

**Appropriate Assessment Conclusion Statement by Licensing Authority in support of the  
Appropriate Assessment of Aquaculture in Great Island SAC (Site Code 001058) and Cork Harbour  
SPA (Site Code: 004030)**

This Conclusion Statement outlines how it is proposed to licence and manage aquaculture activities in the above Special Area of Conservation (SAC) and Special Protection Area (SPA)– Natura 2000 sites - in compliance with the Habitats Directives. Aquaculture in these Natura Sites will be licensed in accordance with the standard terms and conditions as set out in the aquaculture licence templates. These are available for inspection on the Department’s website at <http://www.agriculture.gov.ie/seafood/aquacultureforeshoremanagement/aquaculturelicensing/> Furthermore, the licences will also incorporate specific conditions so as to accommodate Natura requirements, as appropriate, in accordance with the principles set out in this document.

An Article 6 (Habitats) Assessment and, specifically, an Appropriate Assessment report relating to aquaculture on habitats in the Great Island SAC has been prepared by the Marine Institute and Atkins/Marine Institute in relation to bird species in the Cork Harbour SPA on behalf of the Department of Agriculture, Food and the Marine. The Appropriate Assessment Report considered the potential ecological impacts of aquaculture activities on Natura features in the SAC and SPA.

In addition to the Great Island SAC and Cork Harbour SPA there are a number of other SACs and SPAs proximate to the proposed aquaculture activities and a screening was carried out on their likely interaction with aquaculture.

The information upon which the Appropriate Assessment is based is on a list of applications and extant licenses for aquaculture available at the time of assessment. This information was provided by the Department of Agriculture, Food and the Marine.

**Existing and proposed Aquaculture Activity in Great Island SAC and Cork Harbour SPA**

A total of six aquaculture sites, covering a total area of 922 ha, occur within Cork Harbour. These include two sites in the North Channel with a total area of 11 ha, and four application sites in the lower harbour with a total area of 911 ha. Five of the six sites are small (circa 17.5 ha combined) sites where suspended oyster cultivation using the bag and trestle method (oyster trestle cultivation) currently takes place, or is proposed, but only two of these sites are within the Cork Harbour SPA. The sixth site is a very large site covering most of the East Harbour zone and bottom mussel cultivation is proposed for this site. Around 20% of this site is within the Cork Harbour SPA.

Within the Great Island Channel SAC aquaculture focuses on the cultivation of the Pacific oyster *Crassostrea gigas* predominantly on trestles in intertidal areas. There is one company actively farming two bag and trestle Pacific oyster sites. They have applied to amalgamate these two sites into one site totalling 9 hectares. There are no applications to licence any new sites in the SAC. The company licensed for the above 2 Pacific oyster sites have applied to also grow the oysters in floating bags, in the deeper parts of the site. The floating oyster bags would be attached to a longline which is moored to the seabed. This would allow the operator to utilise the deeper parts of their site which are too deep for bag and trestle culture. They are also planning to cultivate two native red seaweeds, namely *Porphyra sp.* and *Palmaria palmate*.

There are two Oyster Fishery Orders within the North Channel. Within these Orders oysters can be cultivated on the bottom. This is primarily for Native oyster production although at times Pacific oysters are fattened on the bottom.

### **Great Island SAC**

The Great Island Channel stretches from Little Island to Midleton, with its southern boundary being formed by Great Island. It is an integral part of Cork Harbour which contains several other sites of conservation interest. Geologically, Cork Harbour consists of two large areas of open water in a limestone basin, separated from each other and the open sea by ridges of Old Red Sandstone. Within this system, Great Island Channel forms the eastern stretch of the river basin and, compared to the rest of Cork Harbour, is relatively undisturbed. Within the site is the estuary of the Owennacurra and Dungourney Rivers. These rivers, which flow through Midleton, provide the main source of freshwater to the North Channel

### **Qualifying Interests**

An initial screening exercise resulted in the following habitat feature being excluded from further consideration by virtue of the fact that no spatial overlap or likely interaction with the culture activities was expected to occur; Atlantic salt meadows (*Glauco-Puccinellietellia maritima*) (1330).

A full assessment was carried out on the likely interactions between existing and proposed culture operations and the feature Annex 1 habitats of 1140 Mudflats and Sandflats not covered by seawater at low tide.

The likely effects of the aquaculture activities (species, structures, access routes) were considered in light of the sensitivity of constituent habitats and species of the Annex 1 habitat 1140 Mudflats and

Sandflats not covered by seawater at low tide. The Annex I 1140 constituent community considered was limited to 'Mixed sediment to sandy mud with polychaetes and oligochaetes community complex'.

### **SCREENING OF ADJACENT SAC FOR *EX-SITU* EFFECTS**

The nearest SACs to the Great Island Channel SAC, are the Ballymacoda (Clonpriest and Pillmore) SAC (Site Code IE000077) and the Courtmacsherry Estuary SAC (Site Code IE001230). The former is 24.6km east and the latter is 54.6km southwest of the Great Island Channel SAC and as a result were screened out.

### **CONSERVATION OBJECTIVES FOR GREAT ISLAND SAC**

The natural condition of the designated features should be preserved with respect to their area, distribution, and extent and community distribution. Habitat availability should be maintained for designated species and human disturbance should not adversely affect such species.

### **ASSESSMENT OF THE EFFECTS OF AQUACULTURE PRODUCTION ON THE SAC CONSERVATION OBJECTIVES**

Intertidal oyster aquaculture activities overlap the community type listed under the habitat feature of Mud and sandflats not covered by seawater at low tide (1140), Mixed sediment to sandy mud with polychaetes and oligochaetes community complex a 15% threshold of overlap between a disturbing activity and a habitat is given in the NPWS guidance. Below this threshold disturbance is deemed to be non-significant.

The spatial overlap of licensed oyster trestle culture activities with this community types is 0.25%. There are no new applications and consequently, adverse impacts of activities occurring at oyster cultivation sites within the Qualifying Interests of (1140) Mud and sandflats not covered by seawater at low tide can be discounted.

In summary, it is concluded (based primarily upon the spatial overlap and sensitivity analysis) current intertidal oyster aquaculture activities individually and in-combination do not pose a risk of significant disturbance to the conservation habitats (1140 and constituent marine community type) in the Great Island Channel SAC.

In addition, the contained subtidal cultivation of native oysters does not pose a significant risk to the Conservation Objectives of marine benthic habitat features for which the SAC is designated.

The risk posed by the introduction of seed stock (e.g. ½ grown oysters or seed) from outside of the jurisdiction cannot be discounted.

The risk of successful Pacific oyster reproduction in Great Island SAC (and Cork Harbour) posed by the culture of non-triploid (reproductively sterile) oysters cannot be discounted on the basis of the area having long residence times and large intertidal areas.

## **IN-COMBINATION EFFECTS OF AQUACULTURE, FISHERIES AND OTHER ACTIVITIES**

### **Subtidal Oyster Cultivation**

There are two Oyster Fishery Orders within the North Channel. Within these Orders oysters can be cultivated on the bottom. This is primarily for Native oyster production although at times Pacific oysters are fattened on the bottom.

The Fishery Order overlaps with 9.62% of habitat 1140 and 9.62% of the constituent marine community types 'Mixed sediment to sandy mud with polychaetes and oligochaetes community complex'

### **Monoculture - Bottom culture**

Mixed sediment communities have high level of resistance and resilience to the pressure resulting from an oyster dredge. The low frequency of dredging (once every 3 years) will reduce the risk from this activity to this community type further.

### **Pollution**

Pressures resulting from intertidal aquaculture activities are primarily localised compaction of sediment along access routes. It was, therefore, concluded that given the pressure resulting from point discharge location such as the urban waste-water treatment and/or combined sewer outfalls would likely impact on physico-chemical parameters in the water column, any in-combination effects with aquaculture activities are considered to be minimal or negligible.

### **Conclusion**

Based on the level of overlap (less than the 15% threshold) and the resilience of the community types (and associated species) with oyster bottom culture and dredging, significant disturbance could be discounted for the following constituent habitat of Qualifying Interests (1140) Mudflats and sandflats not covered by seawater at low tide: Mixed sediment to sandy mud with polychaetes and

oligochaetes community complex. In addition, as oyster trestles are considered non-disturbing they will have no in-combination effect with other activities.

Consequently, in-combination effects of fisheries with intertidal trestle aquaculture activities on designated habitats (and constituent community types) can be discounted.

### **Cork Harbour SPA**

Cork Harbour SPA comprises a number of discrete sections scattered around Cork harbour and includes one section (the Ringabella Estuary), which is located outside the harbour proper.

However, several of the SCI species, particularly those associated with subtidal habitats, make significant use of areas outside the SPA and, for some of these species, the majority of their habitat is outside the SPA. Therefore the area of interest is defined as comprising of the entire tidal habitat within Cork Harbour.

### **Screening**

Three of the aquaculture sites are within, or partly within, the Cork Harbour SPA, while another three aquaculture sites that are outside the SPA are also included in the assessment. Therefore, the assessment covers all the aquaculture sites in Cork Harbour. The Cork Harbour SPA is the primary focus of this assessment. In addition, following a screening exercise, Special Conservation Interests (SCIs) from two other SPAs are included in this assessment. These SPAs are: Courtmacsherry Bay SPA and The Gearagh SPA.

### **Conservation Objectives for Cork Harbour SPA.**

The conservation objectives for the wintering populations of SCIs in Cork harbour are to maintain their favourable conservation condition. The SCIs are: Shelduck, Wigeon, Teal, Pintail, Shoveler, Red-breasted Merganser, Cormorant, Grey Heron, Little Grebe, Great Crested Grebe, Oystercatcher, Golden Plover, Grey Plover, Lapwing, Curlew, Blacktailed Godwit, Bar-tailed Godwit, Dunlin, Redshank, Black-headed Gull, Common Gull and Lesser Black-backed Gull.

The conservation objective for the Common Tern breeding population in the Cork Harbour SPA is to maintain its favourable conservation condition. The favourable conservation condition of this population is defined by the following attributes: breeding population abundance, productivity rate, distribution of breeding colonies, availability of prey biomass, barriers to connectivity, and disturbance at the breeding site. Site specific conservation objectives have not yet been prepared for

The Gearagh SPA. However, it can be assumed that the attributes and targets listed for SCIs in Cork Harbour SPA also apply to Mallard, the SCI of The Gearagh SPA.

### **Current and proposed future extent of the aquaculture activities**

A total of six aquaculture sites, covering a total area of 922 ha, occur within Cork Harbour. These include two sites in the North Channel with a total area of 11 ha, and four application sites in the lower harbour with a total area of 911 ha. Five of the six sites are small (circa 17.5 ha combined) sites where suspended oyster cultivation using the bag and trestle method (oyster trestle cultivation) currently takes place, or is proposed, but only two of these sites are within the Cork Harbour SPA. The sixth site is a very large site covering most of the East Harbour zone and bottom mussel cultivation is proposed for this site. Around 20% of this site is within the Cork Harbour SPA.

In addition to the aquaculture sites, there are four areas within Cork Harbour covered by Fishery Orders.

### **Assessment of oyster trestle cultivation activity**

The small scale of the oyster trestle cultivation activity covered by this assessment, and the location of three of the five sites in areas of the harbour that do not hold high concentrations of intertidal/shallow subtidal waterbirds, mean that no significant displacement impacts are likely to occur. There is a possibility of disturbance impacts to Common Tern roosts on Spike Island. Any such impacts are unlikely to be significant, but further information about Common Tern usage of the Spike Island and about the intensity of husbandry activity, would be required to definitively assess this potential impact.

### **Assessment of bottom mussel cultivation**

The original target production level for the bottom mussel culture site in the East Harbour indicates that high levels of husbandry and harvesting activity will be involved in the cultivation of this site. These activities have the potential to cause significant disturbance impacts to Redbreasted Merganser, Cormorant and Great Crested Grebe roost sites located within the aquaculture site. These are primarily night roost sites but the Great Crested Grebe roost sites is also sometimes occupied during the day. There is also potential for displacement impacts to foraging Redbreasted Mergansers, which could prevent reoccupation of the East Harbour zone in the event of a recovery of the Cork Harbour Redbreasted Merganser population. Smaller scale displacement impacts to foraging Cormorant and Great Crested Grebe are also possible. Wigeon, Mallard and Oystercatchers

using shoreline feeding areas and/or roost sites around the edge of the aquaculture site could also be affected by disturbance from the activity.

## **Assessment of cumulative impacts**

### **Oyster trestle cultivation**

SCI species Wigeon and Mallard are potentially sensitive to negative impacts from oyster trestle cultivation from the mussel fishery in the East Harbour aquaculture site. However displacement impact from full occupation of the Rossmore Fishery Order along with the North Channel aquaculture sites is effectively negligible at 0.4% - 0.6%.

### **Oyster fisheries**

The re-opening of the oyster fishery in the Brick Island Fishery Order would have the potential to have significant cumulative impacts in combination with potential disturbance impacts to Redbreasted Merganser from the mussel fishery in the East Harbour zone, although the major impact would be from the Brick Island Fishery Order. Reopening of the oyster fishery in the East Harbour Fishery Order would cause additional boat activity to that involved in the mussel fishery and may, therefore, increase the cumulative impacts on the Cork Harbour Redbreasted Merganser population.

Re-opening of the oyster fishery in the Brick Island Fishery Order would have the potential to have significant cumulative impacts on the Cork Harbour Oystercatcher population in combination with potential disturbance impacts to Oystercatcher from the mussel fishery in the East Harbour zone. Reopening of the oyster fishery in the East Harbour Fishery Order would cause additional boat activity to that involved in the mussel fishery and may, therefore, increase the cumulative impacts on the Cork Harbour Oystercatcher population.

## **Findings of the Article 6(3) Appropriate Assessment of Great Island SAC and Cork Harbour SPA**

### **Great Island SAC**

- Based upon the scale of spatial overlap of current and proposed intertidal oyster aquaculture activities (including access route activity) and the relatively high tolerance levels of the habitats and associated species, the general conclusion is that current and proposed intertidal culture activities are non-disturbing to the SAC Qualifying Interests and their constituent community types.

- The subtidal relaying and dredging of Native oysters subtidally, either individually or in combination with aquaculture activities, are considered non-disturbing to the Qualifying Interest and its constituent community types.
- Based upon experience elsewhere, the introduction of '½ grown' or 'wild' oyster or mussel seed stock into aquaculture plots (both within and proximate to the SAC) from outside of Ireland does pose a clear risk of establishment of non-native species in the SAC.
- The culture on non-sterile Pacific oysters (in contained systems and subtidally un-contained on the seafloor) in the SAC presents as risk of successful reproduction and recruitment of this species within the SAC.

#### **Cork Harbour SPA**

- The small scale of the oyster trestle cultivation activity covered by this assessment, and the location of the culture sites in areas of the harbour that do not hold high concentrations of intertidal/shallow subtidal waterbirds, mean that no significant displacement impacts are likely to occur.
- There is a possibility of disturbance impacts to Common Tern roosts on Spike Island. Any such impacts are unlikely to be significant, but further information about Common Tern usage of the Spike Island would be required to determine the acceptable level of activity at the site.
- The target production level for the bottom mussel culture site in the East Harbour indicates that high levels of husbandry and harvesting activity will be involved in the cultivation of this site. These activities have the potential to cause significant disturbance impacts to Redbreasted Merganser, Cormorant and Great Crested Grebe roost sites located within the aquaculture site. These are primarily night roost sites but the Great Crested Grebe roost sites is also sometimes occupied during the day.
- There is also potential for displacement impacts to foraging Redbreasted Mergansers, which could prevent reoccupation of the East Harbour zone in the event of a recovery of the Cork Harbour Redbreasted Merganser population.

- Smaller scale displacement impacts to foraging Cormorant and Great Crested Grebe are also possible. Wigeon, Mallard and Oystercatchers using shoreline feeding areas and/or roost sites around the edge of the aquaculture site could also be affected by disturbance from the activity.
- Reopening of the oyster fisheries in the Brick Island and East Harbour Fishery Orders, oyster trestle cultivation in the Rossmore and East Harbour Fishery Orders, disturbance from wildfowling activity in the North Channel, other boat traffic and recreational watercraft activity and shoreline pedestrian activity could all have significant additional cumulative impacts on one or more of the above species in combination with the impact from the bottom mussel culture activity.
- Bottom mussel culture in the East Harbour aquaculture site could potentially cause significant disturbance impacts to Mallard feeding and/or roosting in shallow subtidal habitat along the eastern and southern edges of the aquaculture site. This could cause displacement of a significant proportion of the Cork Harbour population of this species. If there is significant population interchange between Cork Harbour and the Gearagh, this could have a negative impact on attribute 1 (population trends, of the conservation objective for this SCI).
- If there is significant population interchange between the Wigeon populations in Cork Harbour and any of these SPAs, the potential impacts from bottom mussel culture in Cork Harbour could have a negative impact on attribute 1 (population trends) of the conservation objective for these SCIs.

### **Mitigation Measures**

- In order to mitigate the risk of introduction of alien species into the SAC as a result of aquaculture activities all movement of stock in and out of the Great Island Channel SAC should adhere to relevant legislation and follow best practice guidelines.
- It is recommended that triploid *C. gigas* oysters be used in a contained fashion only in licenced aquaculture areas.
- All vessel activities will take place during daylight hours (before 1 hour before sunset and 1 hour after sunrise).

- A truncated licence area for the culture of bottom mussels allied with constraints surrounding the timing of activities in the harbour may mitigate the disturbance risks identified in the Cork Harbour SPA AA report. Given a revised goal of producing 500 tonnes of mussels per annum and assuming a stocking density of 20-25 Tonnes per hectare the required area would be approximately 50ha (assuming a 2-year production cycle). This falls considerably short of the 900ha which was originally sought. This will need to be verified and separately assessed.

## **Conclusion**

The Licensing Authority concludes that in general from a Natura 2000 perspective, given the conclusions and recommendations of the Appropriate Assessment process, the risk of significant disturbance from the proposed aquaculture activities cannot be discounted.

One new application for intertidal oyster and seaweed culture can be considered for licensing purposes as it is unlikely to have any impact on habitat conservation features. The remaining new licence applications for Cork Harbour SPA 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 and visual impact of the area.