Appeal Ref No. AP 27/2018

Aquaculture Licences Appeals Board

Technical Advisor's Report

Description:	Assessment of the appeal against the Minister's decision to refuse an aquaculture and foreshore licence for the cultivation of pacific oysters in Castlemaine, Co. Kerry.

Licence Application

Department Ref No:	T6/476
Applicant(s):	Jonathan O'Connor, Liss Cromane, Killorglin, Co. Kerry
Minister's Decision:	Refused

Appeal

Type of Appeal:	To appeal the ministerial decision to grant an Aquaculture and Foreshore licence for the cultivation of Pacific Oysters using bags and trestles on the site reference T06/476
Appellant(s):	Jonathan O'Connor, Liss Cromane, Killorglin, Co. Kerry
Observers:	
Technical Advisor:	EcoÉireann Ecological Consultants
Date of site Inspection:	Site Inspection carried out on Tuesday 11th June 2019, by Eoin Cussen (See Appendix 5)

Document Control

Version	Date	Changes	Confidentiality	Prep	Rev	Auth
V1	28/04/2019	Draft to client		MR	AL	MM
V2	10/06/2019	Incorporation of client comments		EC		
V3	28/08/2019	Incorporation of client comments		EC		
V4	13/08/2020	Incorporation of MI Bird Monitoring Report		EC	JT	MM
V5	22/03/2021	Final Report		EC		

Contents

1.0 General Matters / Appeal Details

1.1 Appeal Details & Observer Comments / Submissions

Date Appeal Received: Received by ALAB on 26th October 2018

Location of Site Appealed: Castlemaine Harbour, Co. Kerry

1.2 Name of Appellant (s):

Jonathan O'Connor, Liss Cromane, Killorglin, Co. Kerry

1.3 Name of Observer (s)

N/A

1.4 Grounds for Appeal

1. *Location*
   Trestles will not be in the way of conservation practices
   The site will be monitored, and no waterways or channels will be blocked
   No trestles will be placed on the water channels therefore there will be no sediment build up in these areas

2. *Regulatory Engagement*
   The appellant is willing to work with regulatory authorities to fix any issues which may arise from the site should it be licenced.

1.5 Minister's Submission

Section 44 of the Fisheries (Amendment) Act 1997 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 Minister responded to the application for the aquaculture and foreshore licence as below as described in the DAFM website (https://www.agriculture.gov.ie/seafood/aquacultureforeshoremanagement/aquaculturelicensing/aquaculturelicencedecisions/kerry/ [Accessed 25/04/19]);

1. The site lies within an SPA and SAC and Appropriate Assessment reporting has found that proposed aquaculture activities within the Harbour are being managed so as to not affect the integrity of the SAC and SPA. However, the activities are not consistent with the Conservation Objectives of the SPA and a reduction in density and foraging habitats for key birds, in addition to displacement based on disturbance is a factor in application refusal

2. New application sites could result in seston depletion and impact negatively on the carrying capacity of the Harbour for aquaculture species

3. There are potential impacts of the proposed activities on the integrity of the Natura 2000 sites (SPA and SAC) which cannot be discounted

1.6 Applicant Response

The Applicant may submit a response to appeal submissions under the provision set out in Section 44(2) of the Fisheries Amendment Act 1997 which 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.*"

The Applicant made a submission as the Appellant. The Applicant did not respond to the submissions received during the consultation period.

3.0 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.

It is considered, by the advisor, that an Oral Hearing is not required for this application where there is no conflicting technical information on relevant and significant aspects of the appeal.

4.0 Minister's File

Details of the file received by ALAB from the Minster requested under Section 43 are listed here in chronological order. Copies of;

- Appropriate Assessment reports for the SAC and SPA

- Letter of refusal to the Appellant
- Licence Application Form with maps, drawings and coordinates
- Notice / advertisement to be put in “The Kerryman” for public viewing
- Recommendation to refuse the licence application sent to the Minister

were received and assessed to inform this report.

5.0 Context of the Area

5.1 Physical descriptions

5.1.1 Site Location

Castlemaine Harbour is located in the south west of Ireland (Figure 1) south east of the Dingle Peninsula in Co. Kerry. Castlemaine town is located approximately 6km east, Killorglin is located approximately 4km south and Killarney is located approximately 23km south east.

The R561 road is the key access road, located on the northern section of Dingle Bay and connects Castlemaine with Dingle (joining the N86 before Dingle (approximately 30km north west). Tertiary roads / local access roads give access to the harbour (piers) both on the northern and southern shores.

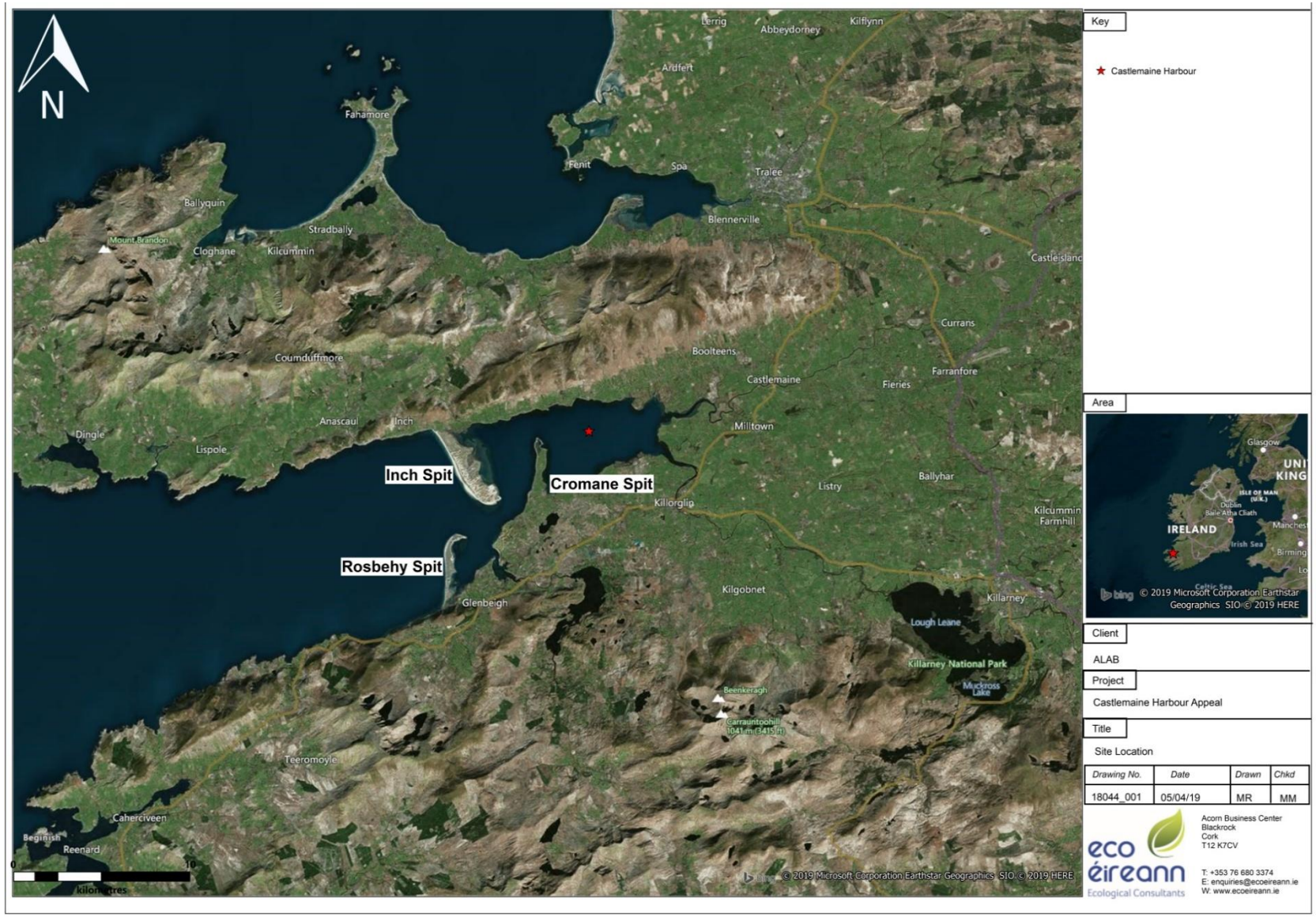
5.1.2 Physical Characteristics

The harbour comprises the inner section of Dingle Bay and hosts three spits; Inch and White Strand (Rosbehy) and Cromane. The spits are separated from each other by a deep tidal inlet and are linked by an ebb-tidal delta. Inch and White Strand / Rosbehy spit are described as sand spits and both have extensive sand dune systems. These spits form the western boundary and provide shelter for the Harbour. Cromane spit is described as a gravel spit. Cromane is located further east (landward) than the two sand spits (Figure 1) and forms the “back-barrier” of Castlemaine Harbour.

The dune system at Inch Beach / spit grades to salt march with *Spartina* swards on the sheltered east side. Salt marsh fringes Cromane spit, the salt marsh continues almost uninterrupted along the south shore to the mouth of River Laune.

The estuary at the Harbour is on average between 4-5km wide and is approximately 11km at the outer limit (beyond the spits). The Harbour comprises the estuaries of the River Maine and River Laune, dominated by extensive areas of sheltered intertidal sand and mud flats with fringing saltmarsh and shallow marine waters (NPWS, 2014).

Figure 1 Site Location and Spit Locations



5.1.3 Freshwater Influence

Freshwater flow into Castlemaine Harbour is seasonally variable reducing in the summer, but high rainfall, particularly in the winter months, feeds two main rivers (River Maine and River Laune) (Figure 2).

The River Maine originates in Tobermaing flowing through Castleisland and Castlemaine before reaching the Harbour. The River Laune originates from Lough Leane (Killarney National Park) flowing north west through Killorglin before reaching Castlemaine Harbour carrying much of the rainwater flow from the MacGillycuddy Reeks mountain range (located south west of Lough Leane). The River Maine and River Laune are the two main freshwater influences to the Harbour, however, the Caragh and the Emlagh also flow into the Harbour along with other smaller rivers.

The River Maine and the River Laune are important fishing (Salmon and Trout) rivers in Co. Kerry.

5.1.4 Topography

The Slieve Mish mountains are located to the north of the Harbour and Dooks Mountain located south of Rossbehy spit. East of Rossbehy spit, the land remains relatively flat around the southern and eastern boundaries of the Harbour.

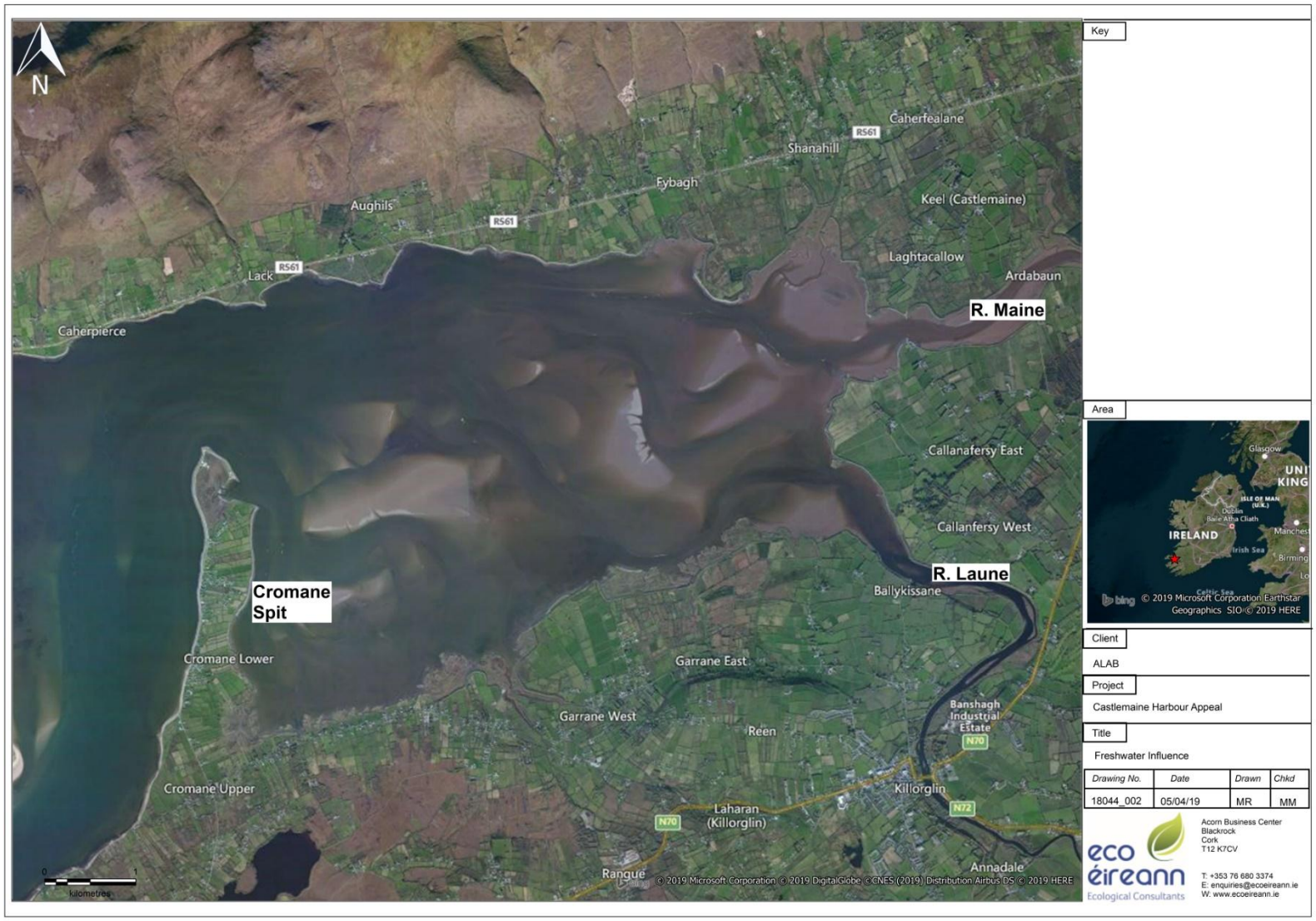
5.1.5 Meteorological Conditions

The Gulf Stream North Atlantic current flows past the Kerry coastline resulting in generally mild temperatures, while it's mountainous nature, geographical location and the prevailing south westerly winds results in one of the highest rainfall rates in the country. The monthly rainfall average recorded by Met Éireann at the Valentia Observatory off the western coast of the Iveragh Peninsula was 140mm for the last ten years (2009-2019). The lowest average rainfall was 54.4mm and the highest 285mm.

5.1.6 Local Population

The main population lies in Castlemaine (176), Killorglin (2,199), Dingle (2,050) and Killarney (14,504) with smaller communities of Milltown, Cromane, Glenbeigh and Annascaul also in the local area.

Figure 2 Freshwater Influences



5.2 Resource Users

5.2.1 Aquaculture Activity

Aquaculture activities are widespread through Castlemaine Harbour, dominated from Cromane spit to the east (landward) (Appendix 1). The activities focus on mussel, oyster and clam production.

Shellfish Designated Waters:
Following the European Council Directive 79/923/EEC on the quality required of shellfish waters and the numerous subsequent amendments to this directive, a codified version was produced - Directive 2006/113/EC on the quality required of shellfish waters. This directive sets out physical, chemical and microbiological parameters and regulations for the designation and sampling of Shellfish Designated Waters to protect or improve these waters in order to support shellfish (bi-valve and gastropod molluscs) life and growth, the directive also provides for the establishment of pollution reduction programmes for designated waters and thus, contribute to the high quality of shellfish products directly edible by man.

In Castlemaine Harbour, existing aquaculture is focused on the cultivation of Pacific oysters on trestles in intertidal areas, the subtidal cultivation of mussels on the seabed and intertidal cultivation of Manilla clams using nursery frames followed by planting on the seabed. The intertidal area along the southern shore of Castlemaine Harbour is the main cultivation area for Pacific oysters while bottom mussel farming also occurs along the southern shore but predominantly along the northern shore.

Bord Iascaigh Mhara, BIM, (Irish Sea Fisheries Board) was set up over 65 years ago to promote, develop and support the Irish seafood sector by providing technical expertise, business support, funding, training and promoting responsible environmental practice. BIM have developed a Special Unified Marking Scheme, SUMS, for Castlemaine harbour in conjunction with the Co-Ordinated Local Aquaculture Management System, CLAMS, and the local aquaculture license holders.

There were 98 new applications for aquaculture licences in Castlemaine Harbour, up to 2018, comprising 91 applications for oyster cultivation, six applications for mussel cultivation and one application for both oyster and mussel cultivation. In addition, five licensees have applied for licence reviews to add oysters to their existing mussel sites (DAFM Appropriate Assessment Conclusion Statement for Aquaculture Activities in Castlemaine Harbour SAC and SPA (Natura Sites) - August 2018 [Accessed 08/04/19]). There are now currently 14 new applications for aquaculture licenses in Castlemaine Harbour comprising 12 applications for oyster cultivation (11 bag and trestle and 1 bottom cultivation) and two applications for mussel cultivation (1 long-line cultivation and 1 bottom culture cultivation). In addition, two licensees have applied for license reviews to add oysters on trestles to their existing mussel sites (DAFM Appropriate Assessment Conclusion Statement for Aquaculture Activities (with particular reference to applications received subsequent to the Appropriate Assessment in 2018) in Castlemaine Harbour SAC and SPA (Natura Sites) - July 2019 [Accessed 30/08/19]).

The key activities are outlined below;
Oyster:
Intertidal Oyster Cultivation: Predominantly grown in trestles and bags which are typically from 20 to 26 inches in height, 3m long and carry 5-6 bags (Marine Institute, 2018). Seed (triploid only, Marine Institute, 2018)) is generally imported from France in the Spring and Autumn of each year. During the growing season, producers turn each bag once a month and spring tides (2 a month) are used by producers to get out to sites, typically – 4 to 5 days around each tide a month.

Basket and Trestle: This method is limited in the Harbour where it is used four baskets are attached to each trestle. Half-grown oysters (70 in number) are placed in each basket and the basket moves with the wave motion.

Bottom *Crassostrea gigas*: This method is limited to one producer (Marine Institute, 2018) (0.93ha). Half-grown oysters are taken from the bag and trestle sites and placed on the bed and harrowed twice a year using a small boat with an open hand dredge and dredged after 12 months.

Bottom Mussel Cultivation: Seed mussel is fished from sub-tidal seed areas and transferred for hardening on the intertidal nursery sites for 6 to 12 months and are harvested usually late September until mid-March (Marine Institute, 2018).

Cultivation is from:
Large Boats – Dredgers: Dredges are 2m mussel dredges with a flat bar that is designed to skim the surface of the substrate. Mussels are relayed on to subtidal, licenced areas via pumping the mussels mixed with seawater from the boat's holds. Vessels move across the plots to achieve an even distribution of mussel on each plot to maximise survival and growth.

Small Boats – Punts: Smaller boats rely on seed drift from seed being brought in by Larger Vessels or on natural settlement. Settled seed is moved when it reaches a size ranging from 25-40mm to finish off before harvesting. Seed is collected from punts using beet forks, pikes or hand dredges and harvesting is by using hand dredge, piking or handpicking. Sites with small boats are not used every year as they are dependent on the availability of seed. Shifting channels are an issue with small boats and one producer on site T6-267D can no longer use this site based on this issue.

The Fishery Order for mussel seed covers the main navigational channel from Inch Point to Cromane Island.

Clams:
Intertidal Clam Cultivation: Typically clam seed is sourced from Irish hatcheries and has a life cycle of 2.5yrs. Seed is placed in nursery frames and on reaching 10mm are transplanted to the ground to grow. They are transplanted into lines covered with mesh, they are brushed once a week when tides are suitable to keep sand and weed off the clams. Clam cultivation is confined to the south in Glenbeigh.

Figure 3 Shellfish Designated Waters, SI 268 of 2006 Cromane, Co.Kerry

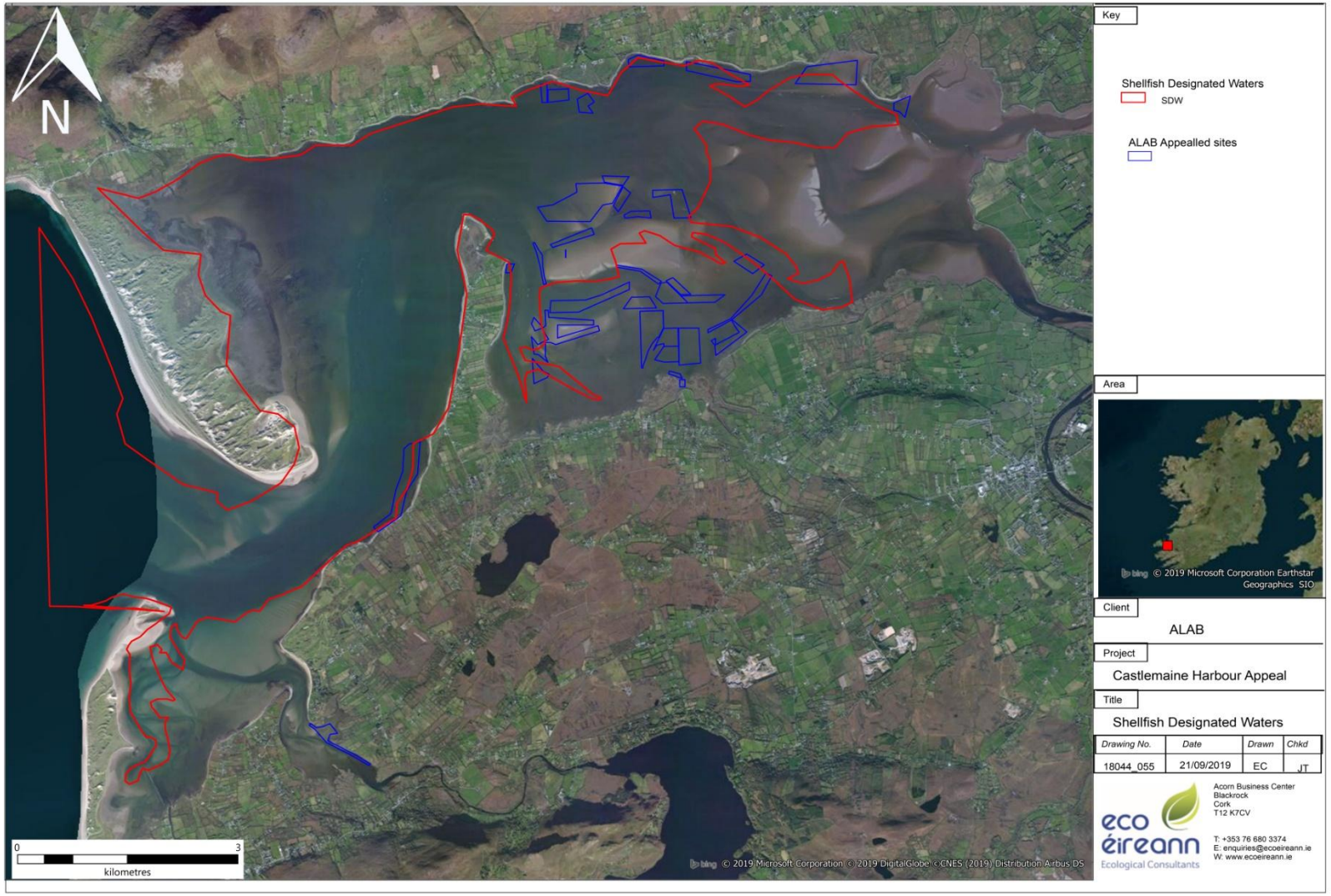
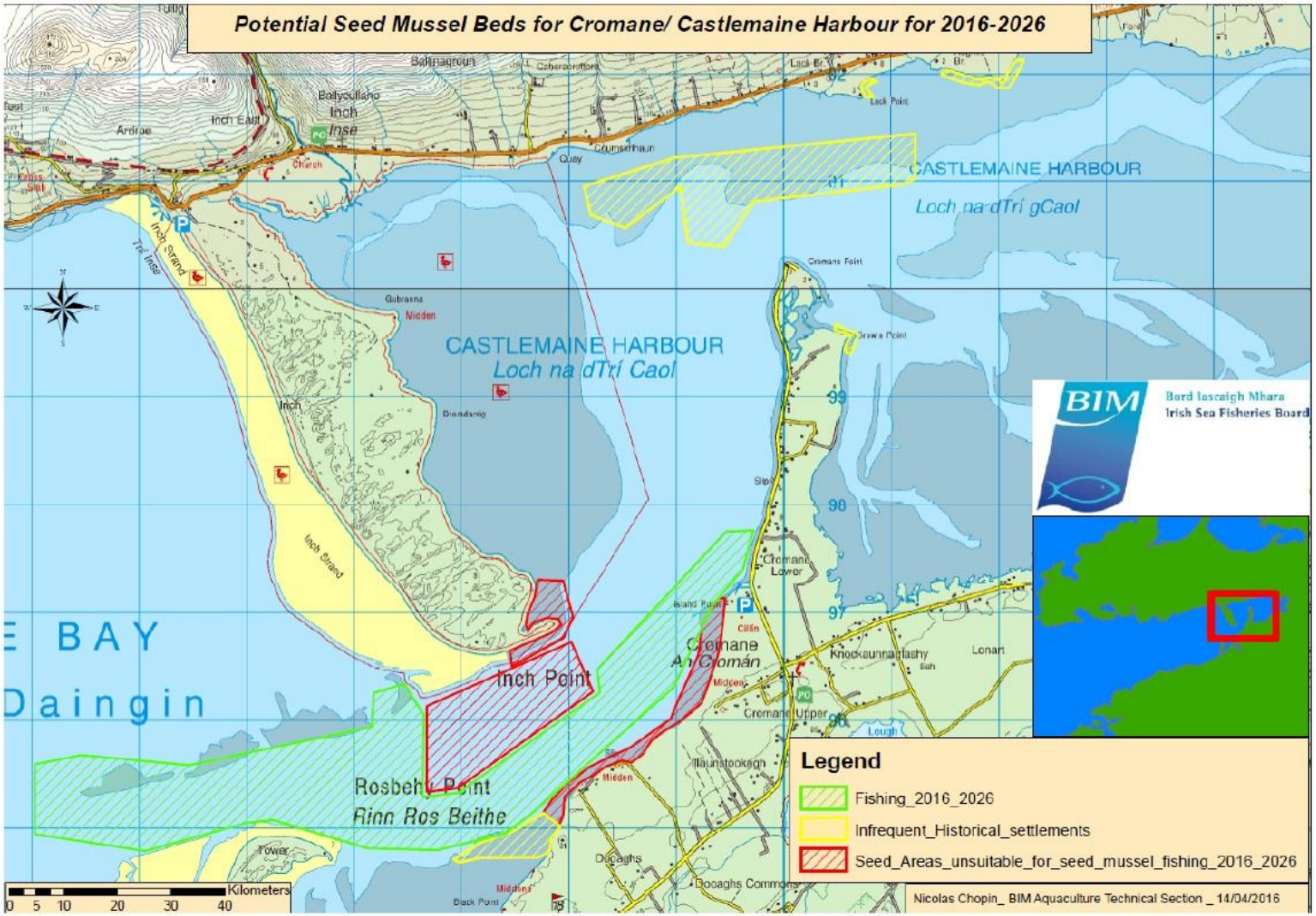


Figure 4 BIM Special Unified Marking Scheme, Cromane Co. Kerry

Figure 5 Seed Mussel Fishing Areas for Castlemaine Harbour (NPWS, 2011c)



5.2.2 Fishing Activity

The Rivers Laune and River Maine are both listed as National Salmon Rivers and provide resource for salmon (*Salmo salar*) and trout (*Salmo trutta*) fishing. Angling is regulated by the Salmon and Sea Trout Angling Regulations which are reviewed annually. The biggest landings of commercial salmon catches in 2015 were in County Kerry on the River Laune with 2,076 salmon (27% of the commercial catch) (IFI, 2015). Tables 1 to 3 summaries of fish catches from the two major rivers entering the Harbour.

Table 1 – Salmon Fisheries: Extracted from 2015 IFI Report (IFI, 2015)

Region	Waterbody	No. Salmon Harvested	% of National Commercial Harvest
Kerry	Laune	2,076	27%
Kerry	Castlemaine	746	9.7%

Table 2 – Commercial and Angling Salmon Catch 2015 determined from Logbook Returns Extracted from 2015 IFI Report (IFI, 2015)

River Name	River System No	Fishery District	Commercial Salmon Catch	Salmon C&R by Rod & Line	Salmon Harvest by Rod & Line	Total Salmon Catch by Rod & Line (inc C&R)	Total Salmon Catch by all Methods (inc C&R)	Total Allowable Catch
Castlemaine		Kerry	746					
Maine	197	Kerry	3	11	103	114	117	1,157
Laune	207	Kerry	2,076	144	830	974	3,050	4,525

Table 3 – Commercial and Angling Sea Trout Catch 2015 determined from Logbook Returns Extracted from 2015 IFI Report (IFI, 2015)

River Name	River System No	Fishery District	Commercial Sea Trout Catch	Sea Trout C&R by Rod & Line	Sea Trout Harvest by Rod & Line	Total Sea Trout Catch by Rod & Line (inc C&R)	Total Sea Trout Catch by all Methods (inc C&R)
Castlemaine	N/A	Kerry	9				9
Maine	197	Kerry		21	8	28	28
Laune	207	Kerry	4	8	19	26	30

5.2.3 Tourism

The south west region (Cork/Kerry) was the most popular tourist and holiday destination outside of Dublin in 2017 (Fáilte Ireland, 2018a). Approximately 19% of the total tourists visiting Ireland (from overseas and domestic) travelled to the south west region with approximately 2,241,000 tourists (domestic and overseas) travelling to Kerry in 2017 (Fáilte Ireland, 2018b).

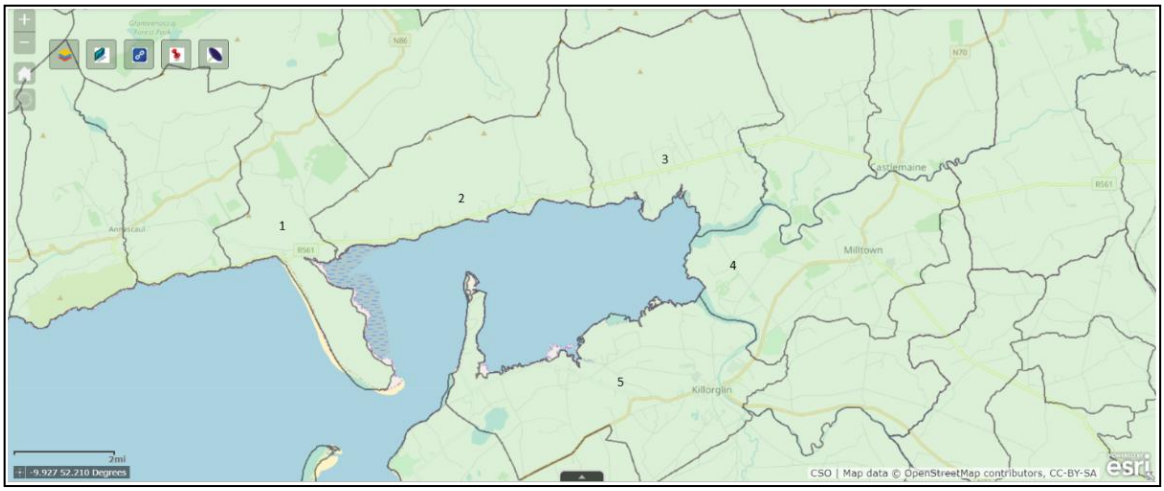
Kerry as a county is dependent on tourism as an economic stream for the region. With blue flag beaches which includes Rossbeigh (Rossbehy spit), National Parks (Killarney) and mountain ranges providing scenic destinations for domestic and overseas visitors Kerry County Council, 2018). The Wild Atlantic Way route travels along the Kerry coastline and Catlemaine Harbour lies on part of this route.

5.2.4 Agricultural Activity

Agriculture accounts for a significant portion of Kerry's economic activity where the grassland scattered though the county makes it appealing for dairy farming (Kerry County Council 2016). Agriculture is the second largest employer in the County, with 5,621 working in the Agriculture, Forestry & Fishing sectors (Kerry County Council, 2015).

Around Castlemaine Harbour there are five electoral regions which hold agricultural data (CSO - http://census.cso.ie/agrimap/ [Accessed 08/04/19]). The number of farms in each region are based on latest data (2010):

1. Inch (north western boundary) – 31
2. Lack (northern boundary) – 42
3. Kilgarrylander (north eastern boundary) – 72
4. Milltown (eastern boundary) – 80
5. Killorglin (taking in Cromane Spit and southern boundary) – 145



In total, in 2010 there were 370 farms around the Harbour. These farms make up approximately 4% of total farms in the county.

Total grazing numbers for the area around Castlemaine Harbour based on 2010 figures are outlined in Table 4 (http://census.cso.ie/agrimap [Accessed 08/04/19]).

Table 4 Grazing Figures per Electoral Area (2010)

Reference	Area	Total Sheep (head)	Total Cattle (head)	Pasture (ha)
1	Inch	3713	702	859
2	Lack	3281	799	457
3	Kilgarrylander	5669	1093	662
4	Milltown	965	4191	1068
5	Killorglin	650	2643	1063
	Total	**14,278.00**	**9,428.00**	**4,109.00**

5.2.5 Inshore Fishing activity

Inshore fishing occurs in the Harbour with bottom fishing for flounder and bass; lugworms can be dug as bait in the estuary. Data was compiled from www.fishinginireland.info/sea/maps/docs/Dingle.doc [Accessed 08/04/19]

5.2.6 Leisure Users of the water body & surrounding area

Around Castlemaine Harbour are a suite of recreational activities. These range from sea kayaking, canoeing, windsurfing and sailing. Being a hub of tourism along the Wild Atlantic Way walking tours are also prevalent in the wider area, in addition to dog walking along the beaches in the area (Rossbeigh and Inch).

Birdwatching is a key activity where part of the Harbour is part of a Ramsar site and Special Protection Area which indicates the site holds nationally and internationally important numbers of a range of bird species. Bird watching sites are located around the Harbour at Inch, Rossbeigh, Cromane, Killorglin.

5.3 Environmental Data

5.3.1 Water Quality

WFD Status
Water quality in Castlemaine Harbour is monitored as part of the Water Framework Directive (WFD) Monitoring Programme. The latest round of monitoring results (2013-2018) indicates that Castlemaine Harbour (site code IE_SW_230_0200) demonstrates Good Water Quality for Transitional Water Quality Status. The adjacent site (outer Dingle Bay (site code IE_SW_230_0000) had no assigned status (under Coastal Waters) for 2013 to 2018 period.

Bathing Water
Bathing water quality is not monitored in Castlemaine Harbour. The nearest sites which are monitored for bathing water are in the outer bay at Rossbeigh (IESWBWC230_0000_0300) and Inch Strand (IESWBWC230_0000_0200) which for the 2019 period both areas were recorded as being of Exellent Water Quality (https://gis.epa.ie/EPAMaps/ [Accessed on 3/08/20]).

5.3.2 Freshwater Status

Two main rivers flow into the Harbour, the River Maine and the River Laune. The River Maine (IE_SW_22M010700) is classed as being "At Risk" and of "Moderate Ecological Status" with changes in hydromorphology being the key pressure on this river system (EPA, 2018). The River Laune (IE_SW_22L010400) is categorised as being "Not At Risk" and being of "Good Water Quality" for 2013-2018 period (https://gis.epa.ie/EPAMaps/ [Accessed on 3/08/20]).

5.4 Statutory Status

5.4.1 Nature Conservation Designations

Special Protection Areas
Ireland is required under the terms of the EU Birds Directive (2009/147/EC) to designate Special Protection Areas (SPAs) for the protection of:

- Listed rare and vulnerable bird species;
- Regularly occurring migratory bird species;
- Wetlands especially those of international importance.

Each SPA focuses on specifically designated species, although the general protections extend to most other regularly occurring species (referred to as non-SCI species). The species designated within each SPA site are referred to as Special Conservation Interests (SCIs) and each has specific conservation objectives.

Special Areas of Conservation
Ireland is also required under the EU Habitats Directive (92/43/EEC) to designate Special Areas of Conservation (SACs) for the protection of certain habitats and species listed within the Directive. There 25 species in Ireland which must be afforded this protection. Irish habitats which have been afforded protection include bogs, heaths, woodlands, grassland, lakes, rivers, turloughs, sand dunes, estuaries as well as other coastal and marine habitats.

Each SAC has specifically designated habitats and species. The habitats and species designated within each SAC site are referred to as Qualifying Interests (QIs) and each has specific conservation objectives.

These two EU Directives have been transposed into Irish law as the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) (as Amended). Together these sites (SACs & SPAs) make up a nationwide and Europe-wide patchwork of protections for areas which are considered prime wildlife conservation areas, considered to be important at both a National and European level.

Castlemaine Harbour is designated as a Special Area of Conservation (SAC) and Special Protection Area (SPA) under the EU Habitats Directives listed above (Figures 5.3 and 5.4). The area is also listed as a Ramsar site under the Ramsar Convention.

The protected habitats and species focused on in this report are those listed as qualifying interests and special conservation interests of Castlemaine Harbour SPA (Appendix 2) and SAC (Appendix 3), which may be impacted by aquaculture activities including; Estuaries [1130](5695.86ha), Mudflats and sandflats not covered by seawater at low tide [1140](4286.69ha), Wetland habitats, numerous bird species, salmon, lamprey and otter (Species listed below in Section 5.5).

5.4.1.1 Castlemaine Harbour SPA

The Castlemaine Harbour SPA boundary stretches through the Harbour, taking in a partial element of the outer Dingle Bay (Figure 7) and includes two of the three spits (Inch & Rosbehy) in addition to including the estuaries of the two main freshwater influences (River Maine and River Laune). A substantial area of shallow marine water in addition to intertidal mud flats are included in the remit of the SPA boundary.

Castlemaine Harbour SPA covers a total area of 12,397.4ha and is of Special Conservation Interest for 15 waterbird species and 1 non-waterbird Annex I species Chough *Pyrrhocorax* pyrrhocorax (SCI species listed in Table 5, below). The conservation designation of the SPA also focuses on the wetland habitats present and the associated waterbirds.

Castlemaine Harbour SPA is one of the most important sites for wintering waterfowl in the south-west of Ireland providing excellent foraging and roosting habitats for a wide diversity of wintering waterbirds (see Table 5 and Appendix 2 for list of SCIs) some of which are listed on Annex 1 of the EU Birds Directive (NPWS, 2014). Annex 1 of the EU Birds Directive lists 194 bird species (and sub-species), as well as all migratory species, which are particularly threatened and require the designation of Special Protection Areas for their survival.

At the time of designation Castlemaine Harbour was of international importance for its Light-bellied Brent Goose population ((694) – figures given are the baseline assessment Mean Peak figure from the winters of 1995/96 –1999/00), and of national importance for a further 14 waterbird species and 1 non-waterbird species (Chough): Red-throated Diver (56), Cormorant (136), Wigeon (6,819), Mallard (487), Pintail (145), Scaup (74), Common Scoter (3,637), Oystercatcher (1,035), Ringed Plover (206), Sanderling (335), Bar-tailed Godwit (397), Redshank (341), Greenshank (46) and Turnstone (144). Of particular note is that at the time of the baseline five species which occurred regularly are listed on Annex I of the E.U. Birds Directive, i.e. Red-throated Diver, Great Northern Diver, Golden Plover, Bar-tailed Godwit and Chough (NPWS, 2014).

NPWS (2011a) describes the objectives and targets for the SPA as follows:

1. To maintain the favourable conservation condition of species listed in Appendix 2 in terms of maintaining population numbers and distribution

2. Maintaining the area of the wetland habitat listed under the SAC designation to ensure that the area of subtidal, intertidal and supratidal habitats should be stable or increasing

and not less than the areas of 7471, 3983 and 312 ha respectively (other than naturally occurring variation)

The conservation objectives outlined above apply to the entirety of Castlemaine Harbour included within the boundary of the SPA, see Figure 7, below.

5.4.1.2 Castlemaine Harbour SAC

Castlemaine Harbour SAC extends over Castlemaine Harbour, partially to the outer Harbour of Dingle Bay,the designation reaches along the River Maine almost to Castlemaine, and much of the River Laune catchment, including the Gaddagh, Gweestion, Glanooragh, Cottoner's River and the River Loe (Figure 6).

The site covers an approximate area of 8683.05 ha and is designated for a range of species and habitats (Appendix 3) including dune systems, marsh habitats, intertidal muds, rivers and associated habitats (woodland, bog and heath).

Five plants listed in the Irish Red Data Book have been recorded at this site: Sea-kale *Crambe maritima*, Corn Cockle *Agrostemma githago*, Sea Pea *Lathyrus japonicus*, Pennyroyal *Mentha pulegium* and Irish Lady's-tresses *Spiranthes romanzoffiana* with the three last-named are legally protected under the Flora (Protection) Order, 2015, as is the rare bryophyte, Petalwort *Petalophyllum ralfsii*. Other scarce species which occur here are Yellow Bartsia *Parentucellia viscosa*, Laxflowered Sea-lavender *Limonium humile* and Blue-eyed-grass *Sisyrinchium bermudiana* (NPWS, 2014).

NPWS (2011a) describes the objectives and targets for the SAC as follows:

1. To maintain the favourable conservation condition of species listed in Appendix 3 in terms of maintaining population numbers and distribution with the exception of those in point 3 below

2. To maintain the favourable conservation condition of habitats listed in Appendix 3 in terms of maintaining population numbers and distribution with the exception of those in point 3 below

3. To restore the favourable conservation condition of otter, fixed coastal dunes with herbaceous vegetation (grey dunes) and alluvial forests with *Alnus glutinosa* and Ash *Fraxinus excelsior*

Figure 6 SAC Boundary

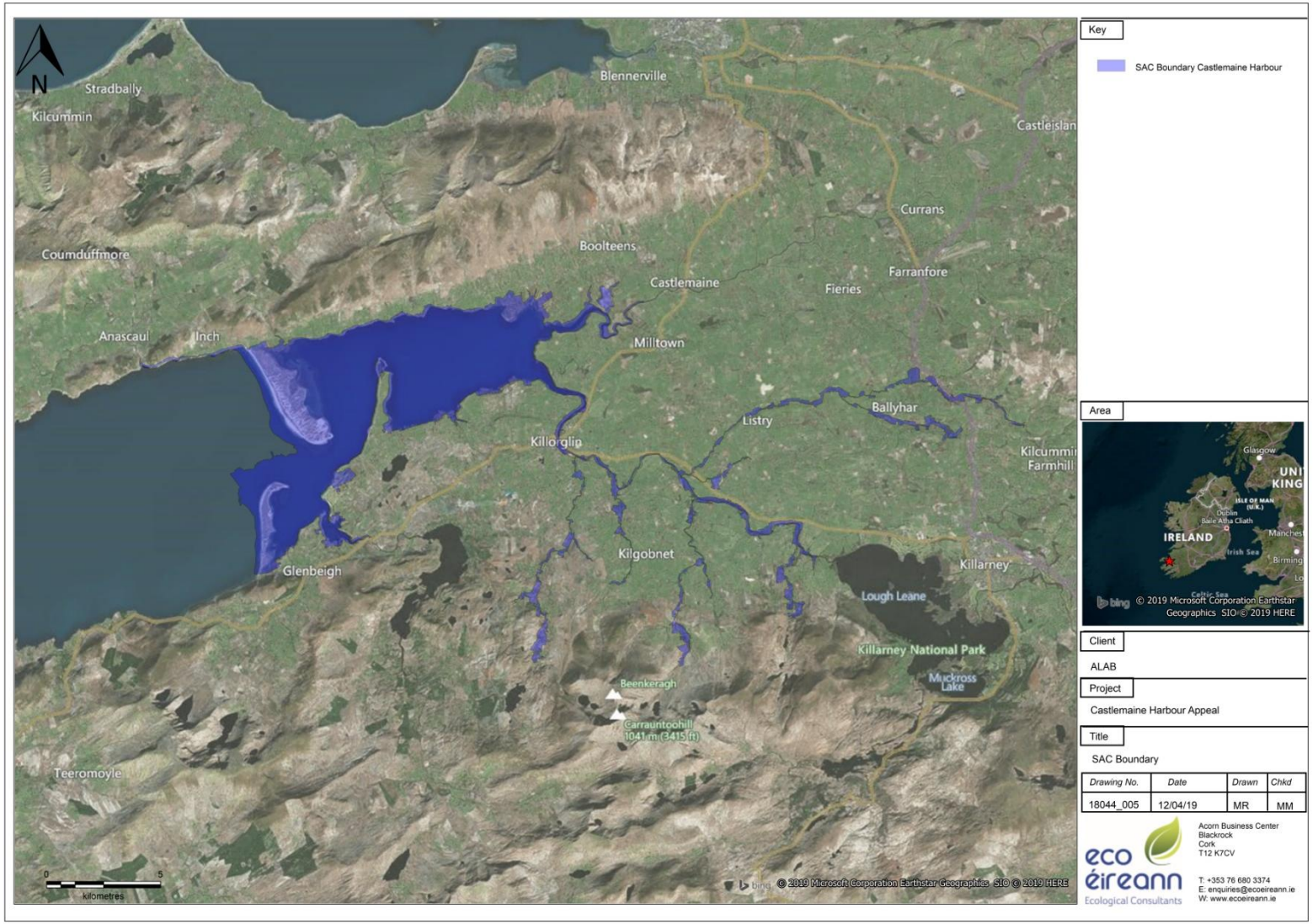
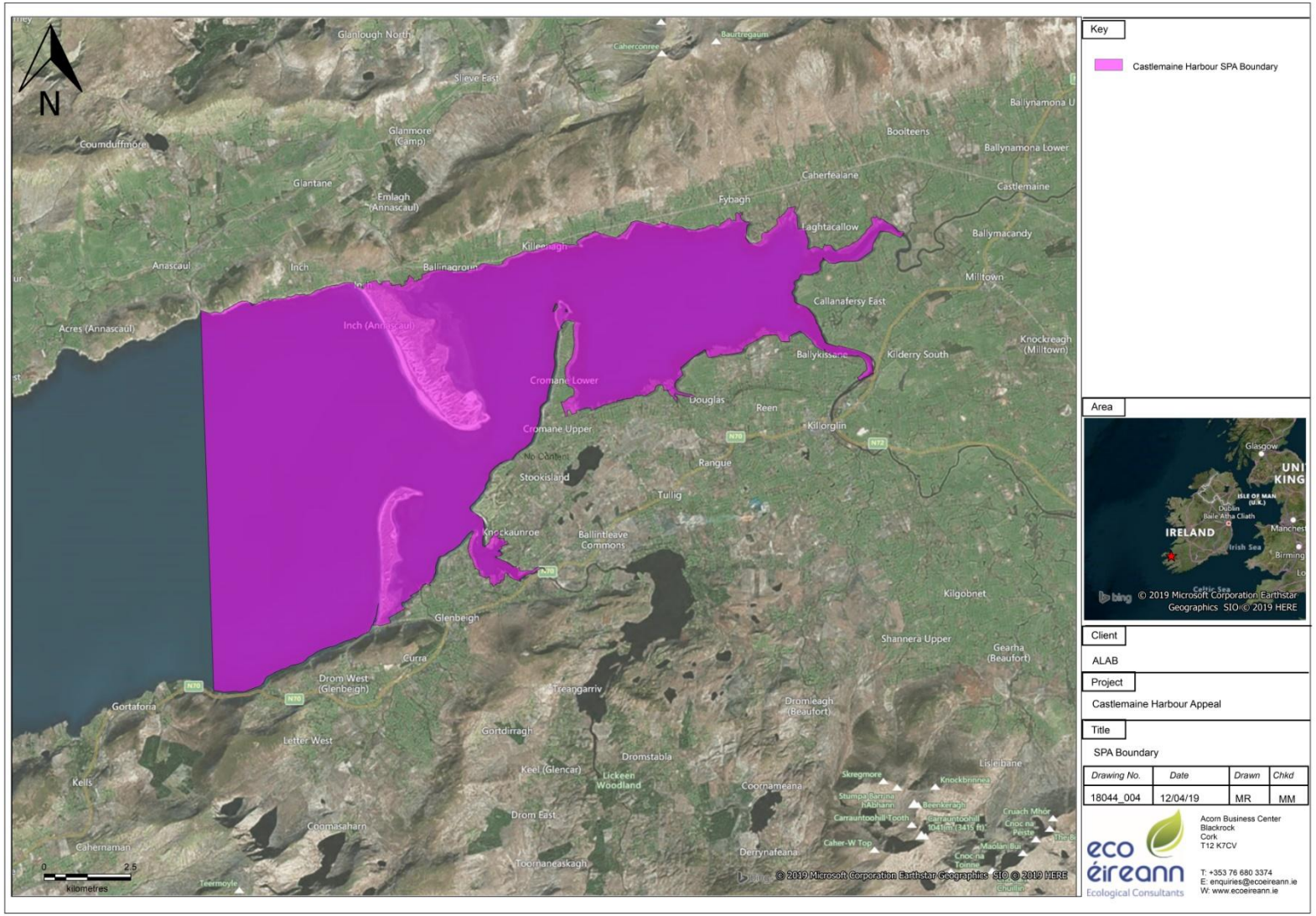


Figure 7 SPA Boundary



5.5 Protected Species

There are a range of protected species recorded in the Harbour, based on records from Biodiversity Ireland in the last ten years.

5.5.1 Cetaceans

A search of the sightings database from the Irish Whale and Dolphin Group (IWDG - http://www.iwdg.ie [Accessed 08/04/19]) from the last 12 months indicates that there were no cetacean sightings in Castlemaine Harbour but 11 separate incidences of sightings in Dingle Bay, one which was of 200 common dolphins in April 2018 (Appendix 4 lists recorded sightings of cetaceans within the surrounding bay).

5.5.2 Seals

In Ireland, two species of seal (common seal *Phoca vitulina* and grey seal *Halichoerus grypus*) 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. The latest records from Biodiversity Ireland show that in August 2018, 12 counts of common seal were recorded and in September 2012 that three counts of grey seal were recorded. Seals are not included as a Qualifying Interests of the Castlemaine Harbour SAC.

5.5.3 Otter

Otter *Lutra lutra* are 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. The database of the Mammals of Ireland 2016-2025 reported up to 45 sightings of otter within the SAC boundary, latest record was in January 2018.

5.5.4 Amphibian

There are three species of amphibian found in Ireland, they are protected under both the Irish Wildlife Acts (1976 and 2000) and under the Habitats Directive. Common frog *Rana temporaria* (listed under Annex V of the Habitat Directive) and natterjack toad *Bufo calamita* (listed under Annex IV) are both recorded in the SAC boundary in the last 10 years, however neither is listed as a Qualifying Interest for the SAC. Both were recorded as part of the report for Amphibians and Reptiles of Ireland and last counts were in May 2018 (natterjack toad – 15 number and common frog – 16 number).

The counts of natterjack toad are significant where the Harbour is one of the few areas in Ireland where they are found, therefore, this species is also listed in the Irish Red Data Book.

5.5.5 Salmon

Salmon *Salmo salar* populations run into the Rivers Laune and Maine. A pilot fishery was operated in Castlemaine Harbour in 2010 to determine the composition of the various stocks in the fishery. The results indicated that at least 94% of the catch in the fishery comprised salmon stocks from rivers entering Castlemaine Harbour (Laune, Caragh and Maine). Salmon are included as one of the Qualifying Interests of Castlemaine Harbour SAC.

5.5.6 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. The range of *Lampetra* spp. In Ireland is considered to be favourable (NPWS 2013), however the species is vulnerable to threats and pressures from the marine and freshwater environment.

5.5.2 Birds

Waterbird population data for Castlemaine Harbour SPA is presented in Table 5, below (detailed datasets and explanations can be found in the supporting Annex I: Castlemaine Bird Data report). The five-year average for the baseline period (1995/96 – 1999/00) is given together with the most recent five-year average (2014/15 – 2018/19). These averages are based on annual peak counts from the Irish Wetland Bird Survey (I-WeBS), a survey undertaken on a rising or high tide.

Table 5 Waterbird Special Conservation Interest Population Data of Castlemaine Harbour SPA

Special Conservation Interests	Baseline Data Period (1995/96 – 1999/00)	Recent Site Average (2014/15 – 2018/19)	Comparison Recent Site Data vs Baseline	Reported Trend (NPWS, 2011b)
Light-bellied Brent Goose *Branta bernicla hrota*	694 (i)	1,111 (i)	Increase	Intermediate (Unfavourable)
Wigeon *Anas penelope*	6,819 (n)	4,421 (n)	Decrease	Highly Unfavourable
Pintail *Anas acuta*	145 (n)	88(n)	Decrease	Intermediate (Unfavourable)
Common Scoter *Melanitta nigra*	3,637 (n)	78	Decrease	Not Calculated
Red-throated Diver *Gavia stellata*	56 (n)	0	Decrease	Not Calculated
Ringed Plover *Charadrius hiaticula*	206 (n)	105	Decrease	Highly Unfavourable
Sanderling *Calidris alba*	335 (n)	266 (n)	Decrease	Favourable
Bar-tailed Godwit *Limosa lapponica*	397 (n)	305 (n)	Decrease	Moderately Unfavourable
Mallard *Anas platyrynchos*	487 (n)	254	Decrease	Intermediate (Unfavourable)
Scaup *Aythya marila*	74 (n)	0	Decrease	Highly Unfavourable
Cormorant *Phalacrocorax carbo*	135	44	Decrease	Moderately Unfavourable
Oystercatcher *Haematopus ostralegus*	1035 (n)	533	Decrease	Highly Unfavourable
Greenshank *Tringa nebularia*	46 (n)	41 (n)	Stable	Moderately Unfavourable
Redshank *Tringa totanus*	341 (n)	629 (n)	Increase	Favourable
Turnstone *Arenaria interpres*	144 (n)	13	Decrease	Highly Unfavourable
(i) Denotes numbers of International importance; (n) denotes numbers of all-Ireland importance. n/c = not calculated				

The NPWS SPA Supporting Document report (NPWS 2011b) states that the I-WeBS database shows 60 waterbird species have been recorded at Castlemaine Harbour SPA during the period

1994/95 – 2009/10 representing a broad range of bird families with important numbers of non-SCI waterbirds, as outlined in Table 6.

Table 6 – Non-SCI Regularly Occurring Waterbirds at Castlemaine Harbour SPA (extracted from NPWS 2011b).

Species	Baseline Average (1995/96 – 1999/00)	Site Average (2005/06 – 2009/10)	Recent Site Average (2014/15 – 2018/19
Shelduck (*Tadorna tadorna*)	90	97	55
Teal (*Anas crecca*)	287	146	64
Red-breasted Merganser (*Mergus serrator*)	25	9	4
Herring Gull (*Larus argentatus)*	23	16	7
Great Northern Diver (*Gavia immer*)	972	36	3
Golden Plover (*Pluvialis apricaria*)	1095	723	3
Lapwing (*Vanellus vanellus*)	199	88	204
Knot (*Calidris canutus*)	909	877	109
Dunlin (*Calidris alpina*)	471	394	381
Curlew (*Numenius arquata*)	536	397	162
Black-headed Gull (*Chroicocephalus ridibundus*)	175	55	88

Although waterbirds are linked by their dependence on water, different species vary considerably in aspects of their ecology due to many evolutionary adaptations and specialisations to their wetland habitats. Different species or groups of species may therefore utilise wetland habitats in very different ways which relates to how species are distributed across a site as a whole.

Table 7 - Ecological Characteristics, Requirements & Specialities of Waterbird Species Recorded in Castlemaine Harbour (NPWS, 2011b)

Waterbirds recorded at Castlemaine Harbour	Winter Distribution[A]	Trophic Guild[B]	Food/ Prey Requirements[C]	Principle supporting habitat within site[D]	Ability to utilise other/ alternative habitats (in & around the site)[E]	Site Fidelity[F]
Light-bellied Brent Goose* ***Branta bernicla hrota***	Highly restricted	1, 5	Highly specialised	Intertidal mud and sand flats, *Zostera* beds	2	High
Wigeon* ***Anas penelope***	Very widespread	1, 5	Narrower	Intertidal mud and sand flats & sheltered & shallow subtidal	1	Weak
Pintail* ***Anas acuta***	Localised	1	Wide	Sheltered & shallow subtidal over sand flats	1	Weak
Common Scoter* ***Melanitta nigra***	Localised	3	Highly specialised	Sheltered & shallow subtidal over sand flats	1	Unknown
Red-throated Diver* ***Gavia stellata***	Intermediate	3	Highly specialised	Sheltered & shallow subtidal over sand flats	1	Unknown
Ringed Plover* ***Charadrius hiaticula***	Localised	4	Wide	Intertidal mud and sand flats	3	High
Sanderling* ***Calidris alba***	Localised	4, 6	Wide	Intertidal sand flats	3	High
Bar-tailed Godwit* ***Limosa lapponica***	Localised	4	Wide	Intertidal mud and sand flats	3	Moderate
Mallard ***Anas platyrynchos***	Very widespread	1	Wide	Very shallow water above intertidal mud and sand flats, intertidal mud and sandflats	1	moderate
Scaup ***Aythya marila***	Localised	2	Wide	Sheltered & shallow subtidal over sand flats	1	Unknown
Cormorant ***Phalacrocorax carbo***	Very widespread	3	Highly specialised	Sheltered & shallow subtidal over sand flats	1	Weak
Oystercatcher ***Haematopus ostralegus***	Intermediate	4	Narrower	Intertidal mud and sand flats	2	High
Greenshank ***Tringa nebularia***	Intermediate	6	Wide	Intertidal mud and sand flats	3	High
Redshank ***Tringa totanus***	Widespread	4	Wide	Intertidal mud and sand flats	2	Moderate
Turnstone ***Arenaria interpres***	Very widespread	4	Wide	Intertidal mud and sand flats	3	High

Shelduck *Tadorna tadorna*	Intermediate	1, 5	Wide	Intertidal mud and sand flats	3	High
Teal *Anas crecca*	Very widespread	1	Wide	Very shallow water above intertidal mud and sand flats	3	Weak
Red-breasted Merganser *Mergus serrator*	Intermediate	2	Highly specialised	Sheltered & shallow subtidal over sand flats	1	Unknown
Great Northern Diver *Gavia immer*	Intermediate	3	Highly specialised	Sheltered & shallow subtidal over sand flats	1	Unknown
Golden Plover *Pluvialis apricaria*	Intermediate	4	Wide	Intertidal mud and sand flats	2	Moderate
Lapwing *Vanellus vanellus*	Very widespread	4	Wide	Intertidal mud and sand flats	2	Moderate
Knot *Calidris canutus*	Localised	4	Narrower	Intertidal mud and sand flats	3	Moderate
Curlew *Numenius arquata*	Very widespread	4	Wide	Intertidal mud and sand flats	2	High
Dunlin *Calidris alpina*	Intermediate	4	Wide	Intertidal mud and sand flats	3	Moderate
Black-headed Gull *Chroicocephalus ridibundus*	n/c	1, 2, 4, 6	Wide	Intertidal mud and sand flats & sheltered & shallow subtidal	2	Moderate
Herring Gull *Larus argentatus*	n/c	1, 2, 4, 6	Wide	Intertidal mud and sand flats & sheltered & shallow subtidal	2	Moderate

Special Conservation Interest, SCI, species are highlighted in **Bold** font

[A] Winter distribution: 1 = very widespread (>300 sites); 2 = widespread (200 – 300 sites); 3 = intermediate (100 – 200 sites); 4 = localised (50-100 sites); 5 = highly restricted (<50 sites) (based on Crowe (2005)).

[B] Waterbird foraging guilds. 1 = Surface swimmer, 2 = water column diver (shallow), 3 = water column diver (deeper), 4/5 = intertidal walker (out of water), 6 = intertidal walker (in water), 7 = terrestrial walker.

[C] Food/prey requirements - where **Wide** = species with a wide prey/food range; **Narrower** = species with a narrower prey range (e.g. species that forage upon a few species/taxa only), and **Highly Specialised** = highly specialised foraging requirements (e.g. piscivores). Note: known link between Light-bellied Brent Goose and Zostera relates to a 'highly specialised' diet although the species does forage upon grassland when Zostera is depleted. Although Wigeon tend to show preference for Zostera they do eat other macroalgae species hence a 'narrow' rather than 'highly specialised' diet is given. Common Scoters forage predominantly on one prey group (bivalves) hence they are classed as specialised. Oystercatchers are classed as 'narrow' because they rely on larger (and more energy– rich) prey items predominantly bivalve molluscs, in comparison with smaller wader species which can achieve sufficient energy from a more varied range of smaller prey species.

[D] Principal supporting habitat present within Castlemaine Harbour SPA. Note that this is the main habitat used when foraging, other habitats may be used at other times, for example when roosting.

[E] Ability to utilise alternative habitats refers to the species ability to utilise other habitats adjacent to the site. 1 = wide-ranging species with requirement to utilise the site as and when required; 2 = reliant on site but highly likely to utilise alternative habitats at certain times (e.g. high tide); 3 = considered totally reliant on wetland habitats due to unsuitable surrounding habitats and/or species limited habitat requirements. Note, a score of 1 for majority of sea ducks, divers and others (e.g. Pintail, Teal) relates to propensity for within-season movements although the site is an important part of the species' wintering range.

[F] Site fidelity on non-breeding grounds: unknown; weak; moderate; high (based on available published information).

5.6 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.

5.6.1 Kerry County Development Plan

Kerry County Development Plan 2015- 2021 was adopted by the Elected Members of Kerry County Council on 16th February 2015 and is effective since 16th March 2015. Chapter 8 (Natural Resources) of the plan indicates the importance of aquaculture to the economy of the county and the importance of safeguarding the natural environment which supports the aquaculture economy.

The overall objectives of the plan with regards to aquaculture in Kerry are:

"Support and promote the sustainable development of the aquaculture sector in order to maximise its contribution to employment and growth in coastal communities and the economic wellbeing of the County, while ensuring environmental protection through the implementation of the objectives and Development Management, Guidelines and Standards of this Plan."

"Support the protection of water quality, key habitat and other natural resource requirements necessary to safeguard coastal, estuarine and freshwater fisheries."

"Have regard to the advice of the relevant statutory bodies, as appropriate and recommendations of the Environmental Section of Kerry County Council in assessing the environmental impacts of developments."

"Support the sustainable development of marine aquaculture and fishing industries and its diversification at appropriate locations having regard to the requirements of the EU Water Framework Directive, the relevant River Basin Management Plans, the Habitats Directive, the integrity of the Natura 2000 network and visual amenity."

Full objectives in relation to all Natural Resources Fisheries are outlined in Section 8.4 of Chapter 8 (Kerry County Council, 2015).

The plan identifies the importance of creating a balance of sustaining businesses from natural resources and protecting the environment which provides a resource for these business throughout the county.

The CDP also refers to the importance of integrating the actions of the National Biodiversity Action plan in to planning application.

"Ensure compliance with the provisions of Actions for Biodiversity 2011-2016 - Ireland's National Biodiversity Plan and any subsequent document adopted during the lifetime of this Plan."

5.6.2 Biodiversity Action Plan

The National Biodiversity Action Plan (NBAP) 2017-2021 refers to aquaculture specifically in terms of engaging the sector to promote the benefits of conservation and sustainable use of biodiversity for the benefit of their businesses. There is a target within (Target 7) which states by 2020 areas under agriculture, aquaculture and forestry are managed sustainably ensuring conservation of biodiversity.

5.6.3 Castlemaine Local Area Plan

The Castlemaine Local Area Plan (LAP) is found with the Tralee / Killarney HUB Functional Area Local Area Plan (FALAP) 2013 – 2019. The primary function of the area is agriculture (including aquaculture) with tourism also providing some income.

There is little reference to the aquaculture industry in the area except that oyster/mussel beds form an important part of the local economy. The LAP recognises the importance that all development proposals must "not adversely impact on Natura 2000 sites, either by way of water pollution, wildlife disturbance or otherwise".

5.7 Man-made Heritage

A search of the Historic Environment Viewer (Archaeological Survey of Ireland http://webgis.archaeology.ie/historicenvironment/ [Accessed 11/04/19]) identified a number of landbased features of historical importance in the immediate area of the Harbour.

Midden – Located at Inch spit and at Cromane

Burial Grounds – Located at Cromane and Callanafersy east

Ringfort – Located at Cromane, Ballykissane, Fybagh, Lack and Inch

Souterrain – Located at Callanafersy west, Aughils and Lack

Burned Spread – Located at Callanafersy west

Building – Callanafercy House located east of the Harbour and Church at Lack,

Standing Stone – Located at Aughils and Caherpierce

All man-made heritage features are located within 100m of the outer boundary of the Harbour.

A search of the WreckViewer application https://www.archaeology.ie/underwater-archaeology/wreck-viewer [Accessed 15.04.19] found that there was no recorded monuments within Castlemaine Harbour. The closest monument is the wreck of the Manchester Merchant approximately 13km west of Castlemaine Harbour within Dingle Bay.

6.0 Section 61 Assessment

6.1 Site Suitability

Castlemaine Harbour is relatively sheltered site with the inner basin sheltered from the outer tidal reach by three spits (Inch, Rossbehy and Cromane). With this sheltered element and also the relatively high tidal range of the Harbour it is considered suitable for aquaculture production.

Castlemaine Harbour is an area of existing aquaculture (mussel and oyster) sites and which can be seen as part of the intertidal habitats. The trestles are likely to be visible at low tide and from an elevated position only thereby not considered to impact negatively on the aesthetic quality of the site.

The proposed site (T6/476) is located to the south of the Inner Harbour (Figure 8) and access will be by boat (access point not disclosed in the application) to the proposed site (Figure 9) and also by tractor from the adjacent land (Road Access, Figure 9). The proposed site lies within the BIM SUMS navigation marks and outside but adjacent to Shellfish Designated Waters. The proposed site is located on "fine to muddy fine sand with polychaetes" community complex and located away from *Zostera* beds (Figure 10).

The proposed site (T6/476) is located in the central inner Harbour within the NPWS waterbird survey programme (2009/10) subsite OK468. This subsite (OK468) was found during the NPWS surveys of 2009/10 to have the highest species richness across the survey period and was considered as being of considerable value to roosting waterbirds and of medium importance for waterbirds in general. Subsite OK468 was found to be an important area for three species of conservation interest (SCI); Light-bellied Brent Goose, Bar-tailed Godwit and Oystercatcher. This subsite (OK468) was classified as being of moderate risk of disturbance from aquaculture and all associated activities.

Recent surveys covering Castlemaine Harbour, conducted using the NPWS BWS methodology (Inis Environemntal, 2020) have identified subsite OK468 as being of Very High, High and Moderate Relative Importance for a number of SCI species, listed below:

- Very High – Wigeon, Bar-tailed Godwit, Greenshank and Turnstone
- High – Light-bellied Brent Goose and Redshank
- Moderate – Mallard and Oystercatcher

The size of the proposed site is small (7.1ha) relative to the size of the proposed habitat complex for the site "fine to muddy fine sand with polychaetes" community complex, which is 2637ha of the "mudflats and sandflats not covered at low tide" habitat complex which is 4286.69ha, and which is 3555ha of the "estuaries" habitat complex, within which the proposed application site is located therefore the land take is not considered to pose a negative effect on the overall site.

The Marine Engineering Division (MED) have stated the site is not in an area that is likely to be highly visible to many people. Population in the area is low and trestles will only be visible at

times of low tide. There are no features of high landscape or scenic value that will be impacted upon.

Figure 8 Application Site Location

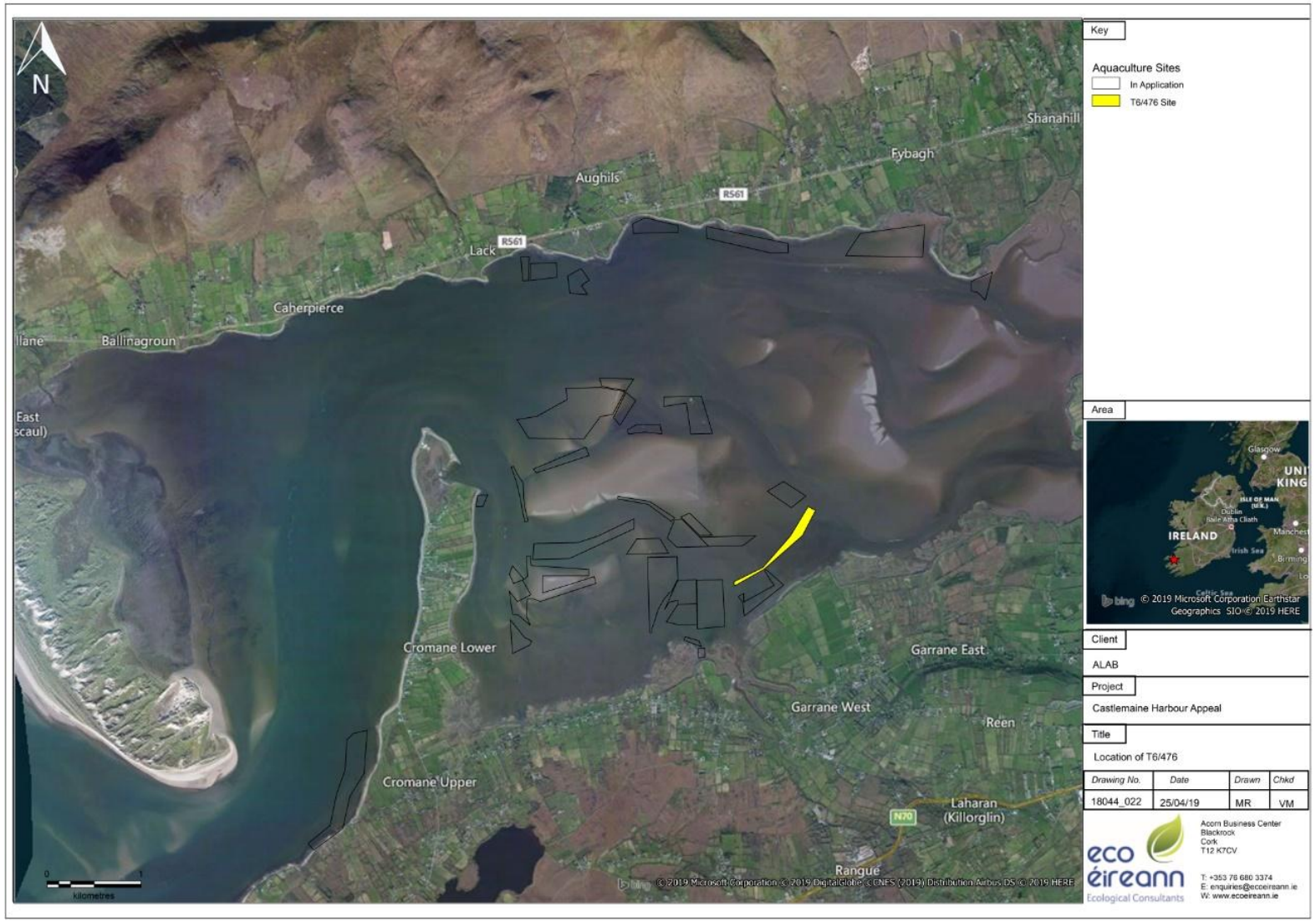


Figure 9 Proposed Access Route *(extracted from Application Form)*

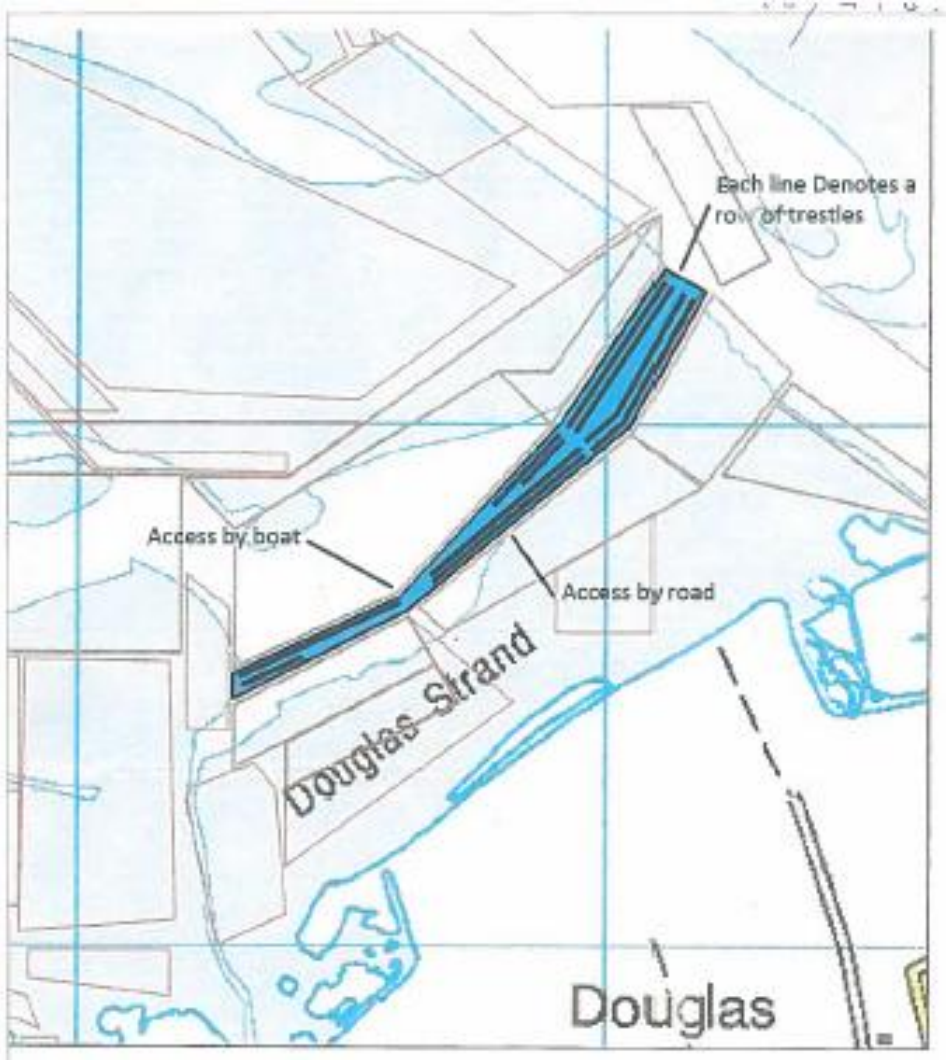


Figure 10 Location of Key Habitats within the Harbour *(extracted from NPWS 2011a)*

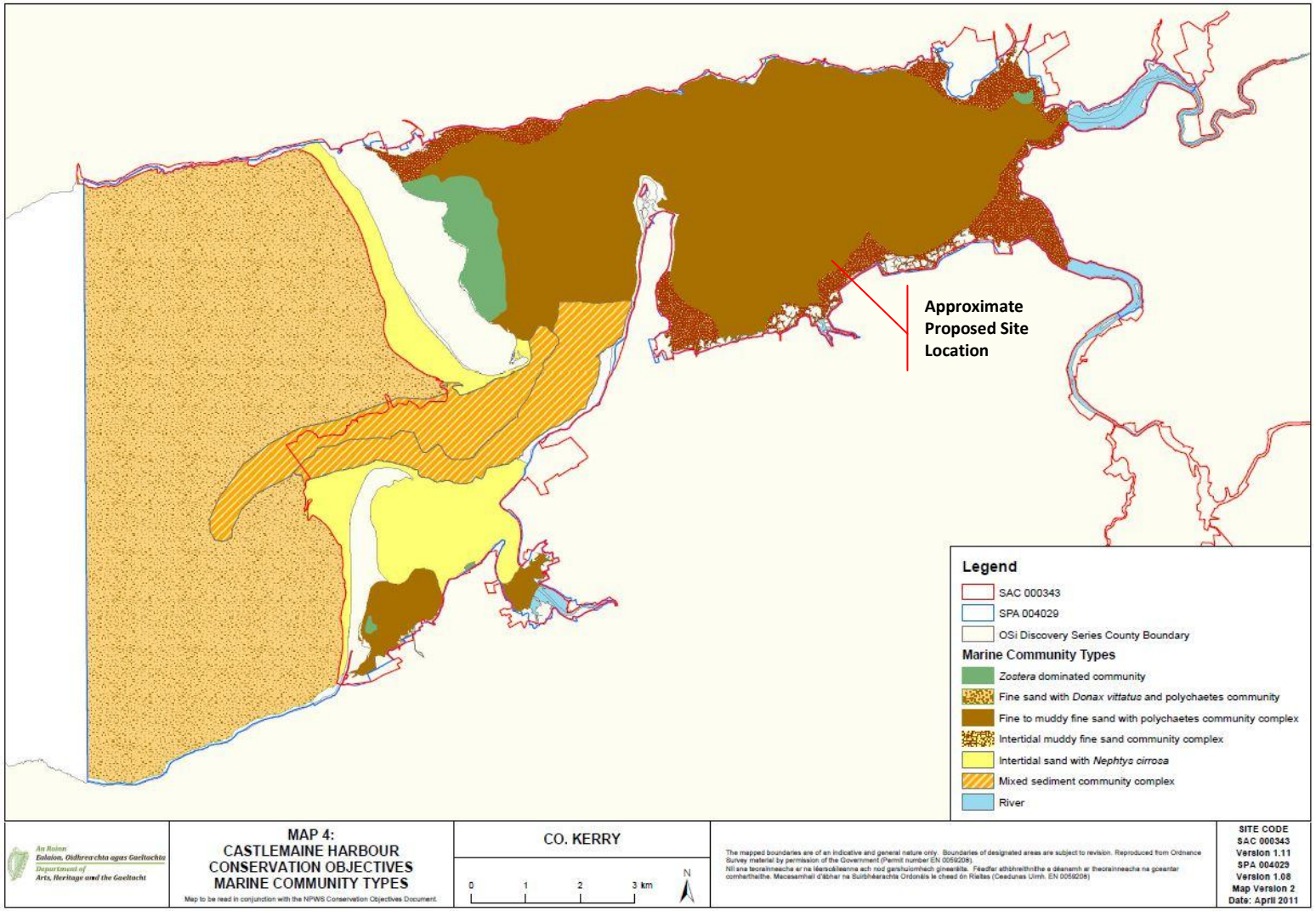
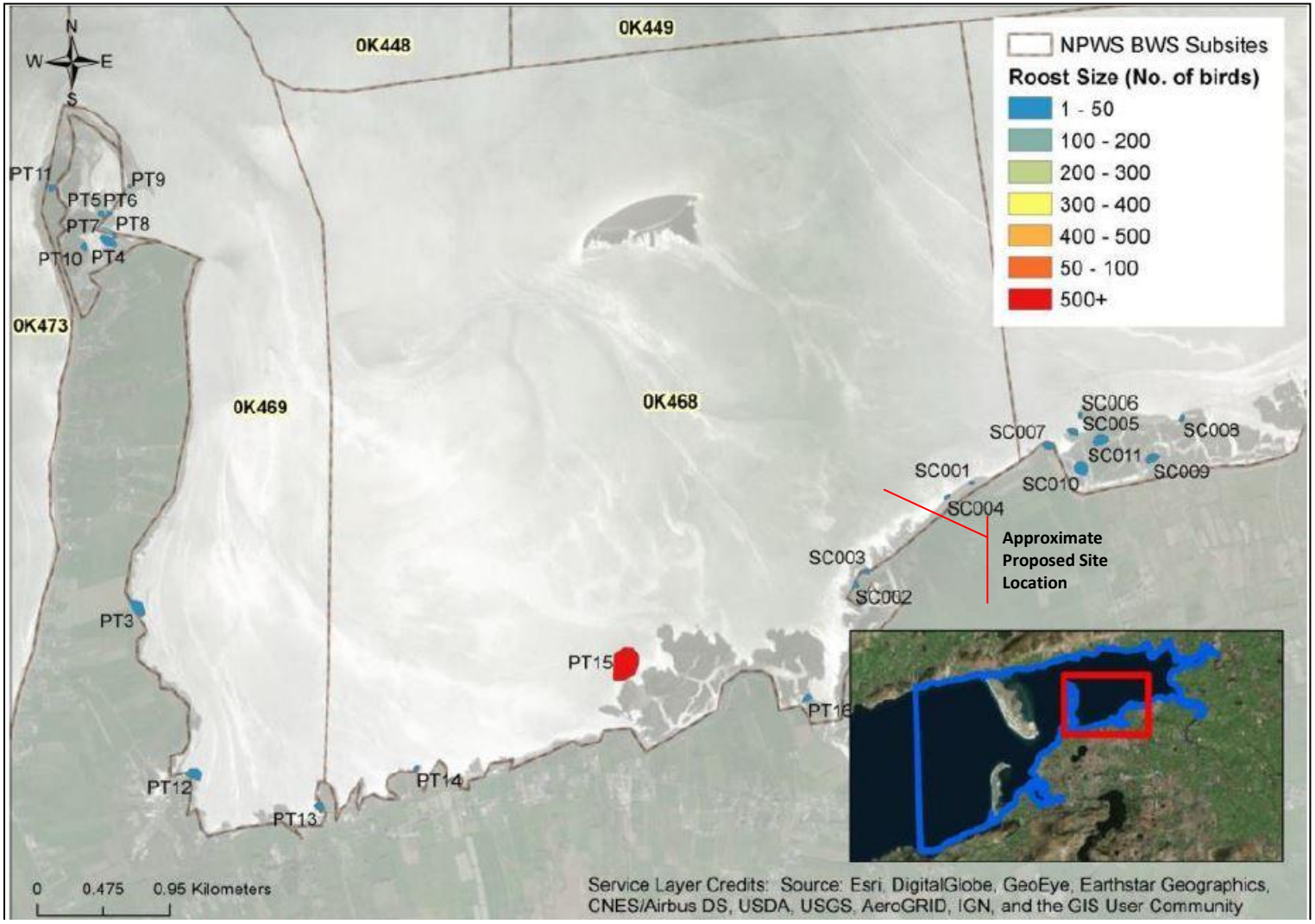


Figure 11 High Tide Roost Sites: Killorglin to Cromane *(extracted from Niras, 2018)*



6.2 Other uses

Fishing, bird watching, walking and water sports are the key "Other Uses" of the Harbour which either largely take place in the outer bay (Dingle Bay), in the Rivers (Maine and Laune) or along the water's edge. Therefore, it is considered that the proposed development will not have a significant direct impact on other recreational or commercial users of the Harbour.

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 (Kerry County Council 2015). Within the Plan it states that a balance must be achieved for the county, specifically in terms of natural resources (including Aquaculture) where the business must be sustainable in addition to economically viable for the county.

In terms of this proposed site (T6/476), where it is a new application, based on the data provided during the initial licence application in consultations with NGOs and semi-state bodies, in addition to the detail provided in the Appropriate Assessments (specific to Aquaculture in Castlemaine Harbour (Marine Institute 2018 & 2019 and Niras 2018 & 2019), as well as existing bird datasets (I-WeBS, NPWS & Inis), it is the considered opinion of the advisor that the implementation of a new aquaculture site in the Harbour could have a significant adverse effect on the conservation objectives of the SPA, in terms of disturbance (Noise/ Visual) and displacement of bird species listed as SCIs for the SPA (further outlined below), within which it is proposed to be sited.

The site is located in proximity to a number of minor High Tide roosts (approximately 250m) (road access route passes within 100m of these high tide roosts). For the birds considered a Species of Conservation Interest for Castlemaine Harbour SPA, as the access route will be utilised 2-3 hours either side of low tide (i.e. outside of the high tide period) it is considered that access to the proposed site will be non-disturbing to high tide roost sites.

Although it is considered that birds (listed as SCIs for the SPA) potentially utilising the area of the proposed site will be disturbed or displaced (depending on the species' sensitivity to disturbance) for the duration of the license, although this will be significantly limited to 2-3 hours either side of low tide when husbandry activities take place, this is considered significant for species considered as being sensitive to disturbance, and may limit the foraging capabilities of certain species therefore, the potential impact of the proposed aquaculture licence as well as the cumulative impact of another aquaculture licence has been deemed as likely to cause a significant effect on bird populations though displacement of birds from foraging habitat for the duration of the licence (Niras, 2018 & 2019). Further consideration of this element is discussed in Section 6.5.4.

6.4 Economic Effects

Tourism and natural resources are key areas of employment in the region (Kerry County Council, 2015). The aquaculture industry provides a substantial element of the overall economy of the county and the region around the Harbour, in addition to providing employment overseas where seed for the sites is typically sought. Should the proposed site (T6/476) be approved it would provide local employment from the operation of the business in addition to supplying local product to the region therefore providing for the local and regional economy.

It is the considered opinion of the advisor that the operation of this proposed new site (T6/476) could provide a positive effect to the local and regional economy.

6.5 Ecological Effects

6.5.1 Particle Suspension / Benthic Communities

Oysters are suspension feeders which means that biodeposition can occur on the seabed beneath the bags and trestles where faeces and pseudofaeces accumulate. This biodeposition can affect the natural local sediment movement and also the natural infaunal community.

Where some enrichment (from biodeposition) in the water can be beneficial, over enrichment can be detrimental and can lead to a change in the natural biogeochemistry reducing natural / native species richness and at time anoxic conditions can occur proving fatal to local organisms.

Oysters can have a "plastic response" to increased sedimentation level, increasing their filtration rate which in turn can increase the amount of biodeposition. The rate of biodeposition in an area is dependent on the density of animals in addition to the hydrology of the site.

The Appropriate Assessment of Aquaculture Activities within Castlemaine Harbour SAC (Marine Institute, 2018 & 2019) concluded that, based upon the scale of spatial overlap of current and proposed intertidal oyster aquaculture activities (including access route activity), the relatively high tolerance levels of the habitats and associated species and the hydrological regime; that current and proposed intertidal oyster culture activities are non-disturbing to the SACs habitats and their constituent community types.

The Appropriate Assessment of Aquaculture Activities within Castlemaine Harbour SPA (Niras, 2018 &2019) concluded that no appreciable effects, alone or cumulatively, are considered likely because the magnitude of the natural sediment and hydrological dynamics of Castlemaine Harbour. The severity of any changes in turbidity and sediment on waterbirds are therefore likely to be low.

Based on the above information provided to the advisor for this report it is e considered that on its own or in combination with other licensed sites within the Harbour, this application should not pose a significant impact on the overall biodiversity of the benthic communities of the Harbour.

6.52 Shading

Oysters, as filter feeders, can alter the zooplankton and phytoplankton abundance and communities in the water column and therefore the overall productivity of a site. It may decrease the turbidity of the water, increasing light penetration through the water column. This increase in light penetration may be beneficial to some species such as eel grass (*Zostera* spp.). Conversely, the trestles and bags may cause shading to the seabed, decreasing the light penetration, thereby negatively impacting the growth of vegetation such as eelgrass.

It is the considered opinion of the advisor that given the new application site is proposed to be situated in an area not categorised as having vegetative communities within (Figure 9) therefore shading caused by the trestles and bags will not pose a significant impact on the benthic communities beneath.

6.5.3 Non-native Species

The movement of oysters in and out of the water can encourage the transport of non-native and / or invasive species either though the introduction via seed and / or from boats moving between sites. *C. gigas* has been known to have become naturalised (Marine Institute, 2018 & 2019) in some sites in Ireland which is the species proposed to be used for this application. However, the Appropriate Assessment for Castlemaine Harbour SAC (Marine Institute, 2018 & 2019) indicates that there is no significant risk of non-native species moving into the harbour where the use of triploid seed by the operators in the bay reduces the risk of *C. gigas* naturalising in the Harbour.

Therefore, it is the considered opinion of the advisor that there is no significant impact posed by this application with regards to the introduction of the non-native species *C.gigas*. So long as Triploid seed is used, and biosecurity measures implemented as part of the Fish Health Regulations Council Directive 2006/88/EC (which is transposed into Irish Law) to prevent the spread of disease and non-native species from vessels.

6.5.4 Designated Sites

6.5.4.1 Castlemaine Harbour SAC

An Appropriate Assessment has been carried out in terms of the impacts of aquaculture on Castlemaine Harbour SAC (Marine Institute 2018 & 2019). The main conclusion of this assessment is outlined in Table 9.

The Conservation Objectives for the SAC is summarised as “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”.

Table 9 Summary of Predicted Impacts within the SAC (Marine Institute 2018, 2019)

Habitat Area	The habitat is likely to remain stable with no overall reduction
Bags and Trestles	The presence of bags and trestles is considered to be non-disturbing to sedimentary habitats
Access Routes	Access routes, via tractor, are considered to be disturbing in terms of compaction of designated habitats such as *Zostera* beds and compaction. Such habitats cannot tolerate compaction
Species Interactions Salmon, Lamprey and Otter	The physical presence of trestles may impact fish migration and restrict otter access to certain habitats. Conclusions of the AA indicate that overall aquaculture in Castlemaine Harbour will be non-disturbing to these species
In-combination Effects	Oyster trestles are considered to be non-disturbing to marine habitats and therefore there is no predicted in-combination effects

A number of features of the SAC have been screened out (Marine Institute, 2018 & 2019) as it was considered that there would be no likely overlap or interaction with aquaculture activities. Two key habitats of the SAC, Estuaries [1130] and Mudflats and sandflats not covered by seawater at low tide [1140] have been considered to have potential to be impacted by aquaculture activities and are further described in Table 11 with regards to results of the AA (Marine Institute 2018 & 2019) and with respect to the proposed applicated site.

Access to the proposed site (T6/476) will be by boat from an undisclosed location and the proposed site is not located within an area which is classified as having vegetative communities, therefore it is considered that there will be no significant impact on the sedimentary habitats of the SAC. Any impact is considered to be temporary (specific to the duration of the license) and localised to the area of the site, with the sedimentary habitats expected to recover over the short to medium term.

The location of the proposed site within the intertidal flats of the estuary, i.e. away from freshwater influences, significantly limits the potential for the site to impact upon Salmon and Lamprey populations, which utilise the freshwater areas for the majority of their life cycles. The presence of trestles within the intertidal area is considered not to impact on the movement of these species within the Harbour.

Although Otter are known to utilise coastal and inshore areas for foraging the presence of trestles within the intertidal habitat has been deemed to be non-disturbing as the trestles do not impede movement across the site. Disturbance from human and vessel use is likely to be low as it will be directed by tides and daylight.

6.5.4.2 Castlemaine Harbour SPA

An Appropriate Assessment has been carried out in terms of the impacts of aquaculture on the Castlemaine Harbour SPA (Niras, 2018 & 2019). The main conclusion of this assessment is outlined in Table 10.

The Conservation Objectives for the SPA can be summarised as "The overarching Conservation Objective for the Castlemaine Harbour SPA is to ensure that waterbird populations and their wetland habitats are maintained at, or restored to, favourable conservation condition" (NPWS, 2011a).

Table 10 Summary of Predicted Impacts within the SPA (Niras 2018, 2019)

Noise / Visual Disturbance	All activities associated with aquaculture have been defined as having a moderate level of impact with the exact nature of disturbance being related to the number of people, type of vehicle (boat/tractor/jeep/ quad) used (motorised/nonmotorised), frequency of visits during a low-tide period, type and length of activity undertaken (NPWS, 2011a). Where landing / access points are close to high tide roost sites and the use of motorised boats or vehicles for access is proposed, Disturbance may also occur. The impact of disturbance is likely to occur at licence application sites where mussel and oyster aquaculture activities are proposed. The zones within which the effects of disturbance can be measured have been calculated to cover large areas, however the effects vary between species and the time of year. The biological consequences of disturbance are difficult to quantify but the severity of disturbance activities from aquaculture activities are likely to be no lower than moderate (NPWS, 2011a); high severity cannot be discounted resulting from the presence of people and vehicles on mud/sandflat.
Displacement of Foraging Habitat	In the absence of more accurate impact predictions based on additional studies and population modelling, an adverse effect on site integrity cannot be excluded alone, cumulatively or in combination for all new application sites. Licenced sites already occupy 33.5% of the total area of intertidal habitat and there is insufficient data available to determine a threshold of which to assess new applications

With regards to the SPA, there is potential for sites (in application and licenced) to pose a significant impact on the conservation status of the waterbirds and their foraging and roosting sites within the Harbour (Niras, 2018 & 2019). A summary of potential impacts (results from the AA Report (Niras, 2018 & 2019)) and conclusions based on the site application along are outlined in Table 12.

Access to the proposed site is proposed by boat from an undisclosed location, as the access route will be utilised 2-3 hours either side of low tide (i.e. outside of the high tide period) it is considered that access to the proposed site will be non-disturbing to high tide roost sites. Access

proposed by boat limits the potential for compaction and trampling of the sedimentary habitats (and therefore limits the potential for displacement of prey species utilised by waterbird species) across the Harbour to the extent of the proposed site itself, which will be temporary in nature (i.e. limited to the temporal extent of the license).

It is predicted that each licence application will contribute to an increase in the level of disturbance and displacement (Niras, 2018 & 2019) and each application should be assessed separately and in-combination for potential to impact the features of conservation interest and conservation objectives of the SPA.

Based on data made available to the advisor the following considerations have been made with regards to the species and habitats of conservation concern for the SAC (Table 11) and the SPA (Table 12).

Table 11 Potential Impacts on the SAC

Feature	Activity	Impact and Reasoning (from AA Report)	Advisor Conclusions for Site T6/476
Estuaries [1130] (Relevant Marine Community Type - Fine to muddy sand with polychaetes community)	Site Operation	No impact of operation of an oyster aquaculture site	No impact as described in the AA Report
	Access Routes	Potential impact - Compaction by vehicles on all habitats	Access to the site is proposed by boat and tractor (Figure 9). Therefore, is it considered that there is potential for an impact on the SAC via repeated compaction and trampling from vehicles
Mudflats and sandflats not covered by seawater at low tide [1140] (Relevant Marine Community Type - Fine to muddy sand with polychaetes community)	Site Operation	No impact of operation of an oyster aquaculture site	No impact as described in the AA Report
	Access Routes	Potential impact - Compaction by vehicles on all habitats	Access to the site is proposed by boat and tractor (Figure 9). Therefore, is it considered that there is potential for an impact on the SAC via repeated compaction and trampling from vehicles
Petromyzon marinus (Sea Lamprey) *Lampetra fluviatilis* (River Lamprey)	Site Operation	Potential and Licenced Activities are proposed to be non-disturbing to maintaining the conservation objective of maintain population status for these species	The proposed site is located away from the main freshwater sources likely to be used by Lamprey The AA states that oyster trestles are non-disturbing to this species, and it is considered that the location of the proposed site will not significantly impact Lamprey migration

Feature	Activity	Impact and Reasoning (from AA Report)	Advisor Conclusions for Site T6/476
			The site is not suitable for breeding lamprey
Salmo salar (Salmon)	Site Operation	Favourable conservation status is maintained within the SAC and impacts on this from aquaculture (new and proposed) is not considered likely	The proposed site location is considered not to impact on the conservation status of salmon in terms of disturbing migration, the site is not suitable for breeding
Lutra lutra (Otter)	Site Operation	No proposed direct impact	No direct impact with this species - no; land take from otter, reduction in foraging habitat, prevention of access Disturbance from human and vessels is likely to be low as it will be directed by tides and daylight where otter are typically active in low light and darkness

Table 12 Potential Impacts on the SPA

Key Issue	Parameter	Impact and Reasoning (from AA Report)	Advisor Conclusions for Site T6/476
Reduction in Foraging Resource – Changes to Invertebrate Communities	Habitat Smothering	High water flow within the Harbour is likely to mitigate the long-term effect of this impact on the SCIs with regards to reducing foraging resource	As described in the AA Report, the site is located within an area which has high tidal flow (Niras, 2018 & 2019) therefore the impact on reduction of foraging resource from habitat smothering is considered to be low from the proposed application site
	Turbidity Changes / Sediment Movement	Localised increase in water turbidity and sediment build up. Can result in a change to the biological composition and/or availability of prey items particularly where intensive shellfish culture occurs. Not considered to be a significant impact where there is consistent	As described in the AA Report, the site is located within an area which has high tidal flow (Niras, 2018 & 2019) therefore the impact on reduction of foraging resource from sediment movement is considered to be low from the

Key Issue	Parameter	Impact and Reasoning (from AA Report)	Advisor Conclusions for Site T6/476
		natural movement of sediment within the Harbour (hydrological dynamic flows)	proposed application site
	Change in Oxygen Levels	Pseudofaeces and biodeposition can increase oxygen demand in a waterbody, thereby decreasing oxygen available to naturally occurring species. This is not considered to be a significant impact on the Harbour where the tidal flows though the site are considered to be of a magnitude to mitigate this impact	As described in the AA Report, the site is located within an area which has high tidal flow (Niras, 2018 & 2019) therefore the impact on reduction of foraging resource from oxygen depletion is considered to be low from the proposed application site
	Abrasion / Physical Disturbance / Compaction of Invertebrate Habitats	Dredging of mussels, use of vehicles and foot traffic on shore can result in changes in sediment structure and characteristics. As a result, a measurable change to the biological composition and/or availability of prey items can occur. Any impact is predicted to be localised therefore severity is considered to be low, with the exception of impacts on *Zostera* beds which is considered to be a Moderate impact	Access to the site is proposed by boat and tractor (Figure 9). Therefore, is it considered that there is potential for an impact on the SAC via repeated compaction and trampling from vehicles The site is not located adjacent to recorded *Zostera* beds
	Displacement of prey species	This impact is only discussed under the activity of dredging of mussels which is considered to be short term for the Harbour. No reference to potential impacts from oyster cultivation is made	Cultivation of oysters from this site is considered to have limited impact in terms of displacement of invertebrates where the benthic community is not proposed to be disturbed during cultivation / harvest Some disturbance is predicted during set up (and decommission) but this is considered to be short term and communities will regenerate

Key Issue	Parameter	Impact and Reasoning (from AA Report)	Advisor Conclusions for Site T6/476
			on completion
	Selective extraction of target species	Considered relevant only to the removal of mussel as part of harvests that will impact Oystercatcher populations. Oystercatchers will predate *C. gigas* if the technique to open shells is acquired by the bird and this is limited to oysters with a shell length of 16cm and above	The movement of target prey species for oyster cultivation is not considered significant from this site where only one SCI is regarded as foraging on oysters (Oystercatcher) and this behaviour is limited to some birds which can open *C. gigas* shells
	Selective extraction of non-target species	This is in reference to removal of predator species which does not affect oyster cultivation	The application does not outline details on predator control. Not applicable to oyster cultivation
Introduction of non-native species	Introduction of *C. gigas*	*C. gigas* is a non-native species used in aquaculture sites through the Harbour. The sites use triploid (nearly sterile) stock seeds therefore the likelihood of spread of this species / to become naturalised is considered low	*C. gigas* is considered to be a non-native species which is proposed to be used for this proposed site application There is no confirmation that these will be from triploid stock but as this is the only stock allowed in the Harbour it is assumed that the seed will be sterile therefore reducing the impact of introducing non-native species
Disturbance	Noise / Visual	Disturbance events such as the use of vessels, presence of humans on the intertidal habitat, the use of vehicles on shore and foot traffic (especially dog walking) on shore are known to displace birds from foraging habitat. Over time this can lead to adverse changes in the abundance and distribution of water-bird species. This impact is scored high in terms of	A number of SCIs are recorded within the area of the proposed site and access areas. Some of these species are recorded as being highly sensitive to noise and visual disturbance (Niras, 2018 Table 6.18) There are a number of minor high tide roost sites at or adjacent to the application site

Key Issue	Parameter	Impact and Reasoning (from AA Report)	Advisor Conclusions for Site T6/476
		severity and consequence for displacement of intertidal waterbirds sensitive to disturbance	(Figure 11) however, access routes will be utilised within 3 hours either side of low tide, therefore, it can be discounted that these species will be impacted by high tide boat use to access the proposed site. There is likely to be some disturbance during set up (and decommission) but this will be short term and not considered to be a significant impact. Low tide foraging areas are considered to be impacted by operation in terms of access to the site for management and harvest where access or harvest by vehicle or on foot is proposed. This disturbance is considered to be limited to the period of time the application site is accessed for harvest or maintenance (i.e. 2-3 hrs either side of low tide) and limited to the duration of the license (10 years). Given the variable responses exhibited by different species to intertidal oyster culture across different intertidal sites within Ireland (Gittings et al., 2012 & 2014) and the limited available data on bird usage of the site at a spatial scale similar to that of the licence applications and over the tidal cycle relevant to shellfish husbandry activities within the harbour, following the precautionary principle it is considered that if the species are present

Key Issue	Parameter	Impact and Reasoning (from AA Report)	Advisor Conclusions for Site T6/476
			during operation they will be displaced and thereby affecting the conservation status of the SCI for that area A new application such as T6/476 has potential to negatively affect the SCI population and unless it can be verified that SCIs are absent from the site itself and the access route then it should be concluded that the operation of a new site will have a negative impact on the conservation status of the SCIs of the SPA
	Operational Displacement	The presence of oyster trestles on inter-tidal foraging habitat is known to adversely change the abundance and distribution of some waterbird species. The potential impact is likely to be significant for bird species sensitive to disturbance. Bar-Tailed Godwit and Sanderling have been found to have a high to moderate displacement response to trestles but full exclusion from sites did not occur. While Light-Bellied Brent Goose can show neutral or positive responses to the presence of trestles (Gittings et al., 2012 & 2014). Where there is significant variation in the responses of SCIs to trestles, a precautionary principle of high severity of the impact of trestles on SCIs should be applied with the exception of those species which responded neutrally or positively where	Given the variable responses exhibited by different species to intertidal oyster culture across different intertidal sites within Ireland (Gittings et al., 2012 & 2014) and the limited available data on bird usage of the site at a spatial scale similar to that of the licence applications and over the tidal cycle relevant to shellfish husbandry activities within the harbour, following the precautionary principle it is considered that if the species are present during operation they will be displaced and thereby affecting the conservation status of the SCI for that area. To fully address the impact that a new application will have on the SCIs of the SPA in that area a site-specific waterbird survey will be required to be carried out. In the absence of specific data of species utilising the proposed

Key Issue	Parameter	Impact and Reasoning (from AA Report)	Advisor Conclusions for Site T6/476
		a minimal severity of impact is applied.	site and access route the precautionary principle should be applied in terms of there being a significant impact of the presence of a new aquaculture site in terms of displacement for bird species sensitive to disturbance.
Overall		In the absence of more accurate impact predictions based on additional studies and population modelling, an adverse effect on site integrity cannot be excluded alone, cumulatively or in combination for all Tier 3 (new application) sites	Due to the methodology (being based on a count within 3 hours either side of high tide), some incomplete annual datasets, and the scale at which annual I-WeBS data is collected for Castlemaine Harbour it is not appropriate for the determination of impact significance of most intertidal shellfish culture activities (It is however useful for population trends and habitat use at the high (or rising) tidal cycle). Low tide count survey data has been carried out and published by the NPWS (2011a), this covers a very limited time period of a single over-wintering season between October 2009 – February 2010. This survey also recorded the location of High tide roosts, covering only a single high tide in February 2010. It is not known if high tide roosts within the Harbour shift throughout the year or across years. A recent low tide overwintering survey of Castlemaine Harbour (Inis Environmental, 2020) has highlighted a significant decline (using numerous comparison datasets, outlined in Annex I: Castlemaine Bird Data Report) in numerous waterbird species

Key Issue	Parameter	Impact and Reasoning (from AA Report)	Advisor Conclusions for Site T6/476
			including species listed as SCIs for the SPA, with an overall drop in numbers of waterbirds of nearly 5,000 (30%) in 10 years. Along with the decline in total waterbird numbers is a reduced distribution in many species, notably Wigeon, Turnstone, Sanderling, Ringed Plover and Bar-tailed Godwit. The advisor considers that further monitoring at both low and high tide, at a more regular interval than every 10 years, is required to fully assess the status and therefore the conservation objectives of the SCIs of the SPA. Site trends for Castlemaine Harbour should be examined in further detail using standard and robust statistical methods of modelling and indexing, as carried out within the SPAs Conservation Objectives documents. There is currently insufficient data to rule out Adverse Effects on Site Integrity, in terms of disturbance (noise and visual) and displacement on the Bird species listed as SCIs.

The main outcomes of this assessment are also summarised here:

Castlemaine Harbour SAC: -

No significant effects predicted from the implementation of the proposed site. Some minor effects are expected (biodeposition and minor compaction of sedimentary habitats from husbandry activities) which will be limited to the vicinity of the site and temporary in nature (i.e. limited to the duration of the license) and will recover in the short to medium term.

Castlemaine Harbour SPA: -

Disturbance (Noise/Visual): Given the variable responses exhibited by different species to intertidal oyster culture across different intertidal sites within Ireland (Gittings et al., 2012 & 2014) and the limited available data on bird usage of the Harbour at a spatial scale similar to that of the licence applications and over the tidal cycle relevant to shellfish husbandry activities (i.e. low tide) within the harbour, the precautionary principle must be followed (i.e. where sufficient information is not available to conduct a full impact assessment of the proposed development a precautionary approach must be taken, whereby a significant impact is assumed likely until it can be shown without reasonable scientific doubt that there will be no significant effects). Therefore, it is considered that if the species are present during operation they will be disturbed (visually through the reduction in sight lines across their foraging habitat, which enables predator detection, and aurally through the presence of machinery and humans on the intertidal flats and thereby affecting the conservation status of the SCI for that area. A new application such as T6/476 has potential to negatively affect the SCI population and unless it can be verified that SCIs are absent from the site itself then it should be concluded that the operation of this new site will have a negative impact on the conservation status of the SCIs of the SPA.

Operational Displacement: Given the variable responses exhibited by different species to intertidal oyster culture across different intertidal sites within Ireland (Gittings et al., 2012 & 2014) and the limited available data on bird usage of the Harbour at a spatial scale similar to that of the licence applications and over the tidal cycle relevant to shellfish husbandry activities (i.e. low tide) within the harbour, following the precautionary principle it is considered that if the species are present during operation they will be displaced and thereby affecting the conservation status of the SCI for that area.

To fully address the impact that a new application will have on the SCIs of the SPA in the area of the proposed site, a site-specific waterbird survey will be required to be carried out. In the absence of specific data of species utilising the proposed site and access route a precautionary principle will be applied in terms of there being a significant impact from the presence of a new aquaculture site in terms of displacement for birds species sensitive to disturbance.

Conclusions relating to existing survey data on birds in Castlemaine Harbour:

Annual surveys (I-WeBS):

Due to the methodology (being based on a count within 3 hours either side of high tide), some incomplete annual datasets, and the scale at which annual I-WeBS data is collected for

Castlemaine Harbour it is considered inappropriate for the determination of impact significance of most intertidal shellfish culture activities within Castlemaine Harbour. It is however very useful for the production of population trends and habitat use at the high (or rising) tidal cycle.

Infrequent surveys:

- Low tide count survey data has been carried out and published by the NPWS (2011a), this covers a very limited time period of a single over-wintering season between October 2009 – February 2010. This survey also recorded the location of High tide roosts, covering only a single high tide in February 2010. It is not known if high tide roosts within the Harbour shift throughout the year or across years.

- A recent low tide overwintering survey of Castlemaine Harbour (Inis Environmental, 2020) conducted throughout the winter of 2019/20, has highlighted a significant decline (using numerous comparison datasets, outlined in Castlemaine Bird Data Annex) in numerous waterbird species including species listed as SCIs for the SPA, Along with a reduced distribution in many species, notably Wigeon, Turnstone, Sanderling, Ringed Plover and Bar-tailed Godwit.

The advisor considers that further monitoring at both low and high tide, at a more regular interval than every 10 years (annually for a minimum of four to five years, this is commensurate with the assessment of mean peak figures i.e. peak averages across a set time period which helps to rule out other naturally impacting factors such as climate or food availability), is required to fully assess the potential impact of the proposed development on the status and therefore the conservation objectives of the SCIs of the SPA. Site trends for Castlemaine Harbour should then, once sufficient data has been collected, be examined in further detail using standard and robust statistical methods of modelling and indexing, as carried out within the SPAs Conservation Objectives supporting documents and national trend assessments (e.g. Lewis et al. 2019; Crowe & Holt, 2013).

There is currently insufficient data to rule out Adverse Effects on Site Integrity, in terms of disturbance (noise/ visual) and displacement on the bird species listed as SCIs for Castlemaine Harbour SPA. Due to this a precautionary approach must be taken to the issuing of further intertidal aquaculture licenses within Castlemaine Harbour SPA. Until such time as it can be shown that the proposed development will have no significant effect on birds listed as SCIs for the SPA.

6.6 General Environmental Effects

It is considered that the proposed application will not pose significant environmental effects within the Harbour and in the wider area other than those highlighted in Section 6.5. There are no predicted impacts from pollution sources or changes to hydrological functioning of the site as a whole (including freshwater influences).

6.7 Effect on Man-made Heritage

There is no predicted impact on man-made heritage sites located around Castlemaine Harbour.

7.0 Section 61 Assessment Conclusions

7.1 Site Suitability

The site under appeal **is not** considered suitable for the proposed application under the following reasons;

1. SCIs for the Castlemaine Harbour have potential to be negatively impacted by the proposed new application site through displacement and disturbance (both noise and visual), therefore impacting on the conservation objectives of the SPA

2. Insufficient data exists at the spatial scale of the proposed site T06/476 to fully evaluate and understand the potential impact of oyster cultivation on waterbirds listed as SCIs for the SPA, some of which have undergone significant declines as detailed in the TA report and the Annex I: Castlemaine Bird Data report. Due to this the precautionary principle must be followed until further data is available.

7.2 Other Uses

The proposed development will have no significant impact on the possible other uses or users of the area for the following reasons;

1. The Sea Fisheries Protection Authority (SFPA) indicated that the application would have no negative impact on local sea fishing operations

2. The application will not pose an in-combination effect with recreational activities already in place in the Harbour where these are largely terrestrial activities (birdwatching, walking), freshwater activities (angling) or are practised in the outer harbour (surfing, canoeing, kayaking, etc.)

7.3 Statutory Status

The proposed development is considered to have a non-significant impact on the Statutory Status of the site in terms of the SAC habitats listed as Qualifying Interests.

The proposed development is considered to have potential to pose a significant adverse effect on the Statutory Status of the site in terms of the SPA, further details are outlined in Sections 6.5 and 7.5.

7.4 Economic Effects

The proposed development is considered to pose a significant positive effect on the economy of the area for the following reasons;

1. Though local employment over the operation of the site

2. Utilising the goods and services of the local area trades to service the operation and maintenance of the site

7.5 Ecological Effects

The proposed development is considered to pose a significant adverse effect on the birds described as being SCIs for the site, which is designated as an SPA based on the following reasons;

1. Site T06/476 is located within NPWS survey subsite OK468 which in 2010 was shown to have the highest average species richness at low tide and was highlighted as being of particular importance. OK468 was also classified as being of moderate risk of disturbance from aquaculture and all associated activities. Birds which have been described as being sensitive to disturbance have potential to be present within the proposed site location, along the access route and along the adjacent shoreline.

2. Insufficient data exists at the spatial scale of the proposed site T06/476 to fully evaluate and understand the potential impact of oyster cultivation on waterbirds listed as SCIs for the SPA, some of which have undergone significant declines as detailed in the TA report and the Annex I: Castlemaine Bird Data report. Due to this the precautionary principle must be followed until further data is available.

3. Further annual monitoring is required at both the spatial (site specific bird data) and tidal scale (low tide bird data) of the application licence to fully determine the status and therefore the impact on the conservation objectives of the SCIs of the SPA. Furthermore, this annual monitoring should be used to inform site trends for Castlemaine Harbour and examined in greater detail using standard and robust statistical methods of modelling and indexing, as shown in SPA conservation objectives supporting documents and also used in national trend assessments (e.g. Lewis et al. 2019; Crowe & Holt, 2013).

The proposed development is considered to pose a non-significant effect on the habitats of the site, including those which are designated as Features of Conservation Interest for the SAC in which the proposed site is located for the following reason;

Studies have shown that oyster cultivation does not, in the long term, negatively impact on the habitat within which the site is proposed, where these habitats will recuperate over time (Marine Institute, 2018 & 2019).

7.6 General Environmental Effects

The proposed development, alone, is considered not to pose a significant effect on the habitats of the site for the following reasons;

1. Pollution of the surrounding environment is not predicted from the processing of the new site

2. No negative hydrological effects are predicted from the processing of the new site

The proposed development is considered to have the potential to cause a significant adverse effect on the bird species listed as SCIs for the SPA, further studies are required to fully inform this potential.

7.7 Man-made Heritage

The proposed development is considered to have no effect on the man-made heritage of value in the area as a result of the proposed operation for the following reason;

1. There are no features within the application site nor the access point and route which would be impacted by the operation

7.8 Confirmation re: Section 50 Notices

There are no pertinent matters which arise in the Section 61 assessment which the Board ought to take into account which have not been raised in the appeal documents and it is not necessary to give notice in writing to any parties in accordance with section 50 (2) of the 1997 Act.

8.0 Screening for Environmental Impact Assessment (EIA)

On 22nd October 2012 the then Minister for Agriculture Food and the Marine was of the opinion that the sites available at the time were not likely to have a significant effect on the environment and therefore an Environmental Impact Statement (EIS) was not required to be carried out (https://www.agriculture.gov.ie/media/migration/seafood/aquacultureforeshoremanagement/aquaculturelicensing/ministerialconsiderationforeis/kerry/EISrequirementsShellfishAquacultureLicensing261012.pdf [Accessed 25/04/19]). The proposed application site was not part of those assessed for this report.

Aquaculture is listed as an Annex II Project under the EU EIA Directive 85/337/EEC, however, where this form of aquaculture depends on natural processes for production and supply of feed (i.e. extensive) an EIA Screening process is deemed not required (Ireland as a Member State Guidance). Therefore, it is the conclusion of the advisor that an EIA Screening (formally EIS) is not required in this instance in line with Ministers Guidance.

9.0 Screening for Appropriate Assessment

Appropriate Assessments have been carried out with respect to the potential of aquaculture to have a significant effect on the Conservation Objectives of the SPA and SAC (Marine Institute, 2018 & 2019 and Niras, 2018 & 2019). These are considered to hold significant data to provide data required to assess the significance of an effect posed by an aquaculture site on the SPA and SAC.

Site Reference T6/476 (Proposed Site Application) lies within Castlemaine Harbour SAC and SPA and it is considered, from best available data, that there is potential for the establishment of a new site to have a significant negative effect on the conservation objectives of the SPA in terms of SCI (waterbird) displacement and disturbance.

10.0 Technical Advisor's Evaluation of the Issues in Respect of Appeal and Submissions/Observations Received

With respect to the issues raised by the appellant the below comments reflect the considered opinion of the advisor based on best available information.

Issue	***Appellants Comments***	***Advisors Comments***
Location	Trestles will not be in the way of conservation practices	Sediment build-up is not considered to be a significant impact of the operation of the proposed site in terms of the conservation objectives of the SAC. The operation of a new intertidal aquaculture site has the potential to negatively impact the SCIs for the SPA through disturbance and displacement thereby potentially negatively impacting on the conservation objectives of the SPA.
	The site will be monitored, and no waterways or channels will be blocked	
	No trestles will be placed on the water channels therefore there will be no sediment build up in these areas	
Regulatory Engagement	The appellant is willing work with regulatory authorities to fix any issues which may arise from the site should it be licenced.	This proposed site has potential to have a significant negative impact on bird species listed as SCIs for the SPA.

11.0 Recommendation of Technical Advisor with Reasons and Considerations

It is the considered opinion of the advisor that the licence be refused on the grounds that;

- The Appropriate Assessment Conclusion Report (DAFM, 2018 & 2019) stated:

"The remaining new licence applications for Castlemaine Harbour cannot be authorised as it is not possible to measure the magnitude of the impact of individual licences which could adversely affect the integrity of the Natura 2000 sites"

- There is insufficient data to rule out Adverse Effects on Site Integrity, in terms of disturbance (noise/ visual) and displacement on the waterbird species listed as SCIs for Castlemaine Harbour SPA. Due to this a precautionary approach must be taken to the issuing of further intertidal aquaculture licenses within Castlemaine Harbour SPA. Until such time as it can be shown that the proposed development will have no significant effect on birds listed as SCIs for the SPA.

Further monitoring at both low and high tide (to be commensurate with the spatial scale of the licence application sites which is required for a more refined impact prediction), at a more regular interval than every 10 years, is required to fully assess the status and therefore the conservation objectives of the SCIs of the SPA. Site trends for Castlemaine Harbour should be examined in further detail using standard and robust statistical methods of modelling and indexing, as carried out within the SPAs Conservation Objectives supporting documents and national trend assessments (e.g. Lewis et al. 2019; Crowe & Holt, 2013).

The Technical Advisor, based on the above information, recommends the Board apply the precautionary principle and agree with the Ministers decision to refuse the application.

12.0 Draft Determination Refusal /or Grant

It is recommended to uphold the Ministers decision to refuse the application based on details outlined in Section 11.

Technical Advisor: Maeve Riley & Eoin Cussen, EcoÉireann

Date: 24th March 2021

References

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DAFM, 2019. Appropriate Assessment Conclusion Statement by the Licensing Authority for aquaculture activities (with particular reference to applications received subsequent to the original Appropriate Assessment in April 2018) in Castlemaine Harbour SAC (Site Code: 000343) and SPA (Site Code: 004029) (Natura 2000 sites) – October 2019. Department of Agriculture, Food & the Marine, Government of Ireland.

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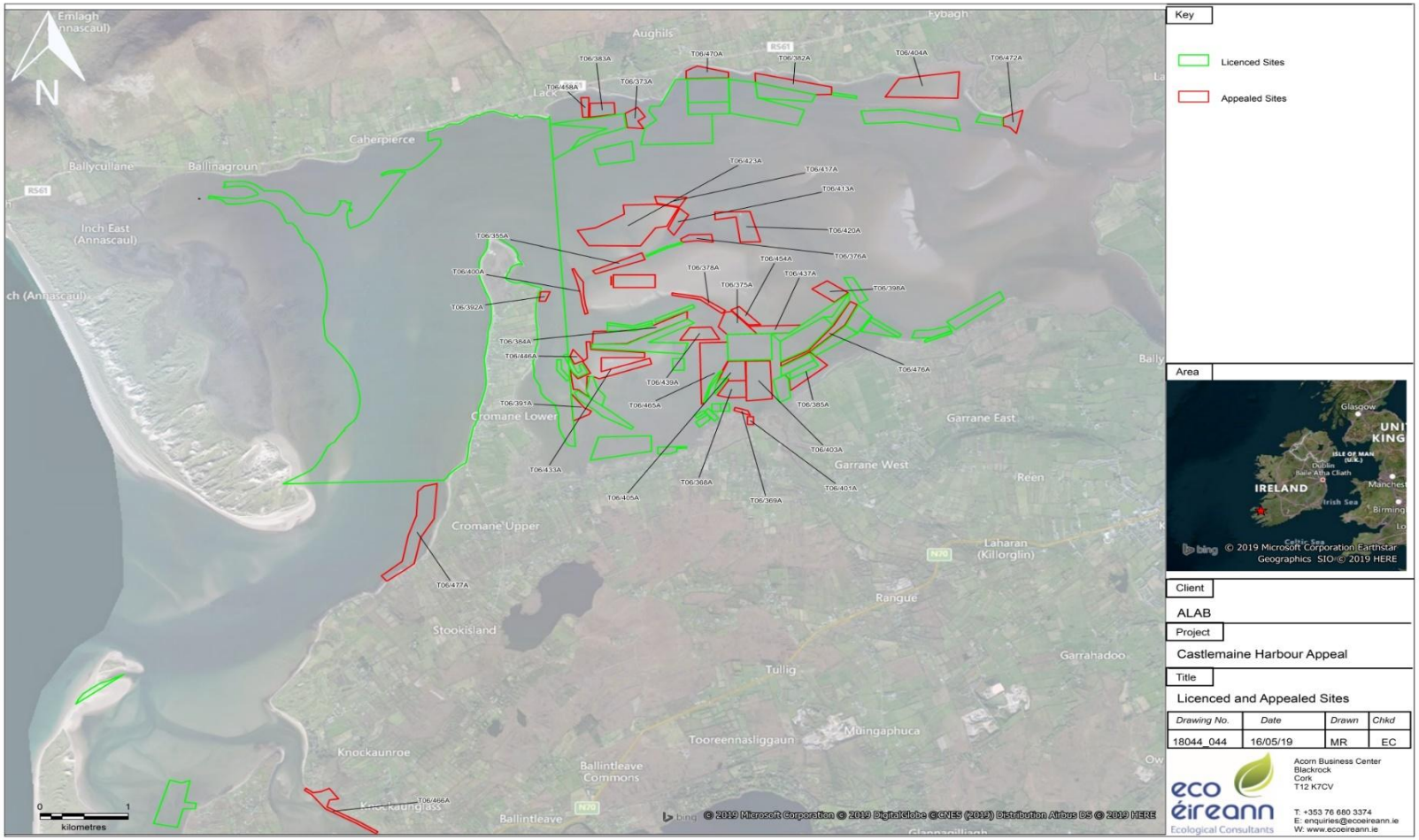
Appendices

Appendix 1 – Licenced and Appealed Sites in Castlemaine Harbour



Appendix 2 – Species Listed as Features of Interest for Castlemaine Harbour SPA

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*)
Ringed Plover (*Charadrius hiaticula*)	Sanderling (*Calidris alba*)	Bar-tailed Godwit (*Limosa lapponica*)	Redshank (*Tringa totanus*)
Greenshank (*Tringa nebularia*)	Turnstone (*Arenaria interpres*)	Chough (*Pyrrhocorax pyrrhocorax*)	Oystercatcher (*Haematopus ostralegus*)

Appendix 3 –Features of Conservation Interest for Castlemaine Harbour SAC

Estuaries [1130]

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

Annual vegetation of drift lines [1210]

Perennial vegetation of stony banks [1220]

Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]

Salicornia and other annuals colonising mud and sand [1310]

Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]

Mediterranean salt meadows (*Juncetalia maritimi*) [1410]

Embryonic shifting dunes [2110]

Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]

Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]

Dunes with *Salix repens ssp. argentea (Salicion arenariae*) [2170]

Humid dune slacks [2190]

Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]

Petromyzon marinus (Sea Lamprey) [1095]

Lampetra fluviatilis (River Lamprey) [1099]

Salmo salar (Salmon) [1106]

Lutra lutra (Otter) [1355]

Petalophyllum ralfsii (Petalwort) [1395]

Appendix 4 – Cetacean Sightings – Data from IWDG Accessed 08/04/19

#	Event Date	Species	No. animals	Location	Record ID
1	10/01/2019	common dolphin	100	Dingle Bay - Co. Kerry	30362
2	01/11/2018	humpback whale	1	Dingle Bay - Co. Kerry	29732
3	16/09/2018	humpback whale	2	Dingle Bay - Co. Kerry	29592
4	29/08/2018	humpback whale	1	Dingle Bay - Co. Kerry	30297
5	20/08/2018	common dolphin	10	Dingle Bay - Co. Kerry	30252
6	13/07/2018	humpback whale	1	Dingle Bay - Co. Kerry	29402
7	13/07/2018	minke whale	30	Dingle Bay - Co. Kerry	29403
8	29/05/2018	bottlenose dolphin	1	Dingle Bay - Co. Kerry	29781
9	11/04/2018	common dolphin	200	Dingle Bay - Co. Kerry	29171
10	11/04/2018	minke whale	8	Dingle Bay - Co. Kerry	29172
11	11/04/2018	humpback whale	1	Dingle Bay - Co. Kerry	29173

Appendix 5a – Site photographs Tullig Quay, access to site via boat

Entrance road to Tullig quay, facing south.

Tullig Quay facing north-east.

Storage area at Tullig quay, facing north.

Storage area along side of track from Tullig quay to Harbour, facing north.

Trestles and bags on left side of track from Tullig quay to Harbour, facing north.

Trestles and bags on right side of track from Tullig quay to Harbour, facing north.

Appendix 5b – Site photographs Douglas strand, access to site via tractor and trailer

Potential access route and site, facing north

Approximate site location, facing north - west

Aproximate site location, facing north - east

Approximate site location and access route, facing north