NPWS (2011)

Bannow Bay SAC (site code: 0697)

Conservation objectives supporting document - marine habitats

Version 1

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Introduction

Bannow Bay SAC is designated *inter alia* for the Annex I qualifying interests of Mudflats and sandflats not covered by sea water at low tide and Estuaries (Figures 1 and 2). The Annex I habitat Estuaries is a large physiographic feature that may wholly or partly incorporate other Annex I habitats including mudflats and sandflats within its area.

Intertidal and subtidal surveys were undertaken in 2009 (Aquafact, 2010; ASU, 2010) and these data were used to determine the physical and biological nature of this SAC and adjacent areas that are contained within the partially overlapping Special Protection Area (SPA). These habitat surveys facilitated the development of site-specific conservation objectives that will allow Ireland deliver 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

Principal Benthic Communities

Within Bannow Bay, six community complexes were recorded. The Annex I habitats in which they occur and their presence in the overlapping SPA is presented in Table 1 and a description of each community type is given below.

Community Type	Habitats		SPA
	Estuaries (1130)	Mudflats and sandflats not covered by seawater at low tide (1140)	
Fine sands with *Pygospio elegans* and *Corophium volutator* community complex	✓	✓	✓
Intertidal sand dominated by polychaetes community complex		✓	✓
Zostera-dominated community		✓	✓
Barnea candida community		✓	✓
Sand with *Chaetozone christei* and *Tellina* sp. community complex			✓
Coarse sediment with *Pisidia longicornis* and epibenthic fauna community complex			✓

Table 1 The community types recorded in Bannow Bay SAC and the Annex I habitats in which they occur.

Estimated areas of each community type per Annex I habitat, based on interpolation, are given in the objective targets in Section 2.

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 the Bannow Bay SAC identified a series 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.

FINE SANDS WITH *PYGOSPIO ELEGANS* AND *COROPHIUM VOLUTATOR* COMMUNITY COMPLEX

This community complex is recorded throughout the bay from its most northerly reaches to the mouth of the bay at the southern margin of the site (Figure 3). It occurs intertidally and subtidally to a depth of approximately 2m.

The sediment is largely that of fine material, with fine sand ranging from 8% to 82%, very fine sand from 1% to 51% and silt-clay from 0.1% to 58%; negligible amounts of coarse material (<3%) are recorded here. The highest proportion of silt-clay is recorded in the estuarine areas at the head of the bay, in the intertidal flats at Gorteens and to the east of Bannow Island.

This community complex is distinguished by the polychaete *Pygospio elegans* and the amphipod *Corophium volutator.* The former species occurs in moderate to high abundances throughout the area; however the highest abundances of *C. volutator* are recorded intertidally in the inner reaches of the bay where it occurs with the polychaete *Nereis diversicolor* and the gastropod *Hydrobia ulvae* (Table 2). The oligochaete *Tubificoides benedii* occurs in moderate abundances intertidally here. The distribution of the polychaete *Arenicola marina* is patchy within the complex; it is absent from the inner reaches of the bay and occurs in densities of $10m^{-2}$ in the vicinity of Tintern Bridge.

Distinguishing species of the Fine sands with *Pygospio elegans* and *Corophium volutator* community complex	
Pygospio elegans	*Corophium volutator*
Tubificoides benedii	*Eteone longa*
Hydrobia ulvae	*Nereis diversicolor*
Scrobicularia plana	*Caprella* sp.

Table 2 Distinguishing species of the Fine sands with *Pygospio elegans* and *Corophium volutator* community complex.

INTERTIDAL SAND DOMINATED BY POLYCHAETES COMMUNITY COMPLEX

This community complex is recorded in the outer reaches of Bannow Bay in the vicinity of Bannow Island and on the sandy beaches in Fethard Bay (Figure 3)[1].

The substrate here is that of medium to fine sand, with these fractions accounting for 89% to 97% of the sediment within this complex; coarse fractions and mud fractions account for <7% and <9%, respectively.

[1] Site surveyors have reported significant inundation of land in the vicinity of Big Burrow. This community type is likely to occur in that area.

The complex is distinguished by the presence of the polychaetes *Nephtys cirrosa* and *Scoloplos armiger* which occur, along with the bivalve *Tellina tenuis*, in moderate abundances within this complex (Table 3).

Distinguishing species of the Intertidal sand dominated by polychaetes community complex	
Nephtys cirrosa	*Scoloplos armiger*
Tellina tenuis	*Nephtys hombergii*

Table 3 Distinguishing species of the Intertidal sand dominated by polychaetes community complex.

ZOSTERA-DOMINATED COMMUNITY

This *Zostera*-dominated community occurs in the upper and mid shore between Gorteens and Saltmills (Figure 3). The sediment here is sandy mud, with silt-clay accounting for 49% of the sediment fractions, fine sand for 23% and very fine sand for 25%; negligible amounts of coarse material (<4%) were recorded here.

Zostera noltii is the dominant species within this bed. Its distribution within the area is described as patchy and it is mixed with the alga *Enteromorpha* sp. The infauna is distinguished by the presence in high abundances of the polychaete *Ampharete acutifrons* and the oligochaete *Tubificoides benedii.* The gastropod *Hydrobia ulvae,* the polychaete *Pygospio elegans* and the amphipod *Corophium volutator* are recorded in moderate abundances here. Occasional patches of the bivalve *Mytilus edulis* with fucoids attached also occur within this bed (Table 4).

Distinguishing species of the *Zostera*-dominated community	
Zostera noltii	*Ampharete acutifrons*
Tubificoides benedii	*Enteromorpha* sp.
Hydrobia ulvae	*Pygospio elegans*
Corophium volutator	*Mytilus edulis*

Table 4 Distinguishing species of the *Zostera*-dominated community.

BARNEA CANDIDA COMMUNITY

The bivalve *Barnea candida*, also known as white piddock, is rarely recorded in Ireland. It is known to burrow into wood, peat and soft rocks (e.g. hard clay or chalk) on the lower shore and in the subtidal. Within this site a relatively extensive bed occurs intertidally at the northern end of the beach at Newtown (Figure 3).

The substrate here forms raised grey impacted clay/mud beds in which this bivalve burrows. The sediment composition is that of sandy mud, with silt-clay accounting for 44% of the sediment fractions and fine sand and very fine sand contributing 33% and 15% respectively; coarse material is negligible (<0.5%).

Apart from *B. candida*, a single specimen of the mobile polychaete *Perinereis cultrifera* was recorded.

The following communities occur outside of the SAC but are within the boundary of the SPA.

SAND WITH *CHAETOZONE CHRISTEI* AND *TELLINA* SP. COMMUNITY COMPLEX

This subtidal community complex occurs in Fethard Bay from Ingard Point to the mouth of Bannow Bay in depths of between 0m and 5m (Figure 3).

The sediment here is that of sand, with fine sand accounting for 54% of the sediment fractions, medium sand and very fine sand both contributing 18% to its composition.

The bivalve *Tellina fabula* occurs in high abundance here while the polychaetes *Glycera tridactyla*, *Nephtys* sp. and *Chaetozone* sp., the bivalve *Tellina tenuis* and the crustaceans *Iphinoe trispinosa* and *Perioculodes longimanus* are recorded in moderate abundances (Table 5).

Distinguishing species of the Sand with *Chaetozone christei* and *Tellina* sp. community complex	
Chaetozone christiei	*Tellina* sp.
Perioculodes longimanus	*Iphinoe trispinosa*
Bathyporeia tenuipes	

Table 5 Distinguishing species of the Sand with *Chaetozone christei* and *Tellina* sp. community complex.

COARSE SEDIMENT WITH *PISIDIA LONGICORNIS* EPIBENTHIC FAUNA COMMUNITY COMPLEX

This community complex occurs to the north of Ingrad Point and at the mouth of Bannow Bay towards the outer boundary of the SPA (figure 3).

The substrate here is coarse sediment comprising cobbles and stones and occurs in depths of less than 10m. The fauna of this complex consists of mobile and epifaunal species with aorid amphipods, mytilid bivalves and *Pomatoceros* sp. being common here.

The distinguishing species of this complex are typical of coarse sediment (table 6).

Distinguishing species of the Coarse sediment with *Pisidia longicornis* and epibenthic fauna community complex	
Aoridae spp.	Mytilidae spp.
Pomatoceros sp.	*Atlyus guttatus*
Platynereis dumerilii	*Caprella acanthifera*
Nemertea sp.	Nicolea venustula
Gammarus locusta	*Hippolyte* sp.

Table 6 Distinguishing species of the Coarse sediment with *Pisidia longicornis* and epibenthic fauna 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) and their low resilience 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 habitats to facilitate the appropriate assessment process:

Objective **To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in Bannow 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 a 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 extent of the *Zostera*-dominated and the *Barnea candida* communities, subject to natural processes.

A *Zostera*-dominated community is considered to be keystone community that is of considerable importance to the overall ecology and biodiversity of a habitat by virtue of its physical complexity, e.g. it serves as important nursery grounds for commercial and non-commercial species. Although recorded in a number of areas in Britain, the bivalve *Barnea candida* is rarely reported in Ireland. Therefore this record represents a westerly extension of its range.

- 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 3. The area given below is based on spatial interpolation and therefore should be considered indicative:

- *Zostera*-dominated community complex- 18ha
- *Barnea candida* community[2]- 0.2ha

Target 3	Conserve the high quality of the *Zostera*-dominated community, subject to natural processes.

- It is important to ensure the quality as well as the extent of *Zostera*-dominated communities is conserved; for example shoot density can provide an indication of the habitat quality as well as giving information on the habitat complexity and refuge capability; all important components in maintaining the structural and functional integrity of the habitat.
- Whilst no site-specific data has been collected to date, any significant anthropogenic disturbance to the quality of this community should be avoided.

Target 4	Conserve the high quality of the *Barnea candida* community, subject to natural processes.

- Every effort should be made to avoid any death to living *Barnea candida*.
- Any significant anthropogenic disturbance to the quality of the community should be avoided.

Target 5	Conserve the following community types in a natural condition: Fine sands with *Pygospio elegans* and *Corophium volutator* community complex and Intertidal sand dominated by polychaetes 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 3.
- The estimated areas of the communities within the Mudflats and sandflats not covered by seawater at low tide habitat given below are based on spatial interpolation and therefore should be used with a degree of caution:
    - Fine sands with *Pygospio elegans* and *Corophium volutator* community complex – 557ha
    - Intertidal sand dominated by polychaetes community complex – 318ha
- 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

[2] This area is an underestimation of the likely extent of this community within the site due to observed coastal erosion in this location.

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

Objective **To maintain the favourable conservation condition of Estuaries in the Bannow 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 a 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	Conserve the following community type in a natural condition: Fine sands with *Pygospio elegans* and *Corophium volutator* community complex.

- A semi-quantitative description of this community has been provided in Section 1.
- An interpolation of its likely distribution is provided in figure 3.
- The estimated area of this community within the Estuaries habitat given below is based on spatial interpolation and therefore should be used with a degree of caution:
  - Fine sands with *Pygospio elegans* and *Corophium volutator* community complex – 24ha
- Significant continuous or ongoing disturbance of this community should not exceed an approximate area of 15% of the interpolated area, 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.

Bibliography:

Aquafact (2010). Subtidal Benthic Investigations in Bannow Bay SAC (Site Code: IE000697) and SPA (Site Code: IE004033), Co. Wexford. Produced by Aquafact International Services Ltd on behalf of the Marine Institute in partnership with National Parks & Wildlife Service.

ASU (2010). A survey of mudflats and sandflats in Ireland. An intertidal soft sediment survey of Bannow Bay. Produced by ASU on behalf of the Marine Institute in partnership with National Parks & Wildlife Service.

Figure 1 Extent of the Annex I habitat Mudflats and sandflats not covered by seawater at low tide in Bannow Bay SAC.

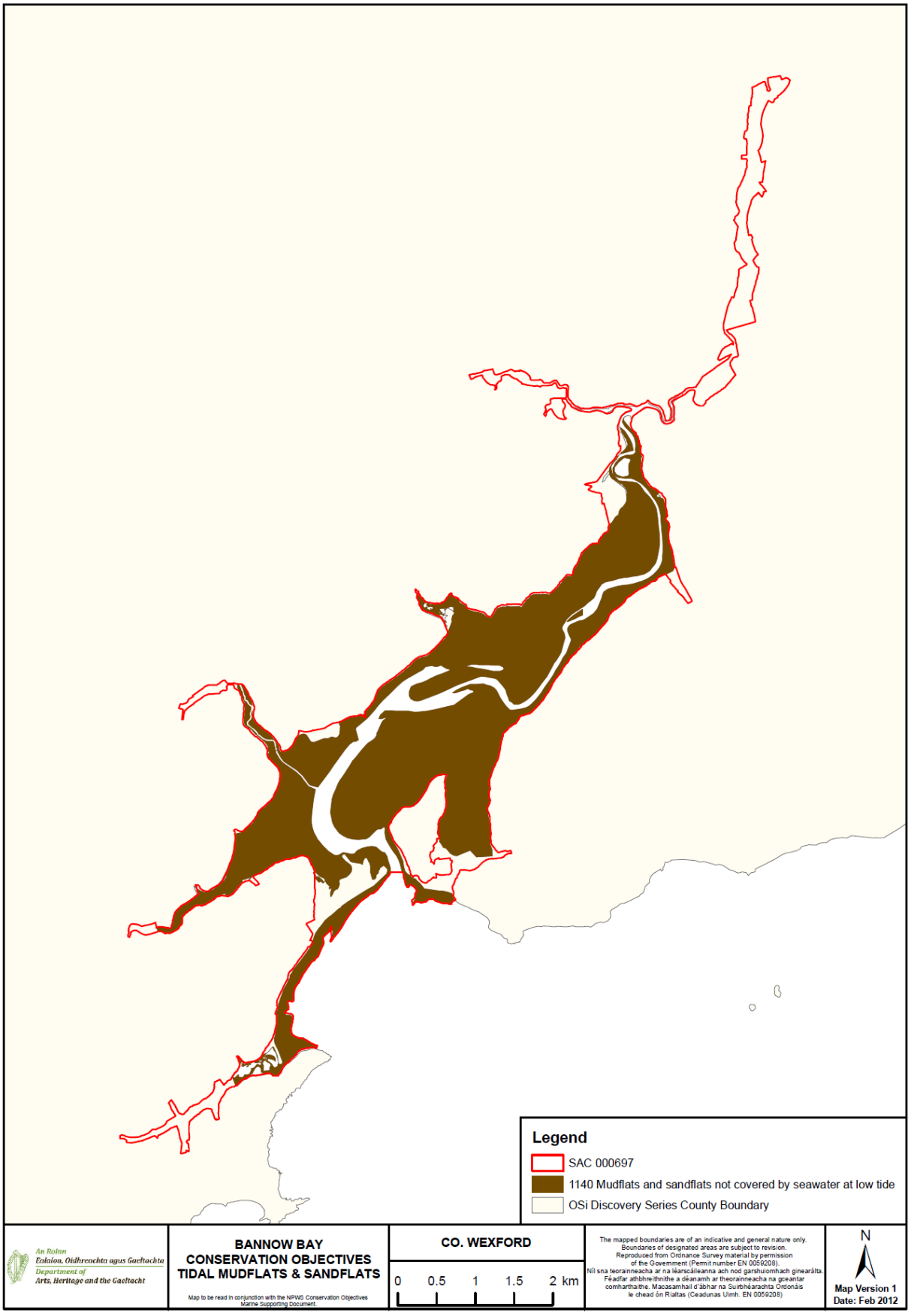

Figure 2 Extent of the Annex I habitat Estuaries in Bannow Bay SAC.

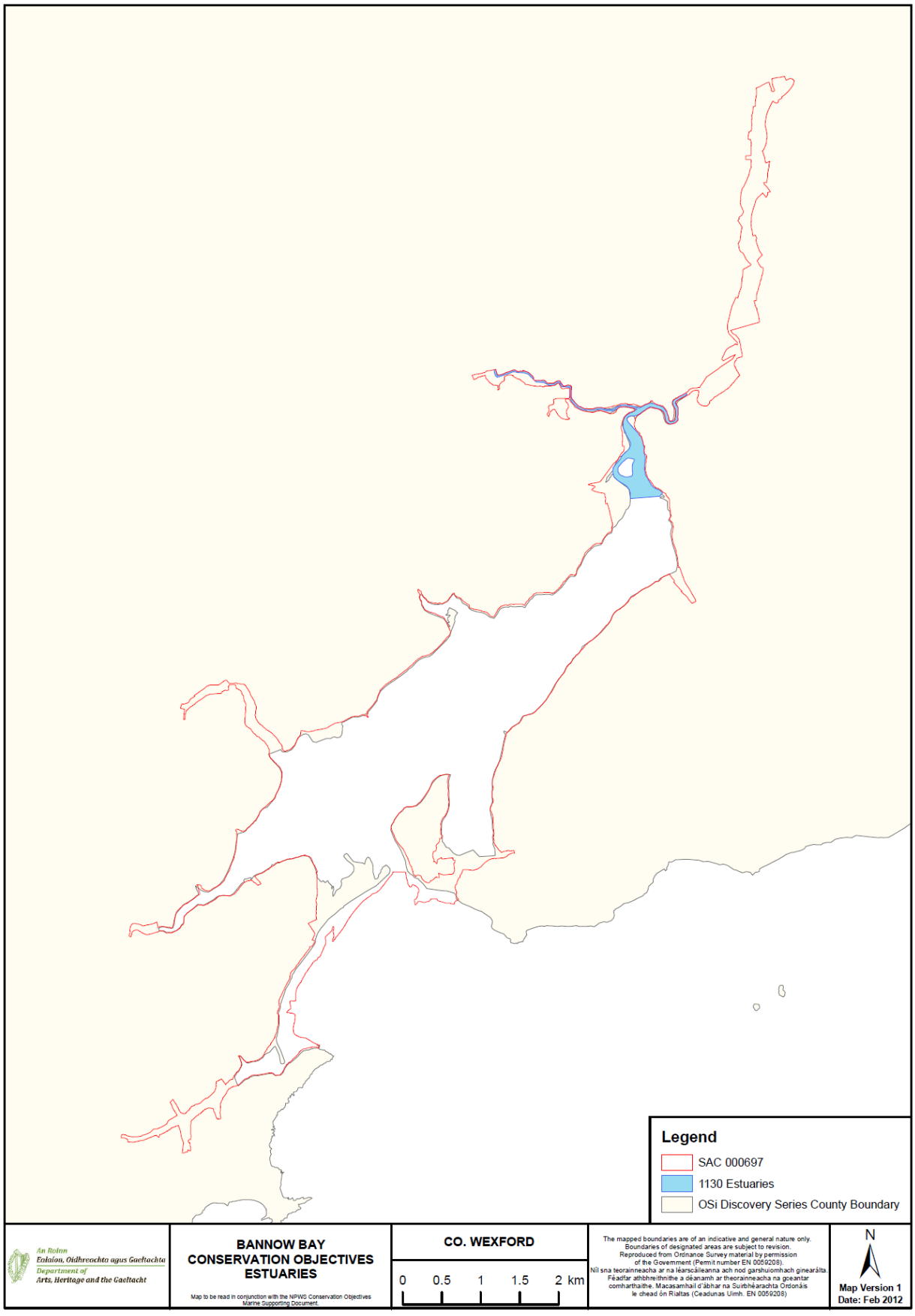

Figure 3 Broadscale community distribution in Bannow Bay SAC and adjacent areas.