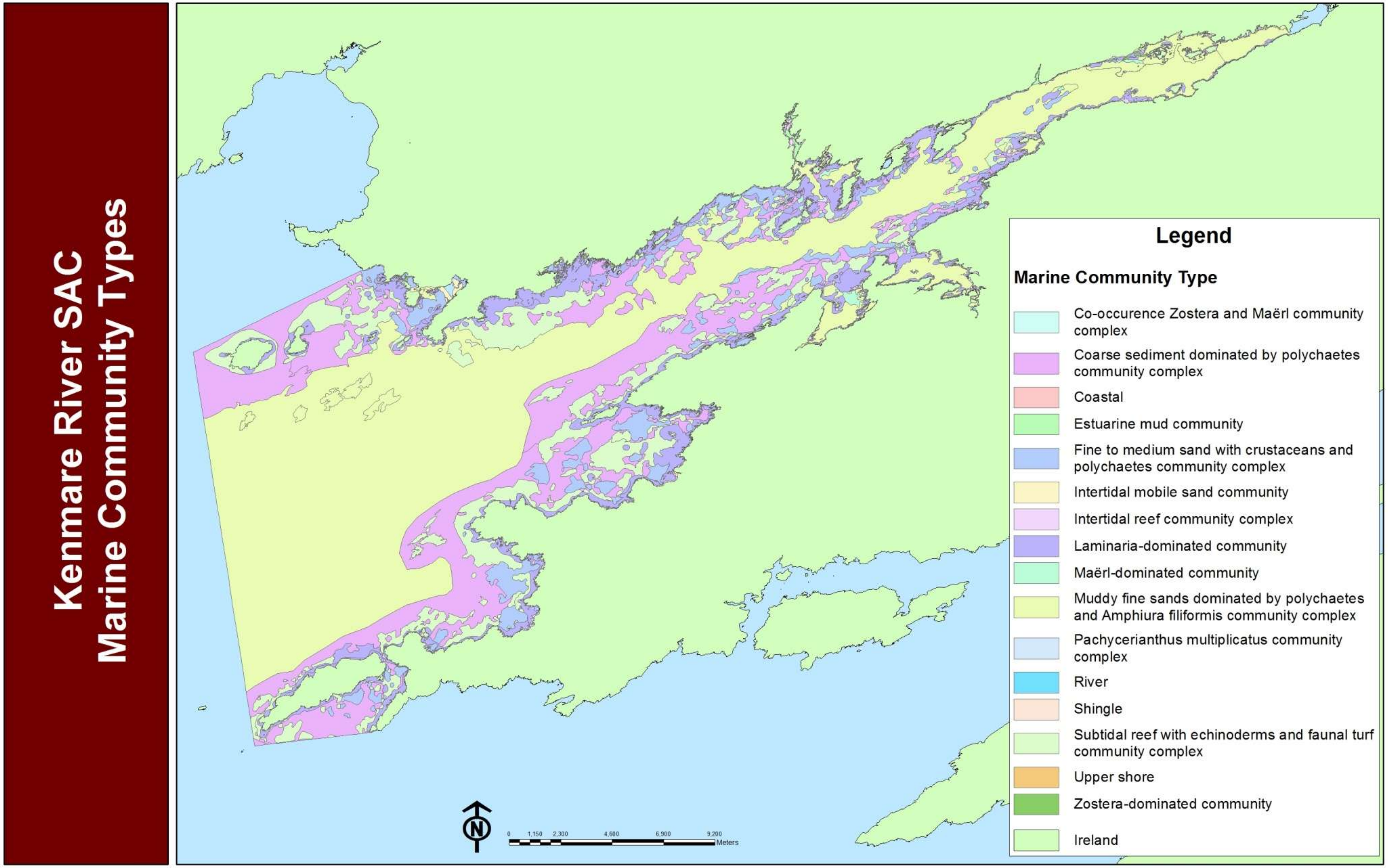


**Figure 2. Principal benthic communities recorded within the qualifying interests Large shallow inlets and bays Reefs and Submerged or partially submerged sea caves within the Kenmare River SAC (Site Code 002158) (NPWS 2013a).**

Based on recent reports (Cronin *et al*., 2004; Heardman *et al*., 2006; Cronin et al, 2008, NPWS 2010, 2011, 2012) the Kenmare River is deemed important both on a regional and on a national scale regarding its Harbour seal population.

A number of different locations have been identified within the SAC (NPWS 2013a) and are considered important to the overall welfare and health of the Harbour seal populations at the site. Figure 3 identifies these locations and distinguishes between breeding, moulting and resting sites. A site naming convention based upon designated periods in the life cycle have been identified by the competent authority, i.e. NPWS (NPWS 2011; 2013b). Important periods are the pupping season (May-July) and moulting season (August-September) and both periods and locations are considered important periods to the overall health of the population in the SAC and that any disturbance during these times should be kept to a minimum. Less information is known about resting period (October-April) and resting areas throughout the SAC. The resting locations provided in Figure 3 represent locations where seals have been observed, yet it must be noted that sheltered areas within the entire SAC are considered suitable habitat for resting seals (NPWS 2012, 2013a).

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

## 4.3 Conservation Objectives for Kenmare River SAC

The conservation objectives for the qualifying interests (SAC) were identified in NPWS (2013a). The natural condition of the designated features should be preserved with respect to their area, distribution, extent and community distribution. Habitat availability should be maintained for designated species and human disturbance should not adversely affect such species. The features, objectives and targets of each of the qualifying interests within the SAC are listed in Table 1 below.

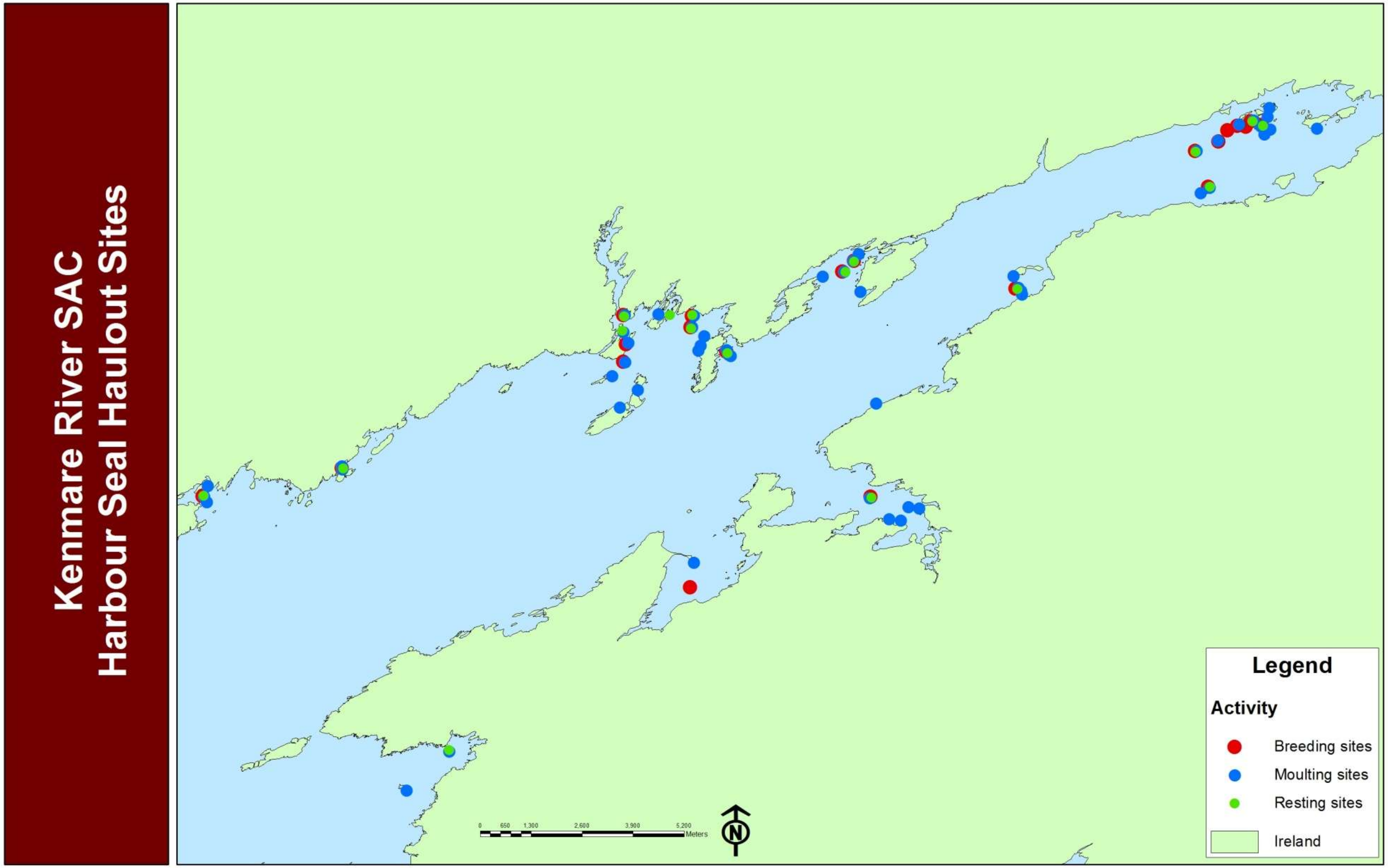


Figure 3  Harbour Seal (*Phoca vitulina*) locations in Kenmare River SAC (Site Code 002158).

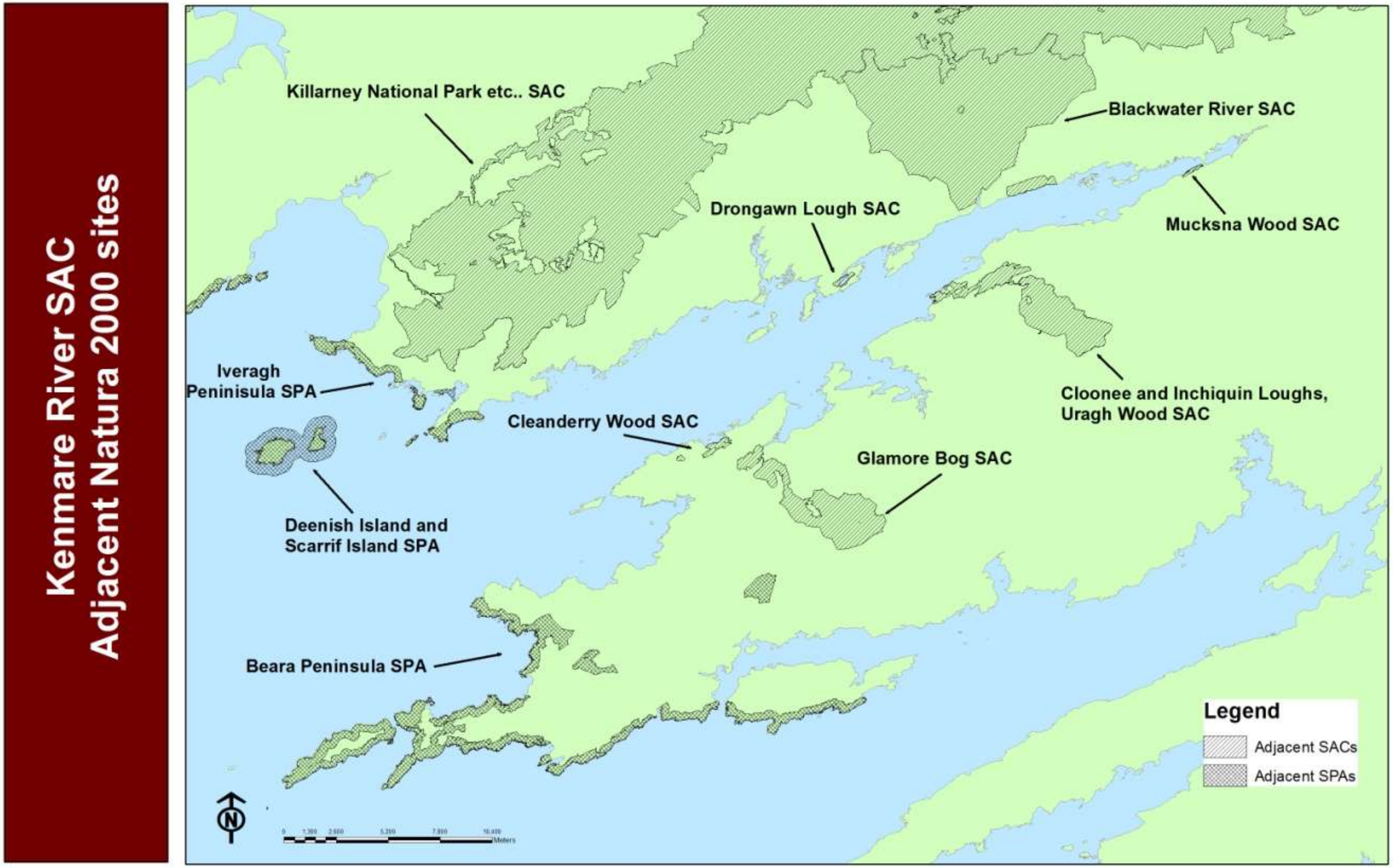


**Figure 4. Natura 2000 sites adjacent to the Kenmare River SAC.**

**Table 1: Conservation objectives and targets for marine habitats and species in Kenmare River SAC (Site Code 002158) (NPWS 2013a, 2013b). Annex I and II features listed in bold.**

| Feature (Community Type) | Objective | Target(s) |
|---|---|---|
| **Large shallow inlets and bays** | Maintain favourable conservation condition | 39,322ha;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. |
| (Intertidal mobile sand community complex) | Maintain favourable conservation condition | 63.07ha; Maintained in a natural condition |
| (*Zostera* dominated communities) | Maintain favourable conservation condition | 20.04ha; Maintain natural extent and high quality of *Zostera* dominated communities |
| (Maërl-dominated community) | Maintain favourable conservation condition | 46.82ha; Maintain natural extent and high quality of Maërl dominated communities |
| (*Pachycerianthus multiplicatus* community) | Maintain favourable conservation condition | 6.23ha; Maintain natural extent and high quality of *Pachycerianthus multiplicatus* community |
| (Muddy fine sands dominated by polychaetes and *Amphiura filiformis* community complex) | Maintain favourable conservation condition | 20,141.20ha; Maintained in a natural condition |
| (Fine to medium sand with crustaceans and polychaetes community complex) | Maintain favourable conservation condition | 1987.75ha; Maintained in a natural condition |
| (Coarse sediment dominated by polychaetes community complex) | Maintain favourable conservation condition | 8,309.80ha; Maintained in a natural condition |
| (Shingle) | Maintain favourable conservation condition | 1.42ha; Maintained in a natural condition |
| (Intertidal reef community complex) | Maintain favourable conservation condition | 525.46ha; Maintained in a natural condition |
| (*Laminaria*-dominated community complex) | Maintain favourable conservation condition | 3,356.63ha; Maintained in a natural condition |
| (Subtidal reef with echinoderms and faunal turf community complex) | Maintain favourable conservation condition | 4805.86ha; Maintained in a natural condition |
| **Reefs** | Maintain favourable conservation condition | 9,196ha; The distribution and permanent area is stable or increasing, subject to natural processes. |
| (Intertidal reef community complex) | Maintain favourable conservation condition | 680.26ha; Maintained in a natural condition |
| (Subtidal reef with echinoderms and faunal turf community complex) | Maintain favourable conservation condition | 4,835.43ha; Maintained in a natural condition |
| (*Laminaria*-dominated community complex) | Maintain favourable conservation condition | 3,676.57ha; Maintained in a natural condition |
| **Perennial vegetation of stony banks** | Maintain favourable conservation condition | Area unknown; Targets are identified that focus on a wide range of attributes with the ultimate goal of maintaining function and diversity of favourable species and managing levels of negative species. |

| Feature (Community Type) | Objective | Target(s) |
|---|---|---|
| **Vegetated sea cliffs of the Atlantic and Baltic coasts** | Maintain favourable conservation condition | >72.2ha; 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. |
| **Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)** | Maintain favourable conservation condition | 2.65ha; 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. |
| **Mediterranean salt meadows (*Juncetalia maritimi*)** | Maintain favourable conservation condition | 17.90ha;Targets are identified that focus on a wide range of attributes with the ultimate goal of maintaining function and diversity of favourable species and managing levels of negative species |
| **Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")** | Maintain favourable conservation condition | 1.67ha;Targets are identified that focus on a wide range of attributes with the ultimate goal of maintaining function and diversity of favourable species and managing levels of negative species |
| **Fixed coastal dunes with herbaceous vegetation (grey dunes)** | Maintain favourable conservation condition | 20.41ha; 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 |
| **European dry heaths** | Maintain favourable conservation condition | >300ha; 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 and disturbance |
| **Calaminarian grasslands of the *Vioetalia claminariae*** | Maintain favourable conservation condition | 3.1ha: 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 and disturbance (soil toxicity). |
| **Submerged or partially submerged sea caves** | Maintain favourable conservation condition | Area unknown; Targets relate to maintaining distribution and managing human activities. |
| **Marsh Snail *Vertigo angustior*** | Maintain favourable conservation condition | A single site is identified for this species and targets relate to maintaining adult and sub-adult densities and overall habitat quality. |
| **Otter *Lutra lutra*** | Restore favourable conservation conditions | Maintain distribution - 88% positive survey sites. |

| Feature (Community Type) | Objective | Target(s) |
|---|---|---|
| | | 2748ha; No significant decline in extent of marine habitat; Couching sites and holts - no significant decline and minimise disturbance: Fish biomass - No significant decline in marine fish species in otter diet. Barriers to connectivity - No significant increase. |
| **Harbour Seal *Phoca vitulina*** | Maintain favourable conservation condition | The range of use within the site should not be restricted by artificial barriers; all sites should be maintained in natural condition; human activities should occur at levels that do not adversely affect harbour seal population at the site. |
| **Lesser Horseshoe Bat (*Rhinolophus hipposideros*)** | Maintain favourable conservation condition | The range of use within the site should not be restricted by artificial barriers; all sites should be maintained in natural condition; human activities should occur at levels that do not adversely affect the Lesser Horsehoe Bay population at the site. |

## 4.4 Screening of Adjacent SACs or for *ex-situ* effects

In addition to the Kenmare River SAC there are a number of other Natura 2000 sites proximate to the proposed activities (Figure 4). The characteristic features of these sites are identified in Table 2 where a preliminary screening is carried out on the likely interaction with aquaculture activities based primarily upon the likelihood of spatial overlap. As it was deemed that there are no *ex situ* effects and no effects on features in adjacent SACs all qualifying features of adjacent Natura 2000 sites were screened out.

**Table 2 Natura Sites adjacent to Kenmare River SAC and qualifying features with initial screening assessment on likely interactions with aquaculture activities.**

| NATURA SITE | QUALIFYING FEATURES [HABITAT CODE] | AQUACULTURE INITIAL SCREENING |
|---|---|---|
| **Old Domestic Building , Dromore Wood SAC (000353)** | Lesser Horseshoe Bat (*Rhinolophus hipposideros*) [1303] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| **Cleanderry Wood SAC (001043)** | Killarney Fern *Trichomanes speciosum* [1421] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| **Cloonee and Inchiquin Loughs, Uragh Wood SAC (001342)** | Kerry slug *Geomalacus maculosus* [1024] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Lesser horseshoe bat *Rhinolophus hipposideros* [1303] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Killarney fern *Trichomanes speciosum* [1421] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Slender naiad *Najas flexilis* [1833] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |

| **NATURA SITE** | **QUALIFYING FEATURES [HABITAT CODE]** | **AQUACULTURE INITIAL SCREENING** |
|---|---|---|
| | Old sessile oak woods with Ilex and Blechnum in British Isles [91A0] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| **Mucksna Wood SAC (001371)** | Old sessile oak woods with Ilex and Blechnum in British Isles [91A0] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| **Glanmore Bog SAC (001879)** | Freshwater pearl mussel (*Margaritifera margaritifera*) [1029] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Killarney fern (*Trichomanes speciosum*) [1421] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Northern Atlantic wet heaths with *Erica tetralix* [4010] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Blanket bog (*active only) [7130] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| **Drongawn Lough SAC (002187)** | Coastal lagoons [1150] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |

| NATURA SITE | QUALIFYING FEATURES [HABITAT CODE] | AQUACULTURE INITIAL SCREENING |
|---|---|---|
| **Blackwater River (Kerry) SAC (002173)** | Kerry slug (*Geomalacus maculosus*) [1024] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Freshwater pearl mussel (*Margaritifera margaritifera*) [1029] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Salmon (*Salmo salar*) [1106] | Migrating salmon passing through Kenmare River SAC and could interact with activities covered in this assessment- **carry forward to Section 8.** |
| | Lesser horseshoe bat (*Rhinolophus hipposideros*) [1303] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| | Otter (*Lutra lutra*) [1355] | Otter may migrate into Kenmare River SAC and could interact with aquaculture and fisheries activities **– carry forward to Section 8.** |
| | European dry heaths [4030] | No spatial overlap with aquaculture and fisheries activities within Kenmare River SAC – excluded from further analysis |
| **Iveragh Peninsula SPA (004154)** | Fulmar (*Fulmarus glacialis*) [A009] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis [4] |
| | Peregrine (*Falco peregrinus*) [A103] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis |

[4] http://www.npws.ie/media/npwsie/content/images/protectedsites/sitesynopsis/SY004154.pdf

| NATURA SITE | QUALIFYING FEATURES [HABITAT CODE] | AQUACULTURE INITIAL SCREENING |
|---|---|---|
| | Kittiwake (*Rissa tridactyla*) [A188] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis |
| | Guillemot (*Uria aalge*) [A199] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis |
| | Chough (*Pyrrhocorax pyrrhocorax*) [A346] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis |
| **Beara Peninsula SPA (004155)** | Fulmar (*Fulmarus glacialis*) [A009] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis [5] |
| | Chough (*Pyrrhocorax pyrrhocorax*) [A346] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis |
| **Deenish Island and Scariff Island SPA (004175)** | Fulmar (*Fulmarus glacialis*) [A009] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis [6] |
| | Manx Shearwater (*Puffinus puffinus*) [A013] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis |

[5] http://www.npws.ie/media/npwsie/content/images/protectedsites/sitesynopsis/SY004155.pdf
[6] http://www.npws.ie/media/npwsie/content/images/protectedsites/sitesynopsis/SY004175.pdf

| NATURA SITE | QUALIFYING FEATURES [HABITAT CODE] | AQUACULTURE INITIAL SCREENING |
|---|---|---|
| | Storm Petrel (*Hydrobates pelagicus*) [A014] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis |
| | Lesser Black-backed Gull (*Larus fuscus*) [A183] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis |
| | Arctic Tern (*Sterna paradisaea*) [A194] | Breeding sites have no spatial overlap with aquaculture and fisheries activities within Kenmare River SAC; Risk of disturbance is minimal – excluded from further analysis |

# 5. Details of the proposed plans and projects

## 5.1 Aquaculture

Aquaculture in the Kenmare River SAC focuses on shellfish species (mussels, oysters scallops and clams) and finfish (Salmon) (Figures 5 and 6). Mussels are the predominant shellfish species cultured within the SAC. Small quantities of oysters are produced; while Scallops and Clams, although licensed, are not currently produced in the area. There are also six locations dedicated to the culture of Atlantic Salmon. Descriptions of spatial extents of existing and proposed activities within the qualifying interests of the Kenmare River SAC were calculated using coordinates of activity areas in a GIS. The spatial extent of the various aquaculture activities (current and proposed) overlapping the habitat features is presented in Table 3 (data provided by DAFM).

### 5.1.1 Oyster Culture

Oyster farming within Kenmare River is a form of intensive culture which has been taking place since the early 1990s. A single species forms the basis of oyster aquaculture operation in the Kenmare River SAC, i.e. the Pacific oyster, *Crassostrea gigas.* The seed is cultivated using the bag and trestle method, either to half-grown or fully-grown size. The bag and trestle method uses steel table-like structures which rise from the shore to just above knee height on the middle to lower intertidal zone, arrayed in double rows with wide gaps between the paired rows to allow for access. The trestles hold HDPE bags approximately 1m by 0.5m by 10cm, using rubber and wire clips to close the bags and to fasten them to the trestles. When first put to sea, there may be up to 2000 oysters in a single bag, but as they grow and are graded this number is gradually reduced. Over the course of the two or three years that it takes an oyster to reach saleable size, the density is reduced until market ready oysters, of approximately 100g each (when grown to full size) are being grown in bags of approximately 100 oysters per bag. The bags need to be shaken, turned and re-secured occasionally to prevent build-up of fouling and to ensure the growing oysters maintains a good marketable shape. This usually takes place once on each tidal cycle, when maximum exposure of the shore allows safe access to all trestles. It is most important during the summer months when plankton, the oysters' food, is abundant and oyster growth rates are at their optimum. Oysters are grown on in these bags to half-grown or full grown size for up to three years, and will be graded two or three times over the course of each summer.

There are four sites in operation, three in Templenoe and one in Coongar Harbour. These operations are relatively small, currently producing less than 30 tonnes annually, they are classified as free from the herpes virus and at the moment the operators are buying in seed from Seasalter, both diploid and triploid, depending on availability. This availability means that there is currently no generalised production cycle. Sites are accessed at low tide using a tractor and trailer, by a public road near Templenoe and by boat in Coongar Harbour.

There are a number of applications for new licences for bag and trestle oyster culture, in Killmakilloge and Ardgroom Harbour, which would be accessed by boat from the local piers and one on the south shore of Kenmare River, near Killaha East which would be accessed by shore from the applicants own property. Some of these are for multi species licences, to include native oysters, mussels, but still using the bag and trestle method of cultivation.

### 5.1.2 Rope Mussels

There are a number of very productive locations for suspended long-line mussel farming in Kenmare River, namely Killmakilloge Harbour (600 – 1000 tonnes), Ardgroom Harbour, including Coosmore and Cleanderry Harbour (700 – 1100 tonnes) and Coongar Harbour, including Sneem Harbour (150 – 200 tonnes). All of the farms are locally owned, providing quite large scale local employment. The main piers in use are located close to these growing areas.

The culture method involves placing, an often re-usable, settlement media (rope, strap, mesh) in the water column, known as a 'dropper' on which natural juvenile mussels settle, depending on a number of seasonal and local factors this takes place in April, May or June, the naturally collected mussel seed is then on-grown for typically 18-24 months before being harvested as per market requirements and in line with shellfish and water quality parameters. Some of the larger farmers operate as contract service providers, carrying out the harvesting for the smaller farmers, using their purpose built work barges, although for the most part the farmers work their own farms using smaller converted fishing vessels. As these mussels grow the 'droppers' are often moved to grow-out areas, or remain in situ. Some farms grade the mussels during the 18-24 months, using the "New Zealand" continuous rope system, whereby the mussels are re-packed at a specific density using bio-degradable cotton mesh around the rope, the mesh rots away after the mussels have re-attached using their byssal threads. All of the long-lines in use are double head rope longlines, constructed from polypropylene mostly of 110m in length, with typically 30 x 210-250l floatation units (mostly grey in colour) and anchored at each end with 2.5 tonne concrete weights. In general the long-line density is no greater than 3 lines per hectare. In Ardgroom Harbour the mussel farmers, through the CLAMS process set a self-imposed stocking density of 2 longlines per hectare and a dropper limit of 406 per line.

There are a number of long-line licence applications in the traditional areas of Ardgroom, Killmakilloge and Coongar Harbours as well as an expansion into deeper, more exposed waters of Kenmare River and in Coulagh Bay. A number of these newer long-line licence applications are for multi-species licences, to include mussels, oysters and native seaweeds.

A single trial site is currently in operation to establish the technical feasibility of a novel rope cultivation system for a mussel longline system in the main body of Kenmare River (Figure 7). The experimental deployment includes 3 mussel lines of 40m (at surface) 180m (total length including full length of moorings) in the proposed site for a period of 18 months. Drop lines (per surface line) are seeded with mussels (7-10mm locally sourced) and suspended at a range of depths between 5m and 35m. Monthly measurements of growth are to be taken. Environmental monitoring will include high frequency data on wave height, current speed and direction, temperature and salinity, and periodic manual observations will also be conducted (e.g. plankton tows, water samples for chlorophyll measurements). Following the trial period of 18 months all field trial equipment will be removed from the area.

### 5.1.3 Salmon Culture

Salmon (*Salmo salar*) is currently produced at 4 sites within the Kenmare River SAC. Five sites are licensed to produce salmon, one of which is also licensed to produce Rainbow trout (*Oncorhynchus mykiss*). There is also one licence application for salmon production.

Marine Harvest Ireland (MHI) operates two sites, Inisfarnard and Deenish. At both sites there is space for fourteen 128m circumference net pens, with 15m sides. The cubic capacity of each net pen is 19,600m$^3$, leading to an overall volume of 274,400m$^3$ and at maximum allowable stocking density, a potential standing stock of 2,744 tonnes. Each site also has a feed barge, moored on site, which can hold a maximum of 200 tonnes of feed. The feed barge can feed the stock automatically throughout the day, each net pen has cameras installed to monitor the fish, optimising feed conversion rate and minimising waste. The sites operate on a two year annual alternate site stocking cycle, inputting 800,000 smolts, to each site alternately and harvesting them in year two from months 16 to 22. The site is then left fallow for two months before next smolt input. These sites are accessed from piers in Castletownbere, Travarra and Ballycrovane.

Murphy's Irish Seafood Ltd operates the other two sites, St. Killians and Doon Point. St Killians, in Killmakilloge Harbour, a 160 tonne licenced site (leased from St. Killian's Salmon Ltd), has three 70m net pens and is currently operating as a smolt site holding the fish for one year before being transferred to a main grower site. The Doon Point site is currently fallow, but has a licenced capacity of similar to the MHI sites above. These sites are accessed from Cleandra and Killmakilloge in Kenmare River and Gearhies in Bantry Bay.

The smolts for these sites come from a number of sources. Smolt is the name given to juvenile salmon, when they would naturally travel from fresh water, where they are hatched and develop, approximately for one year, to salt water for feeding and further growth before returning to the same fresh water to breed. The smolts for the MHI operation are currently produced in the MHI freshwater facilities in Donegal, namely Altan and Pettigoe. Murphy's Irish Seafood Ltd, whilst producing most of their smolt requirements from their Borlin hatchery also buy in smolt from Derrylea Holdings Ltd. All of these smolts are trucked from the freshwater facilities to a well boat for delivery to the sea sites. Once at sea the smolts are reared in nets suspended from circular floating structures known as pens. These are moored in groups, in locations where there are strong water flows in order to provide the stock with optimum environmental conditions, as salmon are extremely sensitive to pollution and only grow if the waters in which they live are clean and well oxygenated. The smolts are initially fed by hand but as they grow, mechanical feed systems are used.

All sites are operating according to EU Organic Aquaculture standards[7], which include low stocking densities and the use of organically certified food. The nets are made of knotless netting and no anti-fouling treatment is allowed, nets are either cleaned *in-situ* using pressurised water systems or alternatively when the need arises the nets are changed. Regular dive inspections are carried out on the nets and moorings.

#### 5.1.4 Scallops

Within the Kenmare River SAC, there are eleven sites licensed for the production of scallops and also two applications (Ballycrovane and Killmakilloge Harbours). None of the licensed scallop sites are currently active. Scallops are dredged from the seafloor within these licensed areas. There is little or no intervention to improve stocks. The activities effectively equate to a wild fishery.

At the two application sites (Killmakillogue and Ballycrovane Harbours), juvenile scallops would be purchased either from a hatchery or from wild collection and broadcast on the seabed; these would then be left to grow, to be harvested by divers.

#### 5.1.5 Clams

There is a single licence for clam cultivation in conjunction with oysters. Clams have never been farmed on site and currently the site is being used to farm oysters on bag and trestle. If clams were to be farmed, they would be seeded in the ground, under nets, the clams would then be raked by hand for grading and harvesting.

## 5.2 Description of Fishing Activities

#### 5.2.1. Pot fisheries

Six vessels less than 8m in length fish for lobster and crab along the coast from Ballinskelligs into Kenmare River using 1500 pots and a further 8 vessels under 10m in length fish 2500 pots in inner Kenmare. A further 19 vessels fishing 9500 pots fish for shrimp (*Palaemon serratus*) in inner Kenmare. Potting for prawns (Nephrops) occurs at the edge of trawling ground in outer and mid Kenmare (Fig. 7).

#### 5.2.2. Dredge fisheries

Scallops are fished with dredges on the south shore of inner Kenmare.

#### 5.2.3. Set net fisheries

Tangle netting for crayfish occurs at the outer edges of the SAC and in coastal waters to the north and south of the site (Fig. 8).

[7] http://www.bim.ie/our-services/grow-your-business/farmedfishqualitylabelling/organicassurancelabellingschemes/

### 5.2.4. Bottom trawl fisheries

Bottom trawl fisheries, targeting *Nephrops* and mixed demersal fish, occurs on fine sedimentary habitats in outer Kenmare River.

### 5.2.5. Pelagic fisheries

Pelagic trawling for sprat occurs in winter in inner Kenmare River (Fig. 9).

### 5.2.6. Hook and line fisheries

Inshore fishing vessels fish for Mackerel and Pollack in outer Kenmare River SAC in summer and autumn (Fig. 10)

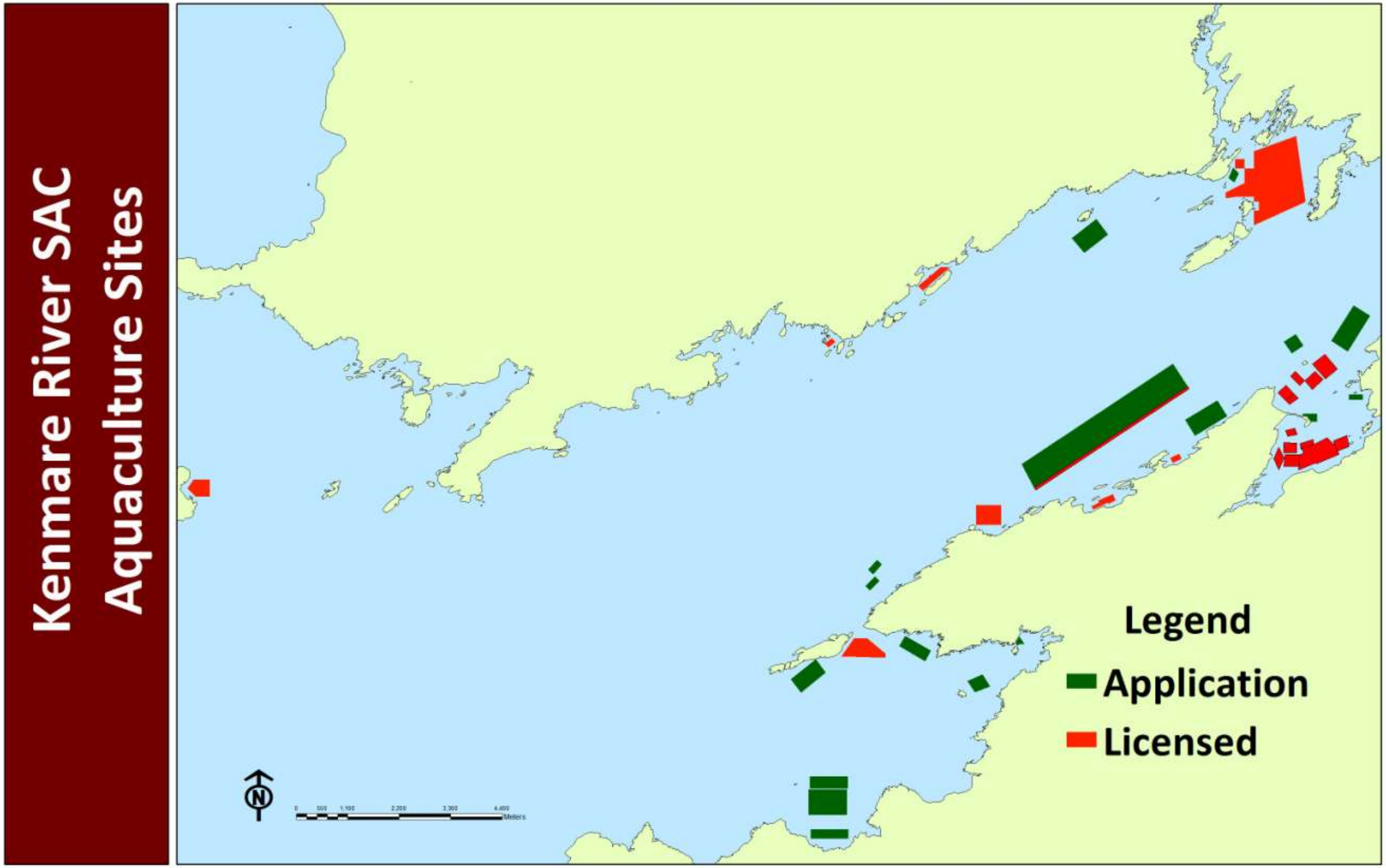


**Figure 5 Aquaculture sites (Licenced and Applications) in western portion of Kenmare River SAC (Site Code 002158).**

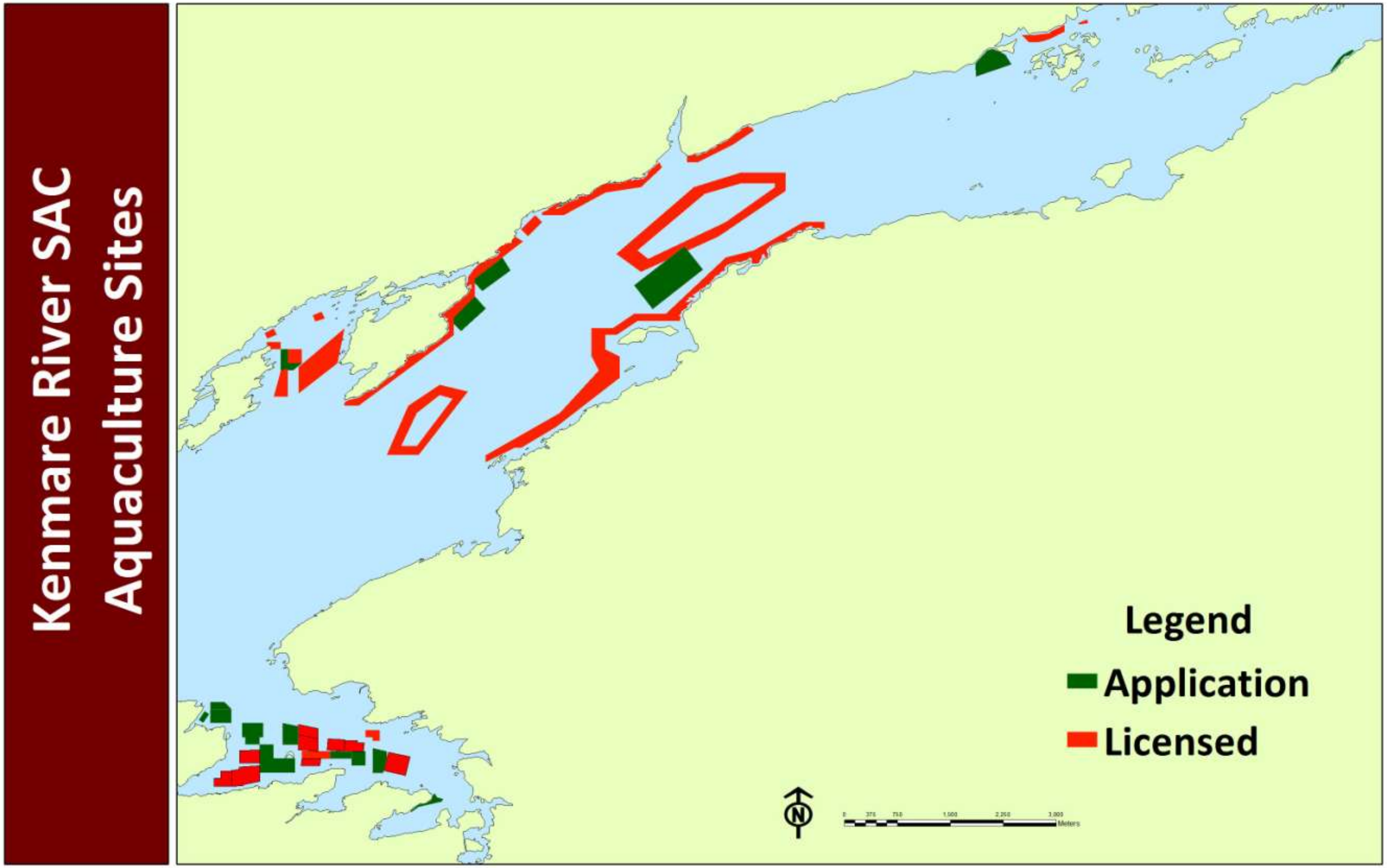


**Figure 6 Aquaculture sites (Licenced and Applications) in eastern portion of Kenmare River SAC (Site Code 002158).**

**Table 3: Spatial extent (ha) of aquaculture activities overlapping with the qualifying interest (1160 Large shallow inlets and bays and 1170 Reefs) in Kenmare River SAC (Site Code 002158), presented according to culture species, method of cultivation and license status.**

| Species | Status | Location | 1160 - Large shallow inlets and Bays 39,322ha | | 1170 – Reefs 9,196ha | |
|---|---|---|---|---|---|---|
| | | | **Area (ha)** | **% Feature** | **Area (ha)** | **% Feature** |
| Oysters | Licensed | Intertidal | 7.53 | 0.02 | 1.54 | 0.02 |
| Oysters | Application | Intertidal | 27.56 | 0.07 | 44.50 | 0.48 |
| Mussels | Licensed | Subtidal | 46.97 | 0.12 | 41.39 | 0.45 |
| Mussels | Application | Subtidal | 483.48 | 1.23 | 134.43 | 1.46 |
| Finfish | Licensed | Subtidal | 62.67 | 0.16 | 12.13 | 0.13 |
| Finfish | Application | Subtidal | 31.89 | 0.08 | 14.50 | 0.16 |
| Scallops | Licensed | Subtidal | 473.10 | 1.20 | 209.10 | 2.27 |
| Scallops | Application | Subtidal | 1.87 | 4.76E-03 | 1.84 | 0.02 |
| **Totals** | | | **1135.07ha** | **2.88%** | **459.43 ha** | **4.99%** |

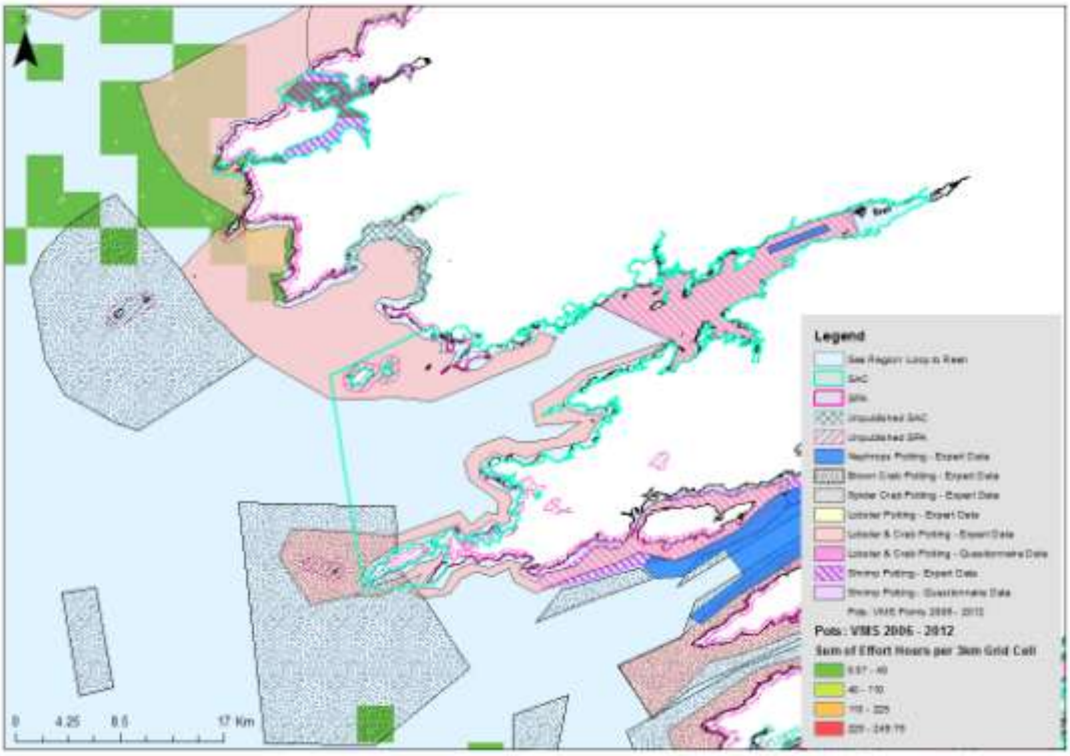


**Figure 7.** Pot fishing activity in the region of Kenmare River SAC


**Figure 8.** Set net fishing activity in the region of Kenmare River SAC

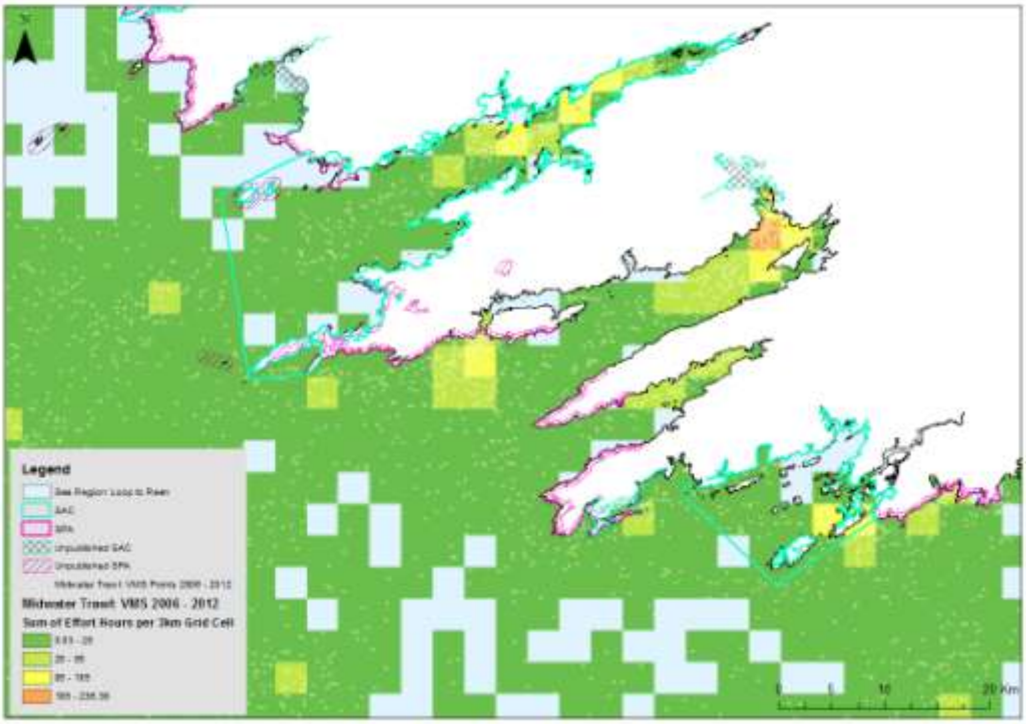


**Figure 9.** Pelagic fishing activity in the region of Kenmare River SAC

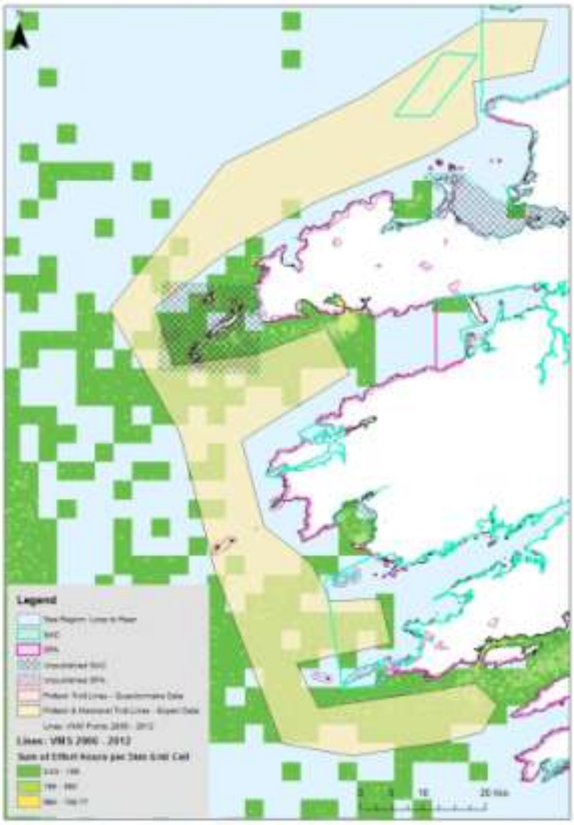


**Figure 10.** Hook and line fishing activity in the region of Kenmare River SAC

# 6. Natura Impact Statement for the Activities

The potential ecological effects of activities on the conservation objectives for the site relate to the physical and biological effects of fishing gears or aquaculture structures and human activities on designated species, intertidal and sub-tidal 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 fishing and aquaculture activities during the lifetime of the proposed plans and projects and the nature of each of these activities in conjunction with the sensitivity of the receiving environment.

## 6.1 Aquaculture

Within the qualifying interest of the Kenmare River SAC, the species cultured are:

- Mussels (*Mytilus edulis*) in suspended culture (Rope culture) in subtidal areas.
- Oysters (*Crassostrea gigas*), in suspended culture (bags & trestles) confined to intertidal areas.
- Scallops (*Pecten maxius*) subtidally on the seafloor.
- Clams (*Ruditapes philippinarum*) on the seafloor intertidally.
- Atlantic salmon (*Salmo salar*) in net pens.

Details of the potential biological and physical effects of these aquaculture activities on the habitat features, their sources and the mechanism by which the impact may occur are summarised in Table 4, below**.** The impact summaries identified in the table are derived from published primary literature and review documents that have specifically focused upon the environmental interactions of mariculture (e.g. Black 2001; McKindsey *et al*. 2007; NRC 2010; O'Beirn *et al* 2012; Cranford *et al* 2012; ABPMer 2013a-h).

Filter feeding organisms, for the most part, feed at the lowest trophic level, usually relying primarily on ingestion of phytoplankton. The process is extractive in that it does not rely on the input of feedstuffs in order to produce growth. Suspension feeding bivalves such as oysters and mussels can modify their filtration to account for increasing loads of suspended matter in the water and can increase the production of faeces and pseudofaeces (non-ingested material) which result in the transfer of both organic and inorganic particles to the seafloor. This process is a component of benthic-pelagic coupling (Table 3). The degree of deposition and accumulation of biologically derived material on the seafloor is a function of a number of factors discussed below.

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

**Suspended Shellfish Culture**: Suspended culture, may result in faecal and pseudo-faecal material falling to the seabed. In addition, the loss of culture species to the seabed is also a possibility. The degree to which the material disperses away from the location of the culture system (longlines or trestles) depends on the density of mussels on the line, the depth of water and the current regime in the vicinity. Cumulative impacts on seabed, especially in areas where assimilation or dispersion of pseudofaeces is low, may occur over time. A number of features of the site and culture practices will govern the speed at which pseudofaeces are assimilated or dispersed by the site. These relate to:

- Hydrography – will govern how quickly the wastes disperse from the culture location and the density at which they will accumulate on the seafloor.
- Turbidity in the water - the higher the turbidity the greater the production of pseudo-faeces and faeces by the filter feeding animal and the greater the risk of accumulation on the seafloor.
- Density of culture – suspended mussel culture is considered a dense culture method with high densities of culture organisms over a small area. The greater the density of organisms the greater the risk of accumulations of material. The density of culture organisms is a function of:
    - depth of the site (shallow sites have shorter droppers and hence fewer culture organisms),
    - the husbandry practices proper maintenance will result in optimum densities on the lines in order to give high growth rates as well as reducing the risk of drop-off of culture animals to the seafloor and sufficient distance among the longlines to reduce the risk of cumulative impacts in depositional areas.

In addition placement of structures associated with mussel culture can influence the degree of light penetration to the seabed. This is likely important for organisms and habitats e.g. Maërl and seagrasses which need sun light for production. Rafts or lines will to a degree limit light penetration to the sea bed and may therefore reduce production of photosynthesising species. However, such effects have not been demonstrated for seagrass.

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

- Hydrography – low current speeds (or small tidal range) may result in material being deposited directly beneath the trestles. If tidal height is high and large volumes of water moved through the culture area an acceleration of water flow can occur beneath the trestles and bags, resulting in a scouring effect or erosion and no accumulation of material.
- Turbidity of water – as with suspended mussel culture, oysters have very plastic response to increasing suspended matter in the water column with a consequent increase in faecal or pseudo-faecal production. Oysters can be cultured in estuarine areas (given their polyhaline tolerance) and as a consequence can be exposed to elevated levels of suspended matter. If currents in the vicinity are generally low, elevated suspended matter can result in increase build-up of material beneath culture structures.
- Density of culture – the density of oysters in a bag and consequently the density of bags on a trestle will increase the likelihood of accumulation on the seafloor. In addition, if the trestles are located in close proximity a greater dampening effect can be realised with resultant accumulations. Close proximity may also result in impact on shellfish performance due to competitive interactions for food.
- Exposure of sites - the degree to which the aquaculture sites are exposed to prevailing weather conditions will also dictate the level of accumulated organic material in the area. As fronts move through culture areas increased wave action will resuspend and disperse material away from the trestles.

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

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

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

**Sub-tidal shellfish culture i.e. Scallops:** This activity involves relaying shellfish on the seabed. There may be increased enrichment due to production of faeces and pseudofaeces in high density cultures. The existing in-faunal community may be changed as a result. Seabed habitat change may also result as a result of dredging during maintenance and harvesting. Uncontained sub-tidal shellfish culture will lead to change in community structure and function through the addition, at high % cover, of an epi-benthic species (living on the seabed) to an infaunal sedimentary community.

The activities associated with this culture practice (dredging of the seabed) are considered disturbing which can lead to removal and/or destruction of infaunal species and changes to sediment composition.

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

Oyster culture poses a risk in terms of the introduction of non-native species as the Pacific oyster (*Crassostrea gigas*) is a non-native species. Recruitment of *C. gigas* has been documented in a number of Bays in Ireland and appears to have become naturalised (i.e. establishment of a breeding population) in two locations (Kochmann et al 2012; 2013) and may compete with the native species for space and food. The culture of large volumes of Pacific oysters may increase the risk of successful reproduction in Kenmare River SAC. The use of triploid (non-reproducing) stock is the main method employed to mange this risk. Furthermore, the introduction of non-native species as 'hitchhikers' on and among culture stock is also considered a risk, the extent of which is dependent upon the duration the stock has spent 'in the wild' outside of Kenmare River. Half-grown stock (15-30g oysters) which would have been grown for extended periods in places (in particular outside of Ireland) present a higher risk. Oysters grown in other bays in Ireland and 'finished' in Kenmare Bay, would not appear to present a risk of introduction of non-native species assuming best practice is applied (e.g. http://invasivespeciesireland.com/cops/aquaculture/). The manila clam, *Ruditapes philippinarum*, has not been cultured in the bay as yet. No record of this species has been recorded in the wild in Ireland since its introduction in 1984.

**Finfish Culture:** Within the Kenmare River SAC there are six (5 licensed, 1 application) marine sites assigned for the culture of salmon (and other finfish). Four of these sites are currently active in the production of salmon (*Salmo salar*).

Finfish culture differs from shellfish culture in that there is an input of feed into the system and as a consequence a net input of organic matter to the system. This material will be found in the system in the form of waste feed (on the seafloor), solid waste (faeces), waste as a consequence of net-cleaning all of which usually accumulates on the seafloor and dissolved material (predominantly fractions rich in nitrogen). For the most part, the majority of organic material builds up on the seabed generally in and around the footprint of the salmon cages with a 'halo' effect evident in areas where dispersion occurs driven by local hydrographic conditions. This is typically referred to a *near-field* effects. Similar to shellfish, the quantity of material that might accumulate on the seabed will be a function of the quantity of fish held in cages, the stage of culture, the health of the fish (unhealthy fish will generally eat less), husbandry practices (are the fish fed too much too quickly?), the physical characteristic of the solid particles and, as mentioned above, hydrographic conditions.

Wildish et al. (2004) and Silvert and Cromey (2001) both summarize the factors (listed above) that govern the level of dispersion of material from the cages to the seafloor. Many of the factors are subsequently incorporated into modelling efforts which are used to predict likely levels of impact. The impact of organic matter on sedimentary seafloor habitat typically evolves after the gradient defined by Pearson-Rosenberg (1978), whereby as the level of organic enrichment increases the communities (macrofaunal species number and abundance) found within the sedimentary habitats will also change. Typically, low levels of enrichment facilitates an increase in species abundance and biomass followed by a decrease in all biological metrics as enrichment increases to a point where azoic conditions prevail and no biota are found. The impact on biota is a consequence of the decrease in oxygen and a build-up of by-products such as ammonia and sulphides brought about by the breakdown of the organic particles which are considered toxic to marine biota. The shift from an oxygenating to reducing environment in the sediment could be such that the effect is mirrored in the water column as well (i.e. reduction in oxygen levels). The output of dissolved material resulting from finfish cages is typically in the form of ammonia, phosphorous and dissolved organic carbon (DOC) originating directly from the culture organisms, or from the feed and/or faecal pellets. Similar to particulate waste, the impact of dissolved material is a function of the extent (intensity) of the activity and properties of the receiving environment (e.g., temperature, flushing time). While elevated levels of nutrient have been reported near fish farms, no significant effect on chlorophyll has been demonstrated (Pearson and Black, 2001).

**Diseases:** It is likely that the first outbreaks of infectious diseases in marine aquaculture operations were caused by pathogens originating in wild hosts and as culture extent and intensity increases the transmission of pathogens (back) to the wild fish stocks is a likely consequence. The result of such pathogen transmission back to wild fish is however unknown, as reports of clinical effects or significant mortality in wild fish populations are largely unavailable. Numerous reviews, models, risk assessments and risk analysis have been carried out or developed in order to determine the potential for disease interaction and pathogen exchange between farmed and wild finfish (OIE 2004, Bricknell *et al*. 2006, DIPNET 2006, Peeler *et al*. 2007). On foot of these outputs there is general acceptance among scientists and managers that pathogens can be transmitted between organisms used in mariculture and those found in the wild and vice-versa (ICES 2013).

The risk of infection in marine organisms, are influenced by a number of environmental factors including temperature, salinity and dissolved oxygen (Grant and Jones 2011), as well as factors particular to the biology of pathogen, e.g., replication rates, virulence. Transmission of pathogens is facilitated by one or a combination of three mechanisms, i.e., horizontal, vertical and vector-borne. Horizontal transmission refers to the direct movement through the water column of a pathogen between susceptible individuals and the open design of most mariculture cages allows the potential for bidirectional transmission of pathogens between wild and captive fish (Johansen *et al.* 2011). Vertical transmission involves the passing of a pathogen with milt or eggs, resulting in infection among offspring. Pathogens can also be spread by a third host or vector. Vectors can include other parasites, fish, piscivorous animals or inanimate objects such as clothing, vessels or equipment.

Disease transmission within culture systems is a primary concern of operators and as a consequence of monitoring and screening, a far greater knowledge base relating to disease causing organisms and their transmission is available relating to cultured stocks rather than wild stocks. As a result of the lack of empirical data relating to diseases specific to wild stocks, it has been difficult to partition population effects in wild-stocks caused by diseases from those caused by other processes (ICES 2010).

Ireland enjoys a high health status (Category 1) in relation to the fish/shellfish on farms, in rivers and lakes and remains free of many diseases that occur in other countries (www.fishhealth.ie). In Ireland, there are programmes in place that govern the movement of (fish and shellfish) stock for on-growing among sites. These movement controls are supported by a risk-based fish health surveillance programme which is operated on a nationwide basis by the Marine Institute, in co-operation with private veterinary practitioners. Ireland is currently free of the following salmonid diseases covered by (Council Directive 2006/88/EC):

- Infectious Salmon Anaemia (ISA)
- Viral Haemorrhagic Septicaemia (VHS)
- Infectious Haematopoetic Necrosis (IHN)
- Gyrodactylosis

Apart from the diseases listed under EU legislation, routine tests are carried out for other diseases found in marine salmonids in Ireland e.g. Pancreas Disease (PD), Infectious Pancreatic Necrosis (IPN), Furunculosis etc. Such diseases are present in Ireland and whilst their control is not covered by legislation, all finfish farmers in the country have agreed to comply with the parameters of a Code of Practice and Fish Health Handbook, jointly agreed between the Marine Institute and the Irish Farmers Association (IFA). These documents cover all aspects of disease prevention and control on Irish fish farms with the twin objectives of minimising disease outbreaks and of dealing with them in a timely and responsible fashion, should they arise. The net outcome should be a decrease in mortality rates on fish farms and a corresponding decrease in potential pathogen transfer to wild stocks. Ensuring the ongoing good health of farmed stocks and the regular monitoring of environmental conditions will also help to minimise the disease impacts which may be caused by infection from wild stocks in the vicinity of the cages.

**Disease Management:** Council Directive 2006/88/EC on animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals form the legislative basis that governs the monitoring and management of disease outbreaks in mariculture operations in Ireland. For diseases not listed in this Directive, a Code of Practice and Fish Health Handbook has been developed jointly by the State and industry with the primary objectives of disease prevention and control.

The adoption of chemotherapeutants and some vaccination programmes have assisted in reducing the abundance and spread of many pathogens. In addition, the principles outlined in the Fish Health Handbook mentioned above such as improved biosecurity practices on farms, fallowing sites to break transmission cycles, disease testing of fish prior to transfer, single year class stocking, coordinating treatments and harvesting within embayments etc have mitigated the transmission of pathogenic organisms.

In summary, it is clear that a number of broad factors govern the transfer of diseases between susceptible organisms. While statistical correlations have been demonstrated in terms of abundance of cultured fish and disease occurrence in wild fishes, extreme caution must apply in terms of applying causality. It is important to note that the only way to determine the link between disease outbreaks in aquaculture installations and detection in wild fish is to empirically measure or observe pathogen transfer. Furthermore, when a risk presents, it not clear if the impact on the wild fish is expressed at the individual and/or population level. While certain effects have been demonstrated at the level of individuals, research has not yet clearly identified or quantified these links at the population level. Disease management programmes operated on a statutory basis by the State and on a voluntary basis by industry *via* Codes of Practice, assist in ensuring that pathogen transfer both to and from farmed fish is kept to a minimum.

**Parasites:** Sea lice are a group of parasitic copepods found on fish worldwide. There are two species of sea lice commonly found on cultured salmonids in marine conditions around the coast of Ireland, *Caligus elongatus* Nordmann, which infests over eighty different species of marine fish, and *Lepeophtheirus salmonis* Krøyer (the salmon louse), which infests only salmon, trout and closely related salmonid species. *L. salmonis*, the salmon louse, is the more serious parasite on salmon, both in terms of its prevalence and effects. It has been reported as a common ecto-parasite of both wild and farmed salmon at sea.

Returning wild salmon have been found to carry an average of 10 or more adult egg bearing females on their return to the Irish coastline (Copley *et al.,* 2005*;* Jackson *et al.,* 2013a) from their feeding grounds in the Atlantic. Having evolved their relationship with salmon and trout over many millennia, the parasite is well adapted to target its host species and it is ubiquitous to all the coastal waters around Ireland and indeed throughout the range of the Atlantic salmon (Jackson *et al.*, 2013b).

Salmon, whether wild or cultured, go to sea from fresh water free of sea lice and only pick up the infestation after they enter the marine phase of their lives. Sea lice infestations can inflict damage to their hosts through their feeding activity on the outside of the host's body by affecting the integrity of the fish’s epithelium, which impairs its osmoregulatory ability and leaves the fish open to secondary infections. In extreme cases this can lead to a reduced growth rate and an increased morbidity in affected individuals.

Marine finfish farms are perceived by certain sectors to be problematic because of the proximity of some operations to river mouths and a concern over the possible impact on wild migratory salmonid fisheries through infestation with sea lice. The studies on the impacts of lice infestation on smolts (Jackson *et al.* 2011, 2013a) suggest that sea lice induced mortality on outwardly migrating smolts is likely a minor and irregular component of marine mortality in the stocks studied. This conclusion is further supported by the finding of no correlation between the presence of aquaculture and the performance of adjacent wild salmon stocks.

**Parasite Management:** Based on the evidence from targeted studies, the information collected as part of the National Sea Lice Monitoring and Control Programme, scientific reports published by the Marine Institute, and in-line with external advice, it is concluded that there is a robust and effective management programme in place in Ireland to control sea lice infestation on farmed fish. Furthermore, there is no empirical evidence to support the suggestion that the fisheries are being adversely affected by unusual levels of sea lice infestation, whether of farmed origin or from other sources.

**Table 4: Potential indicative environmental pressures of aquaculture activities within the qualifying interests (Large shallow inlets and bays (1160), Reefs (1170) and Submerged or partially submerged seacaves (8330)) of the Kenmare River SAC.**

| Activity | Pressure category | Pressure | Potential effects | Equipment | Duration (days) | Time of year | Factors constraining the activity |
|---|---|---|---|---|---|---|---|
| **Aquaculture** | | | | | | | |
| Rope Mussel and other suspended culture methods | Physical | Current alteration | Baffling effect resulting in a slowing of currents and increasing deposition onto seabed changing sedimentary composition | Floats, longlines, continuous ropes (New Zealand system) and droppers | 365 | All year | Location (sheltered location for year round activity) |
| | Biological | Organic enrichment | Faecal and pseudofaecal deposition on seabed potentially altering community composition. Drop-off of culture species. | | | | |
| | | 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 | | | | |
| | | Nutrient exchange | Changes in ammonium and Dissolved inorganic nitrogen | | | | |

| Activity | Pressure category | Pressure | Potential effects | Equipment | Duration (days) | Time of year | Factors constraining the activity |
|---|---|---|---|---|---|---|---|
| | | | resulting in increased primary production. Nitrogen ($N_2$) removal at harvest. | | | | |
| | | Alien species | Introduction of non-native species with culture organism transported into the site | | | | |
| 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 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 | | | | |

| Activity | Pressure category | Pressure | Potential effects | Equipment | Duration (days) | Time of year | Factors constraining the activity |
|---|---|---|---|---|---|---|---|
| | | | populations is compromised. | | | | |
| | | Organic enrichment | Faecal and pseudofaecal deposition on seabed potentially altering community composition | | | | |
| Subtidal Shellfish culture | Physical | Surface disturbance | Abrasion at the sediment surface and redistribution of sediment | Dredge | Once quarterly | Seasonal | Weather for site access. Size of shellfish and market constraints |
| | | Shallow disturbance | Sub-surface disturbance to 25mm | | | | |
| | Biological | Monoculture | Habitat dominated by single species and transformation of infaunal dominated community to epifaunal dominated community. | | | | |
| | | By-catch mortality | Mortality of organisms captured or disturbed during the harvest or process, damage to structural fauna of reefs | | | | |
| | | Non-native species introduction | 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 shellfish populations would likely be compromised. The risk | | | | |

| Activity | Pressure category | Pressure | Potential effects | Equipment | Duration (days) | Time of year | Factors constraining the activity |
|---|---|---|---|---|---|---|---|
| | | | introduction of disease causing organisms by introducing seed originating from the 'wild' in other jurisdictions | | | | |
| | | Nutrient exchange | Increased primary production. $N_2$ removal at harvest or denitrification at sediment surface. | | | | |
| Salmon | Biological | Nutrient exchange | Increased primary production. $N_2$ removal at harvest or denitrification at sediment surface. | | 365 | | Fallow periods when no fish in the cages in the water. |
| | | Organic enrichment | Faecal and waste food on seabed potentially altering community composition | | 365 | | |
| | | Disease risk | Transmission of diseases and parasites between culture organisms and wild stocks and vice-versa. | | 365 | | |
| | | Shading | Prevention of light penetration to seabed potentially impacting light sensitive species | Cages | 365 | | Fallow periods when no fish in the cages in the water. Netting generally removed. |

**Aquaculture and Harbour Seal Interactions:** In relation to Harbour seals (*Phoca vitulina*), less information is available on the potential interactions between the species and the activities in question (see NRC 2009). There has been no targeted research conducted in similar ecosystems that has directly assessed the impact of this type of aquaculture on harbor seals or indeed any other seal populations. There has, however, been considerable research on short-term responses of harbor seals to disturbance from other sources, and these can be used to inform assessments the potential impacts of disturbance from aquaculture activities currently underway and proposed in Kenmare River SAC. These disturbance studies have focused on impacts upon groups of seals that are already ashore at haul-out sites. Sources of potential disturbance have varied widely, and include people and dogs (Allen *et al.*, 1984; Brasseur & Fedak, 2003), recreational boaters (Johnson & Acevedo-Gutierrez, 2007; Lelli & Harris, 2001; Lewis & Mathews, 2000), commercial shipping (Jansen et al., 2006), industrial activity (Seuront & Prinzivalli, 2005) and aircraft (Perry et al., 2002). A harbor seal's response to disturbance may vary from an increase in alertness, movement towards the water, to actual entering into the water, i.e. flushing (Allen et al., 1984) and is typically governed by the location and nature of the disturbance activity. For example, kayaks may elicit a stronger response than power boats (Lewis & Mathews, 2000; Suryan & Harvey, 1999), and stationary boats have been shown to elicit a stronger response than boats moving along a predictable route (Johnson & Acevedo-Gutierrez, 2007). Furthermore, the mean distance at which seals are flushed into the water by small boats and people ranges between 80m and 530m, with some disturbances recorded at distances of over 1000m. In certain areas, these empirical studies have been used to inform management actions in marine protected areas, for example where a 1.5km buffer is set around harbor seal haul-out sites in the Dutch Wadden Sea to exclude recreational disturbance (Brasseur & Fedak, 2003).

Displacement from areas may also result from disturbances attributable to the activities of mariculture workers (Becker et al., 2009; 2011). This disturbance may be caused directly by the presence of workers on intertidal areas. However while disturbance from shellfish culture operations have been observed to influence the distribution of seal within a sheltered embayment, no inference was made on the effect on broader population characteristics of harbour seals from this study (Becker 2011).

Potential interactions between shellfish culture and marine mammals are broadly summarized in Table 5. It should be noted that direct demonstrations of these impacts are rare, and in most cases, potential effects are therefore predicted from the best existing information (NRC, 2010). Furthermore, none of the studies published to explore impacts on marine mammals and in particular Harbour Seals, were specifically designed to detect ecological impacts on this species (NRC 2009; Becker *et al*., 2009, 2011). Even where studies have been carried out around shellfish farms, uncertainty over spatial and temporal variation in both the location of structures (Watson-Capps and Mann, 2005) and levels of disturbance (Becker *et al*., 2009; 2011) constrain the conclusions that can be drawn about the impacts of mariculture on critical life functions such as reproduction and foraging.

Mariculture operations are considered a source of marine litter (Johnson, 2008). Ingestion of marine litter has also been shown to cause mortality in birds, marine mammals, and marine turtles (Derraik, 2002).

Mariculture structures can provide shelter, roost, or haul-out sites for birds and seals (Roycroft *et al*., 2004). This is unlikely to have negative effects on bird or seal populations, but it may increase the likelihood that these species cause faecal contamination of mollusc beds.

Seal interactions with marine finfish cages have been described (Aquaculture Stewardship Council, 2012). The seals (as predators) are attracted to the structures and their contents and have been known to tear netting in attempts to acquire prey items (i.e. cultured finfish). While a risk of entanglement in netting may present, it is not considered likely and the greatest risk is the escape of stocked fishes. In order to mitigate this risk, operators have resorted to the use of deterrent devices (Acoustic or Harassment) which have variable results based upon the location, extent of use and mammals targeted. However, deterrent devices are now considered detrimental to seals and alternative management actions are advised (Nelson 2004; Aquaculture Stewardship Council 2012). Therefore, careful stock management (density control and regular removal of mortalities from cages), use of seal blinds and appropriate net tensioning are all considered suitable methods to minimise negative interactions between seals and finfish culture. Lethal actions to remove seals are only allowed under licence, the criteria which are determined by NPWS (Section 42 of the Wildlife Act, 1976 (as amended).

The Kenmare River is deemed important both on a regional and on a national scale regarding its Harbour Seal population. The overall Harbour Seal numbers (population) has been stable or increasing between 2003 and 2012 (NPWS data) coincident with static levels of mariculture production. While no definitive conclusions can be drawn regarding the population status of harbour seals in the Kenmare River and more widely around Ireland, based upon survey reports from 2009-2011 (as no baseline reference values are provided), it would appear that the levels both regionally and nationally are stable or possibly increasing (see Figure 2 in NPWS 2012).

## 6.2 Fisheries

Fisheries using bottom contacting mobile gears cause physical abrasion and disturbance pressure to marine habitats in Kenmare River. These include bottom trawling on sedimentary habitats and dredging in mixed sediments and at the edge of reef for scallop. Pot fisheries and static net fisheries may cause localized abrasion and disturbance to habitats which may be significant for habitats that are highly sensitive to such pressures. All fisheries extract fish biomass which may reduce habitat quality for designated species such as otter and harbour seals. Harbour seals and otters may be caught as by-catch in certain gears such as pelagic trawls and trammel nets set for bait in shallow water.

## 6.3 In-combination activities

Other activities leading to potential impacts on conservation features relate to harvest of seaweed on intertidal reef communities. There is little known concerning the level of harvest from these intertidal reef communities. The impact is likely two-fold, direct impact upon the reefs by removal of a constituent species and impact upon intertidal sediments as a consequence of travel across the shore to the harvest sites.

Seal watching cruises are conducted in Kenmare. Given the nature of this activity it is unlikely that they will result in extensive disturbance to seal species.

There are a number of activities which are terrestrial in origin that might result in impacts on the conservation features of the Kenmare River SAC. Primary among these are point source discharges from municipal and industrial units (Shellfish Pollution Reduction Programme, DECLG). There are five urban waste water treatment plants in the general vicinity of the SAC. These are found in Ardgroom, Kenmare, Sneem, Kilgarvan, Eyeries. The pressure derived from these facilities is a discharge that may impact upon levels of dissolved nutrients, suspended solids and some elemental components e.g. aluminium in the case of water treatment facilities.

**Table 5: Potential interactions between aquaculture activities and the Annex II species Harbour Seal (*Phoca vitulina*) within the Kenmare River SAC.**

| Culture Method | Pressure category | Pressure | Potential effects | Equipment | Duration (days) | Time of year | Factors constraining the activity |
|---|---|---|---|---|---|---|---|
| **All Aquaculture Methods** | Physical | Habitat Exclusion | Structures may result in a barrier to movement of seals. | Net pens, Bags and trestles | 365 | All year | Spatial extent and location of structures used for culture. |
| | | Disturbance | Ancillary activities at sites increase the risk of disturbance to seals at haul out sites (resting, breeding and/or moulting) or in the water. | Site services, human, boat and vehicular traffic | 365 | All year | Seasonal levels of activity relating to seeding, grading, and harvesting. Peak activities do no coincide with more sensitive periods for seals (i.e. pupping and moulting) |
| | | Entanglement | Entanglement of seals from ropes or material used on structures or during operation of farms | Trestles, bags, ropes and/or nets used in day to day | 365 | All year | Farm management practices |
| | | Ingestion | Ingestion of waste material used on farm | Ties used to secure bags and secure bags to trestle | 365 | All year | Farm management practices |
| | | Deterrent Methods | Seals interfering with cages will result in deterrent actions, e.g. use of Acoustic deterrent or harassment Devices. If all non lethal avenues fail then lethal methods may be employed (under licence). | ADDs and lethal devices (shooting) | 365 | | Fallow periods no fish on-site |

**Table 6: Potential pressures caused by fisheries in the Kenmare River SAC.**

| METIER/ ACTIVITY | PRESSURE CATEGORY | PRESSURE | POTENTIAL EFFECTS | FISHING GEARS OR AQUACULTURE EQUIPMENT | DURATION (DAYS) | TIME OF YEAR | FACTORS CONSTRAINING THE ACTIVITY |
|---|---|---|---|---|---|---|---|
| Potting,for shrimps | Physical | Surface disturbance | Abrasion at the sediment surface | Shrimp pots | 240 | August to March | catch rate, weather, market |
| | Biological | Extraction | Removal of shrimp | | | | |
| | | By-catch | Mortality of species in by-catch | | | | |
| Lobster and crab potting | Physical | Surface disturbance | Abrasion at the sediment surface | Soft eye side entrance creels and top entrance pots | Approx 240 | Mainly March to October | catch rate, weather, market |
| | Biological | Extraction | Removal of lobster and crab | | | | |
| | | By-catch | Mortality of species in by-catch | | | | |
| Tangle netting | Physical | Surface disturbance | Abrasion at the sediment surface | Tangle nets | Unknown | Mainly May to Sept | catch rate, weather, |
| | Biological | Extraction | Removal of crayfish and other commercial fish species | | | | |
| | | By-catch | Potential by-catch of designated species grey seal, porpoise and otter. | | | | |

| METIER/ ACTIVITY | PRESSURE CATEGORY | PRESSURE | POTENTIAL EFFECTS | FISHING GEARS OR AQUACULTURE EQUIPMENT | DURATION (DAYS) | TIME OF YEAR | FACTORS CONSTRAINING THE ACTIVITY |
|---|---|---|---|---|---|---|---|
| Dredging for scallops | Physical | Surface disturbance | Abrasion at the sediment surface | Fixed toothed dredges (DRB), ICES code 04.1.1 | unknown | Mainly winter and spring | catch rate, weather, market, spatial closures |
| | | Shallow disturbance | Sub-surface disturbance to 25mm | | | | |
| | Biological | Extraction | Removal of scallops | | | | |
| | | By-catch mortality | Mortality of organisms captured or disturbed during the fishing process, damage to structural fauna of reefs | | | | |
| Midwater (pelagic) trawling | Biological | Extraction | Removal of pelagic fish (Herring and sprat) | Pelagic trawls, OTM, ICES 03.2.1. | Unknown | Sept to March | Fish biomass |
| | | By-catch | Potential by-catch of designated species harbour seal and otter. | | | | |
| Hook and line pelagic | Biological | Extraction | Removal of pelagic and demersal fish | Hooks and lines, LHP, ICES 09.1.0, LHM, ICES 09.2.0, LTL, ICES 09.6.0 | Unknown | Summer, Autumn | Quota, weather |
| Bottom set tangle nets | Physical | Surface disturbance | Abrasion at the sediment surface | Gill nets, GNS, ICES 07.1.0 | Unknown | All year | weather |

| METIER/ ACTIVITY | PRESSURE CATEGORY | PRESSURE | POTENTIAL EFFECTS | FISHING GEARS OR AQUACULTURE EQUIPMENT | DURATION (DAYS) | TIME OF YEAR | FACTORS CONSTRAINING THE ACTIVITY |
|---|---|---|---|---|---|---|---|
| | Biological | Extraction | Removal of demersal fish | | | | |
| | | By-catch | Potential by-catch of designated species harbour seal and otter. | | | | |
| Mixed fisheries demersal trawling | Physical | Surface disturbance | Abrasion at the sediment surface | Demersal single bottom otter trawls (OTB, ICES code 03.1.2 | Unknown | All year | Weather, quota restrictions |
| | | Shallow disturbance | Sub-surface abrasion by trawl doors | | | | |
| | Biological | Extraction | Removal of fish | | | | |
| | | By-catch mortality | Mortality of organisms in contact with fishing gear | | | | |
| | | | | | | | |
| Trammel nets (bait fishery) | Physical | Surface disturbance | Abrasion on sediment surface or on reefs | GTR, ICES 07.5.0 | Unknown | All year | Availability and price of bait |
| | Biological | Extraction | Removal of non-commercial fish species | | | | |
| | | By catch | Potential catch of designated species otter and harbour seal | | | | |

# 7. Screening of Aquaculture Activities

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

In this assessment screening of the qualifying interests against the proposed activities is based primarily on spatial overlap i.e. if the qualifying interests overlap spatially with the proposed activities then significant impacts due to these activities on the conservation objectives for the qualifying interests is not discounted (not screened out) except where there is absolute and clear rationale for doing so. Where there is relevant spatial overlap full assessment is warranted. Likewise if there is no spatial overlap and no obvious interaction is likely to occur, then the possibility of significant impact is discounted and further assessment of possible effects is deemed not to be necessary. Table 2 provides spatial overlap extent between designated habitat features and aquaculture activities within the qualifying interests of the Kenmare River SAC.

## 7.1 Aquaculture Activity Screening

- The marine habitat Submerged or Partially Submerged Seacaves (8330) has no spatial overlap with (existing and proposed) aquaculture activities.
- Table 2 highlights the spatial overlap between (existing and proposed) aquaculture activities and both habitat features (i.e. Large Shallow Inlet and Bay and Reefs).
- Tables 6 and 7 provide an overview of overlap of aquaculture activities and specific community types (identified from Conservation Objectives) within the broad habitat features 1160 and 1170, respectively.

Where the overlap between an aquaculture activity and a feature is zero it is screened out and not considered further. Therefore, the feature **Submerged or partially submerged sea caves (8330)** is excluded from further consideration in this assessment.

Furthermore, if the aquaculture activity occurs within the SAC but does not overlap a keystone community[8] habitat type or overlap with a feature of interest then they are excluded from further assessment.

Therefore, the following habitats and one species are also excluded from further consideration in this assessment:

- **1014 Marsh Snail *Vertigo angustior***
- **1303 Lesser Horseshoe Bat *Rhinolophus hipposideros***

[8] NPWS 2013. Kenmare River SAC (site code: 2158)-Conservation objectives supporting document - Marine habitats and species. Version 1 March 2013

- **1220 Perennial vegetation of stony banks**
- **1230 Vegetated sea cliffs of the Atlantic and Baltic coasts**
- **1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)**
- **1410 Mediterranean salt meadows (*Juncetalia maritimi*)**
- **2120 Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")**
- **2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)**
- **4030 European dry heaths**
- **6130 Calaminarian grasslands of the *Violetalia calaminariae***

Furthermore, of the 11 community types (see Table 1) listed under the two habitat features (1160 and 1170), two (**Intertidal Mobile Sand Community Complex and Shingle**) have no spatial overlap between them and any aquaculture activities. In one instance, the community type **Shingle** appears to overlap with subtidal scallop aquaculture; however, this is considered a mapping anomaly and therefore, the spatial overlap is concluded as nil. On this basis, the community types, **Intertidal Mobile Sand Community Complex** and **Shingle** are excluded from further analysis of aquaculture interactions.

A number of aquaculture operations and applications within **Ardgroom Harbour and Killmackillogue Harbour** that do not overlap with features of interest and/or keystone communities are excluded from further analysis and are considered not to have a significant impact on habitat conservation features.

When overlap was observed it was quantified in a GIS application and presented on the basis of coverage of specific activity (representing different pressure types), licence status (licenced or application) intersecting with designated conservation features and/or sub-features (community types).

**Table 6:** Habitat utilisation i.e. spatial overlap in hectares and percentage (given in parentheses) of aquaculture activity over relevant community types within the qualifying interest 1160 - Large shallow inlets and bays (Spatial data based on licence database provided by DAFM. Habitat data provided in NPWS 2013a. 2013b).

| | | | **1160 – Large shallow inlets and bays** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Culture Type | Location | Status | Coarse sediment dominated by polychaetes comm. Complex 8,314ha | Fine to medium sand with crustaceans and polychaetes comm. Complex 1,989ha | Intertidal reef comm. Complex 526ha | *Laminaria* dominated comm. Complex 3,358ha | Muddy fine sands dominated by polychaetes and *Amphiura filiformis* comm. Complex 20,150ha | Subtidal reef with echinoderms and faunal turf comm. Complex 4,808ha | *P. multiplicatus* Comm. Complex 6ha | Maerl 47ha | *Zostera* *20ha* |
| Mussel (*Mytilus edulis*) on ropes | Subtidal | L | 17.53 (0.2) | 8.08 (0.4) | 0.03 (5.05E-03) | 13.44 (0.4) | 4.29 (0.02) | 3.61 (0.08) | - | - | - |
| Mussel (*Mytilus edulis*) on ropes | Subtidal | A | 255.88 (3.1) | 45.02 (2.36) | - | 31.97 (0.95) | 57.82 (0.29) | 92.79 (1.93) | - | - | - |
| Scallops (*Pecten maximus*) on seabed | Subtidal | L | 37.85 (0.46) | 20.15 (1.01) | 0.78 (0.15) | 199.15 (5.93) | 186.21 (0.92) | 9.15 (0.19) | 6.23 (100.00) | 13.06 (27.89) | 0.50 (2.52) |
| Scallops (*Pecten maximus*) on seabed | Subtidal | A | 0.47 (0.01) | - | - | 1.39 (0.04) | - | - | - | - | - |
| Oysters (*Crassostrea gigas*) in bags & trestles | Intertidal | L | - | - | 0.80 (0.15) | 0.71 (0.02) | 5.99 (0.03) | 0.03 (5.88E-04) | - | - | - |
| Oysters (*Crassostrea gigas*) in bags & trestles | Intertidal | A | - | 4.15 (0.21) | 0.37 (0.07) | 15.47 (0.46) | 22.9 (0.11) | 1.66 (0.03) | - | - | 3.61 (18.05) |
| Salmon (*Salmo salar*) in net pens | Subtidal | L | 46.28 (0.56) | 4.31 (0.22) | - | 5.45 (0.16) | - | 6.62 (0.14) | - | - | - |
| Salmon (*Salmo salar*) in net pens | Subtidal | A | - | 1.68 (0.08) | - | 4.63 (0.14) | 15.66 (0.08) | 9.92 (0.21) | - | - | - |
| **Totals** | | | **358.01 (4.31)** | **83.39 (4.19)** | **1.98 (0.38)** | **272.75 (8.1)** | **292.87 (1.45)** | **123.78 (2.57)** | **6.23 (100.00)** | **13.06 (27.89)** | **4.11 (20.55)** |

**Table 7:** Habitat utilisation i.e. spatial overlap in hectares and percentage (given in parentheses) of Aquaculture activity over relevant community types within the qualifying interest 1170 - Reefs (Spatial data based on licence database provided by DAFM. Habitat data provided in NPWS 2013a, 2013b).

| | | | **1170 - Reefs** | | |
|---|---|---|---|---|---|
| **Culture Type** | **Location** | **Status** | **Intertidal reef community complex** 681ha | ***Laminaria* - dominated community complex** 3678ha | **Subtidal reef with echinoderms and faunal turf community complex** 4838ha |
| Mussel (*Mytilus edulis*) on ropes | Subtidal | L | - | 37.74 (1.02) | 3.59 (0.07) |
| Mussel (*Mytilus edulis*) on ropes | Subtidal | A | - | 35.92 (0.97) | 98.34 (2.03) |
| Scallops (*Pecten maximus*) on seabed | Subtidal | L | 0.78 (0.11) | 198.93 (5.41) | 9.13 (0.19) |
| Scallops (*Pecten maximus*) on seabed | Subtidal | A | - | 1.82 (0.05) | - |
| Oysters (*Crassostrea gigas*) in bags & trestles | Intertidal | L | 0.80 (0.12) | 0.71 (0.02) | - |
| Oysters (*Crassostrea gigas*) in bags & trestles | Intertidal | A | 2.94 (0.43) | 18.59 (0.51) | 1.66 (0.03) |
| Salmon (*Salmo salar*) in net pens | Subtidal | L | 0 | 5.47 (0.15) | 6.61 (0.14) |
| Salmon (*Salmo salar*) in net pens | Subtidal | A | 0 | 4.62 (0.13) | 9.91 (0.21) |
| | | | **4.52 (0.66)** | **303.8 (8.26)** | **129.24 (2.67)** |

# 8. Assessment of Aquaculture Activities

## 8.1 Determining significance

The significance of the possible effects of the proposed activities on habitats, as outlined in the Natura Impact Statement (Section 6) and subsequent screening exercise (Section 7), is determined here in the assessment. The significance of effects is determined on the basis of Conservation Objective guidance for constituent habitats and species (Figures 1, 2 and NPWS 2013a, 2013b).

Within the Kenmare River SAC the qualifying habitats/species considered subject to potential disturbance and therefore, carried further in this assessment are:

- 1160 Large shallow inlets and bays
- 1170 Reefs
- 1355 Otter - *Lutra lutra*
- 1365 Common (Harbour) seal - *Phoca vitulina*

Habitats and species that are key contributors to biodiversity and which are sensitive to disturbance should be afforded a high degree of protection i.e. thresholds for impact on these habitats is low and any significant anthropogenic disturbance should be avoided. In the Kenmare River SAC these habitats/species include:

- *Zostera* –dominated community
- Maerl – dominated community
- *Pachycerianthus multiplicatus* community

For broad habitats and community types (Figures 1 and 2) significance of impact is determined in relation to, first and foremost, spatial overlap (see Section 7; Tables 6 and 7). Subsequent disturbance and the persistence of disturbance are considered as follows:

1. <u>The degree to which the activity will disturb the qualifying interest.</u> By disturb is meant change in the characterising species, as listed in the Conservation Objective guidance (NPWS 2013b) for constituent communities. The likelihood of change depends on the sensitivity of the characterising species to the activities in question. Sensitivity results from a combination of intolerance to the activity and/or recoverability from the effects of the activity (see Section 8.2 below).

2. <u>The persistence of the disturbance in relation to the intolerance of the community</u>. 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. <u>The area of communities or proportion of populations disturbed.</u> In the case of community disturbance (continuous or ongoing) of more than 15% of the community area it is deemed

to be significant. This threshold does not apply to sensitive habitats as listed above (*Zostera*, Maerl) where any spatial overlap of activities should generally be avoided.

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

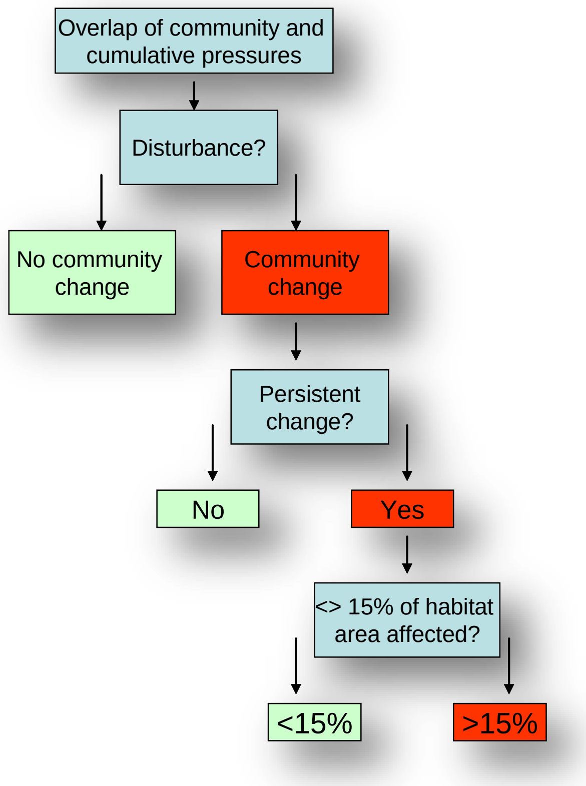


**Figure 11: Determination of significant effects on community distribution, structure and function for sedimentary habitats (following NPWS 2013b).**

In relation to designated species (Harbour Seal, Otter) the capacity of the population to maintain itself in the face of anthropogenic induced disturbance or mortality at the site will need to be taken into account in relation to the Conservation Objectives (CO's) on a case by case basis.

## 8.2 Sensitivity and Assessment Rationale

This assessment used a number of sources of information in assessing the sensitivity of the characterising species of each community recorded within the habitat features of the Kenmare River SAC. One source of information is a series of commissioned reviews by the Marine Institute which identify habitat and species sensitivity to a range of pressures likely to result from aquaculture and fishery activities (ABPMer 2013a-h). These reviews draw from the broader literature, including the MarLIN Sensitivity Assessment (Marlin.ac.uk) and the AMBI Sensitivity Scale (Borja et al., 2000) and other primary literature. It must be noted that NPWS have acknowledged that given the wide range of community types that can be found in marine environments, they application of conservation targets to these would be difficult (NPWS 2013b). On this basis, they have proposed broad community complexes as management units. These complexes (for the most part) are very broad in their description and do not have clear surrogates which might have been considered in targeted studies and thus reported in the scientific literature. On this basis, the confidence assigned to likely interactions of the community types with anthropogenic activities are by necessity relatively low, with the exception of community types dominated by sensitive taxa, e.g. Mearl and *Zostera*. Other literature cited in the assessment does provide a greater degree of confidence in the conclusions. For example, the output of a recent study has provided greater confidence in terms of assessing likely interactions between intertidal oyster culture and community types (Forde et al submitted). Sensitivity of a species to a given pressure is the product of the intolerance (the susceptibility of the species to damage, or death, from an external factor) of the species to the particular pressure and the time taken for its subsequent recovery (recoverability is the ability to return to a state close to that which existed before the activity or event caused change). Life history and biological traits are important determinants of sensitivity of species to pressures from aquaculture.

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

- For persistent pressures i.e. activities that occur frequently and throughout the year recovery capacity may be of little relevance except for species/communities 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 2013a).
- In the case of episodic pressures i.e. activities that are seasonal or discrete in time both the intolerance and recovery components of sensitivity are relevant. If sensitivity is high but recoverability is also high relative to the frequency of application of the pressure then the species/habitat/community will be in favourable conservation status for at least a proportion of time.

The sensitivities of the community types (or surrogates) found within the Kenmare River SAC to pressures similar to those caused by aquaculture (e.g. smothering, organic enrichment and physical disturbance) are identified in Table 8. The sensitivities of species which are characteristic (as listed in the Conservation Objective supporting document) of benthic communities to pressures similar to those caused by aquaculture (e.g. smothering, organic enrichment and physical disturbance) are identified, where available, in Table 9. The following guidelines broadly underpin the analysis and conclusions of the species and habitat/community type sensitivity assessment:

- Sensitivity of certain taxonomic groups such as emergent sessile epifauna to physical pressures is expected to be generally high or moderate because of their form and structure (Roberts *et al.* 2010). Also high for those with large bodies and with fragile shells/structures, but low for those with smaller body size. Body size (Bergman and van Santbrink 2000) and fragility are regarded as indicative of a high intolerance to physical abrasion caused by fishing gears (i.e. dredges). However, even species with a high intolerance may not be sensitive to the disturbance if their recovery is rapid once the pressure has ceased.
- Sensitivity of certain taxonomic groups to increased sedimentation is expected to be low for species which live within the sediment, deposit and suspension feeders; and high for those sensitive to clogging of respiratory or feeding apparatus by silt or fine material.
- Recoverability of species depends on biological traits (Tillin *et al.* 2006) such as reproductive capacity, recruitment rates and generation times. Species with high reproductive capacity, short generation times, high mobility or dispersal capacity may maintain their populations even when faced with persistent pressures; but such environments may become dominated by these (r-selected) species. Slow recovery is correlated with slow growth rates, low fecundity, low and/or irregular recruitment, limited dispersal capacity and long generation times. Recoverability, as listed by MarLIN, assumes that the impacting factor has been removed or stopped and the community type 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 & Desrocher, 2004) cited in Hall *et al*., 2008).,

## 8.3 Assessment of the effects of aquaculture production on the Conservation Objectives for habitat features in the Kenmare River SAC.

Aquaculture pressures on a given habitat are related to vulnerability (spatial overlap or exposure of the habitat to the equipment/culture organism combined with the sensitivity of the habitat) to the pressures induced by culture activities. To this end, the location and orientation of structures associated with the culture organism, the density of culture organisms, the duration of the culture activity and the type of activity are all important considerations when considering risk of disturbance to habitat features and species.

The constituent communities identified in the Annex 1 feature, **Large Shallow Inlets and Bays (1160)**) are:

1. Intertidal mobile sand community complex (No overlap with aquaculture)
2. *Zostera*-dominated community
3. Maerl-dominated community
4. *Pachycerianthus multiplicatus* community
5. Muddy fine sands dominated by polychaetes and *Amphiura filiformis* community complex
6. Fine to medium sand with crustaceans and polychaetes community complex
7. Coarse sediment dominated by polychaetes community complex

8. Shingle (No overlap with aquaculture)
9. Intertidal reef community complex
10. *Laminaria*-dominated community complex
11. Subtidal reef with echinoderms and faunal turf community complex

For Large Shallow Inlets and Bays (1160) there are a number of attributes (with associated targets) relating to this habitat feature as well as its constituent community types;

1. **Habitat Area** – it is unlikely that the activities proposed will reduce the overall extent of permanent habitat within the feature Large Shallow Inlet and Bays. The habitat area is likely to remain stable.
2. **Community Distribution - (conserve a range of community types in a natural condition).**

   This attribute considered interactions with 8 of the community types listed above and exclude three sensitive communities (i.e., *Zostera*-dominated community, Maerl-dominated community and *Pachycerianthus multiplicatus* community). Of the 8 communities, 2 have no overlap with aquaculture activities. Therefore, the following 6 community types, found within the qualifying interest 1160 of the SAC have overlap with aquaculture activities:

   1. Muddy fine sands dominated by polychaetes and *Amphiura filiformis* community complex
   2. Fine to medium sand with crustaceans and polychaetes community complex
   3. Coarse sediment dominated by polychaetes community complex
   4. Intertidal reef community complex
   5. *Laminaria*-dominated community complex
   6. Subtidal reef with echinoderms and faunal turf community complex

   The community types listed above will be exposed to differing ranges of pressures from aquaculture activities. Some of these may result in more chronic and long term changes in community composition which were considered during the assessment process. Such activities in dredging for scallop which will result in physical disturbance to infanal communities and longline mussel culture and finfish farming which results in organic loading on the seabed resulting in biogeochemical changes to sediment and a likely change in faunal compositions – whether this results in permanent change to the community type is unclear. Table 8, where possible, lists the community types (or surrogates) and Table 9 lists the constituent taxa and both provide a commentary of sensitivity to a range of pressures. The risk scores in Table 8 and 9 are derived from a range of sources identified above. The pressures are listed as those likely to result from the primary aquaculture activities carried out in the Kenmare River SAC. Aquaculture activities in the Kenmare River SAC comprises of both finfish and shellfish production. Considered in the assessment are intertidal oyster culture (bag and trestle), subtidal scallop on-bottom culture, intertidal clam on-bottom culture, subtidal (suspended) rope mussel culture, and Atlantic salmon culture in net pens.

Table 11 below identify the likely interactions between the relevant aquaculture activities and the broad habitat feature (1160) and their constituent community types, with a broad conclusion and justification on whether the activity is considered disturbing to the feature in question. It must be noted that the sequence of distinguishing disturbance is as highlighted above, whereby activities with spatial overlap on habitat features are assessed further for their ability to cause persistence disturbance on the habitat. If persistent disturbance is likely then the spatial extent of the overlap is considered further. If the proportion of the overlap exceeds a threshold of 15% disturbance of the habitat (or each constituent community type) then any further licencing should be informed by interdepartmental review and consultation (NPWS 2013b). While some activities (e.g. suspended mussel culture, intertidal clam culture and salmon cage culture) might result in long-term change to the 6 community types identified above; in all cases, no activity (individually or combined) extends beyond 15% of the community type (Tables 6 and 11). In addition, combined activities listed overlap with 2.88% of habitat feature (1160) Large Shallow Inlet and Bay (Table 3). On the basis of targeted research (Forde et al, Submitted) and the fact that intertidal oyster culture on trestles is considered non-disturbing to both sedimentary communities and intertidal reef communities, further assessment (i.e. spatial analysis) is not required.

3. **Community Extent and Structure – focusing upon Mearl, *Zostera* and *Pachycerianthus multiplicatus* communities**

The focus of these attributes are primarily upon the 3 community types, *Zostera*-dominated community, Maerl-dominated community and *Pachycerianthus multiplicatus* community. These communities are considered highly diverse and sensitive community types which host a wide range of taxa. The 'keystone' species in each community type (Maerl and *Zostera*) is considered important and sensitive in their own right. It should be noted that maerl beds exist within Ardgroom and Killmakilloge Harbours, which are not within the qualifying interest (i.e. 1160 Large shallow inlets and bays or 1170 Reefs). However, as these maerl beds are still within the SAC boundary and are listed in Annex V of the Habitats Directive they must be afforded protection and maintained in favourable conservation status.

The Kenmare River is one of a very small number of sites within Europe where the large tube building anthozoan *Pachycerianthus multiplicatus* is known to occur. This community is found in coarse sediment dominated by a polychaete community complex. The anthozoan itself resides in a large tube which is known to provide a variety of micro niches thus resulting in localised increases in biodiversity. *P. multiplicatus* is listed in the UK Biodiversity Action Plan as a species of conservation concern (Biodiversity Steering Group, 1995). According to (Wilding & Wilson, 2009) the species is deemed nationally rare, and due to its limited, fragmented distribution, populations are likely to be of global importance.

Given the highly sensitive natures of these community types and constituent taxa (Table 8 and 9) it is highly likely that aquaculture activities of any type which overlap these community type and the pressures may result in long-term or permanent change to the extent of these community types and the impact upon their structure and function cannot be discounted. This effect will come about by the physical removal or damage caused by the activities on any of the highly diverse taxa associated with these community types (Table 11). In addition, the impact of the placement of large numbers of scallop seed on seagrass beds and subsequent harvest by scuba diving is uncertain, in the absence of information on the nature of the diving operation (exact method of extraction).

The constituent communities identified in the Annex 1 feature **Reefs (1170)** are:

1. Intertidal reef community complex
2. *Laminaria*-dominated community complex
3. Subtidal reef with echinoderms and faunal turf community complex

Similar to Large Shallow Inlets and Bays (1160) there are a number of attributes (with associated targets) relating to Reef (1170) habitat features as well as associated constituent community types;

1. **Distribution and Habitat area:** The aquaculture activities in question will not, by virtue of the pressures associated with them, impact on the broad distribution of reef structures and reduce the area of these features within the SAC.
2. **Community Structure:** The intertidal reef community, which is extensive within the SAC, is dominated by brown algal species with red algae and a faunal aspect typical of the rocky intertidal (i.e. gastropods, anemones and sponges). The subtidal rocky communities are dominated by large macro algae (kelp) and faunal turf (anthozoans, echinoderms, hydrozoans and sponges).

   Table 8 lists the community (or surrogates) and Table 9 lists the constituent taxa and both provide a commentary of sensitivity to a range of pressures. The risk scores are derived from a range of sources identified above. The pressures are listed as those likely to result from the primary aquaculture activities carried out in the Kenmare River SAC. Aquaculture activities in the Kenmare River SAC comprises of both finfish and shellfish production. Considered in the assessment are intertidal oyster culture (bag and trestle), subtidal scallop on-bottom culture, intertidal clam on-bottom culture, subtidal (suspended) rope mussel culture, and Atlantic salmon culture in net pens.

   Suspended culture activities of finfish and rope mussel can lead to organic enrichment and exclusion of taxa on any reef community type (as well 1170), thus impacting upon community structure and hence, function. In addition, scallop culture on the seabed is unlikely to occur on the majority of reef community types, but may occur on more mixed sediments. However, the maximum cover of aquaculture activities on each of the habitats is below 15% (Table 13) and the total cover of all aquaculture activities is 4.48% of reef habitat (1170) (Table 3).

**Introduction of non-native species;** As already outlined **o**yster culture may present a risk in terms of the introduction of non-native species as the Pacific oyster (*Crassostrea gigas*) itself is a non-native species. Recruitment of *C. gigas* has been documented in a number of Bays in Ireland and appears to have become naturalised (i.e. establishment of a breeding population) in two locations (Kochmann et al 2012; 2013) and may compete with the native species for space and food. In addition to having large number of oysters in culture, Kochmann et al (2013) identified short residence times and large intertidal areas as factors likely contributing to the successful recruitment of oysters in Irish bays. In addition, a recent study (Kochmann and Crowe, 2014) has identified heavy macroalgal cover as a potential factor governing successful recruitment, with higher cover resulting in lower recruitment. Oyster production in the Kenmare does not fulfil these criteria, as production is low (30 tonnes pa), the suitable habitat intertidally is low with high macroalgal cover and residence time is between 1.2-22.6 days. Therefore the risk of successful establishment of the pacific oyster in Kenmare River SAC is considered low.

In relation to the Manila clam (*Ruditapes philippinarum*), this species has been in culture in Ireland since 1984 and, to the best of our knowledge, no recruitment in the wild has been recorded. The operations are totally reliant on hatchery seed and are fully contained at all stages of the production cycle. The risk of naturalisation of this species is considered low, but should be kept under surveillance.

**Table 8: Matrix showing, where possible, the characterising community types (or surrogates) sensitivity scores x pressure categories in Kenmare River SAC (ABPMer 2013a-h)**. Table 9 provides the code for the various categorisation of sensitivity and confidence

| | Pressure Type | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Community Type (EUNIS code) | Surface Disturbance | Shallow Disturbance | Deep Disturbance | Extraction | Siltation (addition of fine sediments, pseudofaeces, fish food) | Smothering (addition of materials biological or non-biological to the surface) | Changes to sediment composition- increased coarseness | Changes to sediment composition- increased fine sediment proportion | Changes to water flow | Increase in turbidity/suspended sediment | Decrease in turbidity/suspended sediment | Organic enrichment-water column | Organic enrichment of sediments-sedimentation | Increased removal of primary production-phytoplankton | Decrease in oxygen levels- sediment | Decrease in oxygen levels-water column | Introduction of non-native species | Removal of Target Species | Removal of Non-target species | Introduction of antifoulants | Introduction of medicines | Introduction of hydrocarbons | Prevention of light reaching seabed/features |
| *Zostera*-dominated community (A5.533) | M-H (***) | M-VH (***) | M-VH (***) | M-VH (***) | VH (***) | VH (***) | M(*) | M (***) | M(*) | H (***) | NS (*) | H (***) | H (***) | NS (*) | H-VH (*) | H-VH (*) | H (**) | NS (*) | NS (*) | NEv | NEv | NS (***) | H-VH (**) |
| *Maerl*-dominated community (A5.51) | H (***) | H-VH (***) | H (***) | H-VH (***) | H-VH (***) | H-VH (***) | NS (*) | NS (*) | NS (*) | H(*) | NS (*) | H(*) | H (***) | NS (*) | H(**) | H(**) | H (***) | VH (***) | NS (*) | NE | NE | NE | VH (*) |
| Muddy fine sands dominated by polychaetes and *A. filiformis* community complex (Subtidal A5.33/A5.35) | NS (*) | L(*) | L(*) | L-M (*) | L(*) | L-M (*) | L-M (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | L(*) | NS (*) | L(*) | L(*) | H (*) | NS (*) | NS (*) | NS (*) | NS (*) | L(*) | NS (*) |
| Fine to medium sand with crustaceans and polychaetes community complex (Intertidal and subtidal) (A5.23) | NS (*) | L(*) | L(*) | L-M (*) | L-M (*) | L-M (*) | L-M (*) | M(*) | L-M (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | L-NS (***) | L-NS (***) | NS (***) | NS (*) | NS (*) | NS (*) | NS (*) | L(*) | NS (*) |

| | Pressure Type | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Community Type (EUNIS code) | Surface Disturbance | Shallow Disturbance | Deep Disturbance | Extraction | Siltation (addition of fine sediments, pseudofaeces, fish food) | Smothering (addition of materials biological or non-biological to the surface) | Changes to sediment composition- increased coarseness | Changes to sediment composition- increased fine sediment proportion | Changes to water flow | Increase in turbidity/suspended sediment | Decrease in turbidity/suspended sediment | Organic enrichment-water column | Organic enrichment of sediments-sedimentation | Increased removal of primary production- phytoplankton | Decrease in oxygen levels- sediment | Decrease in oxygen levels-water column | Introduction of non-native species | Removal of Target Species | Removal of Non-target species | Introduction of antifoulants | Introduction of medicines | Introduction of hydrocarbons | Prevention of light reaching seabed/features |
| Intertidal reef community complex (A3.21)** | NS (*) | NA | NA | NA | NS (*) | M-VH (*) | NA | NA | NS (*) | NS (*) | NS (*) | NS (*) | NE | NS (*) | NE | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) |
| *Laminaria*-dominated community complex (A3.21)** | NS (*) | NA | NA | NA | NS (*) | M-VH (*) | NA | NA | NS (*) | NS (*) | NS (*) | NS (*) | NE | NS (*) | NE | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) |
| Subtidal reef with echinoderms and faunal turf community complex (A4.1/4.2) | NS (*) | NA | NA | NA | NS (*) | M-VH (*) | NA | NA | NS (*) | NS (*) | NS (*) | NS (*) | NE | NS (*) | NE | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) |

**Note: *No sensitivity listed for this community type;**No sensitivity listed for this community type (3.21) so using scores for A3.22.**

**Table 9: Matrix showing the characterising species sensitivity scores x pressure categories for taxa in Kenmare River SAC (ABPMer 2013a-h).** Table 9 provides the code for the various categorisation of sensitivity and confidence

| | Pressure Type | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | Surface Disturbance | Shallow Disturbance | Deep Disturbance | Extraction | Siltation | Smothering (addition of materials biological or non-biological to the surface) | Changes to sediment composition- increased coarseness | Changes to sediment composition- increased fine sediment proportion | Changes to water flow | Increase in turbidity/suspended sediment | Decrease in turbidity/suspended sediment | Organic enrichment-water column | Organic enrichment of sediments-sedimentation | Increased removal of primary production-phytoplankton | Decrease in oxygen levels- sediment | Decrease in oxygen levels-water column | Introduction of non-native species | Removal of Target Species | Removal of Non-target species | Introduction of antifoulants | Introduction of medicines | Introduction of hydrocarbons | Prevention of light reaching seabed/features |
| *Abra alba* | L(*) | L (***) | L(*) | M (*) | NS (***) | M (*) | L(*) | NS (*) | NS (*) | L(*) | L(*) | NS (*) | NS (*) | NS (*) | L (***) | L-M (***) | L-M (*) | NS (*) | NS (*) | NS (***) | NEv | L (***) | NS (*) |
| *Alcyonium digitatum* | L-M (***) | NE | NE | NE | L(**) | M(*) | NA | NA | L(*) | NS (*) | NS (*) | NEv | NE | NS (*) | NE | M(*) | NEv | NS (*) | NS (*) | NEv | NEv | NS (*) | NS (*) |
| *Angulus sp. (Moerella)* | NS (*) | L(*) | L (***) | M(*) | NS (*) | H(*) | M-H (*) | NS (*) | L-M (*) | L(*) | NS (*) | NS (*) | Nev | L-NS (*) | NEv | NEv | M (*) | NS (*) | NS (*) | NS (*) | NEv | NEv | NS (*) |
| *Bathyporeia* spp. | NS (*) | L (***) | L (***) | L-M (*) | L (***) | L-M (*) | L-M (*) | L-M (*) | NS (*) | NS (*) | NS (*) | L-M (*) | L-M (*) | NS (*) | L-M (***) | L-M (***) | L-M (*) | NS (*) | NS (*) | NS (*) | NEv | NEv | NS (*) |
| *Corynactis viridis* | M-H (*) | NA | NA | NA | L(*) | H-VH (*) | NA | NA | M-H (*) | L(*) | NS (*) | NS (*) | NE | NS (*) | NE | NEv | NS (*) | NS (*) | NS (*) | NEv | NEv | NEv | NS (*) |
| *Cliona celata* | M (***) | NA | NA | NE | M (**) | L(*) | NA | NA | NEv | NS (***) | NS (*) | NS (***) | NE | NS (*) | NE | NEv | NS (*) | NS (*) | NS (*) | NEv | NEv | NEv | NS (*) |
| *Caryophyllia smithi* | H (**) | NA | NA | NE | H (***) | VH(*) | NA | NA | NS (*) | NS (*) | H(*) | NEv | NE | NS (*) | NE | NEv | NEv | NS (*) | NS (*) | NEv | NEv | NEv | MS (*) |
| *Capitella* spp. | L(*) | L (**) | L (**) | L(*) | L(*) | NS (*) | NS (*) | NS (***) | NS (*) | NS (*) | NS (*) | NS (***) | NS (***) | NS (*) | L (***) | L (***) | NS (*) | NS (*) | NS (*) | NS (***) | L (***) | NS (***) | NS (*) |
| *Corophium volutator* | L (***) | L (***) | L (***) | L(*) | L (***) | L (***) | M(*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (***) | NS (***) | NS (*) | L (***) | L (***) | Nev | NS (*) | NS (*) | NA | NEv | L (***) | NS (*) |
| *Cerastoderma edule* | L(*) | L-M (*) | L-M (***) | L-H (*) | L (***) | L-M (*) | L-H (*) | NS (*) | L(*) | NS (*) | NS (*) | NS (*) | NS (**) | L-NS (*) | L-M (*) | L-M (*) | M (*) | M (*) | NS (*) | NS (*) | NEv | L-M (*) | NS (*) |

| Species | Pressure Type | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Surface Disturbance | Shallow Disturbance | Deep Disturbance | Extraction | Siltation | Smothering (addition of materials biological or non-biological to the surface) | Changes to sediment composition- increased coarseness | Changes to sediment composition- increased fine sediment proportion | Changes to water flow | Increase in turbidity/suspended sediment | Decrease in turbidity/suspended sediment | Organic enrichment-water column | Organic enrichment of sediments- sedimentation | Increased removal of primary production- phytoplankton | Decrease in oxygen levels- sediment | Decrease in oxygen levels-water column | Introduction of non-native species | Removal of Target Species | Removal of Non-target species | Introduction of antifoulants | Introduction of medicines | Introduction of hydrocarbons | Prevention of light reaching seabed/features |
| *Echinus esculentus* | L-M (***) | NA | NA | NA | L (***) | H(*) | NA | NA | NS (*) | NS | NS (*) | NS | NE | NS (*) | NE | H(*** ) | NS (*) | L-M | NS | NEv | NEv | M-H | NS (*) |
| *Euclymene oerstedii* | NS (*) | NS (*) | M(*) | H(*) | NS (*) | H(*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | M(*) | M(*) | NS (*) | NS (*) | NS (*) | NS (*) | NEv | NS (*) | NS (*) |
| *Fabulina fabula* | NS (*) | L-NS (*) | L-NS (*) | M(*) | NS (*) | M(*) | M-H(*) | L(*) | L(*) | NS (*) | NS (*) | L(*) | M-H (*) | L-NS (*) | NS-L (***) | L-NS (*) | M(*) | NS (*) | NS (*) | NS (*) | NEv | L-M (*) | NS (*) |
| *Glycera* sp. | NS (*) | L-M (***) | L-M (*) | M(*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (**) | NS (***) | NS (*) | NS (***) | NS (***) | NS (*) | NS (*) | NS (*) | NA | NEv | NS (***) | NS (*) |
| *Hydrobia ulvae* | L-NS (*) | L (***) | L(*) | M (*) | NS (***) | L(*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (***) | NS (*) | L(*) | L(*) | L(*) | NS (*) | NS (*) | NEv | NEv | M (*) | NS (*) |
| *Lanice conchilega* | NS (*) | NS-L (***) | NS-L (***) | M-H (*) | NS (*) | M-H (*) | NS (*) | NS (***) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | M (*) | M (*) | M-H (*) | NS (*) | NS (*) | NS (*) | NEv | L (***) | NS (*) |
| *Nephtys hombergii* | NS (*) | L(*) | L(*** ) | L(*) | NS(* *) | NS (*) | L(*) | NS (*) | NS(* *) | NS (*) | NS (*) | NS (*) | NS(* *) | NS (*) | NS (***) | NS (***) | NS (*) | M(*) | NS (*) | NS(* *) | NEv | M (***) | NS (*) |
| *Nephtys cirrosa* | NS (*) | L (***) | L (***) | L(*) | NS (***) | NS (*) | L(*) | NS (*) | L(*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | M (*) | M (*) | NS (*) | NS (*) | NEv | NEv | NS (*) |
| *Nematoda* | NS (***) | NS (***) | NS (***) | L(*) | NS (*) | NS (***) | NS (***) | NS (***) | NS (*) | NS (*) | NS (*) | NS (*) | NS (***) | NS (*) | L (***) | L (***) | NS (***) | NS (*) | L(*) | NS (***) | NEv | L (***) | NS (*) |
| *Protodorvillea kefersteini* | NS (*) | NS (*) | NS (*) | L-M(*) | L(*) | L(*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (***) | NS (*) | NS (*) | NS (*) | M(*) | NS (*) | NS (*) | NS (*) | NEv | NS (*) | NS (*) |
| *Phaxas pellucidus* | NS (*) | M(*) | M(*) | H(*) | NS (***) | M(*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | L(*) | L-NS | NEv | NEv | M(*) | NS (*) | NS (*) | NS (*) | NEv | NEv | NS (*) |

| Species | Pressure Type | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species** | Surface Disturbance | Shallow Disturbance | Deep Disturbance | Extraction | Siltation | Smothering (addition of materials biological or non-biological to the surface) | Changes to sediment composition- increased coarseness | Changes to sediment composition- increased fine sediment proportion | Changes to water flow | Increase in turbidity/suspended sediment | Decrease in turbidity/suspended sediment | Organic enrichment-water column | Organic enrichment of sediments-sedimentation | Increased removal of primary production-phytoplankton | Decrease in oxygen levels- sediment | Decrease in oxygen levels-water column | Introduction of non-native species | Removal of Target Species | Removal of Non-target species | Introduction of antifoulants | Introduction of medicines | Introduction of hydrocarbons | Prevention of light reaching seabed/features |
| | | | | | | | | | | | | | | (*) | | | | | | | | | |
| *Pygospio elegans* | L(*) | L (**) | M (***) | L-M (*) | L (***) | L-M (***) | L-M (*) | NS (**) | L-M (*) | NS (*) | NS (*) | NS (*) | NS (***) | NS (*) | L (**) | L (**) | M (*) | NS (*) | NS (*) | NS (*) | NEv | NEv | NS (*) |
| *Scoloplos armiger* | NS (*) | L(*) | L-M (*) | H (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (***) | NS (***) | NS (*) | M (***) | M (***) | M (*) | M (**) | NS (*) | NS (*) | NEv | NEv | NS (*) |
| *Tubificoides* spp. | NS (*) | NS (*) | L (**) | M (*) | NS (*) | L(*) | NS (*) | NS (*) | NS (***) | NS (*) | NS (*) | NS (***) | NS (***) | NS (*) | NS (***) | NS (***) | NS (*) | NS (*) | NS (*) | NS (**) | NEv | NEv | NS (**) |
| *Notomastus sp* | NS (*) | L (***) | L (***) | L-M (*) | L(**) | L(*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (**) | NS (*) | L(*) | L(*) | M(*) | NS (*) | NS (*) | NS (*) | NEv | NS (***) | NS (*) |
| *Melinna palmata* | NS (***) | NS (***) | NS (***) | M(*) | L (***) | M(*) | NS (*) | NS (*) | NS (*) | L(*) | NS (***) | NS (***) | NS (***) | NS (*) | NS (***) | NS (***) | L(*) | NS (*) | NS (*) | NS (***) | NEv | M (***) | NS (*) |
| *Mysella bidentata* | NS (*) | NS (*) | L-M (*) | M(*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (**) | NS (**) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | L-M (*) | NS (*) | NEv | NA | NS (*) |
| *Prionospio spp.* | NS (*) | NS (***) | NS (*) | L(*) | L (***) | L(*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (***) | NS (***) | NS (*) | NS (***) | NS (***) | L(*) | NS (*) | NS (*) | NS (***) | NEv | NS (***) | NS (*) |
| *Scalibregma inflatum* | NS (*) | L(*) | M(*) | M(*) | NS (***) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (***) | NS (*) | NS (***) | NS (***) | NA | NS (*) | NS (*) | NS (*) | NS (*) | NEv | NS (*) |
| *Spiophanes bombyx* | L(*) | L (***) | L(*** ) | L(*) | NS (*) | L(*) | L(*) | L(*) | NS (*) | NS (*) | NS (*) | NS (***) | NS (***) | NS (*) | L (***) | L (***) | L(*) | NS (*) | NS (*) | NS (*) | NEv | L (***) | NS (*) |
| *Thyasira flexuosa* | L(*) | L (***) | L(*) | M-H (*) | NS (*) | M-H (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (*) | NS (***) | NS (*) | M (***) | M (***) | M (*) | NS (*) | NS (*) | NS (***) | NEv | NS (***) | NS (*) |

**Table 10: Codes of sensitivity and confidence applying to species and pressure interactions presented in Tables 8 and 9.**

| Species x Pressure Interaction Codes for Tables 8 and 9 | |
|---|---|
| **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 |

**Conclusion 1**: It is concluded that, with three exceptions, the aquaculture activities individually and in-combination do not pose a risk of significant disturbance to the conservation features for habitats (and community types) in Kenmare River based primarily upon the spatial overlap and sensitivity analysis (Tables 11 and 12). The exceptions are the activity (**scallop culture**) occurring over **Maerl dominated community, *Pachycerianthus multiplicatus* community complex** and ***Zostera* dominated community**. In spite of the relatively benign nature of the culture proposed (placement of scallop seed on seafloor) it is still considered potentially disturbing to these extremely sensitive community types types, primarily by virtue of the dredging activity associated with the culture practice and the uncertain nature of the placement of large quantities of scallop seed upon seagrass beds and subsequent scuba diving activities. The location of an intertidal oyster cultivation operation (T06/500A) over a *Zostera* bed is considered disturbing.

**Table 11: Interactions between the relevant aquaculture activities and the habitat feature Large shallow inlets and bays (1160) constituent communities with a broad conclusion on the nature of the interactions.**

| | | | 1160 – Large shallow inlets and bays | | | | |
|---|---|---|---|---|---|---|---|
| **Culture Type** | **Location** | **Method** | ***Zostera*-dominated community** | ***Maerl*-dominated community** | ***P. multiplicatus* community** | **Muddy fine sands dominated by polychaetes and *Amphiura filiformis* community** | **Fine to medium sand with crustaceans and polychaetes community complex** |
| Mussel<br>(*Mytilus edulis)*<br>on ropes | Subtidal | Intensive | **N/A** | **N/A** | **N/A** | **Disturbing: Yes**<br><br>**Justification:** The high density of stock will impact on seafloor due to organic enrichment (faeces and pseudofaeces) and stock drop off. However the species have high recoverability and are tolerant.<br><br>This activity overlaps 0.31% of this community type. | **Disturbing: Yes**<br><br>**Justification:** The high density of stock will impact on seafloor due to organic enrichment (faeces and pseudofaeces) and stock drop off. However the species have high recoverability and are tolerant.<br><br>This activity overlaps 2.76% of this community type |
| Oysters<br>(*Crassostrea gigas*)<br>in bags & trestles | Intertidal | Intensive | **Disturbing: Yes**<br><br>**Justification:** Given the highly sensitive nature of this community type any activity is likely to have some impact either by shading by trestles on grass or compaction by transport routes to/through the trestles and increased organic enrichment.<br><br>This activity overlaps 18.05% of this community type | **N/A** | **N/A** | **Disturbing: No**<br><br>**Justification:** Published literature (Forde et al., 2015) suggests that activities occurring at trestle culture sites are not disturbing. The stock is confined in bags, is sourced from hatcheries and is diploid/triploid. | **Disturbing: No**<br><br>**Justification:** Published literature (Forde et al., 2015) suggests that activities occurring at trestle culture sites are not disturbing. The stock is confined in bags, is sourced from hatcheries and is diploid/triploid. |
| Scallops<br>(*Pecten maximus*)<br>on seabed | Subtidal | Extensive | **Disturbing: Yes**<br><br>**Justification:** Given the highly sensitive nature of this community type any activity is likely to have some impact either by increasing species (albeit native) biomass/density and the disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 2.52% of this community type. | **Disturbing: Yes**<br><br>**Justification:** Given the highly sensitive nature of the community type in question any activity is likely to have some impact either by increasing species (albeit native) biomass/density and the disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 27.89% of this community type.. | **Disturbing: Yes**<br><br>**Justification:** Given the highly sensitive nature of the community type in question any activity is likely to have some impact mainly due to disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 100% of this community type. | **Disturbing: No**<br><br>**Justification:** The activities associated with this culture type is likely to have some impact mainly due to disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 0.92% of this community type. | **Disturbing: No**<br><br>**Justification:** The activities associated with this culture type is likely to have some impact mainly due to disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 1.01% of this community type. |
| Salmon<br>(*Salmo salar)*<br>in net pens | Subtidal | Intensive | **N/A** | **N/A** | **N/A** | **Disturbing: Yes**<br><br>**Justification:** The community and species would be sensitive to the activity by virtue of persistent organic enrichment on the seafloor.<br><br>This activity overlaps 0.08% of this community type | **Disturbing: Yes**<br><br>**Justification:** The community and species would be sensitive to the activity by virtue of persistent organic enrichment on the seafloor.<br><br>This activity overlaps 0.31% of this community type |
| **Cumulative Impact Aquaculture** | | | **Disturbing: Yes**<br><br>**Justification:** This community type is not tolerant of any overlap of any activity. The cumulative pressure of likely impacting activities on this community type is 20.55%**.** | **Disturbing: Yes**<br><br>**Justification:** This community type is not tolerant of any overlap of any activity. The cumulative pressure of likely impacting activities on this community type is significant at 27.89%**.** | **Disturbing: Yes**<br><br>**Justification:** The cumulative pressure of likely impacting activities on this community type is significant at 100%**.** | **Disturbing: No**<br><br>**Justification:** The cumulative pressure of likely impacting activities is 0.39% on this community type. (<15% threshold). | **Disturbing: No**<br><br>**Justification:** the cumulative pressure of likely impacting activities is 3.07% on this community type. (<15% threshold). |

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**Table 12** cont'd**: Interactions between the relevant aquaculture activities and the habitat feature Large shallow inlets and bays (1160) constituent communities with a broad conclusion on the nature of the interactions.**

| | | | **1160 – Large shallow inlets and bays** | | | |
|---|---|---|---|---|---|---|
| **Culture Type** | **Location** | **Method** | **Coarse sediment dominated by polychaetes community complex** | **Intertidal reef community complex** | ***Laminaria*-dominated community complex** | **Subtidal reef with echinoderms and faunal turf community complex** |
| Mussel (*Mytilus edulis)* on ropes | Subtidal | Intensive | **Disturbing: Yes**<br><br>**Justification:** The high density of stock will impact on seafloor due to organic enrichment (faeces and pseudofaeces) and stock drop off.<br><br>This activity overlaps 3.31% of this community type | **Disturbing: Yes**<br><br>**Justification:** The community type is sensitive to shaing, stock drop off, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 5.05E-03% of this community type | **Disturbing: Yes**<br><br>**Justification**: The community type is sensitive to shaing, stock drop off, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 1.35% of this community type. | **Disturbing: Yes**<br><br>**Justification:** The community type is sensitive to shaing, stock drop off, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 2.01% of this community type |
| Oysters<br><br>(*Crassostrea gigas*)<br><br>in bags & trestles | Intertidal | Intensive | **N/A** | **Disturbing: Yes**<br><br>**Justification:** The community type is sensitive to shading, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 0.22% this community type. | **Disturbing: Yes**<br><br>**Justification:** The community type is sensitive to shading, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 0.48% this community type. | **Disturbing: Yes**<br><br>**Justification:** The community type is sensitive to shading, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 0.03% this community type. |
| Scallops<br><br>(*Pecten maximus*)<br><br>on seabed | Subtidal | Extensive | **Disturbing: Yes**<br><br>**Justification:** The activities associated with this culture type is likely to have some impact mainly due to disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 0.47% of this community type. | **Disturbing: Yes**<br><br>**Justification:** It is unlikely that the culture operation will occur over this community type given the difficulty likely to be encountered operating a dredge. However, the activities associated with this culture type are likely to have some impact mainly due to disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 0.15% of this community type. | **Disturbing: Yes**<br><br>**Justification:** It is unlikely that the culture operation will occur over this community type given the difficulty likely to be encountered operating a dredge. However, the activities associated with this culture type is likely to have some impact mainly due to disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 5.97% of this community type. | **Disturbing: Yes**<br><br>**Justification:** It is unlikely that the culture operation will occur over this community type given the difficulty likely to be encountered operating a dredge. However, the activities associated with this culture type is likely to have some impact mainly due to disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 0.19% of this community type. |
| Salmon<br><br>(*Salmo salar)*<br><br>in net pens | Subtidal | Intensive | **Disturbing: Yes**<br><br>**Justification:** The community type and species would be sensitive to the activity by virtue of persistent organic enrichment on the seafloor.<br><br>This activity overlaps 0.56% of this community type. | **N/A** | **Disturbing: Yes**<br><br>**Justification:** The community type is considered tolerant to pressures from activity. The species would be sensitive to the activity by virtue of persistent organic enrichment on the seafloor.<br><br>This activity overlaps 0.30% of this community type. | **Disturbing: Yes**<br><br>**Justification:** The community type is considered tolerant to pressures from activity. The species would be sensitive to the activity by virtue of persistent organic enrichment on the seafloor.<br><br>This activity overlaps 0.35% of this community type. |
| **Cumulative Impact Aquaculture** | | | **Disturbing: No**<br><br>**Justification:** the cumulative pressure of likely impacting activities is 4.34% on this community type. (<15% threshold). | **Disturbing: No**<br><br>**Justification:** the cumulative pressure of likely impacting activities is 0.37% on this community type. (<15% threshold). | **Disturbing: No**<br><br>**Justification:** the cumulative pressure of likely impacting activities is 8.60% on this community type. (<15% threshold). | **Disturbing: No**<br><br>**Justification:** the cumulative pressure of likely impacting activities is 2.58% on this community type. (<15% threshold). |

**Table 13: Interactions between the relevant aquaculture activities and the community type feature Reefs (1170) constituent communities with a broad conclusion on the nature of the interactions.**

| | | | **1170 – Reef** | | |
|---|---|---|---|---|---|
| **Culture Type** | **Location** | **Method** | **Intertidal reef community complex** | ***Laminaria*-dominated community complex** | **Subtidal reef with echinoderms and faunal turf community complex** |
| Mussel (*Mytilus edulis*) on ropes | *Subtidal* | *Intensive* | - | **Disturbing: Yes**<br><br>**Justification**: The community type is sensitive to shading, stock drop off, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 1.99% of this community type. | **Disturbing: Yes**<br><br>**Justification:** The community type is sensitive to shaing, stock drop off, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 2.1% of this community type |
| Oysters (*Crassostrea gigas*) in bags & trestles | *Intertidal* | *Intensive* | **Disturbing: Yes**<br><br>**Justification:** The community type is sensitive to shading, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 0.55% this community type. | **Disturbing: Yes**<br><br>**Justification:** The community type is sensitive to shading, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 0.53% this community type. | **Disturbing: Yes**<br><br>**Justification:** The community type is sensitive to shading, smothering and siltation (faeces and pseudofaeces).<br><br>This activity overlaps 0.03% this community type. |
| Scallops (*Pecten maximus*) on seabed | *Subtidal* | *Extensive* | **Disturbing: Yes**<br><br>**Justification:** It is unlikely that the culture operation will occur over this community type given the difficulty likely to be encountered operating a dredge. However, the activities associated with this culture type are likely to have some impact mainly due to disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 0.11% of this community type. | **Disturbing: Yes**<br><br>**Justification:** It is unlikely that the culture operation will occur over this community type given the difficulty likely to be encountered operating a dredge. However, the activities associated with this culture type is likely to have some impact mainly due to disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 5.46% of this community type. | **Disturbing: Yes**<br><br>**Justification:** It is unlikely that the culture operation will occur over this community type given the difficulty likely to be encountered operating a dredge. However, the activities associated with this culture type is likely to have some impact mainly due to disturbance risks associated with harvest activities (dredging).<br><br>This activity overlaps 0.19% of this community type. |
| Salmon (*Salmo salar*) in net pens | *Subtidal* | *Intensive* | - | **Disturbing: Yes**<br><br>**Justification:** The community type is considered tolerant to pressures from activity. The species would be sensitive to the activity by virtue of persistent organic enrichment on the seafloor.<br><br>This activity overlaps 0.28% of this community type. | **Disturbing: Yes**<br><br>**Justification:** The community type is considered tolerant to pressures from activity. The species would be sensitive to the activity by virtue of persistent organic enrichment on the seafloor.<br><br>This activity overlaps 0.35% of this community type. |
| **Cumulative Impact Aquaculture** | | | **Disturbing: No**<br><br>**Justification:** the cumulative pressure of likely impacting activities is 0.66% on this community type. (<15% Threshold) | **Disturbing: No**<br><br>**Justification:** the cumulative pressure of likely impacting activities is 8.26% on this community type. (<15% Threshold) | **Disturbing: No**<br><br>**Justification:** the cumulative pressure of likely impacting activities is 2.67% on this community type. (<15% Threshold) |

## 8.4 Assessment of the effects of shellfish production on the Conservation Objectives for Harbour Seal in Kenmare River SAC.

Kenmare River SAC is designated for the Harbour Seal (*Phoca vitulina*). The distribution of the harbour seal and site use within the Kenmare River SAC are provided in Figure 3. The conservation objectives for this species are listed in Table 1 and can be found in detail in NPWS (2013a; 2013b). Recent harbour seal surveys (NPWS 2010, 2011, 2012) show the Kenmare River has maintained its importance on a regional and national scale in terms of Harbour Seal numbers, as indicated in earlier surveys (Cronin *et al*., 2004; Heardman *et al.,* 2006). While the conservation status of the species is therefore considered favourable at the site, the interactions between harbour seals and the features and aquaculture activities carried out in the SAC must be ascertained.

The interactions between aquaculture operations and aquatic mammal species are a function of:

1. The location and type of structures used in the culture operations - is there a risk of entanglement or physical harm to the animals from the structures or is access to locations restricted?

2. The schedule of operations on the site – is the frequency such that they can cause disturbance to the animals?

The proposed activities must be considered in light of the following attributes and measures for the Harbour Seal:

- Access to suitable habitat – number of artificial barriers
- Disturbance – frequency and level of impact
- Harbour Seal Sites:
    - Breeding sites
    - Moulting sites
    - Resting sites

Restriction to suitable habitats and levels of disturbance are important pressures that must be considered to ensure the maintenance of favourable conservation status of the harbour seal and implies that the seals must be able to move freely within the site and to access locations considered important to the maintenance of a healthy population. They are categorised according to various life history stages (important to the maintenance of the population) during the year. Specifically they are breeding, moulting and resting sites (Figure 3). It is important that the access to these sites is not restricted and that disturbance, when at these sites, is kept to a minimum. The structures used in culture of oysters (bags on trestles) may form a physical barrier to seals when both submerged and exposed on the shoreline such that the access to haul-out locations might be blocked. Activities at sites and during movement to and from culture sites may also result a disturbance events such that the seals may note an activity (head turn), move towards the water or actually flush into the water. While such disturbance events might have been documented, the impact of these disturbances at the population level has not been studied more broadly (National Research Council, 2009).

Intertidal oyster culture using bags and trestles has been conducted within the Kenmare River since the early 1990's. The current level of production, which remains quite small (<30 tonnes) is represented as licenced activities in Figure 4. It is considered that, given the favourable conservation status of Harbour Seals within the SAC represented by stable numbers since 2009 (NPWS 2012) that the current production levels (and activities associated with them) are conducive with favourable conservation status. However, some shellfish culture activities do physically overlap with designated seal sites identified in the SAC. In Coongar Harbour an oyster farm (licensed) and an application site for mussel culture is in very close proximity to a seal moulting site and in Ardgroom Harbour a mussel farm (licensed) overlaps a seal site (breeding). In Coonger Harbour, the seal site in question has multiple recordings of seals and therefore, would be considered an important location (Oliver O'Cadhla, NPWS - personal communication). The aquaculture site in question, has structures confined to the northern portion of the site and cannot expand beyond immediate areas based upon the topography of the site. This ensures that the activity will not occur in close proximity to the seal haul-out location. An expansion of intertidal aquaculture activity to areas in the immediate vicinity of the haul out locations would likely increase the risk of disturbance of the seals during the moulting period. The mussel application appears to be an expansion of existing operations it is therefore, likely the seals will be habituated or tolerant of disturbance from this activity.

In Ardgroom Harbour a single sighting was recorded at a mussel culture site during 2000 and 2001 (Lyons, 2003) – it is assumed, given the lack of natural structures at the site in question, that seal was hauled out on mussel rafts. The site in question has been licenced (and active) since 1992.

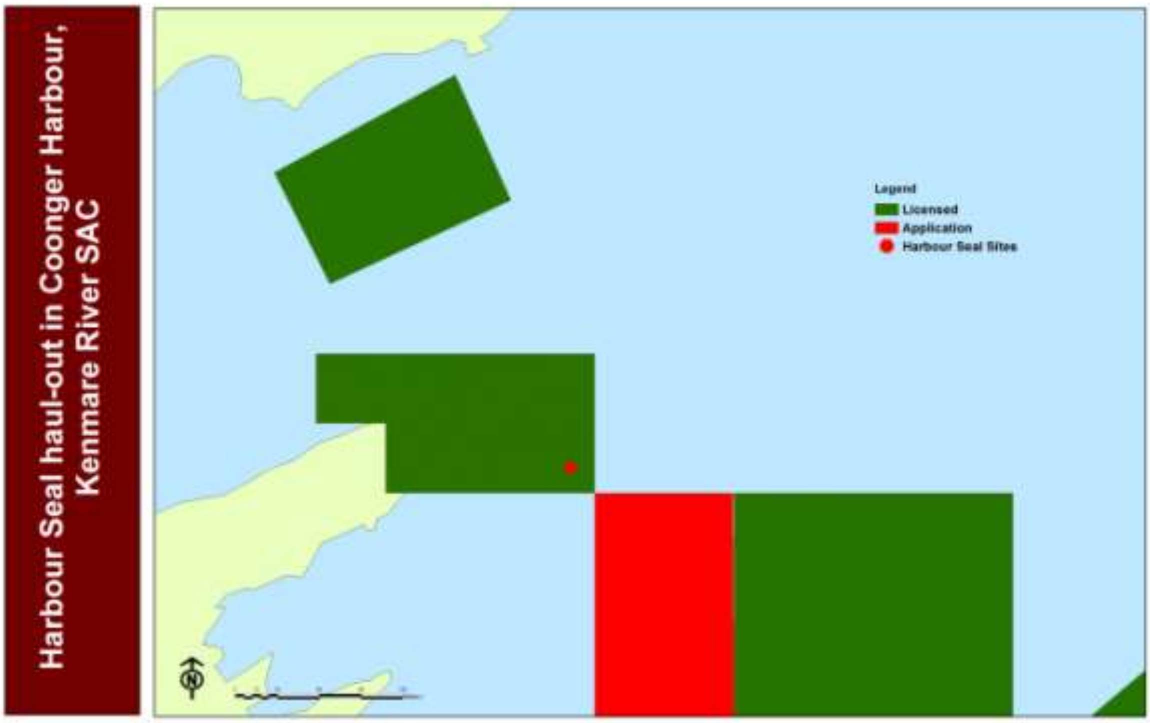
It should be noted that a finfish culture site within Killmakilloge Harbour is in close proximity to designated seal sites (breeding, moulting and haul out). As indicated previously, seal interactions with marine finfish cages have been identified (Aquaculture Stewardship Council, 2012). The risk to seals (as predators) result from their interaction with netting where if incorrectly configured (loose) the risk of drowning due to being entangled is increased. While a risk of entanglement in netting may present, it is not considered likely given that slack netting also presents a risk to culture organism in that it reduces the containment area. In terms of mitigation and in order to minimise risk to seals, the operators should employ a range of management actions including stock management (density control, regular removal of mortalities from cages), use of seal blinds and appropriate net tensioning. These practices are all considered suitable methods to minimise negative interactions between seals and finfish culture (Aquaculture Stewardship Council 2012). The use of Acoustic Deterrent Devices (ADDs) is not considered practical. Lethal actions to remove seals are only allowed under licence, the criteria which are determined by NPWS (Section 42 of the Wildlife Act, 1976 (as amended)).

Notwithstanding this, it would appear that the current level of activity at the sensitive times of the year (breeding and moulting, i.e. May to September) is sufficient to maintain stable seal counts at the site.

**Conclusion 1: With one exception, the current levels of licenced shellfish and finfish culture and proposed applications are considered non-disturbing to harbour seal conservation features.**

One exceptions to this conclusion is outlined above in Coonger Harbour (refer Figure 8). It is recommended that the boundaries for this intertidal oyster culture site be redrawn to exclude the area overlapping the seal haul-out locations which will mitigate further any disturbance risk to seals.

**Figure 12: Aquaculture activity (oyster farm) overlapping Harbour Seal moulting site in Coongar Harbour.**




**Conclusion 2: Under the conditions described above, finfish culture is not considered disturbing to the Harbour Seal.**

## 8.5 Assessment of the effects of aquaculture production on the Conservation Objectives for Otter and migrating Salmon in Kenmare River SAC.

**Otter**

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

The Kenmare River SAC is designated for the otter (*Lutra lutra*); the conservation objectives for such are listed in Table 1. The risk of negative interactions between aquaculture operations and aquatic mammal species is a function of:

1. The location and type of structures used in the culture operations- is there a risk of entanglement or physical harm to the animals from the structures?

2. The schedule of operations on the site – is the frequency such that they can cause disturbance to the animals?

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

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

- Extent of terrestrial habitat,
- Extent of marine habitat or
- Extent of freshwater habitat.
- The activity involves net input rather than extraction of fish biomass so that no negative impact on the essential food base (fish biomass) is expected
- The number of couching sites and holts or, therefore, the distribution, will not be directly affected by aquaculture and fisheries activities.
- Shellfish production activities are unlikely to pose any risk to otter populations through entrapment or direct physical injury.
- The structures and activities associated this form of oyster culture structures are raised from the seabed (0.5m -1m) and are oriented in rows, thus allowing free movement through and within the site.
- Disturbance associated with vessel and foot traffic could potentially affect the distribution of otters at the site. However, the level of disturbance is likely to be very low given the likely encounter rates will be low dictated primarily by tidal state and in daylight hours.

**Conclusion 3: The current levels of licenced shellfish culture and applications are considered non-disturbing to otter conservation features.**

**Finfish Culture:** The structures (nets) involved in finfish culture may pose an entanglement hazard to otters. However if site conditions as outlined in the seal section above (Section 8.4) are maintained this risk will be greatly mitigated.

**Conclusion 4: The current levels of licenced finfish culture and applications are considered non-disturbing to otter conservation features.**

**Salmon (*Salmo salar*)**

The Blackwater River runs into the north shore of Kenmare River SAC and is designated as an SAC for salmon (Blackwater River (Kerry) SAC).

Significant declines in sea survival and reduced returns to the coast and rivers of Atlantic salmon in recent decades have been recorded in Ireland (Salmon Management Task Force Report (Anon., 1996); O'Maoileidigh *et al*., 2004; Jackson *et al*., 2011). The reasons for the reduced sea survival remain unclear and speculation has covered such issues as global warming effects (Friedland *et al*., 2000; Friedland *et al*., 2005), changes in locations or availability of prey species, loss of post-smolts as by-catch in pelagic fisheries, increased fishing pressure, riverine habitat changes and sea lice infestation (Finstad et al., 2007; SSCWSS 2013). However, despite many years of study, processes contributing to the high mortality of juvenile Atlantic salmon between ocean entry and the first winter at sea remain poorly understood (Jones, 2009).

The results of a long term study carried out in the Burrishoole system in Co. Mayo (Jackson *et al*., 2011) show a strong and significant trend in increasing marine mortality of Atlantic salmon originating from the Burrishoole system. They would also point to infestation of outwardly migrating salmon smolts with the salmon louse (*L. salmonis*) as being a minor and irregular component of marine mortality in the stocks studied and not being implicated in the observed decline in overall survival rate. The results of this study have been corroborated by studies carried out by the Marine Institute as part of a detailed investigation into the potential impacts of sea lice on a number of other river systems, including the Newport River (Jackson *et al*., 2013a).

The Irish State has developed a comprehensive control and management strategy for sea lice infestations on farmed salmonids. This systems is underpinned by research dating back to the early 1990s and was the basis for the introduction of the original lice monitoring programme (Jackson and Minchen, 1993). Subsequent research (Jackson *et al.,* 2000; Jackson *et al.,* 2002) informed the development of a set of management protocols published by the Department of Marine in 2000 (Anon., 2000). The full implementation of these protocols resulted in improved sea lice control on farmed salmon (O'Donohoe *et al*., 2013). There has been a policy of utilising research to ensure that the most up to date and effective treatment and management regimes are in place to control sea lice on Irish farms and this has included research into techniques to assess the most effective treatment regimes (Sevatdal *et al*., 2005) and the sources of sea lice infestation in the marine environment (Jackson *et al.*, 1997; Copley *et al*., 2005; Copley *et al.,* 2007).

The monitoring and control system in place is comprehensive, transparent and independent. The Irish management and control system is widely regarded as best international practice because it has low treatment trigger levels, is based on independent inspection regimes, has a robust follow-up on problem areas and Ireland is the only country in the world to publish the results of the independent state run inspection programme in full each year (O'Donohoe *et al.,* 2013). Following the introduction of the "S*trategy for improved pest control on Irish salmon farms*" in 2008 by the Department of Agriculture Fisheries and Food there were significant improvements in sea lice management in Ireland (Jackson, 2011).

The control strategy is aimed at implementing a more strategic approach to lice control at a bay level and targeting efforts on the spring period where there is a potential for impacts on wild smolts embarking on their outward migration. The effectiveness of the system is witnessed by trends in sea lice infestation on farmed fish in the peak period for wild salmon smolt migration having shown a strong downward trend since the introduction of the new management strategy (Jackson *et al.,* 2013). As indicated previously, in relation to **disease interactions**, any risks of disease transfer between cultured finfish and wild fish are mitigated by the management systems currently in place. In summary, Council Directive 2006/88/EC on animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals form the legislative basis that governs the monitoring and management of disease outbreaks in mariculture operations in Ireland. For diseases not listed in this Directive, a Code of Practice and Fish Health Handbook has been developed jointly by the State and industry with the primary objectives of disease prevention and control.

Active veterinary surveillance and intervention has assisted in reducing the prevalence and spread of many pathogens. In addition, the principles outlined in the Fish Health Handbook mentioned above such as improved biosecurity practices on farms, fallowing sites to break transmission cycles, veterinary inspection of fish prior to transfer, single year class stocking, coordinating treatments and harvesting within embayments etc have mitigated the transmission of pathogenic organisms.

**Notwithstanding the issues highlighted above, it is concluded that aquaculture production in the Kenmare River SAC does not pose any risk to the following salmon attributes:**

- **Distribution (in freshwater)**
- **Fry abundance (freshwater)**
- **Population size of spawners (fish will not be impeded or captured by the proposed activity)**
- **Smolt abundance (out migrating smolts will not be impeded or captured by the proposed activity)**
- **Water quality (freshwater)**

## 8.6 Assessment of the effects of shellfish production on the Conservation Objectives for Maerl in the Kenmare River SAC.

Maerl dominated community occurs in certain areas (Ardgroom and Killmakilloge Harbours) which are outside of the Qualifying Interests for which the Kenmare River SAC was designated but are still within the SAC boundary. Maerl, the characterising species of this community, is listed as an Annex V species and as it is within the SAC boundary it must be afforded protection.

Aquaculture activity (suspended mussel culture) within Ardgroom harbour spatially overlaps (1.84%) with the Maerl dominated community and may have negative effects on the distribution and quality of this community type (Figure 13). The potential effects of this aquaculture type which are listed in Table 5, include current alteration, increased deposition and shading. Table 8 lists the sensitivities of community types to various pressure types according to ABPMer (2013b). According to ABPMer (2013b) Maerl habitats are restricted to shallow coastal waters by requirements for light penetration hence this species has a high sensitivity to increased turbidity, is sensitive to decrease in water flow speed and organic enrichment of sediments. Based on the findings of the later report the proposed activity (suspended mussel culture) will therefore have an adverse effect on the species for the following reasons:

Maerl is very highly sensitive to the following which may result as a consequence of suspended culture operations:

- Shading (due to structures at the surface and/or in water column)
- Siltation (addition of fine sediments, pseudofaeces).
- Smothering (addition of materials biological or non-biological to the surface).
- Change in water flow due to permanent/semi-permanent structures placed in the water column).
- Change in turbidity/suspended sediment/Increased suspended sediment turbidity.

**Conclusion 5: Suspended mussel culture in Ardgroom Harbour is potentially disturbing to Maerl dominated community.**

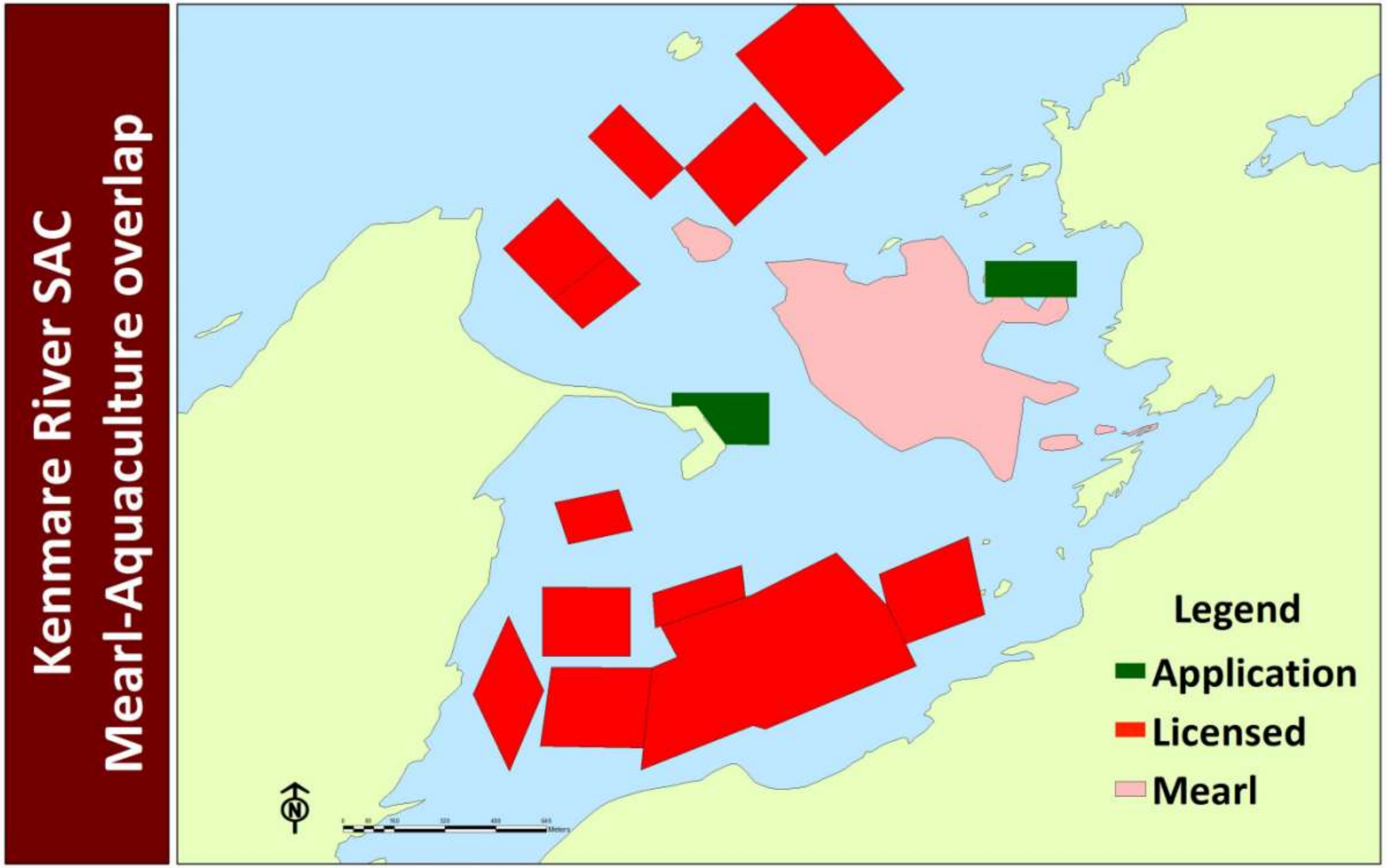



**Figure 13. Aquaculture activities overlapping Mearl habitat in Kenmare River SAC.**

# 9. Assessment of Fisheries Activities

## 9.1. Fisheries:

The risk assessment framework for fisheries follows, where feasible, EC guidance (2012) and includes elements of risk assessment from Fletcher (2002, 2005). The qualitative and semi-quantitative framework is described in Marine Institute (2013) and criteria for risk categorization is shown in Tables 14 and 15 below.

The framework uses categorical conditional probability matrices of likelihood and consequence to assess the risk of an activity to a conservation feature. Categorical likelihood and consequence scores for each such 'incident' (fishery-designated feature interactions) are provided by expert judgment and a base literature resource which has been pre-compiled for each habitat type defined in the COs.

Separate conditional probability matrices for habitats and designated species are used to assess risk. In the case of habitats the consequence criteria largely follow the definitions and methodologies used for AA of projects and plans. In the case of species the consequence categories relate to the degree to which populations and their supporting habitats may be negatively affected by the given activity.

### 9.1.2. Sensitivity of characterizing species and marine communities to physical disturbance by fishing gears

- The approach and rationale to assessment of the sensitivity of species and habitats to fishing activities and the information used in this assessment is similar to that outlined for aquaculture
- NPWS (2012b) provide lists of species characteristic of the habitats that are defined in the Conservation Objectives. The sensitivity of these species to various types of pressures varies and the species list varies across habitats.
- Pressures due to fishing are mainly physical in nature i.e. the physical contact between the fishing gear and the habitat and fauna in the habitat causes an effect.
- Physical abrasive/disturbing pressures due to fishing activity of each metier maybe classified broadly as causing disturbance at the seabed surface and/or at the sub-surface.
- Fishing pressures on a given habitat is related to vulnerability (spatial overlap or exposure of the habitat to the gear), to gear configuration and action, frequency of fishing and the intensity of the activity. In the case of mobile gears intensity of activity is less relevant than frequency as the first pass of the gear across a given habitat is expected to have the dominant effect (Hiddink *et al.*. 2007).
- Sensitivity of a species or habitat to a given pressure is the product of the resilience of the species to the particular pressure and the recovery capacity (rate at which the species can recover if it has been affected by the pressure) of the species. Morphology, life history and biological traits are important determinants of sensitivity of species to pressures from fishing and aquaculture.

- The separate components of sensitivity (resilience, recoverability) are relevant in relation to the persistence of the pressure
    - For persistent pressures, i.e. fishing 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 reduction caused by fishing. In all but these cases, and if resilience is moderate or low, then the species may be negatively affected and will exist in a modified state. Such interactions between fisheries and species/habitats represent persistent disturbance. They become significantly disturbing if more than 15% of the community is thus exposed (NPWS 2012b).
    - In the case of episodic pressures i.e. fishing activities that are seasonal or discrete in time both the resilience and recovery components of sensitivity are relevant. If resilience is low but recovery is high, relative to the frequency of application of the pressure, than the species/community will be in favourable conservation status for a given proportion of time
- The sensitivities of some species, which are characteristic (as listed in the COs) of benthic communities, to physical pressures similar to that caused by fishing gears, are described above.
- In cases where the sensitivity of a characterising species (NPWS 2011b) has not been reported this risk assessment adopts the following guidelines
    - Resilience of certain taxonomic groups such as emergent sessile epifauna to physical pressures due to all fishing gears is expected to be generally low or moderate because of their form and structure (Roberts *et al.* 2010).
    - Resilience of benthic infauna (eg bivalves, polychaetes) to surface pressures, caused by pot fisheries for instance, is expected to be generally high as such fisheries do not cause sub-surface disturbance
    - Resilience of benthic infauna to sub-surface pressures, caused by toothed dredges and to a lesser extent bottom otter trawls using doors, may be high in the case of species with smaller body sizes but lower in large bodied species which have fragile shells or structures. Body size (Bergman and van Santbrink 2000) and fragility are regarded as indicative of resilience to physical abrasion caused by fishing gears
    - Recovery 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

**Table 14.** Risk categorization for fisheries and designated habitat interactions (see: Marine Institute 2013). Colours indicate risk category. Disturbance is defined as that which leads to a change in characterising species. Such disturbance may be temporary or persistent depending on the frequency of impact and the sensitivity of the receiving environment. Colours indicate the probable need for mitigation of effects from green (no mitigation needed), to yellow (mitigation unlikely to be needed but review on a case by case basis), orange (mitigation probably needed) and red (mitigation required)

| **Habitats** | | | **Consequence criteria** | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Activity is not present or has no contact with habitat | Activity occurs and is in contact with habitat | Up to 15% overlap of fishery and habitat seasonally. | Over 15% overlap of fishery and habitat seasonally. | Over 15% of habitat disturbed persistently leading to cumulative impacts | Impact is effectively permanent due to severe habitat alteration. |
| | | | No change due to fishing activity can occur | Individual effects on characterising species but this is undetectable relative to background natural variability | Seasonal change in characterising species and community structure and function | Seasonal change in characterising species and structure and function | Persistent change in characterising species, structure and function | Biodiversity reduction associated with impact on key structural species |
| | | | | | | Frequency of disturbance < recovery time. Non-cumulative | Frequency of disturbance> recovery time. Cumulative | No recovery or effectively no recovery |
| **Likelihood** | **%** | Level | **0** | **1** | **2** | **3** | **4** | **5** |
| Highly likely | >95 | **5** | 0 | 5 | 10 | 15 | 20 | 25 |
| Probable | 50-95 | **4** | 0 | 4 | 8 | 12 | 16 | 20 |
| Possible | 20-50 | **3** | 0 | 3 | 6 | 9 | 12 | 15 |
| Unlikely | 1-20 | **2** | 0 | 2 | 4 | 6 | 8 | 10 |
| Remote | 1 | **1** | 0 | 1 | 2 | 3 | 4 | 5 |

**Table 15.** Risk categorization for fisheries and designated species interactions (Marine Institute 2013)

| Species | | | **Consequence criteria** | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Activity is not present and individuals or population cannot be affected | Activity present. Individuals in the population affected but effect not detectable against background natural variability | Direct or indirect mortality or sub-lethal effects caused to individuals by the activity but population remains self-sustaining | In site population depleted by the activity but regularly sub-vented by immigration. No significant pressure on the population from activities outside the site | Population depleted by the activity both in the site and outside of the site. No immigration or reduced immigration | Population depleted and supporting habitat significantly depleted and unable to continue to support the population |
| **Likelihood** | **%** | Level | **0** | **1** | **2** | **3** | **4** | **5** |
| Highly likely | >95 | **5** | **0** | **5** | **10** | **15** | **20** | **25** |
| Probable | 50-95 | **4** | **0** | **4** | **8** | **12** | **16** | **20** |
| Possible | 20-50 | **3** | **0** | **3** | **6** | **9** | **12** | **15** |
| Unlikely | 1-20 | **2** | **0** | **2** | **4** | **6** | **8** | **10** |
| Remote | 1 | **1** | **0** | **1** | **2** | **3** | **4** | **5** |

### 9.1.3. Spatial overlap of fisheries and qualifying interests

Percentage spatial overlap of fisheries on marine community types within each Qualifying Interest is shown below in Table 16. The footprint of each fishery is the area of the polygon within which the fishery takes place and is an exaggeration of the actual area over which gear is deployed, especially in the case of static gears (Traps, Gill nets, Tangle nets, Trammel Nets). In some cases (Hooks and Lines) there is overlap with the marine community type but no pressure or footprint as the gear is not in contact with the seabed.

**Table 16. Spatial overlap of fisheries and marine community types in Kenmare River SAC. There are no fisheries on intertidal mobile sands or on shingle communities. Spatial overlap of demersal and pelagic trawls, as shown by Vessel Monitoring System data, is not quantified and is presented as absent or present. Overlap of multiple fisheries occur on community types making the calculation of cumulative spatial overlap impractical.**

| QI/SCI | Marine Community Type | Fishing current | Trap - lobster | Trap - crab | Trap - shrimp | Trap - Nephrops | Dredge - scallop | Gill net | Tangle net crayfish | Trammel netting bait | Otter trawl - demersal | Mid-water trawl | Hooks and Lines | Hand gathering winkles |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Large shallow inlets and bays [1160] | Intertidal mobile sand community complex | Yes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Large shallow inlets and bays [1160] | Zostera dominated community | Yes | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Large shallow inlets and bays [1160] | Co-occurrence Zostera and maerl community complex | Yes | 100 | 100 | 100 | 0 | 0 | 0 | | 100 | 0 | 0 | 0 | |
| Large shallow inlets and bays [1160] | Maërl-dominated community | Yes | 95 | 95 | 98 | 0 | 0 | 0 | 0 | 95 | 0 | 0 | 0 | |
| Large shallow inlets and bays [1160] | Pachycerianthus multiplicatus community | Yes | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Large shallow inlets and bays [1160] | Muddy fine sands dominated by polychaetes and Amphiura filiformis community complex | Yes | 20 | 20 | 17 | 1 | 1 | 1 | 14 | 20 | 1 | 1 | 33 | |
| Large shallow inlets and bays [1160] | Fine to medium sand with crustaceans and polychaetes community complex | Yes | 55 | 55 | 28 | 2 | 9 | 1 | 0 | 55 | 1 | 1 | 0 | |
| Large shallow inlets and bays [1160] | Coarse sediment dominated by polychaetes community complex | Yes | 36 | 36 | 7 | 0 | 6 | 1 | 18 | 36 | 1 | 1 | 2 | |
| Large shallow inlets and bays [1160] | Shingle | Yes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Large shallow inlets and bays [1160] | Intertidal reef community complex | Yes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Large shallow inlets and bays [1160] | Laminaria-dominated community | Yes | 34 | 34 | 30 | 1 | 0 | 1 | 3 | 34 | 1 | 1 | 0 | |
| Large shallow inlets and bays [1160] | Subtidal reef with echinoderms and faunal turf community complex | Yes | 30 | 30 | 11 | 0 | 6 | 1 | 12 | 30 | 1 | 1 | 1 | |
| Reefs [1170] | Intertidal reef community complex | Yes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Reefs [1170] | Laminaria-dominated community | Yes | 38 | 38 | 35 | 1 | 0 | 1 | 2 | 38 | 1 | 1 | 0 | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reefs [1170] | Subtidal reef with echinoderms and faunal turf community complex | Yes | 37 | 37 | 12 | 0 | 0 | 1 | 12 | 37 | 1 | 1 | 1 | |

### 9.1.3. Risk assessment of the impact of fishing gears on marine benthic communities

- The list of fishing activities (métiers) operating in Kenmare Bay is described above
- The sensitivity of marine communities, which are the subject of the COs to physical disturbance that may be caused by fishing gears is in Table 8.
- The risk assessment framework outlined in Table 14 and Table 15 for habitats and species respectively provides a rationale for assessing and scoring risk posed by fishing activities to the conservation objectives. More detailed explanation is provided in Marine Institute (2013).
- One of the risk assessment criteria for habitats is the % overlap of the activity and each habitat. The overlap of fisheries and marine community types within those habitats is in presented in Table 16.
- Risk scores for effects of individual fisheries on marine community types and species are in Table 17.

## 9.2 Fisheries Risk profile

### 9.2.1. Marine Community types

9.2.1.1. Trap fisheries for lobster, crab, shrimp and *Nephrops*

- Trap fisheries may pose a risk to sensitive habitats such as Zostera and Maerl due to abrasion and disturbance caused by pots, ropes and anchors. The effect will depend on the intensity and frequency of the activity and the gear configuration in terms of pot spacing, number of anchors used, type of rope etc. Trap fisheries for *Nephrops* will not occur on this ground. Shrimp fisheries may occur on the *Pachycerianthus* community and there is a low risk of impact to this species.
- Trap fisheries may pose some risk to kelp reef communities and to sub-tidal faunal turf reefs depending on the intensity of the potting activity. This risk is likely to be low however against background variability in these communities.
- Pot fisheries pose no risk to sedimentary habitats

9.2.1.1. Dredge fisheries for scallop

- Dredge fisheries for scallop occurs on sub-tidal reef community and may have an impact on this community. There is some uncertainty as to the location of this fishery and its relation to aquaculture applications for bottom culture of scallop
- Dredging for surf clams may occur in sedimentary habitats in Kenmare River (spatial analysis not shown). They are not currently fished, no surveys of their distribution have been undertaken and the site is not a classified production area for this species. The risk posed to sedimentary habitats from a surf clam fishery is low.

9.2.1.2. Set net fisheries

- Gill net, tangle nets and trammel nets are used to capture mixed fish, crayfish and bait respectively
- The extent of trammel netting is unknown and here it is assumed to have the same footprint of the lobster fishery as trammel nets are used primarily to catch bait species for lobster pots. If they are used the associated anchors and footropes may impact Zostera and Maerl beds and may have lesser impacts on kelp reefs which are less sensitive to disturbance than Zoster or Maerl.
- Tangle nets and gill nets are likely to be used in deeper waters away from kelp reefs or Zostera and Maerl beds.

9.2.1.3. Bottom trawl fisheries

- Bottom trawling in Kenmare Bay occurs mainly in the outer part of the site in the muddy fine sand community complex. Fishing in the eastern part of the site by vessels >15m is close to zero. It also occurs on medium fine sand. Annual VMS effort for vessels >15m, between 2006-2012 in the site was approximately 350 hrs. The distribution of VMS points indicates that over 15% of the muddy fine sand community is fished. Fishing occurs in all months of the year
- Muddy fine sand communities, particularly suspension feeders and crustaceans, are sensitive to fishing pressure from trawls but this depends on intensity of the fishing pressure. The community is not sensitive to low levels of trawling (a single pass for instance). Recovery time is prolonged compared to coarser substrates due to the fact that such habitats are mediated by a combination of biological, chemical and physical processes compared to coarse substrates which are dominated by physical processes (ABPMer 2013. Muddy sands. Appendix F, ). Recovery times from impacts may take years.
- The intensity of trawling by vessels over 15m in length in outer Kenmare River could be classed as medium (using scales provided by the Beaumaris approach to sensitivity assessment, ABPMer 2012. Muddy sands. Appendix F, p. 71) and some of the habitat probably experiences more than a single pass of the gear per annum. Activity by vessels under 15m is unquantified. The community therefore may be impacted. Impact would increase if fishing effort escalated.
- In Kenmare the anthozoan *Virgularia mirabilis* occurs in the muddy fine sand community but is unlikely to be affected by trawling as it occurs in the inner Bay.

9.2.1.3. Mid-water trawl fisheries and hook and line fisheries

- These fisheries are not expected to impact marine habitats in Kenmare Bay

9.2.1.3. Hand gathering of periwinkles

- Hand gathering of periwinkles occurs on intertidal reef communities. There is a low risk of impact in such communities due to trampling pressure. However, although the intensity of the activity is unknown it is unlikely to be such that significant effects would occur.

**Table 17. Risk assessment for fisheries-marine community type interactions in Kenmare River SAC.**

| QI/SCI | Marine Community Type | Trap - lobster | Trap - crab | Trap - shrimp | Trap - Nephrops | Dredge - scallop | Gill net | Tangle net crayfish | Trammel netting bait | Otter trawl - demersal | Mid-water trawl | Hand gathering winkles | Hooks and Lines |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Large shallow inlets and bays [1160] | Co-occurrence Zostera and maerl community complex | 16 | 16 | 16 | | | | | 16 | | | | |
| Large shallow inlets and bays [1160] | Zostera dominated community | | | 12 | | | | | | | | | |
| Large shallow inlets and bays [1160] | Maërl-dominated community | 16 | 16 | 16 | | | | | 16 | | | | |
| Large shallow inlets and bays [1160] | Pachycerianthus multiplicatus community | | | 9 | | | | | | | | | |
| Large shallow inlets and bays [1160] | Muddy fine sands dominated by polychaetes and Amphiura filiformis community complex | 4 | 4 | 4 | 4 | | 4 | 4 | 4 | 12 | 4 | | 2 |
| Large shallow inlets and bays [1160] | Fine to medium sand with crustaceans and polychaetes community complex | 4 | 4 | 4 | 4 | | 4 | | 4 | 12 | 4 | | |
| Large shallow inlets and bays [1160] | Coarse sediment dominated by polychaetes community complex | 4 | 4 | 4 | | | 4 | 4 | 4 | 12 | 4 | | 2 |
| Large shallow inlets and bays [1160] | Intertidal reef community complex | | | | | | | | | | | 6 | |
| Large shallow inlets and bays [1160] | Laminaria-dominated community | 9 | 9 | 9 | 9 | | 4 | 4 | 9 | 4 | 4 | | |
| Large shallow inlets and bays [1160] | Subtidal reef with echinoderms and faunal turf community complex | 9 | 9 | 9 | | 8 | 4 | 4 | 9 | 4 | 4 | | 2 |
| Reefs [1170] | Laminaria-dominated community | 9 | 9 | 9 | 9 | | 4 | 4 | 9 | 4 | 4 | | |
| Reefs [1170] | Subtidal reef with echinoderms and faunal turf community complex | 9 | 9 | 9 | | | 4 | 4 | 9 | 4 | 4 | | 2 |
| Large shallow inlets and bays [1160] | Intertidal reef community complex | | | | | | | | | | | 6 | |

### 9.2.2. Species

9.2.2.1. Harbour Seal

- Harbour seals haul out in sheltered waters, typically on sandbanks and in estuaries, but also in rocky areas and may swim upstream into freshwater. They undertake smaller scale foraging movements (30km from the haul out site) and migrations than grey seal. Pups remain in their natal area after weaning (Wilson *et al*. 2003, Cronin *et al*. 2008). Space use maps for Harbour seals tagged in Kenmare River shows very limited movement outside of Kenmare River SAC (Figure 14).

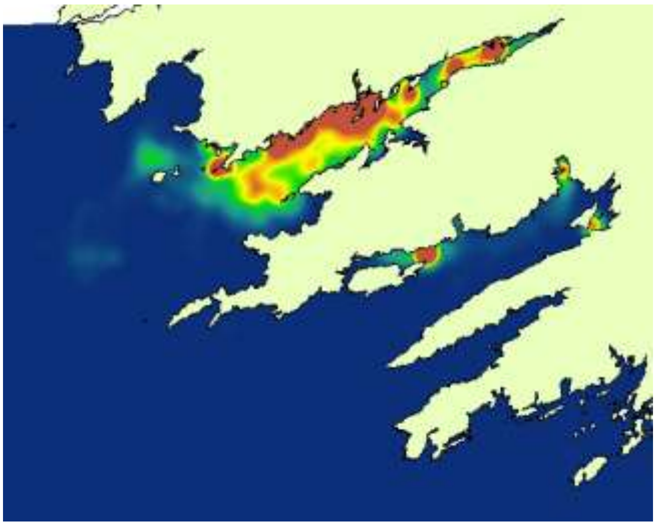


**Figure 14. Space use maps for tagged Harbour seals in Kenmare river (source: Cronin *et al*. 2008)**

- Number of Harbour seals in Kenmare River declined slightly from 413 to 390 between Census counts in 2003 and 2011
- Tangle nets are used at the mouth of Kenmare River within the foraging range of seals at the site.
- Gill net use is reported by vessels over 15m in Kenmare River within the foraging range of seals from Kenmare River
- Pelagic trawling for sprat (with herring by-catch) occurs in Kenmare River and east to the upper reaches of the Bay.
- Demersal trawling occurs in outer Kenmare River but within the Kenmare River SAC.
- Potting for shrimp occurs in inner Kenmare river while lobster and crab potting, with the possible use of trammel nets for bait, occurs along the south and north shores of the outer Bay.
- By-catch risk is highest for gill net fishing and pelagic fishing in inner Kenmare River. There may be a by-catch in trammel nets. The pelagic fishery for sprat and pot fisheries may cause disturbance at haul out locations which are mainly in the inner Bay on north and south shores.

Cumulative risk posed by fisheries may result in sub-lethal and lethal effects on individual seals but the risk to the population may be relatively low. However, total annual by-catch of Harbour Seal in Kenmare River is unknown.

- Risk of by catch, prey depletion and disturbance does not exceed a value of 6 and is considered to be low.

9.2.2.1. Otter

- Otter (*Lutra lutra*) is listed in Annex II of the Habitats Directive. Otter is common throughout freshwater systems in Ireland and also occurs in coastal marine habitats.
- There is a low risk of capture of otters in lobster pots and trammel nets set in shallow water (<5m). Such mortality has been documented elsewhere.
- Because of the intensity of pot fishing, unknown levels of associated use of trammel nets and documented accounts of mortality of otter in parlour creels in particular there is some likelihood of capture of individual otters. As creels and trammels are unlikely to be deployed within the preferred dive range of otters in the Irish lobster fishery the likelihood of capture is thought to be unlikely

# 10. In-combination effects of aquaculture, fisheries and other activities

Given the uncertainty in relation to scallop fishing the assessment of in-combination effects of this activity and scallop culture (which is in-effect a type of fishery activity) are difficult to estimate. It is likely that the 'wild' fishery activities will not occur in the aquaculture plots if they are actively maintained. Conservative estimates of percentage overlap of wild-fishery activities on Marine Community Types are provided in Table 16. Notwithstanding the difficulty estimating the extent of fishery activities, the likely in-combination of potentially disturbing fishery (Table 16) and aquaculture activities on Marine Community types (Tables 12, 13) do not exceed the 15% threshold identified in guidance documents (NPWS 2013b).

Those fishery activities that overlap with sensitive community types or represent a risk identified in Table 17 should be subject to mitigation measures the extent of which are beyond the scope of this report. Other fishery activities have little or no overlap with aquaculture activities and are subject to separate management actions.

Other activities leading to potential impacts on conservation features relate to harvest of seaweed on intertidal reef communities. There is little known concerning the level of harvest from these intertidal reef communities. The impact is likely two-fold, direct impact upon the reefs by removal of a constituent species and impact upon intertidal sediments as a consequence of travel across the shore to the harvest sites. The likely overlap between these activities and intertidal shellfish culture is considered small as the (reef) habitat is not considered suitable for shellfish culture and low levels of this culture method overlaps this habitat. Seaweed harvesting requires a foreshore licence administered by the Department of Environment, Community and Local Government. The level of transport across the intertidal area is unknown, but it is presumed that the routes are well defined.

Seal watching cruises are conducted in Kenmare. The extent of these activities are confined to the inner portions of Kenmare River SAC and do not overlap with the aquaculture operations. It is assumed that these activities are subject to a separate AA process?

There are a number of activities which are terrestrial in origin that might result in impacts on the conservation features of the Kenmare River SAC. Primary among these are point source discharges from municipal and industrial units (Shellfish Pollution Reduction Programme, DECLG). There are five urban waste water treatment plants in the general vicinity of the SAC. These are found in Ardgroom, Kenmare, Sneem, Kilgarvan, Eyeries. The pressure derived from these facilities is a discharge that may impact upon levels of dissolved nutrients, suspended solids and some elemental components e.g. aluminium in the case of water treatment facilities. It should be noted that the pressures resulting from fisheries and aquaculture activities are primarily morphological in nature. It was, therefore, concluded that given the pressure resulting from say, a point discharge location (e.g. urban waste-water treatment plant or combined sewer overflow) would likely impact on physico-chemical parameters in the water column, any in-combination effects with aquaculture or fisheries activities are considered to be minimal or negligible.

No other activities resulting in morphological and/or disturbance pressures were identified or could be quantified.

# 11. SAC Aquaculture Appropriate Assessment Concluding Statement and Recommendations

In the Kenmare River SAC there are a range of aquaculture activities currently being carried out or proposed. Based upon this and the information provided in the aquaculture profiling (Section 5), the likely interaction between this aquaculture and conservation features (habitats and species) of the site were considered.

An initial screening exercise resulted in a number of habitat features and species being excluded from further consideration by virtue of the fact that no spatial overlap of the culture activities was expected to occur. The habitats and species excluded from further consideration were1014 Marsh Snail *Vertigo angustior*, 1220 Perennial vegetation of stony banks, 1230 Vegetated sea cliffs of the Atlantic and Baltic coasts, 1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae), 1410 Mediterranean salt meadows (*Juncetalia maritimi*), 2120 Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes"), 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes), 4030 European dry heaths and 6130 Calaminarian grasslands of the *Violetalia calaminariae* and Submerged or partially submerged sea caves (8330).

## 9.1 Habitats

A full assessment was carried out on the likely interactions between aquaculture operations (as proposed) and the Annex 1 habitats 1160 (Large Shallow Inlets and Bay), and 1170 (Reefs). The likely effects of the aquaculture activities (Species, structures) were considered in light of the sensitivity of the constituent community types and species of the Annex 1 habitats.

**Conclusion and Recommendation - Aquaculture Activities:** Of the 11 community types listed under the remaining habitat features (1160 and 1170) two (Intertidal mobile sand community complex and Shingle) were also excluded from further analysis as they had no overlap with aquaculture activities.

Based upon the scale of spatial overlap and the relatively high tolerance levels of the habitats and species therein, the general conclusions relating to the interaction between current and proposed aquaculture activities with habitats is that consideration can be given to licencing (existing and applications) in the Annex 1 habitats – 1160 (Large Shallow Inlets and Bays and 1170 (Reefs) with the exception of activities overlapping the following community types:

1. **Zostera-dominated community**- This habitat is not tolerant of any overlap of any activity. The cumulative pressure of likely impacting activities on this habitat is 20.55%**.**
2. **Maerl-dominated community -** This habitat is not tolerant of any overlap of any activity. The cumulative pressure of likely impacting activities on this habitat is significant at 27.89%**.**
3. ***Pachycerianthus multiplicatus* community -** The cumulative pressure of likely impacting activities on this habitat is significant at 100%**.**

It is important to note that licenced areas impacted by aquaculture that might be redrawn to exclude any overlap with sensitive habitats should include a sufficient buffer zone to allow for mapping resolution and/or visual enforcement of exclusion. Furthermore, there is still the risk that wild fishery interests might still dredge for scallop in these areas; therefore, it is recommended that some understanding should be arrived at between aquaculture management and fishery management interests in relation to these areas.

Also, it might be worth discussing whether the scallop culture activities as described (i.e., with harvest by dredging) can be considered an 'aquaculture' activity as distinct from a wild fishery, given that seeding is questionable and that 'culture' areas are very large.

Finally, the likely interaction between the proposed aquaculture activities and the Annex V species Maerl was assessed in areas where the maerl habitat did not fall under the Qualifying Interests but was still within the SAC boundary. It is **also concluded** that the aquaculture activity (suspended mussel culture) in Ardgroom Harbour is disturbing to this community type.

## 9.2 Species

The likely interactions between the proposed aquaculture activities and the Annex II Species Harbour Seal (*Phoca vitulina*) and Otter (*Lutra lutra*) were also assessed. The objectives for these species in the SAC focus upon maintaining the good conservation status of the population and consider certain uses of intertidal habitats as important indicators of status. The aspect of the culture activities that could potentially disturb the Harbour seal status relates to movement of people and vehicles within the sites as well as accessing the sites over intertidal areas and via water.

**Conclusion and Recommendation:** It is acknowledged in this assessment that the favourable conservation status of the Harbour seal (*Phoca vitulina*) has been achieved given current levels of aquaculture production within the SAC. On this basis, the current levels of licenced aquaculture (existing and renewals) are considered non-disturbing to harbour seal conservation features. However, there is one exception:

- Aquaculture activity (oyster farm) overlaps a Harbour Seal moulting site in Coongar Harbour and is recommended that the site boundaries be redrawn to exclude the overlap of harbour seal haul-out site.

In relation to new applications, given the lack of spatial overlap or the fact that applications which are adjacent to haul-out sites represent expansion of existing activities (and tolerance or acclimatisation has occurred) it is considered that the aquaculture activities proposed (applications) do not pose a threat to the harbour seal in the Kenmare River SAC.

The current levels of licenced aquaculture operations and applications are considered non-disturbing to Otter (*Lutra lutra)* conservation features.

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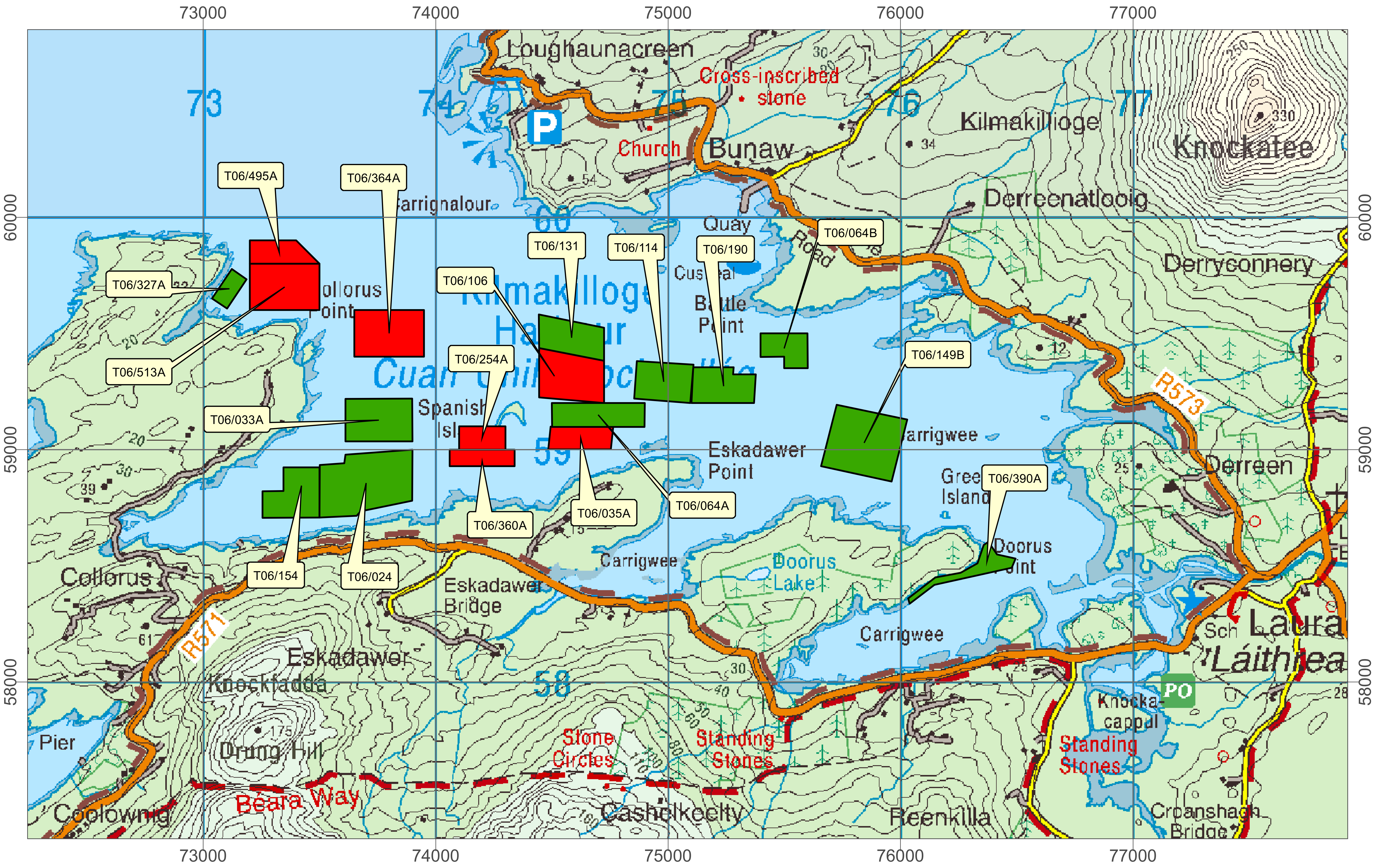


**Aqua Culture Sites**

<all other values>

**Site_Status**

- Under Appeal
- Application
- Licensed

**Drawn : 06-12-2019**

**Kilmackillloge Harbour**
**Co. Kerry.**
**Aquaculture Sites.**



**Scale = 1:15,000**

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