

Cumulative Assessment

Aquaculture Licence Appeals in Castlemaine Harbour

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1 INTRODUCTION

A cumulative assessment considers the known or potential impacts of multiple activities taking place in an area under consideration for development. These are foreseen as part of Environmental Impact Assessment (EIA) Screenings (in accordance with the codified Environmental Impact Assessment Directive 2011/92/EU Article 4(3) and Annex III) prior to the commencement of a project or plan.

As part of the Castlemaine Harbour aquaculture licence application process potential cumulative effects for the following were assessed in accordance with Commission Guidance on EIA Screening by a Group comprising DAFM, the Marine Institute and BIM:

1. existing aquaculture projects or with other licensed aquaculture projects that have not yet commenced; and
2. existing foreshore projects or with other licence foreshore projects that have not yet commenced.

In the case of the former there was considered to be a potential for cumulative interactions that could result in environmental effects but these were not considered likely to result in significant negative impacts on 'receptors' such as air, water, cultural heritage or visual amenity. For the latter the Group deemed cumulative effects unlikely.

This addendum to the Aquaculture Licence Appeals Board (ALAB) process will revisit this process and outline which activities take place in the Castlemaine Harbour area and the likelihood for cumulative effects. The Appropriate Assessment (Marine Institute, 2011) and other data sources will be used as a basis for this assessment.

2 CUMULATIVE IMPACT ASSESSMENT

2.1 SPATIAL DENSITY

As of May 2013, there were seven existing licensed aquaculture sites and 43 determinations for new site applications or renewals. Five of the 43 determinations (two oysters, two mussels and one clam) have been referred to the ALAB.

The Castlemaine Harbour area is approximately 5,300 hectares (ha). The total area taken up by the 50 current/proposed licences is approximately 372 ha or approximately 7% of the total Harbour area. The spatial footprint of the five appealed sites is approximately 57.50 ha or approximately 15% of the designated aquaculture area (**Table 2.1 and Figure 2.1**).

Table 2.1: Summary of Aquaculture Sites Being Appealed

Site reference	Species	Spatial footprint (ha)
T06/255A	Oysters	16.14
T06/259B	Oysters	4.7
T06/306A	Mussels	17
T06/315N1	Clams	16.14
T06/342A	Mussels	3.5
All licences (Figure 2.1)		371.55

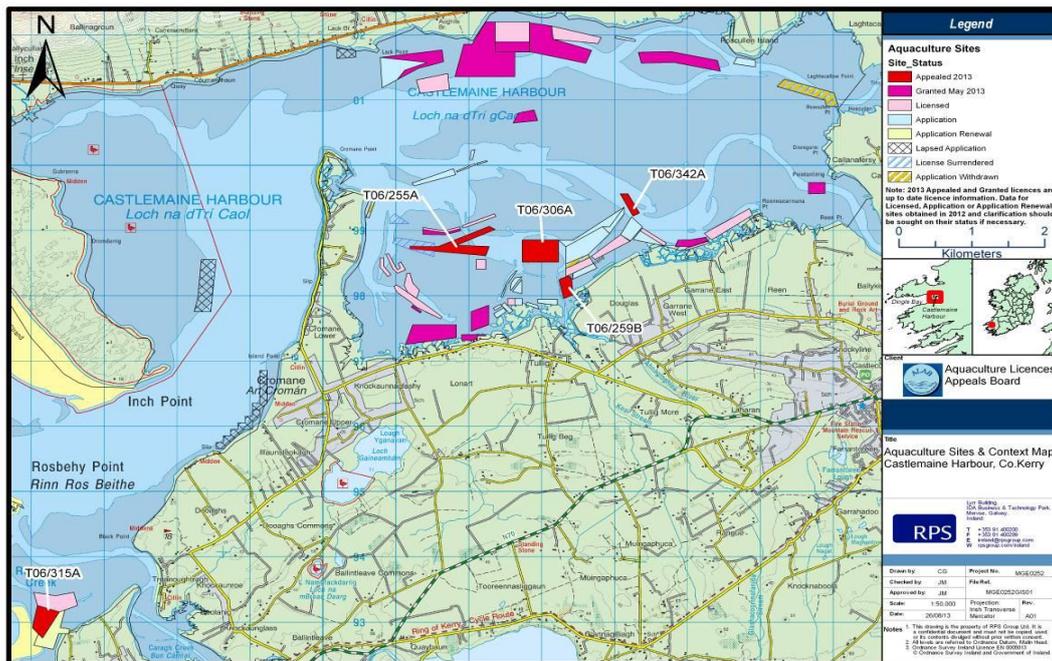


Figure 2.1: Location and Licence Status of Aquaculture Activity in Castlemaine Harbour

2.1.1 Data Sources

Licence details were accessed from the BIM Aquaculture database (2011, supplied from BIM) and recent licence application areas were updated from the information in the DAFM appeals files. Proposed or appealed licence conditions are not available to review until the licence is granted.

The Marine Institute Appropriate Assessments of Castlemaine (MI, 2012) were also consulted (<http://www.agriculture.gov.ie/fisheries/aquacultureforeshoremanagement/> accessed August 2013) as was NPWS SAC and SPA information and associated documents (<http://www.npws.ie/protectedsites/specialareasofconservationsac/castlemaineharboursac/> <http://www.npws.ie/protectedsites/specialprotectionareasspa/castlemaineharboursa/> accessed August 2013)

The HABMAP database (www.marine.ie accessed August 2013) and the WFD information for the two waterbodies (www.watermaps.ie accessed August 2013) were also reviewed.

2.1.2 Assessment

The recommended extent of mussel relaying in the Fishery Order area is 12%. At this level significant alterations to the intertidal sandflat are not anticipated. Should a substantial percentage increase occur it is advised that environmental monitoring take place to ensure waterbird populations protected under the Birds Directive (particularly Sanderling and the Bar-tailed Godwit) are not significantly affected.

Likewise, oyster authorisations contain a provision that trestle cover should not exceed 10% average occupancy of any licensed area. Any incremental increases should be subject to monitoring.

The Appropriate Assessment applied tests with threshold values to determine whether benthic habitats or waterbird populations would be negatively impacted by the current levels of cultivation. In the case of habitats a disturbance of less than 15% of the habitat area is deemed insignificant. Negative impacts can be expected if more than 25% of the total Castlemaine Harbour waterbird population is displaced.

2.2 HABITATS AND ASSOCIATED COMMUNITIES

Habitat 1140 (mudflat and sandflat not covered by seawater at low tide) and 1130 (estuaries) with their associated communities have been designated in Castlemaine Harbour under the Habitats Directive.

2.2.1 Data Sources

The Special Area of Conservation (SAC) site synopsis produced by the National Parks and Wildlife Service provide the background information for this section (NPWS, 2006). The benthic habitat and community analysis is based on analysis undertaken during the Appropriate Assessment process (Marine Institute, 2011).

2.2.2 Assessment

Appropriate Assessment screening identified potential impacts to a number of SAC qualifying interests because of a spatial overlap with an aquaculture activity. Tests applied by the Appropriate Assessment determined the % cumulative impact of this overlap (**Table 2.3**).

Table 2.3: Effects of Aquaculture Activity on Benthic Habitats and Communities

Activity	Habitat	Community	% Habitats and Community Affected by Activity	Significant Effects Anticipated (Y/N)	>15% Habitat/Community Disturbed (Y/N)
Subtidal fishing for seed mussel	1130 only	Mixed sediment community complex	2% and 3-4%	N	N
Relaying and dredging seed mussel on intertidal sandflat	1140/1130	Fine/muddy sands with polychaete community complex; intertidal muddy fine sand community complex	4.3% (1140), 5.7% (1130) and 6.8% (1140), 2.1% (1130)	N	N
Relaying and dredging seed mussel on subtidal sandflat	1130 only	Fine/muddy sands with polychaete community complex	3.8% and 6.1%	N	N
Intertidal oyster culture	1140/1130	Fine/muddy sands with polychaete community complex	Stable. Figures not available	N	N
Intertidal clam culture	1140/1130	Intertidal sand with <i>Nephtys cirrosa</i> ; Fine/muddy sands with polychaete community complex	0.4% (1140), 0.3% (1130) and 0.1% (1140), 2.21% (1130)	N	N

All culture sites (mussel, clam and oyster) require a degree of foot traffic approximately every two weeks at low tide to check the development of the end product. As this foot fall is localised and of low intensity no adverse effects on benthic habitats or communities are expected (Tyler-Walters & Arnold, 2008).

Harvesting techniques however can be locally damaging to the substrate and associated communities. Mussel harvesting in Castlemaine Harbour uses a type of dredge which does not have a blade or teeth. When fished the mussel beds are elevated from the substrate and the dredge does not penetrate the seabed and disturb the sediment. Clam harvesting does not use an intrusive 'pump-scoop' technique but sediments and non-target benthic organisms can still take up to 4 and 12 months respectively to recover.

Overall it can be concluded that the 15% impact threshold was not reached. Current activity levels are therefore not expected to cause any long-term or permanent change to habitats or associated communities.

2.3 WATERBIRD POPULATIONS

Waterbird populations are attracted to the intertidal areas because of the availability of food such as fish and benthic bivalves (including seed mussel). Fifteen species of waterbird have been designed in the Castlemaine Harbour Special Area of Conservation (SPA) under the Birds Directive.

2.3.1 Data Sources

Waterbird data are based on work contributing to the Appropriate Assessment (Marine Institute, 2011) carried out in 2010 by Gittings and O'Donoghue (2011a; 2011b; 2011c).

2.3.2 Assessment

The full occupation of the licensed/appealed sites (oyster, mussel and clam) is thought unlikely however **Table 2.2** outlines the potential displacement of protected waterbird species under a full occupation scenario.

Table 2.2: Effects of aquaculture activity on protected waterbird populations

Species	Potential displacement (mussel) %	Potential displacement (oyster) %	Potential displacement (clam) %
Wigeon	2.1	1	-
Mallard	2.9	0.6	-
Ringed Plover	-	-	8
Sanderling	-	-	8
Bar-tailed Godwit	12	12	-

Clam cultivation at full occupation has the potential to remove up to 25% of the main habitats for the Ringed Plover and Sanderling and displace up to 8% of these populations. The mitigation measure put in place to relocate the existing clam cultivation sites to one smaller and less suitable site is deemed appropriate.

In agreement with the Appropriate Assessment, it was found that should the extent of mussel relaying activity increase above a pre-set level of 12% a monitoring programme should be put in place to assess the affects of the activity on the Bar-tailed Godwit. No significant impacts on other waterbird species are anticipated.

Increased levels or full occupation of a licensed oyster area could impact on the Bar-tailed Godwit. It is advised that the proposed level of activity proceed but with parallel site monitoring.

2.4 OTHER ACTIVITIES AND RESOURCE USERS

Castlemaine Harbour is shared by a number of other licensed and ad-hoc human activities. These have been identified as:

1. Predator control using baited pots. Approximately 300 tonnes of green crab are extracted annually;
2. Commercial picking of periwinkles in the intertidal areas at low tide. Picking has been observed in the mussel nursery area and Rossbehy Creek but quantities extracted are unknown. There is a cockle bed in Rossbehy Creek but quantities collected by hand are again unknown;
3. Five wastewater treatment plants in the Castlemaine area. The Castlemaine, Milltown and Rossbeigh plants have primary treatment only while Glenbeigh and Killorglin provide secondary treatment; and
4. A number of recreational activities including: beach use, bird watching, walking, horse riding, recreational off-road vehicles, angling, sailing and windsurfing.

2.4.1 Data Sources

The Kerry Council Development Plan provided much of the information for this section. Additional information on wastewater treatment facilities is publicly available from the EPA http://www.epa.ie/terminalfour/wvda/wvda-search.jsp?name=K*&Submit=Browse.

2.4.2 Assessment

It is difficult to quantify effects from unregulated, seasonal or ad-hoc human activities (**Table 2.4**). Without further assessment, most of the identified activities are thought to have only a localised and short term effect on benthic communities or little or no effect on waterbird populations. The EPA is however responsible for monitoring waste water discharges. In 2011 none of the treatment facilities in the Castlemaine Harbour area were a cause of concern (EPA, 2012).

Table 2.4: Environmental effects from other human activities in the Castlemaine Harbour area

Activity	Effects on Castlemaine SAC/SPA	Degree of impact
Predator control	Localised effects that will not significantly alter the range or area of the benthic community	Minor
Hand collection of periwinkles and cockles	Low intensity activity. Localised effects that will not significantly alter the range or area of the benthic community or waterbird populations	Minor
Wastewater treatment plants	Localised effects that will not significantly alter the range or area of the benthic community	Minor
Recreational users	Recreational activities are not regulated and no data is available to determine impact (if any)	Unknown

3 RECOMMENDATIONS

Following a review of the cumulative impacts associated with aquaculture activity the following recommendations can be made:

- Capacity limits should be retained and monitored for oyster trestle cover and mussel relaying. The TraC-MImAS results for Castlemaine Harbour and Cromane waterbodies show low levels of aquaculture below current licenced limits. The current total area licenced is believed to be below the threshold at which the waterbody status is subject to change. The next Water Framework Directive morphology assessment using the TraC-MImAS tool should include an assessment of Castlemaine Harbour and Cromane using the updated assessment tools;
- An Aquaculture Management Plan should be drawn up with input from all stakeholders. The management plan should be developed with reference to and in consultation with statutory and non-statutory bodies responsible for Fisheries Orders and fisheries management plan.
- Until further quantitative data is available on the physical and biological status of Castlemaine Harbour it is advised that current thresholds used as a proxy for significant negative impacts to benthic habitats and communities (>15%) and waterbirds (>25%) be maintained;
- The licences should maintain the low licence area coverage and ornithological monitoring required by the original licence conditions. This monitoring may be best served as a single co-ordinated monitoring plan; and
- Licencees continue to operate according to the terms of their licences and in accordance with best practice.

4 CONCLUSION

This cumulative assessment has found that:

- Current licensed and appealed sites account for approximately 7% of the total areal extent of Castlemaine Harbour;
- Benthic habitats and associated communities and waterbird populations should not be negatively impacted by aquaculture activity and, at present, remain within the set threshold limits;
- Other human activities e.g. predator control, periwinkle and cockle picking, wastewater treatment facilities and recreational activities are at levels that are not foreseen to impact on the coastal environment.

On the condition that operators continue to work within the terms of their licence and in accordance with best aquaculture practice and regulatory bodies continue to monitor the effects of aquaculture activities there should be no adverse effects on the environment and culture activities can continue at current levels.

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