Technical Advisor Report

Liam O'Connor Appeal
AP5/1/2013 Review

DOCUMENT CONTROL SHEET

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A01	Board Approval	A. Douglas V. Campbell	J. Massey	W. Madden	Galway	3.9.13

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EXECUTIVE SUMMARY

Description:	Renewal of a 10-year Aquaculture Licence and accompanying Foreshore Licence for the cultivation of bottom culture mussels on the foreshore in Castlemaine Harbour, Co. Kerry.
Appeal Reference	AP5/1/2013
Licence Application	Site T06/342A
Department Reference Number	T06/342A
Applicant	Liam O'Connor
Minister Decision	Granted a 10-year Aquaculture Licence and accompanying Foreshore Licence 23rd May 2013
Appeal	
Type of Appeal	Grant of New Licence
Appellant(s)	An Taisce
Observers	None
Technical Advisor	RPS
Site Inspection	N/A

1 APPEAL DETAILS AND OBSERVER COMMENT/SUBMISSIONS

Date Appeal Received: 28th June 2013

Location of Site Appealed: Castlemaine Harbour, Co. Kerry

1.1 APPEAL TIMEFRAME

Publication notice to amend the aquaculture licence featured in 'The Kerryman' on Wednesday, 29th May 2013. The appeal was submitted within the statutory timeframe of one month from the date of the publication notice.

1.2 NAME OF APPELLANTS

Table 1.1: Details of the Appellant

Organisation	Name	Address
An Taisce	n/a	The Tailors' Hall, Back Lane, Dublin 8

1.3 NAME OF OBSERVERS

No observations received.

1.4 GROUNDS FOR APPEAL

- **Access to information.** Contrary to provisions under the Aarhus Convention the appellant has not been able to gain access to the details of the licence. They advised that they are unable to assess the contents if they were not made publically available.

- **Cost of appeal; and forfeit of fee where oral hearing is requested but not held.** The appellant advised that they received notification of 43 new aquaculture licence approvals in Castlemaine Harbour in two separate letters dates 27th May 2013. They pointed out that the costs of appealing all licences (e.g. €152.37 x 43 = €6551.91) and requesting an oral hearing (e.g. (€152.37 + €76.18) x 43 = €9827.65) are prohibitive. They were also concerned that should a requested oral hearing not go ahead the fee per licence would not be refunded. They claim that both aspects are in breach of the Aarhus Convention.

- **Section 4 of the Fisheries and Foreshore (Amendment) Act, 1998.** The appellant asks that the Board ensures that no aquaculture activity takes place on the site until the licence has been granted.

- **Breach of EIA Directive.** The appellant is concerned that the Minister determined that no Environmental Impact Statement (EIS) was required in respect of aquaculture licences granted in Castlemaine Harbour (screening decision dated 22nd October 2012). The appellant states

that the Minister only considered the cumulative impacts of the licences granted through the Appropriate Assessment process under the Habitats Directive and not the separate and distinct requirements of the Environmental Impact Assessment (EIA) Directive. The appellant requires the Board to take account of Annex III of the EIA Directive which includes 'the cumulation with other projects'.

- **Breach of Habitats Directive.** The Appropriate Assessment (April 2011) did not apply the legal *Waddenzee* Test (European Court of Justice in Case C-127/02) which requires the assessment of the impact of the licensed activity against a Natura 2000 sites conservation objectives. The appellant is concerned that different tests were applied and an incomplete ecological assessment was carried out. The appellants submission therefore consists of (1) the present mussel operations overlaps with an area of importance to the Bar-tailed Godwit, (2) 42 other licences which were granted for the cultivation of three species of filter feeder – mussel, clam and the invasive non-native Gigas (Pacific) Oyster, (3) predator control, (4) the affects of the hand collection of shellfish by an unknown number of operators, (5) effluent discharge and (5) recreation. This means the Minster should have determined that 'reasonable scientific doubt remains' as to the integrity of the Castlemaine Harbour site. Should the proper legal tests been applied the Minster would be required to apply the derogation in Article 6(4) of the Habitats Directive whereby the project can only go ahead if (a) the is no alternative solution; (b) there are imperative reasons of overriding public interest and (c) compensatory measure are adopted to ensure the Natura 2000 site is protected.

1.5 MINISTERS SUBMISSION

Section 44 of the Fisheries (Amendment) Act 1997 Part 2 states that *'The Minister and each other party except the appellant may make submissions or observations in writing to the Board in relation to the appeal within a period of one month beginning on the day on which a copy of the notice of appeal is sent to that party by the Board and any submissions or observations received by the Board after the expiration of that period shall not be considered by it'*.

The Department of Agriculture, Food and the Marine made a submission to the Aquaculture Licence Appeals Board (ALAB) on the 29 July 2013 in response to the appeal to the Ministerial determination in relation to Mr O'Connor's application.

- The Department of Agricultures, Food and the Marine (DAFM) advised that the appellant had been notified that the Appropriate Assessment Conclusion Statement for aquaculture activities in the Castlemaine Harbour Natura 2000 site had been placed on the Departments website and sent to all statutory consultees when notifying them of the Minster's determinations.

- DAFM provided a briefing document outlining the Appropriate Assessment findings in response to this appeal. The Appropriate Assessment, which included the ecological impacts of fishing and aquaculture activities in and adjacent to Castlemaine Harbour were based on a draft 5-year mussel fishery Natura plan submitted by the Castlemaine Mussel Producers Cooperative to DAFM in March 2011 and bird studies commissioned specifically for the Appropriate Assessment.

- The Appropriate Assessment found that subtidal fishing for seed mussel is unlikely to affect waterbird species. It also found that the existing extent of mussel relaying at 12% cover in the Fisheries Order area is deemed to be acceptable but substantial increases in % mussel cover may significantly affect Sanderling and the Bar-tailed Godwit. Should intertidal seed mussel relay activity increase monitoring and additional research into the effects of the activity on waterbirds will be required.

- The Appropriate Assessment found that the proposed fishery and aquaculture activities will not have significant impacts on the conservation objectives of Castlemaine Harbour Special Area of Conservation (SAC) and the existing level of aquaculture activity will not significantly affect the baseline ecological conditions or conservations objectives for the qualifying interests of the Castlemaine Harbour Special Protected Area (SPA).

- DAFM maintain that the cumulative effects of each proposed aquaculture activity was addressed when screening each licence application to determine whether an EIA was required. Considering the overall footprint of the activities and the scale of Castlemaine Harbour, the activities were not considered to significantly impact on the 'receptors' (air, water, cultural heritage, visual amenity).

1.6 APPLICANT RESPONSE

Section 44 (2) of the Fisheries' Amendment Act 1997 states '*The Minister and each other party except the appellant may make submissions or observations in writing to the Board in relation to the appeal within a period of one month beginning on the day on which a copy of the notice of appeal is sent to that party by the Board and any submissions or observations received by the Board after the expiration of that period shall not be considered by it*'.

A summary of the response received by the Secretary of the ALAB on 31st July 2013 from the licence applicant regarding points raised by the appellant is as follows:

- **Procedural issues, access to information.** The applicant states that this is no concern of his and should be directed at the Department and not the producer.

- **Cost of appeal.** The applicant believes that this is an issue for the Appeals Board and should not be directed at the producer.

- **Section 4 of the Fisheries and Foreshore (Amendment) Act, 1998.** The applicant has not engaged in any aquaculture activity on the site (T06/342A) and this has been observed by BIM.

- **Impact survey.** The applicant stated that An Tasice's appeal was very technical and he did not understand the legal and technical terminology. The applicant states that the Castlemaine Harbour Cooperative has conducted their own impact study and found there to be no adverse affects on the local wildlife.

2 CONSIDERATION OF NON-SUBSTANTIVE ISSUES

Each issue raised by the appellant is considered substantive and has been reviewed.

3 ORAL HEARING ASSESSMENT

In line with Section 49 of the Fisheries Amendment Act 1997 an oral hearing may be conducted by the ALAB regarding the licence appeals.

At this time an oral hearing has not been called nor requested by the appellant or the applicant.

4 MINISTER'S FILE

In line with particulars of Section 43 of the Fisheries Amendment Act 1997 the following documented items were sent to the ALAB from the Minister:

- Copy of Application Forms;
- Copy of Aquaculture Licence with maps, charts, co-ordinates and drawings;
- Copy of Foreshore Licence;
- Copy of EIA Screening Assessment;
- Copy of Submission made to the Minister;
- Copy of Notification to Applicants of Minister's Decision;
- Copy of Advertisement of Minister's Decision;
- Overview Map of Sites in Castlemaine Harbour;
- Copy of Appropriate Assessment and Conclusion Statement.

5 CONTEXT OF THE AREA

5.1 PHYSICAL DESCRIPTION

Site T06/342A (**Figure 5.1**), an area of 3.5 hectares (ha), is located in the intertidal area on the southern shore of the Castlemaine Harbour and lies within Castlemaine Harbour SAC (Site Code 000343) and SPA (Site Code 004029). Information on exact characteristics of the site has not been provided with the application and a site survey would be required to obtain such information.

Castlemaine Harbour is a large shallow tidal estuary located in the innermost part of Dingle Bay, Co. Kerry, it is approximately 11 km long and 5 km wide, covering an area of over 5,300 ha. Castlemaine Harbour has extensive areas of intertidal sand and mud flats together with expanses of shallow marine water (NPWS, 2011a). Castlemaine Harbour is sheltered from the open sea by three sand spits which protrude into the estuary; Rossbehy and Cromane both extend northwards from the Iveragh Peninsula while Inch extends southwards from the Dingle Peninsula. Two large rivers, the Maine and the Laune, flow into the Harbour as well as a number of other rivers including the Caragh, the Emlagh and the Behy and several small streams. The principal town adjacent to the Harbour is Killorglin with the smaller communities of Castlemaine, Milltown, Cromane, Glenbeigh and Inch (**Figure 5.2**).

The climate of Co. Kerry is influenced by its maritime location which produces considerable rainfall. The annual rainfall average recorded by Met Éireann at the Valentia Observatory off the western coast of the Iveragh Peninsula was 1,557.4 mm[1] for the period 1981 to 2010. Highest mean rainfall during this period was in October with a mean of 177.1 mm, while May had the lowest mean rainfall at 93.5 mm.

Figure 5.1: Location of site T06/342A in Castlemaine Harbour

[1] http://www.met.ie/climate/monthly-data.asp?Num=2275

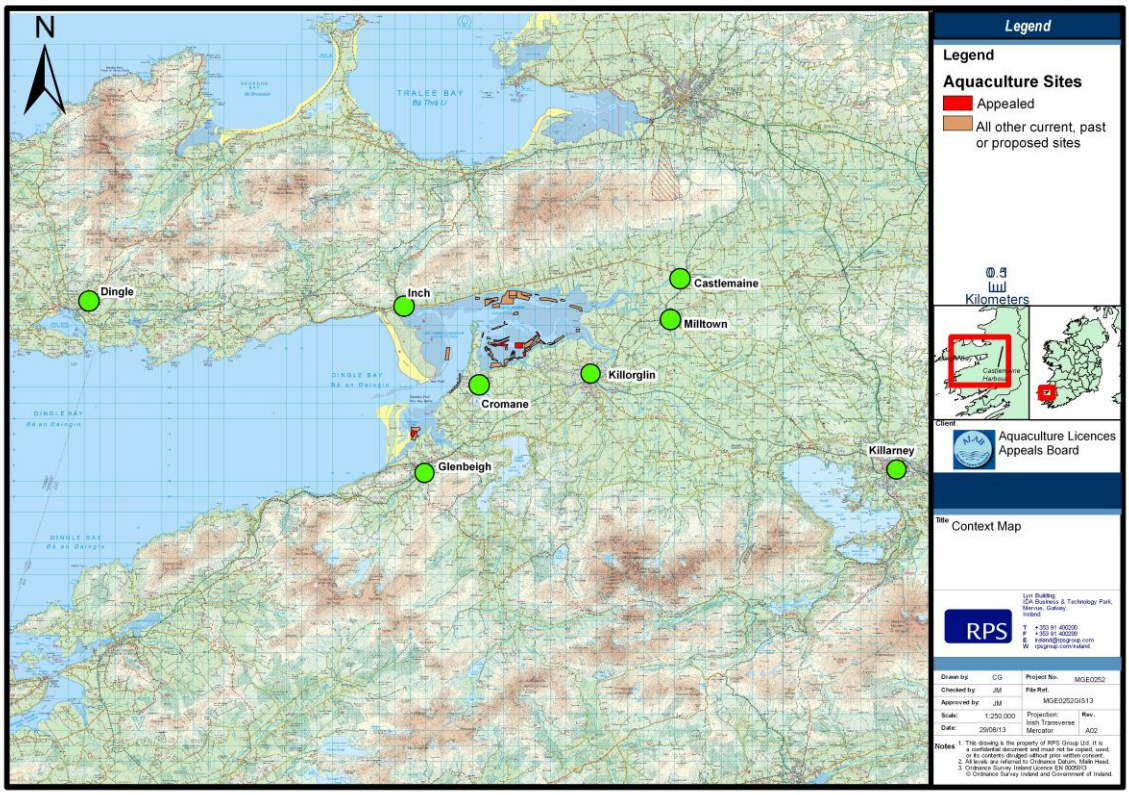

Figure 5.2: Overview of Castlemaine Harbour Area and Significant Population Centres

5.2 PROPOSED ACTIVITY

The application is for an Aquaculture Licence and accompanying Foreshore License for the bottom cultivation of mussels. There are three distinct phases to the production of mussels in Castlemaine Harbour: (1) seed dredging, (2) intertidal nursery and (3) subtidal on-growing and dredge harvesting. Seed dredging is licensed through fisheries legislation and occurs outside of Castlemaine Harbour.

5.3 RESOURCE USERS

Aquaculture

Containing one of the largest natural mussel beds in Ireland, shellfish cultivation has a long history in Castlemaine Harbour. Mussels have been exploited in the area since the 1800s and are the predominant, well established farmed species in Castlemaine Harbour (**Figure 5.3).** More recently Pacific Oyster and clam cultivation has commenced in the area (Anon, 2009). The Castlemaine Harbour Cooperative Society serves as a coordinating and representative body for aquaculture activities in Castlemaine Harbour. The Society holds the Mussel Fishery Order granted in 1979 for the area allowing them control of allocation of the grounds for aquaculture over the 250 acre body of water[2].

[2] http://www.cromane.net/fishing.htm

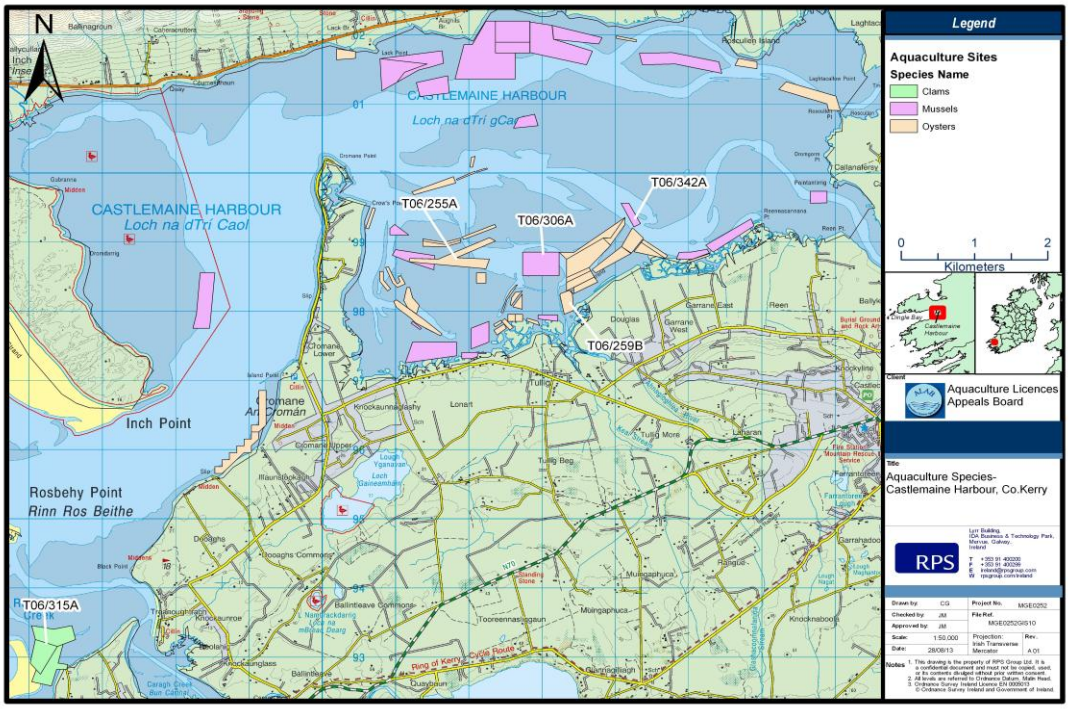

Figure 5.3: Aquaculture Species

At present, there are 50 sites in Castlemaine Harbour that have either existing aquaculture licences which are due for renewal, are at the application stage, have been recently licenced, or are currently under review for appeal (see **Figure 5.4**). The majority of these sites are found on the inner part of Castlemaine Harbour. Individual licenced sites range in size from 0.44 ha to 45 ha. The total area covered by the licenced activities is 372.08 ha (Marine Institute, 2011).

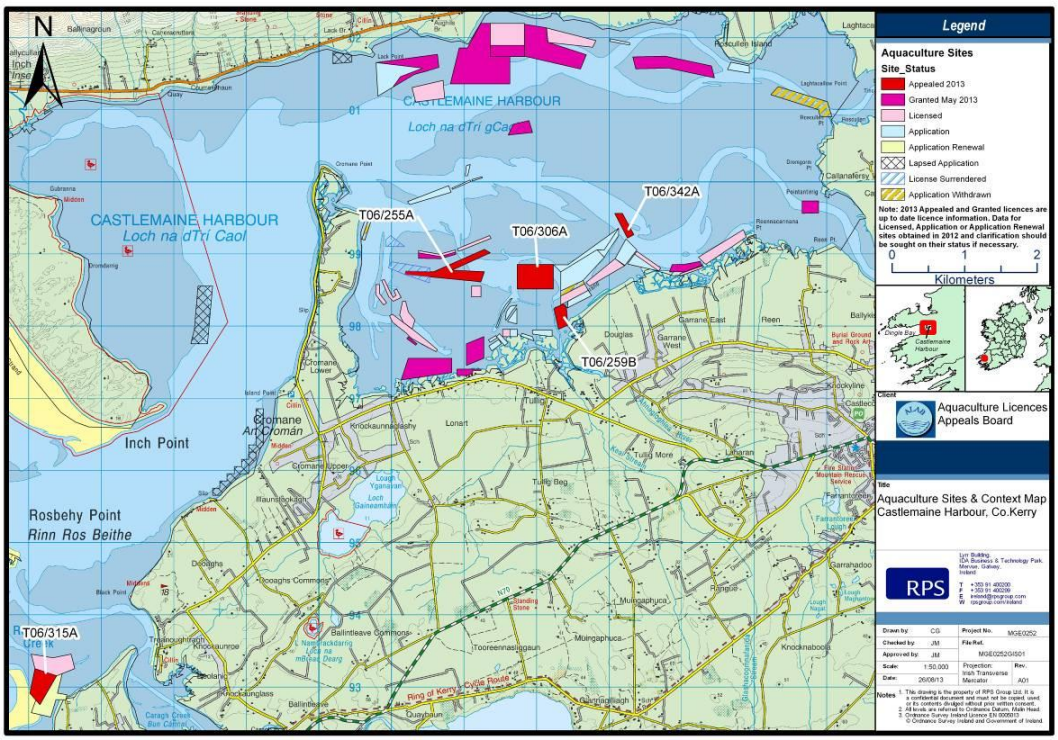

Figure 5.4: Licencing of Sites for Aquaculture Activities

In 1994, a large proportion of the Castlemaine Harbour area was designated as a shellfish area under the European Communities (Quality of Shellfish Waters Regulations) 2004 (**Figure 5.5**). Referred to as the Cromane Shellfish Area, the designated area is 37.6 km^2 in size (**Figure 5.5**).

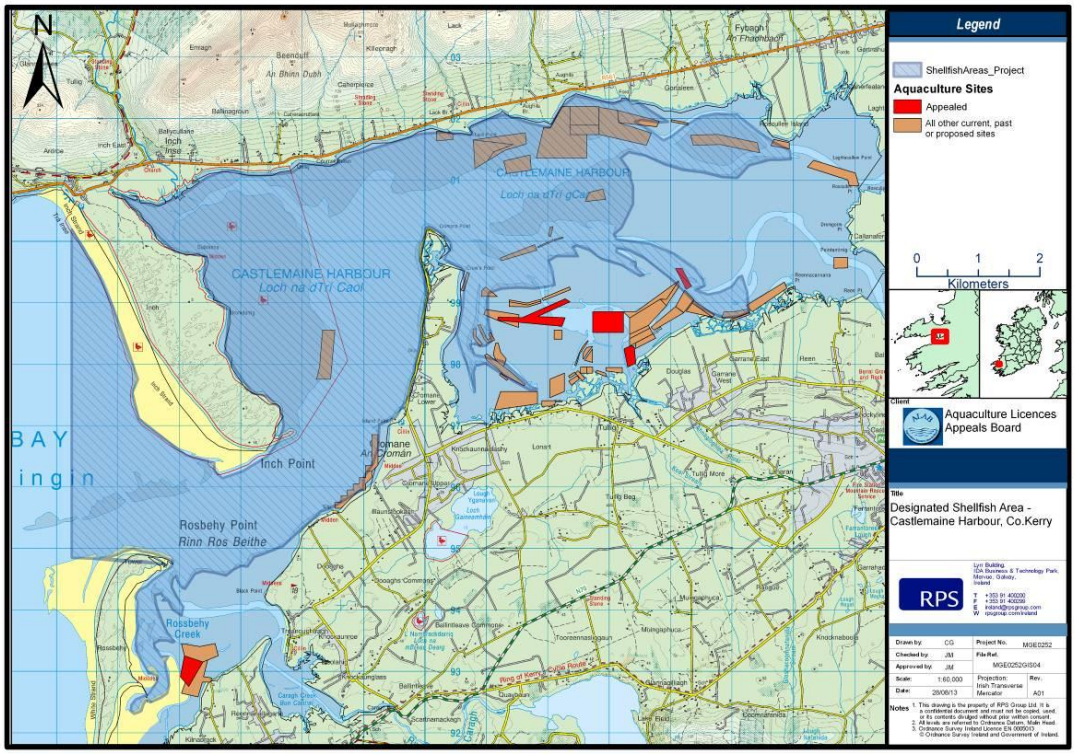

Figure 5.5: Cromane Shellfish Area

Angling

The Dingle Peninsula is a hotspot for shore angling. Angling is largely concentrated in outer Dingle Bay, however, fishing for flounder, bass and plaice occurs within Castlemaine Harbour[3].

Tourism and Recreation

Kerry is a well known international and domestic tourism centre with a varied tourism profile. The tourism industry draws on the county's natural advantages as a highly scenic county to support its continued growth (Kerry County Council, 2009) and is an important contributor to the economic activity of many towns and villages throughout the county.

Glenbeigh is a small village located to the south of Castlemaine Harbour. It is situated in a very scenic area at an intersection of the Kerry Way walking route with the Ring of Kerry route and consequently is a busy tourist destination. It is considered a haven for bird watching due to its varied country-side of marshes, wetlands, estuary, rivers, coastline, mudflats and uplands. Tourism is recognised as one of the more important employment sectors in the village.

[3] http://www.fishinginireland.info/sea/southwest/dingle.htm

Rossbeigh, a small coastal development located approximately 2km from Glenbeigh, is primarily a tourist location. Its fine beach with Blue Flag status, scenic location and availability of outdoor pursuits which include hand-gliding, horse trekking and angling among others, ensures it is a popular destination for tourists. It also supports tourism in Glenbeigh as the proximity of the two settlements allows for a natural pooling of tourist attractions.

Similarly, Killorglin's proximity to Castlemaine Harbour with its Blue Flag beach at Rossbeigh is a key asset in terms of tourism. The town is not reliant on tourism for its economic development, nonetheless, it is considered important that the town and the surrounding area should develop and enhance its tourist potential.

Located over 20km from the nearest aquaculture site, the nearest significant tourism hub is the town of Dingle (**Figure 5.2**) and wider peninsula. The town of Killarney is also an extremely important tourist hub for County Kerry located in land from the aquaculture activity (**Figure 5.2**)**.**

5.4 ENVIRONMENTAL DATA

Water quality in Castlemaine Harbour is monitored as part of the Water Framework Directive (WFD) Monitoring Programme. For the purpose of WFD monitoring Castlemaine Harbour is divided into two transitional water bodies, Castlemaine Harbour and Cromane (**Figure 5.6**). The Castlemaine Harbour water body is located just north of Killorglin. It consists of the mouths of both the River Maine and River Laune as they enter the sea and extends 1km into Cromane Estuary. The Cromane Estuary water body is an extension of Castlemaine Harbour, extending westwards until it reaches the open sea at Dingle Bay. The proposed aquaculture site is located within the Cromane Estuary water body and therefore results for the Castlemaine Harbour water body are not considered in this report.

Water Framework Directive status classifications are generally based on several samples/surveys targeting a variety of parameters including biological, physico-chemical, chemical and hydromorphological elements. Monitoring is carried out by the Environmental Protection Agency (EPA), Marine Institute and Inland Fisheries Ireland.

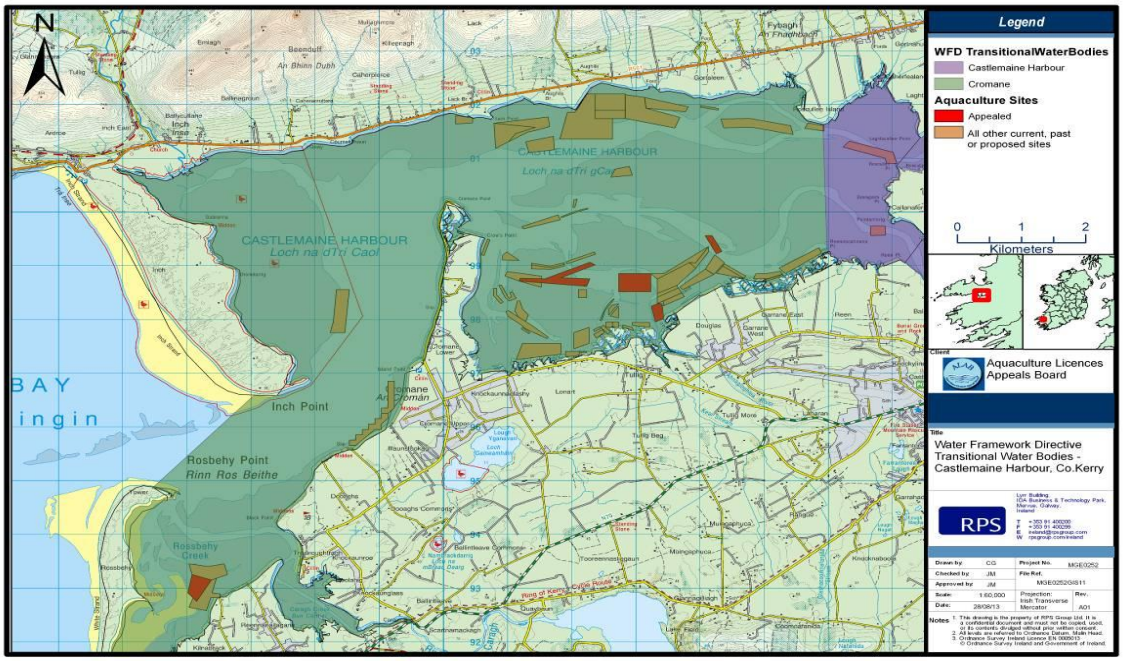

Figure 5.6: WFD Castlemaine Harbour and Cromane water bodies

The latest WFD monitoring programme covers the period 2007-2009. Monitoring results indicate that there are water quality issues within the area and the overall status of the Cromane water body is considered only 'moderate'. The water quality issues are largely related to unsatisfactory dissolved oxygen (DO) concentrations and phytoplankton biomass (EPA, 2010). A status update report for Irish surface and groundwaters based on monitoring results for the period 2007-2009 reported similar DO issues for the Cromane water body (EPA, 2011).

Similar water quality issues were reported in the Cromane Shellfish Area Pollution Reduction Programme. Monitoring results for the period 2005 – 2008 indicated that elevated levels of DO and Biological Oxygen Demand (BOD) were the major contributors to the water body achieving only 'moderate' status.

Bathing Water Quality

Bathing water quality is not monitored in Castlemaine Harbour. The nearest locations at which water quality is monitored is at Rossbeigh (White Strand) and Inch Strand, located immediately outside the Harbour. In 2012 water quality results were found to comply with both EU guide and mandatory values indicating that water is of 'good' quality status at these locations. These results were achieved despite a remarkably wet summer which saw the south and southwest have record breaking rainfall figures which was the cause of the reduction in the number of waters achieving "Good" status. The prolonged rain resulted in saturated soils increasing the pollution run-off from agricultural land, particularly where livestock were being grazed or animal manures being spread, and also urban runoff from roads/ pavements etc (EPA, 2013).

5.4.1 Biotoxicology

The monitoring of biotoxins in shellfish and the analysis of seawater for the presence of toxin producing phytoplankton is carried out all year round by the Marine Institute. Shellfish samples are taken from three strategically placed sampling points in the Cromane shellfish production area (**Figure 5.7**). Water samples are taken from a single sampling point (KY-CH-BF).

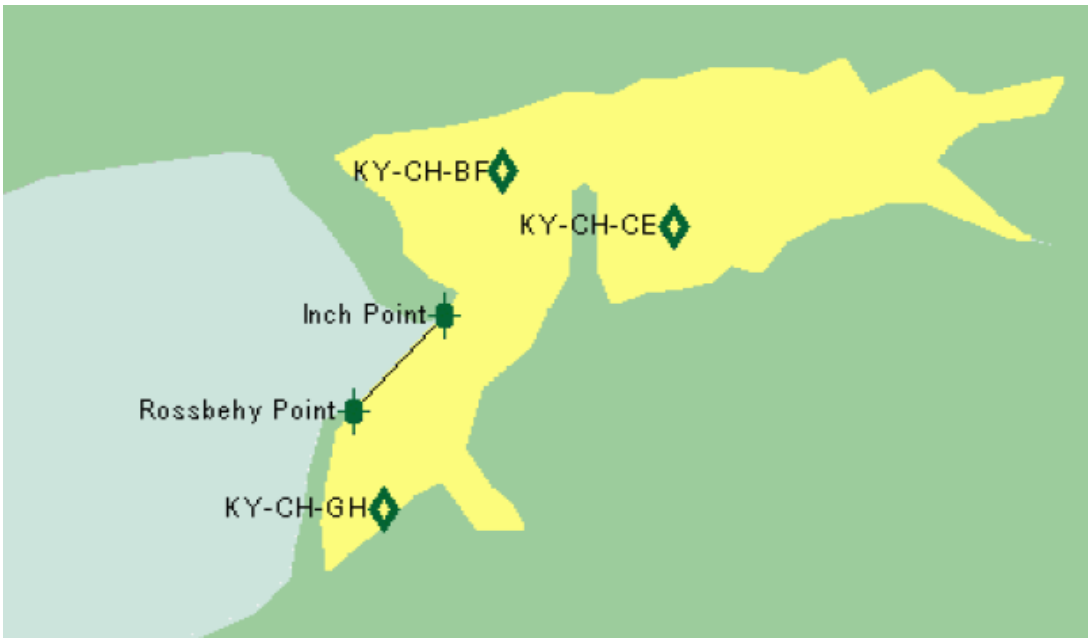

Figure 5.7: Shellfish and water sampling points in the Castlemaine Harbour Shellfish Production Area (Marine Institute, 2012)

Shellfish sampling results for the period 1/6/2013 to 12/8/2013 indicated that levels of biotoxins detected in Blue Mussel (*Mytilus edulis*) and Pacific Oyster samples were consistently below regulatory limits.

In August 2013, the diatom Pseudo-nitzschia sp., a producer of the Amnesic Shellfish Poisoning toxin domoic acid, was detected in Castlemaine Harbour. However, its presence had no impact on aquaculture operations and the area remained open for harvesting.

5.4.2 Benthic Habitats

Castlemaine Harbour has extensive areas of intertidal sand and mud flats together with expanses of shallow marine water. Much of the intertidal sediment is comprised of muds or muddy sands. Benthic communities consist of high densities of polychaete worms such as Ragworm (*Hediste diversicolor*) and Lugworm (*Arenicola marina*), along with a variety of bivalves and molluscs (NPWS, 2010a).

Aquaculture activities in Castlemaine Harbour overlap with habitats of conservational interest (Estuaries and Mud and sand flats not covered by seawater at high tide), as designated under the Habitats Directive.

The distribution of intertidal communities within the Harbour is closely related to exposure levels and sediment types. The rivers Laune, Maine and Caragh have a strong influence on the distribution of estuarine communities within the Harbour. **Table 5.1** and **Table 5.2** outlines the species and habitats of conservational interest and the communities associated with mudflat and sandflat that are not covered by seawater at low tide and estuaries in Castlemaine Harbour.

The mud and sandflats provide important habitat for marine birds as well as habitats of particular conservational interest such as seagrass beds, mussel beds and cockle beds.

5.5 STATUTORY STATUS

Castlemaine Harbour is of major ecological importance. It is a designated a SAC under the EU Habitats Directive (**Figure 5.8**). It contains a range of coastal habitats of excellent quality, many of which are listed on Annex I of the Directive. It also includes long stretches of river and streams which are ideal habitats for Salmon, Lamprey and Otter. It supports dune systems which are recognised as among the finest in the country. The Harbour supports internationally important waterfowl populations, rare plants, the rare Natterjack Toad and populations of several animal species that are listed on Annex II of the Directive (NPWS, 2006).

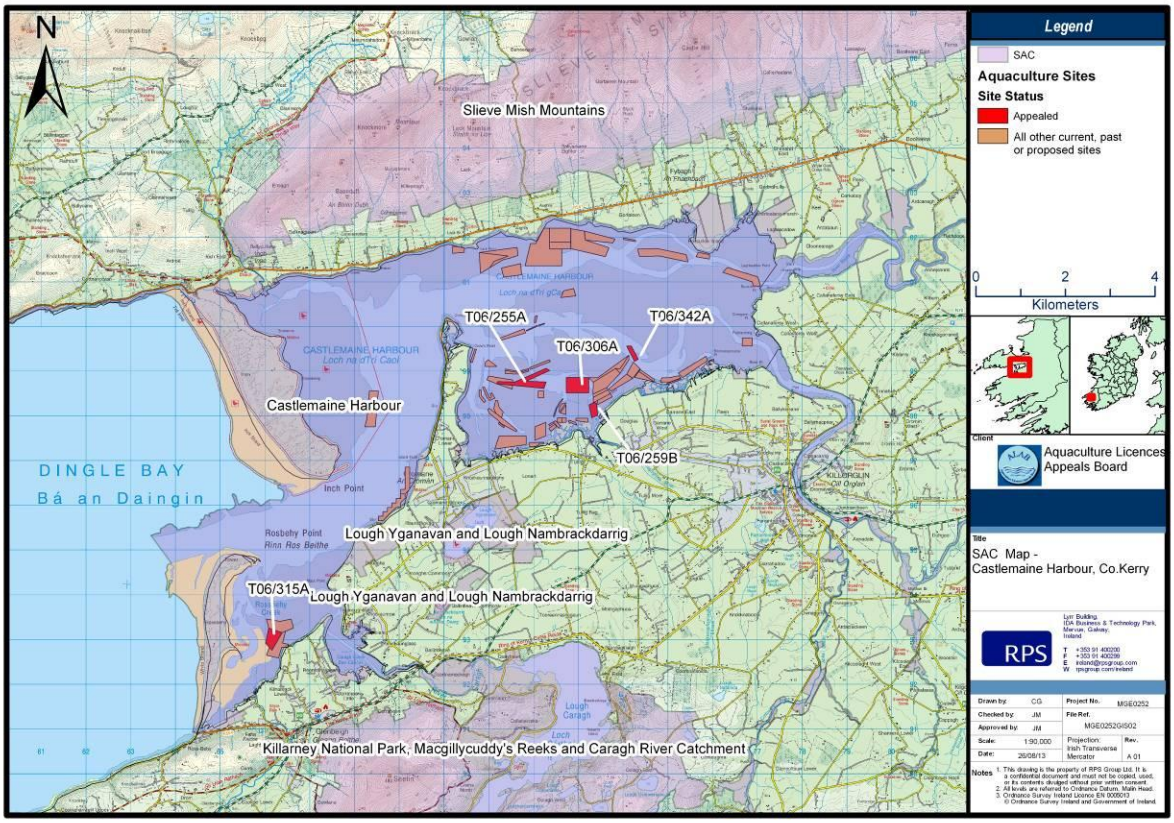

Figure 5.8: Castlemaine Harbour SAC

Part of the site is also designated as a SPA under the EU Birds Directive (**Figure 5.9)** and is listed as a site under the Ramsar Convention. It is of special conservation interest for the species listed in **Table 5.1** below. It is one of the most important sites for wintering waterfowl in the south-west. It provides habitats for a wide diversity of waterbirds, including divers and seaduck (NPWS, 2006).

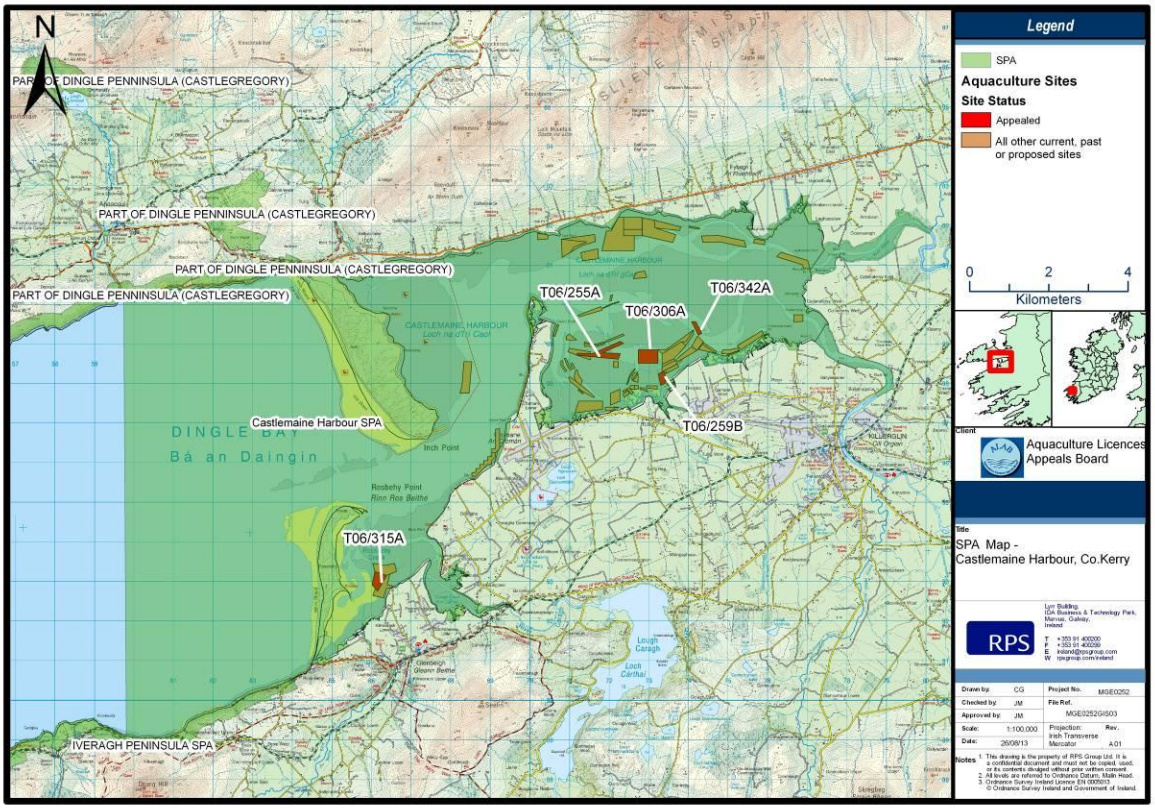

Figure 5.9: Castlemaine Harbour SPA

Table 5.1: SAC and SPA sites within which the proposed aquaculture site is located and features for which they are designated

Designated Sites	Qualifying Features (EU Importance)
Castlemaine Harbour SAC (Site Code: 000343)	Sea lamprey (*Petromyzon marinus*) River lamprey (*Lampetra fluviatilis*) Salmon (*Salmo salar*) Estuaries Mudflats and sandflats not covered by seawater at low tide Annual vegetation of drift lines Perennial vegetation of stony banks Salicornia and other annuals colonizing mud and sand Spartina swards (*Spartinion maritimae*) Atlantic salt meadows (*Glauco-Puccinellietalia maritimae)* Otter (*Lutra lutra*) Petalwort (*Petalophyllum ralfsii*) Mediterranean salt meadows (*Juncetalia maritimi*) Embryonic shifting dunes Shifting dunes along the shoreline with Ammophila arenaria (white dunes) Fixed coastal dunes with herbaceous vegetation (grey dunes) Dunes with Salix repens ssp.argentea (*Salix arenariae*) Humid dune slacks Alluvial forests with Alnus glutinosa and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*)
Castlemaine Harbour SPA (Site Code: 004029)	Red-throated Diver (*Gavia stellata*) Cormorant (*Phalacrocorax carbo*) Light-bellied Brent Goose (*Branta bernicla hrota*) Wigeon (*Anas penelope*)

	Mallard (*Anas platyrhynchos*) Pintail (*Anas acuta*) Scaup (*Aythya marila*) Common Scoter (*Melanitta nigra*) Oystercatcher (*Haematopus ostralegus*) Ringed Plover (*Charadrius hiaticula*) Sanderling (*Calidris alba*) Bar-tailed Godwit (*Limosa lapponica*) Redshank (*Tringa totanus*) Greenshank (*Tringa nebularia*) Turnstone (*Arenaria interpres*) Chough (*Pyrrhocorax pyrrhocorax*) Wetlands & Waterbirds

Conservation Objectives for the SAC

NPWS (2010b) describe the conservation objectives for all qualifying interests of the SAC. The proposed aquaculture activity overlaps with habitat 1130 (Estuaries) and 1140 (Mud and sand flats not covered by seawater at high tide) in particular.

Estuaries and Mud and sand flats not covered by seawater at high tide:

In the case of these habitats the important attributes that must be conserved are Habitat area and Habitat structure and function.

Habitat area: The likely area occupied by the constituent communities of Habitats 1130 and 1140 should be stable or increasing with overall target areas of 5, 696 ha and 4, 287 ha respectively.

Habitat structure and function: The communities of habitats 1130 and 1140 should be stable in distribution and composition.

Table 5.2: Communities within Mudflat and Sandflat not covered by seawater at low tide, and Estuaries in Castlemaine Harbour (NPWS, 2011)

	Community	Characterising species
Mudflat and sandflat are not covered by seawater at low tide	Intertidal muddy fine sand community complex	*Tharyx sp A* *Polydora cornuta* *Gammarus locusta* *Macoma balthica* *Hediste diversicolor* *Corophium volutator* *Heterochaeta costata* *Pygospio elegans* *Crangon crangon*
Mudflat and sandflat are not covered by seawater at low tide / Estuaries	Fine to muddy fine sand with polychaetes community complex	*Pygospio elegans* *Eteone longa* *Scoloplos armiger* *Spio martinensis* *Macoma balthica* *Capitella capitata* *Angulus tenuis*
Mudflat and sandflat are not covered by seawater at low tide / Estuaries	Intertidal sand with *Nephtys cirrosa*	*Nephtys cirrosa* *Bathypoeia pilosa* *Scolelepis squamata*
Mudflat and sandflat are not	*Zostera* dominated community	*Zostera sp.*

covered by seawater at low tide / Estuaries		
Estuaries	Mixed sediment community complex	*Mytilus edulis* *Corophium acherusicum* *Caprella acanthifera* *Pholoe synophthalmica* *Nemertea indet* *Pomatoceros lamarckii* *Microprotopus maculates* *Abludomelita obtusata* *Amphipholis squamata* *Jassa pusilla* *Eumida sanguine* *Nephtys cirrosa* *Ammothella longipes* *Angulis tenuis* *Gastrosaccus spinifer*
	Fine sand with *Donax vittatus* and polychaetes community	*Donnax vittatus* *Spiophanes bombyx* *Magelona mirabilis etc.* (source: Marine Institute, 2011)

Conservation Objectives for the SPA

NPWS (2010b) also describes the conservation objectives and targets for species of waterbirds and the wetlands which support them.

1. Population trends and distribution, as measured by the % change in population size and the numbers of birds and range of areas used, should be stable or increasing.

2. The area of subtidal, intertidal and supratidal habitats should be stable or increasing and not less than the areas of 7,471, 3,983 and 312 hectares for subtidal, intertidal and supratidal habitats, respectively other than that occurring from natural patterns of variation.

5.6 CASTLEMAINE HARBOUR SPECIES RECORDS

5.6.1 Cetaceans

Cetaceans have been commonly recorded around Dingle Bay, however, no recent sightings have been recorded within Castlemaine Harbour (IDWG, 2012).

5.6.2 Birds

Table 5.3 presents waterbird population data for Castlemaine Harbour SPA. The five-year average for the baseline period (1995/96 – 1999/00) is reported alongside the most recent five-year average (2005/06 – 2009/10). To allow calculation of the recent five-year average, the dataset comprises Irish Wetland Bird Survey (I-WeBS) data for the period 2005/06 – 2008/09 and count data from the high tide count undertaken as part of the 2009/10 waterbird survey programme. Averages are based on annual peak counts from I-WeBS, a survey undertaken on the high tide (NPWS, 2011a).

Table 5.3: Site population data for waterbird Special Conservation Interest Species of Castlemaine Harbour SPA (NPWS, 2011a)

Species	Baseline populations	Recent site average (2005/06-2009/10)
Light-bellied Brent Goose	694 (i)	535 (i)
Wigeon	6,819 (n)	341
Pintail	145 (n)	133 (n)
Common Scoter	3,637 (n)	n/c
Red-throated Diver	56 (n)	n/c
Ringed Plover	206 (n)	101
Sanderling	335 (n)	468 (n)
Bar-tailed Godwit	397 (n)	163 (n)
Mallard	487 (n)	149
Scaup	74 (n)	6
Cormorant	135	48
Oystercatcher	1035 (n)	629
Greenshank	46 (n)	18
Redshank	341 (n)	380 (n)
Turnstone	144 (n)	64

(i) denotes numbers of International importance; (n) denotes numbers of all-Ireland importance; n/c = not calculated.

5.6.3 Harbour Seals

In Ireland, harbour seals (*Phoca vitulina*) are protected under the Wildlife Acts (1976 and 2000) and are listed under Annex II of the Habitats Directive as species of Community Interest, whose conservation requires the designation of SACs. Castlemaine Harbour is known to support a small colony of harbour seals. The survey was in 1978 when a total of 3 harbour seals were recorded. Although there are no recent surveys for the Harbour, a sighting of a seal 24 km inland from the coast in the lakes of Killarney in March 2013 is thought to have migrated *via* the River Laune from Castlemaine Harbour (Lucey, 2013). This suggests that harbour seals continue to occur in the area.

5.6.4 Otter

The Otter (*Lutra lutra*) is protected under the Irish Wildlife Acts (1976 and 2000) and is also listed in Annexes II and IV of the Habitats Directive. It is listed as one of the qualifying features of interest in the Castlemaine SAC. National surveys of otter in Ireland in 2006 found that approximately 75% of sites surveyed in the south-west of Ireland showed signs of otter occupancy. There is no specific data on otter population size in Castlemaine Harbour although they are known to be present throughout the area (Bailey and Rochford, 2006).

5.6.5 Salmon

Salmon populations run into the Rivers Laune and Maine. Numbers of adult salmon returning to the River Laune increased between 2004 and 2007. Scientific advice from the Standing Scientific Committee on Wild Salmon Stocks 2010 indicated a surplus over and above the conservation limit is required to enable optimum levels of spawning. In the River Maine there was no estimated surplus (Marine Institute, 2011).

5.6.6 Sea Lamprey and River Lamprey

In Ireland, the Sea Lamprey (*Petromyzon marinus*) and River Lamprey (*Lampetra fluviatilis*) are listed under Annex II of the Habitats Directive. Both species are listed as qualifying interest in Castlemaine Harbour however there is no specific data on populations of Sea Lamprey or River Lamprey in Castlemaine (Marine Institute, 2011).

5.6.7 Natterjack Toad

This species is listed in the Irish Red Data Book and under Annex IV of the Habitats Directive. The vicinity of Castlemaine Harbour is one of the few areas in Ireland where the Natterjack Toad (*Epidalea calamita*) occurs naturally. The Natterjack Toad was once more widespread in Kerry, however, its range decreased substantially between the period 1800 to 1970. The most significant loss in range occurred around Castlemaine Harbour where historic records indicate that the species was previously found right around its coastal strip. Although the toad's range has not changed much since the 1970's, some toad populations are now isolated which may, subsequently, lead to reduced genetic diversity, local inbreeding and, eventually, population extinction. Schemes aimed at restoring suitable breeding and foraging habitats for the natterjack around Castlemaine Harbour have been introduced (NPWS, 2007).

5.7 STATUTORY PLANS

There are no specific statutory or development plans for Castlemaine Harbour. Aquaculture is, however, considered under the Kerry County Development Plan and the development plans for the neighbouring land area of Castlemaine.

5.7.1 Kerry County Development Plan

Kerry's County Development Plan 2009 to 2015 sets out an overall strategy for the proper planning and sustainable development of the county.

With regard to aquaculture, the Plan recognises the economic importance of the aquaculture industry in the county. It acknowledges the potential for the aquaculture sector to expand and sets out to support the further development of aquaculture in Kerry. The overall objective with regard to aquaculture is to:

"Support and promote the sustainable development of the aquaculture sector in order to maximize its contribution to employment and growth in coastal communities and the economic well-being of the County."

The Plan, however, also acknowledges that the coastline of the county is a key attribute in its tourism offering with the scenic quality of the area a keystone to the county's tourism industry. It appreciates that the quality of the natural environment must be protected from improper development and protecting the environment is core to the County Development Plan with objectives for the protection and enhancement of natural areas.

Aware that equipment associated with aquaculture operations such as cages, colourful buoys and markers tend to make developments visually obtrusive, as these developments are located in areas of high amenity value, Kerry County Council propose to put in place a framework that accommodates the various and diverse interests who use the coastal areas including aquacultural interests. This framework will form part of the Kerry County Council's integrated coastal management strategy.

5.7.2 Local Area Plan – Castlemaine

The Castlemaine Town Local Area Plan[4] makes little reference to the aquaculture industry in the area except that oyster/mussel beds form an important part of the local economy.

The Plan recognises the importance that development proposals must "*not adversely impact on Natura 2000 sites, either by way of water pollution, wildlife disturbance or otherwise*".

5.8 MAN-MADE HERITAGE

According to the 'Archaeological Survey of Ireland'[5], there are a number of land-based features of archaeological and architectural interest in the wider surrounding area of Castlemaine Harbour. Several heritage remains are located in the close proximity to licenced areas. These include:

Souterrain – Lack

Situated on a gentle south facing slope about 150 m from the north shore of Castlemaine Harbour. The site contains the remains of a clochaun and souterrain.

Midden – Inch

Inch Spit is comprised of a vast expanse of sandhills, c. 5 km long, up to 1.5 km wide and over 100 feet (30.5 m) high in places. On its east side, bordering Castlemaine Harbour, is a very large shell midden composed of several layers of cockle shells, which extends for a distance of c. 168m and c. 3.5m deep.

Burial Ground – Cromane Lower

This site is located directly above the shoreline near the landward end of Cromane Spit. The site is described locally as an unenclosed burial area, of roughly circular plan, which contains rows of uninscribed, upright grave markers.

Other features in close proximity to Castlemaine Harbour include Rath ringfort, Laghtacallow enclosure, and Lonart pier/jetty. No description of these features or information on their proximity to the harbour is available.

4 http://www.kerrycoco.ie/en/allservices/planning/localareaplans/localareaplans/drafttraleekillarneyhubfunctionalarealap/thefile,8177,en.pdf

5 http://webgis.archaeology.ie/NationalMonuments/FlexViewer/

6 SECTION 61 ASSESSMENTS

Section 61 of the 'Fisheries Amendment Act 1997'specifies the following matters to which the licencing authority shall have regard to when an appeal regarding an aquaculture licence is being considered.

6.1 SITE SUITABILITY

*The site under appeal **is** suitable for the intended purpose for the following reasons:*

- Castlemaine Harbour has previously been selected for aquaculture operations. The harbour's relatively high tidal range coupled with strong tidal streams reduces the risk of accumulations of waste beneath site infrastructure.

- The site can be accessed by boat. No additional infrastructure is required.

- The site is located in close proximity to purification facilities.

- The site is located in an area of already high aquaculture activity and any visual impact incurred by this individual site is therefore considered negligible.

6.2 RESOURCE USERS

- Much of the recreational activity around Castlemaine Harbour is shore-based and is concentrated in the outer harbour area at Rossbeigh Beach and Glenbeigh. Therefore, the proposed aquaculture activity is unlikely to impact other recreational users.

- While fishing is known to occur in Castlemaine Harbour its extent is unknown. Given the scale of the proposed activity, however, it is unlikely to impact fishing in the harbour.

- With regard to the aesthetic quality of the land and seascape around the harbour, the site of the proposed aquaculture activity is located in an area of already high aquaculture activity and any visual impact incurred by an individual site of this scale is considered negligible.

*The proposed aquaculture activity will have **no significant impact** on the possible other users of the area*

6.3 STATUTORY STATUS

There are no specific statutory or development plans for Castlemaine Harbour. Aquaculture is, however, considered under the Kerry County Development Plan and the development plans for the neighbouring land-based area of Castlemaine.

- A core objective of the Kerry County Development Plan is the protection of natural areas while the Castlemaine Local Area Plan stresses that developments must not adversely impact on Natura 2000 sites, either by way of water pollution, wildlife disturbance or otherwise. With site T06/342A located within an SAC and SPA, the culture of mussels has the potential to impact the ecological integrity of the designated sites. However, the outcome of an Appropriate Assessment of the impacts on the Conservation Objectives of the SAC and SPA indicate that impacts will not be significant.

- The proposed aquaculture activity is a positive step towards satisfying the Kerry County Development Plan objective to support the further development of aquaculture in Kerry.

- Equipment (i.e. cages, colourful buoys and markers) associated with the proposed aquaculture activity has the potential to impact the scenic quality of the area. However, as the site is located in an area with relatively high aquaculture activity, any potential aesthetic impacts of the development are negligible.

*The proposed aquaculture activity will have **no significant impact** on the statutory status of the area*

6.4 ECONOMIC EFFECTS

Aquaculture as a local economic activity provides small-scale full-time and part-time employment – usually in the low single digits per site. As the demand for cultured products increases there are domestic and overseas opportunities for these local enterprises. The aquaculture industry in Ireland is one of the marine sectors targeted for expansion under the Marine Plan for Ireland (Inter-Departmental Marine Coordination Group, 2012) and Food Harvest 2020 (DAFF, 2010).

The Irish bottom mussel industry produced 6,000 tonnes in 2012 while rope mussel production was 9,000 tonnes. Of this 1,670 tonnes of bottom mussel and 704 tonnes of rope mussel were produced in Co. Kerry (BIM, 2012).

If permitted, this proposed aquaculture activity would:

- Allow a local producer to provide employment opportunities to local people;
- Continue to provide wholesalers, local restaurants and shops with locally grown produce.

If this proposal ***is not permitted***:

- The area is already designated a shellfish growing area and employment will be lost,
- Infrastructure already in place will not be used, and
- There will be a failure to supply already established export markets,

*The proposed aquaculture activity is likely to have a **positive effect** on the economy of the area.*

6.5 ECOLOGICAL EFFECTS

6.5.1 Benthic Communities

The intertidal bottom cultivation of mussels at this site may lead to changes in sediment and benthic communities in the area in which they occur.

High densities of filter-feeding shellfish can lead to an increase in organic and silt load to the benthic habitats through the egestion of faeces and pseudofaeces. The accumulation of organic matter can affect the seabed below aquaculture operations. Such effects can be significant in large (hectares) cultivated areas (Nugues *et al*. 2008), however, given the proposed scale of cultivation at T6/342A, the effects are likely to be minor and limited to the area directly beneath the mussel beds. This conclusion is further supported by the fact that predominant substrate type in the culture area is sand (suggesting some degree of flushing) and the communities are tolerant of organic loading (e.g. *Pygospio elegans* and *Eteone longa*). In addition the tidal range in Castlemaine is relatively high (3.9m on Spring tides and

1.8m on Neap tides). This combined with the strong tidal streams experienced in the Harbour indicate that water movement is high in the harbour will serve to reduce the risk of accumulations of organic matter (Marine Institute, 2011).

Access to site T6/342A will be by boat. Once the mussel seed has been relayed the site will generally be visited by foot once every fortnight, on spring tides, to check the condition of the seed. The level of foot traffic would therefore be considered very light. Tyler-Walters and Arnold (2008) conclude that in communities found in the intertidal sediments (muddy-sand), similar to those found in Castlemaine, would have low sensitivity to the traffic at the culture sites.

Dredging represents approximately 28 days of activity over a six month period during the spring and summer months, with the larger boats working 4 hours per day. As this activity elevates the mussels from the substrate, the dredge does not penetrate the seafloor or significantly disturb the surrounding sediment. This is supported by evidence of repeated annual mussel settlement in the area. The general conclusion is that the culturing of bottom mussels in the intertidal areas in Castlemaine Harbour SAC is not a disturbance on intertidal mudflat and sand flat habitats as well as estuarine habitats.

*The proposed aquaculture activity is **unlikely to have a significant impact** on benthic communities*

6.5.2 Designated Sites

The Appropriate Assessment of Castlemaine Harbour SAC assessed the potential ecological impacts of (wild) fishing and aquaculture activities on the conservation features of the designated sites. The main conclusions of the Appropriate Assessment in relation to effects of intertidal mussel cultivation on SAC qualifying features are outlined in **Table 6.1**.

Table 6.1: Appropriate Assessment conclusions with regards to the different activities undertaken in relation to aquaculture in the Castlemaine Harbour SAC.

Activity	**SAC qualifying features (EU importance)**	**Potential ecological effects**
Assessment of subtidal fishing for seed mussel	Sea lamprey (*Petromyzon marinus*) River lamprey (*Lampetra fluviatilis*) Salmon (*Salmo salar*) Estuaries Mudflats and sandflats not covered by seawater at low tide Annual vegetation of drift lines Perennial vegetation of stony	The types of dredge used on mussel seed beds do 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. Reduction of mussel bed, leads to change in structure and functioning of the benthic community. Less than 15% of the constituent community is likely to be disturbed. ***No** significant impact anticipated.*
Relaying of mussel seed on the		The existing benthic invertebrate

intertidal sandflat	banks Salicornia and other annuals colonizing mud and sand Spartina swards (*Spartinion maritimae*) Atlantic salt meadows (*Glauco-Puccinellietalia maritimae)* Otter (*Lutra lutra*) Petalwort (*Petalophyllum ralfsii*) Mediterranean salt meadows (*Juncetalia maritimi*)	fauna will change. The intertidal mussel relaying site is approximately 300 m from the eastern edge of a Zostera (seagrass) bed at Inch. The risk of encroachment of seed onto the seagrass bed is minimal given the 300 m buffer between the licenced area and bed. The % overlap of the activity and any benthic community is less than 15%. The effects are not disturbing to the existing community. *Minor non-significant impact anticipated.*
Dredging of half-grown mussel from the intertidal area	Embryonic shifting dunes Shifting dunes along the shoreline with Ammophila arenaria (white dunes) Fixed coastal dunes with herbaceous vegetation (grey dunes) Dunes with Salix repens ssp.argentea (*Salix arenariae*) Humid dune slacks Alluvial forests with Alnus glutinosa and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*)	The relaying of seed in the intertidal area leads to some changes in the composition of macrobenthos. Dredging will essentially removed the mussel structure and the fauna associated with it. The underlying sediment may remain undisturbed as the 'mussel mud' which accumulates on the bed detaches the bed from the underlying substrate. The re-establishment of the fauna depends of the type and exposure. Dredging releases fine sediment, from the mussel mud, into the water column and the dispersal depends on local tidal conditions. The accumulation of mussel mud is not a real issue in exposed areas. Evidence suggests that dredging does not lead to the transport of fine material from the dredge area to the seagrass bed upshore and to the west of the dredging area. There is a 300 m buffer between the dredging area and the edge of the seagrass bed. The % overlap of the activity and any benthic community is less than 15%. *Minor temporary impact*

		anticipated.
Relaying and dredging of mussels in the subtidal channel of Castlemaine Harbour		Relaying can smother existing fauna leading to change in the community structure and function. Dredging effectively removes the mussel bed from the subtidal, disturbs sediments and leads to changes in fauna. The % overlap of the activity with habitat and community is less than 20% and 15% respectively. ***Minor** impact anticipated.*
Predator control, winkle picking, discharges		Predator control, other fish removals and discharges may alter the species composition at the site and the structure and functioning of communities. These activities have local effects and do not significantly alter the range or area of the benthic community. ***Minor** impact anticipated.*
Assessment of the effects of shellfish production and in combination effects on the Conservation Objectives for Otter, Salmon and Lamprey		Activities may affect the abundance and distribution of the species concerned e.g. otters could become entrapped in pots designed to trap crabs. As there is no spatial overlap with the otter, salmon or lamprey no direct or direct impact is envisaged. ***No** impact anticipated.*

The following section (**Tables 6.2-6.7**) outlines the potential impacts of existing and proposed aquaculture activities on the conservation status of waterbird populations of special conservation interest in Castlemaine Harbour SPA. One bird species (Chough), listed as a species of conservation interest is not included in this assessment because the screening assessment concluded that there is not any spatial overlap between the activities being asssessed and the distribution of this species.

Table 6.2 : Effects of the seed mussel fishery in the Castlemaine Harbour SPA

Species	Parameter	Potential impacts
Light-bellied Brent Goose, Wigeon, Mallard and Scaup	Population distribution and size	Does not occur in this part of Castlemaine Harbour. ***No** impact anticipated.*
Common Scoter	Population distribution and size	Seed mussel bed in an area that is not regularly used by scoter and where the habitat is unsuitable for scoter due to the speed of the current. Maximum allowed exploitation rate of fishery will leave ample seed mussel biomass to support the entire baseline scoter population. Dredging takes place over a short period of time so any disturbance impacts will be of short duration and will not affect the availability of resources in this area. ***No** impact anticipated.*
Comorant and Red-throated Diver	Population distribution and size	Dredging takes place over a short period of time so any disturbance impacts will be of short duration and will not affect the availability of resources in this area. ***No** impact anticipated.*
Oystercatcher, Ringed Plover, Sanderling, Bar-tailed Godwit, Greenshank, Redshank and Turnstone	Population distribution and size	Do not occur in subtidal habitat. ***No** impact anticipated.*

Table 6.3: Assessment of intertidal relay of mussels in the mussel order area: effects of 12% mussel cover on habitat suitability for waterbirds within the mussel nursery area in the Castlemaine Harbour SPA

Species	Parameter	Potential impacts
Light-bellied Brent Goose, Greenshank and Turnstone	Population trend and distribution	Distribution in the affected area is expected; the area holds representative proportion of their population in the area taking account of the habitat conditions. Light-bellied Brent Goose and Turnstone were positively associated with mussel cover at the within-sector scale. Greenshank and Turnstone regularly feed in mussel

		beds. No effect of seagrass beds (Light-bellied Brent Goose). ***No** impact anticipated.*
Wigeon, Mallard and Pintail	Population trend and distribution	Does not use the intertidal zone occupied by the mussel nursery area. Absence due to habitat associations with freshwater inflows and proximity to saltmarsh, rather than avoidance of mussel cover. No effect on seagrass beds (Wigeon). ***No** impact anticipated.*
Common Scoter, Red-throated Diver and Cormorant	Population trend and distribution	Common Scoter does not occur in the inner part of Castlemaine Harbour (i.e. east of Cromane Point). Percentage occurrence of Red-throated Diver and Cormorant in the vicinity of the nursery area is broadly in line with the percentage expected if the birds were randomly distributed across the subtidal habitat covered by the survey. ***No** impact anticipated.*
Oystercatcher and Redshank	Population trend and distribution	Positively associated with mussel cover at both the within-sector and between-sector scales. ***No** impact anticipated.*
Ringer Plover	Population trend and distribution	Very rare, or absent, in the nursery area during the transect counts despite occurring in significant numbers in the count sectors containing the nursery area. Feeds on open sandflats and so would be expected to avoid the mussel biotope, even in the absence of any intertidal relay. ***No** impact anticipated.*
Sanderling and Bar-tailed Godwit	Population trend and distribution	Distribution in the affected area is as expected: the area holds representative proportions of their populations, taking account of habitat conditions. May avoid mussel patches at small spatial scales. But it is unlikely that the change in the mussel cover from the baseline condition would have affected their use of the nursery area.

		***No** impact anticipated.*

Table 6.4: Assessment of intertidal relay of mussels in the mussel order area: Effects of human disturbance in the Castlemaine Harbour SPA

Species	Parameter	Potential impacts
Light-bellied Brent Goose, Oystercatcher, Sanderling, Bar-tailed Godwit, Redshank, Greenshank and Turnstone	Population distribution and size	Indices of coincidence (overlap) in habitat use of bird population and human activity associated with mussel production is low. Modelling of individual disturbance events show that a very low % of the available habitat is affected. Do not use the nursery area at high tide when dredging occurs. ***No** impact anticipated.*
Wigeon, Mallard, Pintail, Scaup, Common Scoter and Ringed Plover	Population distribution and size	Do not regularly occur within, or in close proximity to the nursery area. ***No** impact anticipated.*
Red-throated Diver and Cormorant	Population distribution and size	Do not use the area at low tide. Percentage occurrence of Red-throated Diver and Cormorant in subtidal habitat in the vicinity of nursery area broadly in line with the percentage expected if the birds were randomly distributed across the subtidal habitat covered by the survey. Populations dispersed throughout the site and only a small area will be affected by dredging at any one time. ***No** impact anticipated.*

Table 6.5: Assessment of subtidal relaying of mussels in the mussel order area of the Castlemaine Harbour SPA

Species	Parameter	Potential impacts
Light-bellied Brent Goose, Wigeon, Mallard and Pintail	Population distribution and size	Feeding habitat not affected. Relay of mussels into subtidal plots takes place outside

		main period of occurrence. Vessels used for dredging mussels restricted to deep water. ***No** impact anticipated.*
Scaup	Population distribution and size	Feed on molluscs. Relay of mussels into subtidal plots takes place outside main period of occurrence. Dredging will only affect a small area of the available habitat at any one time and there will be ample alternative habitat. ***No** impact anticipated.*
Common Scoter	Population distribution and size	Does not occur in affected area. ***No** impact anticipated.*
Red-throated Diver and Cormorant	Population distribution and size	Fish-eating species. Relay of mussels into subtidal plots takes place outside main period of occurrence particularly for Red-throated Diver. Populations dispersed throughout the site and only a small area will be affected by dredging at any one time. ***No** impact anticipated.*
Oystercatcher, Redshank, Greenshank and Turnstone	Population distribution and size	Relay of mussels into subtidal plots takes place outside main period of occurrence. High tide roost near subtidal relay is not a major roost site. Roosting waders generally habituate to vehicular disturbance. Alternative roost sites nearby. ***No** impact anticipated.*
Sanderling and Bar-tailed Godwit	Population distribution and size	No high tide roosts near subtidal relay plots.

		***No** impact anticipated.*

Table 6.6: Assessment of subtidal mussel licenses and license applications outside the mussel order area of the Castlemaine Harbour SPA

Species	Parameter	Potential impacts
Light-bellied Brent Goose, Wigeon and Mallard	Population distribution and size	Feeding habitat not affected. Relay or mussels into subtidal plots takes place outside main period of occurrence. Vessels used for dredging mussels restricted to deeper water. High tide roosts (Wigeon and Mallard) near subtidal relay are not major roost sites. Alternative roost sites nearby. ***No** impact anticipated.*
Pintail, Common Scoter and Red-throated Diver	Population distribution and size	Does not occur in affected areas. ***No** impact anticipated.*
Scaup	Population distribution and size	Feed on molluscs. Relay of mussels into subtidal plots takes place outside main period of occurrence. Dredging will only affect a small area of the available habitat at any one time and there will be ample alternative habitat. ***No** impact anticipated.*
Cormorant	Population distribution and size	Fish-eating species. Relay of mussels into subtidal plots takes place outside the main period of occurrence. Populations dispersed throughout the site and only a small area will be affected by dredging at any one time. ***No** impact anticipated.*

Oystercatcher, Redshank, Greenshank and Turnstone	Population distribution and size	Relay of mussels into subtidal plots takes place outside main period of occurrence. High tide roosts near subtidal relay are not major roost sites. Roosting waders generally habituate to vehicular disturbance. Alternative roost site nearby. ***No** impact anticipated.*
Sanderling and Bar-tailed Godwit	Population distribution and size	No high tide roosts near subtidal relay plots. ***No** impact anticipated.*

Table 6.7: Assessment of additional intertidal mussel licences and licence applications outside the mussel order area of the Castlemaine Harbour SPA

Species	**Parameter**	**Potential impacts**
Light-bellied Brent Goose, Oystercatcher, Redshank, Greenshank and Turnstone	Population distribution and size	Positive response to intertidal mussel cultivation. Mussel production related to disturbance activities likely to affect a very low % of the available intertidal habitat and will not affect high tide roosts. ***No** impact anticipated.*
Wigeon and Mallard	Population distribution and size	Response to intertidal mussel cultivation not known. Worst-case displacement scenario (probably unrealistic) would affect up to 3% of the Castlemaine Harbour population and any resulting impacts unlikely to be detectable. Mussel production related to disturbance activities likely to affect a very low % of the available intertidal habitat and will not affect high tide roosts. ***No** impact anticipated.*
Pintail and Common Scoter	Population distribution and size	Does not occur in the Douglas Strand-Cromane area. ***No** impact anticipated.*

Scaup and Red-throated Diver	Population distribution and size	Does not feed in intertidal habitat. Any disturbance to birds in subtidal habitat from boats will be infrequent and each incidence will be of very short duration. ***No** impact anticipated.*
Cormorant	Population distribution and size	Does not feed in intertidal habitat. Roosts on outer sandbanks away from intertidal mussel cultivation. Any disturbance to birds in subtidal habitat from boats will be infrequent and each incidence will be of very short duration. ***No** impact anticipated.*
Ringed Plover and Sanderling	Population distribution and size	Does not occur in the main areas affected or potentially affected by license applications. Limited data on distribution within the Douglas Strand-Cromane area. ***No** impact anticipated.*
Bar-tailed Godwit	Population distribution and size	Possible negative response to intertidal mussel cultivation. Worst-case scenario (probably unrealistic) would cause displacement of up to 5% of the Castlemaine Harbour population. Mussel production related to disturbance activities likely to affect a very low % of the available intertidal habitat. Effect of displacement on population size will depend on whether populations are at carrying capacity. ***Non-significant** impact could be anticipated.*

6.5.3 Natterjack Toad

In Castlemaine Harbour, the Natterjack Toad is found in coastal dunes and marshes, bog systems and in wet fields near the sea. As none of these habitats overlap spatially with the proposed activity no impact is deemed possible.

*The proposed development **will not impact** on Natterjack Toads (Epidalea calamita) populations*

6.6 GENERAL ENVIRONMENTAL EFFECTS

Use of natural resources:

The proposed cultivation of mussels on the foreshore will use naturally occurring marine phytoplankton present in seawater.

Production of waste:

The cultivated shellfish will produce faeces and pseudofaeces. Grading and removal of mortalities will result in shells being discarded.

Pollution and nuisances:

Emissions will be burnt by burning fuel in boat engines and other machinery used in husbandry and harvesting operations. There will be no releases to the air of other hazardous, toxic or noxious pollutants.

Noise and vibration or release of light:

There will be noise associated with husbandry and harvesting of the shellfish e.g. use of boats and other machinery.

*Taking all of the above into account it is considered that the environmental effects of the proposed aquaculture activity are **not likely to be significant**.*

6.7 EFFECT ON MAN-MADE HERITAGE

There are no significant heritage features present in the vicinity of site T6/342A.

*There are **no effects** anticipated on the man-made heritage of value in the area as a result of the proposed aquaculture activity*

7 RECOMMENDATIONS

In accordance with Section 59 of the Fisheries (Amendment) Act 1997 the Technical Advisor recommends that the licence be granted for the site reference number T6/342A for the following reasons and considerations:

- The Technical Advisor has found that the tests applied during the Appropriate Assessment process to habitats, benthic species and birds were satisfactory. Although there is an overlap with qualifying habitats and species with mussel cultivation techniques, the interaction levels are believed to be sufficiently low and not thought to have a significant impact on the conservation objectives for the Castlemaine Harbour SAC and SPA;

- The Technical Advisor agrees that proposed stocking densities are sufficient however, should Liam O'Connor's operations expand in the future it is recommended that a full environmental assessment take place alongside a cumulative assessment of all aquaculture operations in Castlemaine Harbour SAC and SPA;

- Due to the increasing number of licenced aquaculture operations in the Castlemaine Harbour SAC and SPA an aquaculture management plan (finfish and shellfish) is recommended;

- The Technical Advisor recommends that Liam O'Connor operates according to European best practice.

8 CONCLUSIONS

The site under appeal is suitable for the intended purpose.

- The proposed aquaculture activity will have ***no significant impact*** on other possible users of the area;
- The proposed aquaculture activity will have ***no significant impact*** on the statutory status of the area;
- The proposed aquaculture activity will have a ***positive effect*** on the economy of the area;
- The proposed aquaculture activity will have ***no significant effects*** on wild fisheries, natural habitat and fauna provided effective controls and monitoring protocols are adhered to;
- There are ***no significant environmental effects*** expected as a result of the proposed aquaculture activity;
- The licencee should operate in line with best European industry practice; and
- There are ***no effects*** anticipated on the man-made heritage value in the area as a result of the proposed aquaculture activity.

The proposed aquaculture activity will have a positive effect on the Castlemaine economy by securing jobs and maintaining established export markets.

Taking all other available information into account it would appear the facility would pose an insignificant impact on the environment, statutory status and man-made heritage value of the area.

The Technical Advisor recommends the decision to grant a licence.

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