

NPWS (2011)

Kingstown Bay SAC (site code: 2265)

**Conservation objectives supporting document-
marine habitats**

Version 1

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Introduction

Kingstown Bay SAC is designated for the Annex I qualifying interest of Large shallow inlets and bays (figure 1).

Subtidal habitat surveys of Kingstown Bay SAC were undertaken in 2003, 2005 and 2010 to investigate the physical and biological structure of this site. Aspects of the biology and ecology of the Annex I habitat is provided in Section 1. The corresponding site-specific conservation objectives will facilitate Ireland delivering on its surveillance and reporting obligations under the EU Habitats Directive (92/43/EC).

Ireland also has an obligation to ensure that consent decisions concerning operations/activities planned for Natura 2000 sites are informed by an appropriate assessment where the likelihood of such operations or activities having a significant effect on the site cannot be excluded. Further ancillary information concerning the practical application of the site-specific objectives and targets in the completion of such assessments is provided in Section 2.

Section 1

LARGE SHALLOW INLETS AND BAYS

Kingstown Bay is a small, narrow tidal inlet located in north-west Connemara, Co Galway (figure 1). It is sheltered due to its orientation and the presence of the islands of Omev, Inishturk and Turbot at its mouth. Depths are at their greatest towards the mouth of the bay where they reach 15m and become gradually shallower moving inwards. A sill extending for over 200m in length is present in the middle of the bay with depths of less than 2m BCD occurring here. Depth increases again to the east of the sill however they are in the main less than 5m BCD. Currents within the bay can be moderately strong and are at their strongest over the sill. There is little direct freshwater inflow to the site.

Kingstown Bay contains a wide range of sublittoral sediments including medium sand and broken shell at the mouth of the bay and living and dead maërl, gravel and muds in the inner bay. Shorelines vary from bedrock to boulders and cobble at the mouth to exposed bedrock, dead maërl, gravel, and mud in the inner bay.

This Annex I habitat is represented by the following benthic communities at this site: *Zostera* dominated community; Maërl dominated community; Subtidal sand with amphipods and polychaetes community; Sandy mud with *Arenicola marina* and anemones community complex; Intertidal sediment community complex; and Intertidal reef community complex. Throughout much of the site, the *Zostera* dominated and Maërl dominated communities co-occur and have been mapped as such (map 2).

These community types are described below. The development of a community complex target arises when an area possesses similar abiotic features but records a number of biological communities that are not regarded as being sufficiently stable and/or distinct temporally or spatially to become the focus of conservation efforts. In this case, examination of the available data from Kingstown Bay identified a number of biological communities whose species composition overlapped significantly. Such biological communities are grouped together into what experts consider are sufficiently stable units (i.e. a complex) for conservation targets.

ZOSTERA DOMINATED COMMUNITY

In Kingstown Bay a *Zostera* dominated community extends over the major portion of the benthos from just inside the mouth of the bay to the headland due west of Knockbaun Quay (figure 2). It occurs in shallow water, typically to a maximum of c.4m depth. Over the major portion of this area it co-occurs with the maërl forming species of coralline algae *Phymatolithon calcareum* and *Lithothamnion corallioides*.

It is the eelgrass species *Zostera marina* which predominates within this community with densities ranging from abundant (>12 individuals per m²) within the maërl bed to occasional (2-5 individuals per m²) based on the AFOR scale of abundance.

The sediment here is classified as gravelly muddy sand with sand being the major component (>69%). The medium, fine and very fine sand fractions each account for >15%, while gravel constituted 18% and silt/clay 11%.

The infauna of the *Zostera* dominated community is distinguished by the presence of large numbers of the crustacean *Nebalia* sp., other species of crustacean *Gammarus locusta* and *Aoridae* sp are also present. The crab *Necora puber* and the polychaete *Chaetopterus variopedatus* were also present here.

Species associated with the <i>Zostera</i> dominated community	
<i>Zostera marina</i>	<i>Phymatolithon calcareum</i>
<i>Lithothamnion corallioides</i>	<i>Nebalia</i> sp.
<i>Gammarus locusta</i>	<i>Aoridae</i> sp.
<i>Nematoda</i>	<i>Platynereis dumerilii</i>
<i>Tubificoides benedii</i>	<i>Malacoceros fuliginosus</i>
<i>Lysianassa ceratina</i>	<i>Parvicardium exiguum</i>
<i>Idotea pelagica</i>	<i>Necora puber</i>
<i>Chaetopterus variopedatus</i>	

Table 1 Species associated with the *Zostera* dominated community.

MAËRL DOMINATED COMMUNITY

Dense beds of maërl-forming species *Lithophyllum dentatum*, *Lithophyllum fasciculatum* and *Lithothamnion corallioides* occur within this site, the main one of which is recorded midway along the bay at a shallow sill (c.2m) in moderate currents (figure 2). This bed is very dense and is formed by unusually large rounded balls of *L. dentatum*, some of which may be up to 10cm in diameter. It is very heterogeneous composition with some patches dominated by *L. dentatum* and *L. fasciculatum* alternating with patches dominated by *Lithothamnion corallioides*. There are further small beds of mixed maërl to the east of the shallow sill and Knockbaun Quay. Kingstown Bay has the second largest known population of *L. dentatum* in Ireland and the largest population of *L. fasciculatum*. Both of these species are known to be rare within Ireland. Another species of maërl, *Phymatolithon calcareum*, also occurs here as a less abundant component. *Zostera marina* was recorded as a dominant species within the centre of the maërl bed.

In general, the sediment within the beds may be defined as sandy gravel, with gravel constituting the most dominant component (67%) and a very low proportion of silt-clay (4%).

In areas where *Zostera* is rare or absent, the anemones *Anthopleura ballii* and *Cereus pedunculatus* were recorded (table 2). Several epiphytic algae also occur; of particular interest are *Gelidiella calcicola*, thought to be endemic to maërl communities, and the common coralline algae, *Corallina officinalis* which grows in unattached balls at this site. Infauna species that were recorded in high abundances here include the oligochaete *Tubificoides benedii*, the tanaid *Apseudes talpa* and the gastropod *Onoba seimcostata*, other species typical of maërl beds in general were also recorded here including *Kurtiella bidentata*, *Notomastus latericeus* and *Janira maculosa*.

Species associated with the Maërl dominated community	
<i>Lithothamnion corallioides</i>	<i>Lithophyllum dentatum</i>
<i>Lithophyllum fasciculatum</i>	<i>Phymatolithon calcareum</i>
<i>Zostera marina</i>	<i>Tubificoides benedii</i>
<i>Apeudes talpa</i>	<i>Anthopleura ballii</i>
<i>Onoba semicostata</i>	<i>Aonides oxycephala</i>
<i>Mediomastus fragilis</i>	<i>Cereus pedunculatus</i>
<i>Gammarella fucicola</i>	<i>Nematoda</i>
<i>Nebalia sp.</i>	<i>Kurtiella bidentata</i>
<i>Prionospio cf. multibranchiata</i>	<i>Anemonia viridis</i>
<i>Gelidiella calcicola</i>	<i>Corallina officinalis</i>

Table 2 Species associated with the Maërl dominated community

SUBTIDAL SAND WITH AMPHIPODS AND POLYCHAETES COMMUNITY

This community is recorded from the mouth of the bay in depths of 2m to 12m (figure 2). The sediment is that of gravelly sand, with fine sand and very fine sand accounting for 76% of the sediment fractions.

The species that occur in this area are typical of fine sands and include the crustaceans *Tanaopsis graciloides*, *Corophium crassicorne*, *Iphinoe trispinosa*, and *Urothoe elegans* and the polychaete *Spio filicornis*.

Distinguishing species of the Subtidal sand with amphipods and polychaetes community	
<i>Tanaopsis graciloides</i>	<i>Nebalia sp.</i>
<i>Nematoda</i>	<i>Spio filicornis</i>
<i>Spio sp.</i>	<i>Pomatoceros triqueter</i>
<i>Notomastus sp.</i>	<i>Siphonoecetes kroyeranus</i>
<i>Iphinoe trispinosa</i>	<i>Urothoe elegans</i>
<i>Coropium crassicorne</i>	

Table 3 Distinguishing species of the Subtidal sand with amphipods and polychaetes community.

MUD WITH *ARENICOLA MARINA* AND ANEMONES COMMUNITY

This community occurs in the inner reaches of the bay west of the quay at Knockbaun at depths of between 2m and 5m (figure 2). The sediment here is largely that of mud with rock outcrops. The species noted as common from this community include the polychaete *Arenicola marina* and the anemones *Meritridium senile*, *Sargartiogeton* sp. *Anemone viridis*. The serpulid polychaete *Serpula vermicularis*, the ophistobranch *Philine operta* and the crab *Carcinus maenas* have also been recorded here.

Species associated with the Mud with <i>Arenicola marina</i> and anemones community	
<i>Arenicola marina</i>	<i>Meritridium senile</i>
<i>Sargartiogeton</i> sp.	<i>Anemone viridis</i>
<i>Serpula vermicularis</i>	<i>Philine operta</i>
<i>Carcinus maenas</i>	

Table 4 Species associated with the Mud with *Arenicola marina* and anemones community.

INTERTIDAL SEDIMENT COMMUNITY COMPLEX

This intertidal community complex ranges from muddy mixed sediment in the north-east and east to sand in the northwest of the bay (figure 2). Along the southern shore the mixed sediment is composed of live and dead maërl deposits (*Phymatolithon calcareum* and *Lithophyllum fasciculatum*) and gastropod and bivalve shells.

Red algal species *Asparagopsis armata*, *Cryptopleura ramose* and *Aglaothamnion hookeri* occur in the mixed sediment on the southern shore. The polychaete *Arenicola marina* and the bivalves *Tapes rhomboides*, *Cerastoderma edule* and *Angulus tenuis* and the anemone *Bunodactis verrucosa* are all recorded for this community complex.

Species associated with the Intertidal sediment community complex	
<i>Tapes rhomboides</i>	<i>Cerastoderma edule</i>
<i>Angulus tenuis</i>	<i>Bunodactis verrucosa</i>

Table 5 Species associated with the Intertidal sediment community complex.

INTERTIDAL REEF COMMUNITY COMPLEX

Intertidal reef occurs extensively throughout this site (figure 2). It ranges from reef-forming outcrops to boulders on cobble, vertical reefs occur at Hogs Island to the north-west and low-lying cobble on the south-west shore.

The exposure regime ranges from moderately exposed to wave action at the mouth of the bay to sheltered in the inner reaches of the bay.

The algal species *Fucus spiralis*, *Pelvetia canaliculata* and *Ascophyllum nodosum* are common in sheltered areas in east of the bay. An abundant layer of the red alga *Rhodothamniella floridula* occurs in the sheltered south-eastern end of the bay. On exposed shores the algal species *Fucus vesiculosus*, *Fucus serratus*, *Osmundea pinnatifida*, *Chorda filum* and *Mastocarpus stellatus* are more prevalent. The typical faunal

species observed are: the limpet *Patella vulgata*, the barnacle *Semibalanus balanoides*, the periwinkle *Littorina* spp. and the sponge *Hymeniacidon perleve*.

Species associated with the Intertidal reef community complex	
<i>Fucus spiralis</i>	<i>Pelvetia canaliculata</i>
<i>Ascophyllum nodosum</i>	<i>Fucus vesiculosus</i>
<i>Fucus serratus</i>	<i>Osmundea pinnatifida</i>
<i>Chorda filum</i>	<i>Mastocarpus stellatus</i>
<i>Patella vulgata</i>	<i>Semibalanus balanoides</i>
<i>Littorina</i> spp.	<i>Hymeniacidon perleve</i>

Table 4 Species associated with the Intertidal reef community complex.

Section 2: Appropriate Assessment Notes

Many operations/activities of a particular nature and/or size require the preparation of an environmental impact statement of the likely effects of their planned development. While smaller operations/activities (i.e., sub threshold developments) are not required to prepare such statements, an appropriate assessment and Natura Impact Statement is required to inform the decision-making process in or adjacent to Natura 2000 sites. The purpose of such an assessment is to record in a transparent and reasoned manner the likely effects on a Natura 2000 site of a proposed development. The Department of the Environment, Heritage and Local Government has prepared general guidance on the completion of such assessments (www.npws.ie).

Annex I Habitats

It is worth considering at the outset that in relation to Annex I habitat structure and function, the extent and quality of all habitats varies considerably in space and time and marine habitats are particularly prone to such variation. Habitats which are varying naturally, i.e., biotic and/or abiotic variables are changing within an envelope of natural variation, must be considered to have favourable conservation condition. Anthropogenic disturbance may be considered significant when it causes a change in biotic and/or abiotic variables in excess of what could reasonably be envisaged under natural processes. The capacity of the habitat to recover from this change is obviously an important consideration (i.e., habitat resilience) thereafter.

This Department has adopted a prioritized approach to conservation of structure and function in marine Annex I habitats.

1. Those communities that are key contributors to overall biodiversity at a site by virtue of their structure and/or function (keystone communities) should be afforded the highest degree of protection and any significant anthropogenic disturbance should be avoided.
2. In relation to the remaining constituent communities that are structurally important (e.g., broad sedimentary communities) within an Annex I marine habitat, there are two considerations.
 - 2.1. Significant anthropogenic disturbance may occur with such intensity and/or frequency as to effectively represent a continuous or ongoing source of disturbance over time and space (e.g., effluent discharge within a given area). Drawing from the principle outlined in the European Commission's Article 17 reporting framework that disturbance of greater than 25% of the area of an Annex I habitat represents unfavourable conservation status, this Department takes the view that licensing of activities likely to cause continuous disturbance of each community type should not exceed an approximate area of 15%. Thereafter, an increasingly cautious approach is advocated. Prior to any further licensing of this category of activities, an inter-Departmental management review (considering *inter alia* robustness of available scientific knowledge, future site requirements, etc) of the site is recommended.
 - 2.2. Some activities may cause significant disturbance but may not necessarily represent a continuous or ongoing source of disturbance over time and space. This may arise for intermittent or episodic activities for which the receiving environment would have some resilience and may be expected to recover within a reasonable timeframe relative to the six-year reporting cycle (as required under Article 17 of the Directive). This Department is satisfied that such activities could be assessed in a context-specific manner giving due consideration to the proposed nature and scale of activities

during the reporting cycle and the particular resilience of the receiving habitat in combination with other activities within the designated site.

The following technical clarification is provided in relation to specific conservation objectives and targets for Annex I habitat to facilitate the appropriate assessment process:

Objective **To maintain the favourable conservation condition of Large shallow inlets and bays in Kingstown Bay SAC, which is defined by the following list of attributes and targets**

Target 1 The permanent habitat area is stable or increasing, subject to natural processes.

- This target refers to activities or operations that propose to permanently remove habitat from the site, thereby reducing the permanent amount of habitat area. It does not refer to long or short term disturbance of the biology of a site.
- Early consultation or scoping with the Department in advance of formal application is advisable for such proposals.

Target 2 Maintain the natural extent of the *Zostera* dominated and Maërl dominated communities.

- *Zostera* and Maërl dominated communities are considered to be keystone communities that are of considerable importance to the overall ecology and biodiversity of a habitat by virtue of their physical complexity, e.g. they serve as important nursery grounds for commercial and non-commercial species.
- Any significant anthropogenic disturbance to the extent of these communities should be avoided.
- An interpolation of the likely distribution of these communities is provided in figure 2. The areas given below are based on spatial interpolation and therefore should be considered indicative.
 - Co-occurring *Zostera* and maërl dominated communities 19ha
Zostera dominated community 6ha
Maërl dominated community 4ha

Target 3 Maintain the high quality of *Zostera* dominated community.

- It is important to ensure the quality as well as the extent of *Zostera* dominated community is conserved. Shoot density provides an indication of the habitat quality as well as giving information on the habitat complexity and refuge capability; all are important components in maintaining the structural and functional integrity of the habitat.
- Within Clew Bay, the density of the *Zostera* dominated community in 2005 was estimated to range from Abundant to Occasional on the AFOR scale (semi-quantitative abundance measure).
- Any significant anthropogenic disturbance to the quality (i.e., shoot density) of these communities should be avoided.

Target 4 Maintain the high quality of Maërl dominated community.

- Every effort should be made to avoid any death to living maërl.
- Any significant anthropogenic disturbance (i.e. that results in changes to the volume of live maërl) to the quality of the maërl dominated community should be avoided.

Target 5 The following communities should be maintained in a natural condition: Subtidal sand with amphipods and polychaetes community; Mud with *Arenicola marina* and anemones community; Intertidal sediment community complex; and Intertidal reef community complex.

- A semi-quantitative description of the communities has been provided in Section 1.
- An interpolation of their likely distribution is provided in figure 2.
- The estimated areas of the communities given below are based on spatial interpolation and therefore should be considered indicative:
 - Subtidal sand with amphipods and polychaetes community 15ha
 - Mud with *Arenicola marina* and anemones community 7ha
 - Intertidal sediment community complex 3ha
 - Intertidal reef community complex 21ha
- Significant continuous or ongoing disturbance of communities should not exceed an approximate area of 15% of the interpolated area of each community type, at which point an inter-Departmental management review is recommended prior to further licensing of such activities.
- Proposed activities or operations that cause significant disturbance to communities but may not necessarily represent a continuous or ongoing source of disturbance over time and space may be assessed in a context-specific manner giving due consideration to the proposed nature and scale of activities during the reporting cycle and the particular resilience of the receiving habitat in combination with other activities within the designated site.

Figure 1. Extent of Shallow Inlets and Bays in Kingstown Bay SAC

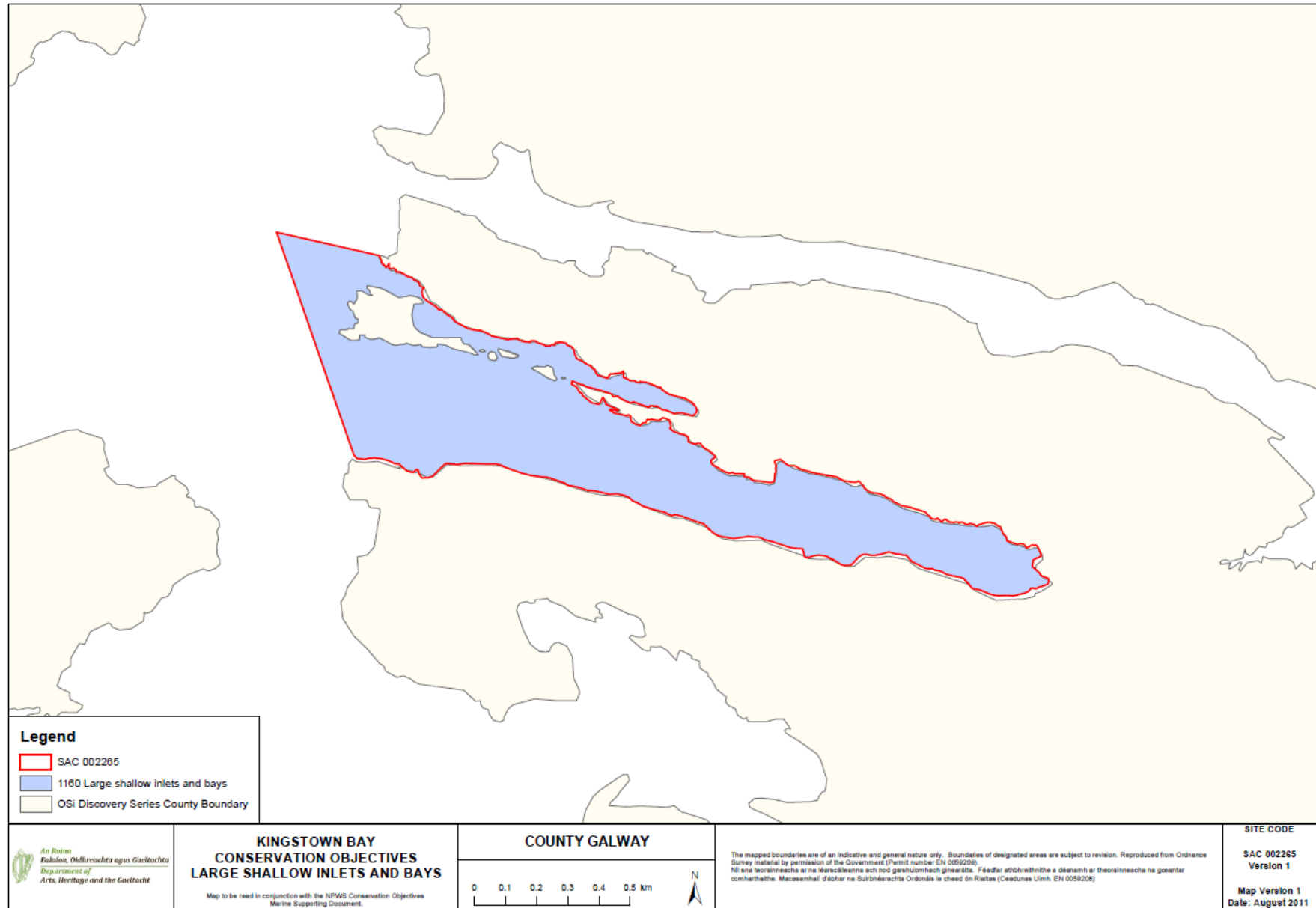


Figure 2. Distribution of communities in Kingstown Bay SAC

