Marine Institute
Foras na Mara

Appropriate Assessment Summary Report of Aquaculture in the Bannow Bay SAC (Site code: 000697) and Bannow Bay SPA (Site code 004033)

Marine Institute

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Preface

In Ireland, the implementation of the Habitats Directive in relation to aquaculture and certain fisheries activities that occur within designated sites is achieved through Article 6(3) of the Directive whereby such activities, which are licenced by the Department of Agriculture, Food and the Marine (DAFM) or Department of Communications, Energy and Natural Resources (DCENR), are viewed as plans and projects and are therefore subject to Appropriate Assessment (AA). The Habitats Directive is transposed in Ireland in the European Communities (Birds and Natural Habitats) Regulations 2011. Appropriate assessments are currently carried out against the conservation objectives (COs), and more specifically on the version of the COs that are available at the time of the Assessment, for designated ecological features, within the site, as defined by the National Parks and Wildlife Service (NPWS). NPWS are the competent authority for the management of Natura 2000 sites in Ireland. Obviously, aquaculture and fishing operations existed in coastal areas prior to the designation of such areas under the Directives. Ireland is thereby assessing both existing and proposed aquaculture and fishing activities in such sites. This is an incremental process, as agreed with the EU Commission in 2009, and will eventually cover all fishing and aquaculture activities in all Natura 2000 sites.

In the case of aquaculture, DAFM receives applications to undertake such activity and submits a set of applications, at a defined point in time, for assessment. The aquaculture applications are then subject to AA. If the AA finds that significant effects of such activities cannot be discounted the plans or projects will need to be mitigated further if such activities are to continue. The AA is not explicit on how this mitigation should be achieved but rather the degree of mitigation required. In effect, therefore, the AA is a 'point in time' assessment of aquaculture activities to determine if they are consistent with COs for designated features within a Natura site and thereby compliant with the Directives.

This report is structured such that the summary, conclusions and recommendations from the assessments aquaculture activities on Natura 2000 features for the Bannow Bay SAC (Site code: 000697) and SPA (site code 004033) are provided in the first part of this report while the full assessments on the SAC and the SPA are provided in Annex 1 and 2.

Summary SAC Considerations, Conclusions and Recommendations

The SAC

Bannow Bay SAC is a large estuarine site, approximately 14km long on the south coast of County Wexford. The bay is designated as a Special Area of Conservation (SAC) under the Habitats Directive. Designated marine habitats include Estuaries (1130) and Mudflats and sand flats not covered by seawater at low tide (1140) each of which support soft sedimentary communities and community complexes. The site also contains, and is designated for, a range of coastal habitats including salt meadow, sand dunes and scrub. Conservation Objectives for marine habitats and constituent communities within Bannow Bay SAC were identified by NPWS (2012a) and relate primarily to the requirement to maintain habitat distribution, structure and function, as defined by characterizing (dominant) species in these habitats. For designated species the objective is to maintain various attributes of the populations including population size, habitats quality and the distribution of the species.

Aquaculture activities in the SAC

Within Bannow Bay SAC aquaculture focuses on the cultivation of the Pacific oyster Crassostrea gigas on trestles in intertidal areas of the bay. The profile of the aquaculture industry in the SAC, used in this assessment, was prepared by BIM and is derived from the list of licence applications received by DAFM and provided to the MI for assessment in February 2015.

Appropriate Assessment Process

The function of an appropriate assessment and risk assessment is to determine if the ongoing and proposed aquaculture activities are consistent with the Conservation Objectives for the Natura site or if such activities will lead to deterioration in the attributes of the habitats and species over time and in relation to the scale, frequency and intensity of the activities. NPWS (2012a) provide guidance on interpretation of the Conservation Objectives which are, in effect, management targets for habitats and species in the SAC. This guidance is scaled relative to the anticipated sensitivity of habitats and species to disturbance by the proposed activities. Some activities are deemed to be wholly inconsistent with long term maintenance of certain sensitive habitats while other habitats can tolerate a range of activities. For the practical purpose of management of sedimentary habitats a 15% threshold of overlap between a disturbing activity and a habitat is given in the NPWS guidance. Below this threshold disturbance is deemed to be non-significant. Disturbance is defined as that which leads to a change in the characterizing species of the habitat (which may also indicate change in structure and function). Such disturbance may be temporary or persistent in the sense that change in characterizing species may recover to pre-disturbed state or may persist and accumulate over time.

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

of the consequence occurring are scored categorically as separate components of risk. Risk scores are used to indicate the requirement for mitigation.

Data Supports

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

Findings

In Bannow Bay SAC there are eight existing oyster production licences with a further seventeen new applications. The likely interaction of aquaculture activity occurring at licenced sites, application sites and along access routes with conservation features (habitats and species) of the site was considered.

An initial screening exercise resulted in a number of habitat features and species being excluded from further consideration. None of the aquaculture activities (existing and/or proposed) overlaps or likely interacts with the following features or species, and therefore the following habitats and species were excluded from further consideration in the assessment:

- 1130 Estuaries
- 1210 Annual vegetation of drift lines
- 1220 Perennial vegetation of stony banks
- 1310 Salicornia and other annuals colonizing mud and sand
- 1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
- 1410 Mediterranean salt meadows (Juncetalia maritimi)
- 1420 Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)
- 2110 Embryonic shifting dunes
- 2120 Shifting dunes along the shoreline with Ammophila arenaria ('white dunes')
- 2130 *Fixed coastal dunes with herbaceous vegetation ('grey dunes')

A full assessment was carried out on the likely interactions between aquaculture operations and the feature Annex 1 habitat Mudflats and sandflats not covered by seawater at low tide (1140). The likely effects of existing and proposed aquaculture activities were considered in light of the sensitivity of the constituent communities of the Annex 1 habitat 1140 which overlap with current and proposed intertidal oyster namely; Fine sands with *Pygospio elegans* and *Corophium volutator* community complex and, Intertidal sand dominated by polychaetes community complex.

In summary, it is concluded (based primarily upon the spatial overlap and sensitivity analysis) current and proposed intertidal aquaculture activities individually and in-combination do not pose a risk of significant disturbance to the conservation of habitats in Bannow Bay SAC.

Summary SPA Considerations, Conclusions and Recommendations

This report contains the Appropriate Assessment of aquaculture in Bannow Bay. The aquaculture sites are within Bannow Bay SPA (site code 004033) and this SPA is the primary focus of this assessment. Following a screening exercise, Special Conservation Interests (SCIs) from three other SPAs are included in this assessment. These SPAs are: Ballyteige Burrows SPA (004020), Keeragh Islands SPA (004118) and Saltee Islands SPA (004002).

The only aquaculture activity in Bannow Bay is suspended oyster and mussel cultivation using bags and trestles in the intertidal zone (referred to as intertidal oyster and mussel cultivation hereafter). The subject of the assessment are areas that have either already been licensed for intertidal mussel and oyster cultivation, or for which there are applications for such licenses; these are collectively referred to as aquaculture sites. The information on the licensing status of aquaculture sites used in this report was provided by the Department of Agriculture Food and Marine.

The history and oyster cultivation in Bannow Bay and a description of current activities is set out in Chapter 6.0 of the assessment. Within the Bannow Bay SPA, there are currently eight sites licensed for intertidal oyster cultivation, and these sites cover a total area of 19.31 ha. There are an additional 18 sites with applications for licenses for intertidal oyster cultivation, and these sites cover a total area of 103 ha. One of the application sites (89A) also includes an application for mussel cultivation. All the application and licensed sites are in the middle part of Bannow Bay, spanning the estuary between Saintkierans/Taulaght on the western side of the bay and Newtown on the eastern side of the bay.

This assessment is based on a desktop review of existing information combined with a limited number of site visits. Where relevant, it identifies information gaps that may affect the reliability of the conclusions of this assessment. As the waterbird data available for Bannow Bay is limited, the conclusions derived from the analysis of this data are subject to caveats, which are discussed in the relevant sections of this report. Furthermore, this report relies heavily on the research carried out for a previous Marine Institute project: The effects of intertidal oyster culture on the spatial distribution of waterbirds (Gittings and O'Donoghue, 2012). This report, and additional unpublished data from this project, are referred to within the assessment as the trestle study. One of the SCIs of the Bannow Bay SPA is Pintail. This species no longer occurs in Bannow Bay, and there is no information available on its distribution within the bay when it did occur.

Methodology

Information on the development and current practices of intertidal oyster cultivation activities in Bannow Bay was obtained from the aquaculture profile document compiled by Bord Iascaigh Mhara in December 2015 (O'Loan, 2015), interviews with major producers in March 2016, and information from the Bannow Bay CLAMS report (CLAMS, 2002). Consultation was also undertaken with National Parks and Wildlife Services.

Most of the analyses of the likely impacts of activities covered in this assessment are based on calculations of spatial overlap between the SCI species distribution and the spatial extent of the activities. These analyses focus on distribution patterns of feeding, or potentially feeding birds, as the main potential impacts will be to the availability and/or quality of feeding habitat, although we have included assessment of potential impacts on roosting birds, where relevant. The distribution of

waterbird was analysed using data from the Irish Wetland Bird Survey (I-WeBS) counts of Bannow Bay (mainly using data from 1994/95-2014/15); bird usage counts carried out by NPWS in 1998 and 1999; the National Parks and Wildlife Service (NPWS) Baseline Waterbird Survey (BWS) low tide counts (carried out in 2009/10); data collected during the 2011 trestle study; as well as general observations from 2011 and 2016. Maps of flock locations from the NPWS BWS low tide counts and descriptions of waterbird distribution in and NPWS (2012) have also been used to interpret the patterns derived from these analyses. Use of these data and associated analyses are described in detail in the report.

The methodology used to identify potentially significant impacts is focussed on the Conservation Objectives, and their attributes, that have been defined and described for the Bannow Bay SPA. Impacts that will cause displacement of 5% or more of the total Bannow Bay population of a non-breeding SCI species have been assessed as potentially having a significant negative impact.

Further data available to the assessment included: a hydrographic study of Bannow Bay (Murphy & Co., 1990); data on intertidal habitats & Zostera (Natura Environmental Consultants and Robinson, 2003; ASU, 2010; NPWS, 2012) and data intertidal benthic fauna (ASU, 2010; Forde et al., 2015).

Conservation Objectives & Screening

The Special Conservation Interests (SCIs) of the Bannow Bay SPA include: -

- non-breeding populations of Light-bellied Brent Goose, Shelduck, Pintail, Oystercatcher, Golden Plover, Grey Plover, Lapwing, Knot, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew and Redshank.

The conservation objectives for the non-breeding SCI species at Bannow Bay are to maintain their favourable conservation condition, which are defined by there being stable or increasing long-term population trends and no significant decrease in numbers or range of areas used within Bannow Bay.

The wetland habitats within the Bannow Bay SPA and the waterbirds that utilise this resource are an additional SCI (the wetlands and water birds SCI). The conservation objective for this SCI is to maintain its favourable conservation condition, which is defined by there being no significant decrease in the permanent area occupied by wetland habitats.

The trestle study (Gittings and O'Donoghue, 2012) showed that, across all the sites studied, Oystercatcher and Redshank generally have neutral or positive responses to intertidal oyster cultivation. The results from Bannow Bay for Oystercatcher conformed to this pattern. Therefore, Oystercatcher can be screened out from further assessment. However, Redshank appeared to show an exception to the general pattern at Bannow Bay; as such we have screened in Redshank.

The trestle study (Gittings and O'Donoghue, 2012) classified the response of Curlew to intertidal oyster cultivation as neutral/positive, but with only a moderate degree of confidence. However, there was variation between sites in the nature of the response. At Bannow Bay, Curlew appeared to show a negative response to trestles; as such we have screened in Curlew.

The other SCI species either have negative responses to oyster trestles (Shelduck, Golden Plover, Grey Plover, Lapwing, Knot, Dunlin, Black-tailed Godwit and Bar-tailed Godwit) or uncertain or unknown responses (Light-bellied Brent Goose and Pintail); therefore full appropriate assessment is also required for these species.

The Conservation Objectives define the favourable conservation condition of the wetlands and waterbirds SCI at Bannow Bay purely in terms of habitat area. None of the activities being assessed will cause any change in the extent of wetland habitat. Therefore, the activities being assessed are not likely to have any significant impact on this SCI and it has been screened out from any further assessment.

Other sites

All of the SCI species of Ballyteige Burrow SPA (Light-bellied Brent Goose, Shelduck, Golden Plover, Grey Plover, Lapwing, Black-tailed Godwit and Bar-tailed Godwit) are also SCIs of the Bannow Bay SPA, and are species that are potentially negatively affected by intertidal oyster cultivation. Following consideration of species mobility, site fidelity etc., and given the proximity of the two sites, the SCIs of Ballyteige Burrows SPA that are known to move inland to feed on fields, and/or do not have high site fidelity, have been screened in for further assessment; these are Light-bellied Brent Goose, Golden Plover, Lapwing, Black-tailed Godwit and Bar-tailed Godwit.

The SCI of the Keeragh Islands SPA is a breeding population of Cormorant. The SCIs of the Saltee Islands SPA are breeding populations of Fulmar, Gannet, Cormorant, Shag, Lesser Black-backed Gull, Herring Gull, Kittiwake, Guillemot, Razorbill and Puffin. Pelagic species that feed in the open sea (i.e. Fulmar, Gannet, Kittiwake, Guillemot, Razorbill and Puffin) have been screened out and are not considered further. Further to a re-examination of data on Herring Gull from the trestle study (see pg. 3.20) there is no evidence that Herring Gull react negatively to oyster trestles; Herring Gull can therefore be screened out from further assessment. As the aquaculture sites at Bannow Bay are within the foraging ranges of Cormorant (Keeragh Islands SPA; Saltee Islands SPA) and Shag and Lesser Black-backed Gulls (from the Saltee Islands SPA) these are considered further.

Other SPAs in the wider environs were also considered and screened out.

Assessment of impacts on intertidal species (excluding Pintail)

The predicted displacement from intertidal oyster and mussel cultivation in Bannow Bay is shown below (i.e. Table 8.5 of the AA). The predicted displacement from full occupancy of the renewal sites (which do not include the sites with trial licenses) ranges from over 3% of the total Bannow Bay population for Grey Plover and Bar-tailed Godwit to less than 0.1% for several other species.

Full occupancy of all the sites (renewals and applications) may cause much higher levels of displacement, including over 14% of the Bannow Bay Bar-tailed Godwit population, over 12% of the Bannow Bay Grey Plover population, and over 9% of the Bannow Bay Dunlin population.

Table 1 – Summary of Predicted displacement

Species	Probability of negative response	Predicted displacement levels		
		Renewal sites	Renewal and trial sites	All sites
Light-bellied Brent Goose	low	1.0% (0.4%-1.6%)	3.0% (1.2%-4.8%)	6.4% (2.6%-10.1%)
Shelduck	moderate	negligible		

Species	Probability of negative response	Predicted displacement levels		
		Renewal sites	Renewal and trial sites	All sites
Golden Plover	moderate	0.0% (0.0%-0.0%)	0.0% (0.0%-0.0%)	2.9% (1.6%-4.2%)
Grey Plover	very high	2.6% (2.3%-2.9%)	7.8% (7.0%-8.5%)	16.4% (14.7%-18.1%)
Lapwing	mod	0.2% (0.1%-0.3%)	0.5% (0.2%-0.8%)	2.6% (1.8%-3.3%)
Curlew	low	0.9% (0.6%-1.2%)	2.6% (1.8%-3.5%)	6.8% (5.3%-8.3%)
Black-tailed Godwit	moderate	2.5% (2.2%-2.8%)	7.5% (6.7%-8.3%)	15.9% (14.2%-17.7%)
Bar-tailed Godwit	high	2.3% (2.1%-2.5%)	6.9% (6.1%-7.5%)	14.5% (12.9%-16.0%)
Knot	very high	2.6% (2.2%-3.1%)	7.9% (6.5%-9.3%)	16.8% (13.8%-19.7%)
Dunlin	high	2.1% (1.8%-2.5%)	6.3% (5.3%-7.3%)	13.3% (11.2%-15.3%)
Redshank	low	0.9% (0.6%-1.2%)	2.8% (1.9%-3.7%)	6.5% (4.8%-8.2%)

The predicted displacement figures in the above table are based on three key assumptions: (1) the 2009/10 low tide counts provide an accurate representation of the species low tide distribution; (2) in the absence of intertidal oyster cultivation, the species would be uniformly distributed throughout all the available intertidal habitat within subsite 00413; and (3) the species are completely excluded from the areas occupied by the trestles. Given the very limited available data it was necessary to make these assumptions. However, all three assumptions are unlikely to be true for some, or all, of the species involved.

The comparisons between the bird usage counts and NPWS waterbird survey programme (WSP) datasets (2009/210), and between the WSP and trestle study datasets (2011), show that most species did not show consistent distribution patterns across all three datasets. This is not surprising as each dataset only included four or five counts and waterbird distribution patterns at this scale usually show a high degree of variability. In particular, the three species with the highest predicted displacement levels (Grey Plover, Dunlin and Bar-tailed Godwit) all showed higher relative numbers in the mid zone/subsite 00413 in the WSP dataset compared to the other two datasets. Therefore, the distribution data from the WSP may exaggerate the overall average level of occurrence of these species in the subsite 00413 and result in overestimation of the likely displacement impact for these species. Both Light-bellied Brent Goose and Curlew showed more or less consistent distribution patterns across the three datasets, suggesting that the use of distribution data from the WSP should not have affected the calculation of the likely displacement impact.

In the case of Grey Plover, our observations suggest that the birds in subsite 00413 may preferentially use the area on the south side of the main tidal channel, outside the aquaculture area (although this could be an indicator of impact from the aquaculture activities, i.e. displacement).

Subsite 00413 contains a heterogeneous mixture of intertidal habitats. The ASU habitat map (see Chapter 5.0 of the AA) shows that three broad sediment types occur in this subsite: littoral mud along the northern/western side of the subsite, muddy sand in the middle part of the subsite and littoral fine sand in the southern/eastern part of the subsite. As discussed in Chapter 5.0, the actual distribution of sediment types within this subsite is more complex than represented in the ASU map. The distribution patterns recorded between sectors in the trestle study counts may reflect this habitat variation and show that the assumption that, in the absence of intertidal oyster cultivation, species would be uniformly distributed throughout all the available intertidal habitat within subsite 00413 is not correct. In particular, these distribution patterns indicate that the aquaculture areas occupy a transitional zone between the muddier sediments in the upper estuary that hold high densities of most species and the sandier sediments in the middle zone of the estuary that hold low densities of most species.

It is also not the case that all species are completely excluded from the areas occupied by the trestles. The overall results of the trestle study indicate that, while Grey Plover and Knot are completely excluded, the impact on Dunlin and Bar-tailed Godwit is a reduction in density, rather than complete exclusion. The data from Bannow Bay indicates that most species had more strongly negative patterns of association with trestle blocks compared to the overall pattern across the trestle study. This may indicate some site-specific factor causing a higher level of impact. However, it is also possible that this is an artefact due to the small number of counts: the trestle study was designed to investigate overall patterns of association across sites, rather than to produce reliable data for individual sites.

Impact assessment

The displacement analysis above predicts that full occupation of the aquaculture sites could cause: -

- high levels of displacement (13-16%) to the Bannow Bay Knot, Grey Plover, Dunlin, Black-tailed Godwit and Bar-tailed Godwit populations;
- significant, or near-significant, displacement levels of around 5% to the Bannow Bay Light-bellied Brent Goose, Curlew and Redshank populations;
- measurable but non-significant displacement levels of 1.3-3.5% to the Bannow Bay Lapwing, populations;
- and negligible displacement levels of 0.1-0.2% to the Bannow Bay Shelduck populations.

However, for the reasons discussed above, there is a high level of uncertainty to these predictions. Therefore, the actual displacement levels to these species could be significantly less than predicted. Conversely the displacement levels to these species could be significantly greater than predicted.

Therefore, we consider that, in general, the potential for significant displacement impacts cannot be discounted simply because the predicted displacement level is less than 5%, and that Light-bellied Brent Goose, Grey Plover, Lapwing, Knot, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew and Redshank may all be subject to significant adverse impacts from full occupation of the aquaculture sites. However, we consider that potential for significant displacement impacts is very unlikely for Shelduck and Golden Plover.

While significant numbers of Shelduck and Golden Plover occur in the mid zone of the estuary, these birds almost all occur in the muddy bay on the eastern side of Bannow Island (subsite 00418). During the WSP counts, there was only a single counts of 7 Shelduck and 17 Golden Plover from subsite 00413. In the trestle study counts the mean Shelduck count in the sectors overlapping subsite 00418 was 19 (range 6-42), while no Golden Plover were recorded. In February and March 2016, Shelduck were also concentrated in subsite 00418 and no Shelduck or Golden Plover were recorded in the areas around the trestles (the Golden Plover only occurred at the upper end of the estuary in subsite 00416). Therefore, there is consistent evidence across three winters indicating that Shelduck and Golden Plover usage of subsite 00413 is very low.

Assessment of impacts on other species

Pintail has disappeared from Bannow Bay. Its disappearance does not appear to be related to the development of aquaculture activities in the bay, but may be due to a combination of a national population decline and a re-distribution of the remaining population.

No information is available about the occurrence of visiting Cormorant from the Keeragh Islands SPA within Bannow Bay. In winter, Cormorant regularly occur within Bannow Bay but it is not known to what extent, if any, Cormorants use Bannow Bay in summer. No evidence is available about the response of Cormorants to oyster trestles. In general, intertidal oyster cultivation is likely to have neutral or positive impacts on the availability of prey resources for Cormorant in the areas occupied by the activity, compared to areas of similar habitat elsewhere in Bannow Bay. Therefore, intertidal oyster cultivation is not likely to cause any displacement of Cormorant within Bannow Bay.

The response of Lesser Black-backed Gull to trestles is unknown. An assessment of the potential occurrence of breeding birds from the Saltee Islands SPA was undertaken by considering evidence about the typical foraging range and diet of the species during the breeding season. It is clear that Lesser Black-backed Gull can range very widely from their breeding colonies and the aquaculture areas in Bannow Bay may be within the core foraging range of the Saltee Islands SPA population. While Lesser Black-backed Gull may be more likely to use food resources in the open sea compared to some other gull species, food resources in the intertidal zone can be a significant component of the diet in at least some breeding colonies. In the absence of specific information about the diet of the Lesser Black-backed Gull colony of the Saltee Islands, the possibility cannot be discounted that intertidal habitat in Bannow Bay provides food resources for the colony. Without firm information on the diet of the Saltee Islands Lesser Black-backed Gull colony, the occurrence of Lesser Black-backed Gull in Bannow Bay during the summer, and/or the response of Lesser Black-backed Gull to oyster trestles, it is not possible to make an assessment of the potential impact of aquaculture activities in Bannow Bay on the colony.

Cumulative impacts

This section presents an assessment of potential cumulative impacts from intertidal oyster cultivation in combination with other activities. Cormorant is not included in this assessment because the main assessment has concluded that this species are likely to have a neutral or positive response to intertidal oyster and mussel cultivation. Therefore, as the species included in this assessment are only associated with intertidal habitat, activities only affecting deep subtidal habitat such as boat traffic are not included in this assessment. Potentially disturbing activities considered include beach recreation, bait digging, hand collection of shellfish and shore angling. Overall, the available information indicates that non-aquaculture related disturbance generating activities are unlikely to

be causing significant impacts to the species covered in this assessment. Therefore, it is not necessary to consider potential in-combination effects with intertidal oyster and mussel cultivation.

Consideration was also given to potential effects on food resources by bait digging, shellfish collection and changing patterns of effluent discharge (i.e. nutrient inputs). There was no evidence that any such activities / proposed changes will cause a significant reduction in food supply for any of the SCI species, and it is not necessary to consider potential in-combination effects with intertidal oyster and mussel cultivation.