NPWS (2012)

Boyne Coast and Estuary SAC (site code: 1957)

Conservation objectives supporting document - marine habitats

Version 1

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Introduction

The Boyne Coast and Estuary SAC is designated for the marine 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 the Boyne Coast and Estuary SAC in 2010 (ASU, 2011; EcoServe, 2011) and these data were used to determine the physical and biological nature of this SAC and adjacent areas that are contained within the Boyne Estuary Special Protection Area (SPA) (site code 4080). 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 the Boyne Coast and Estuary SAC three community types are 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	SAC Annex I Habitats		SPA
	Estuaries (1130)	Mudflats and sandflats not covered by seawater at low tide (1140)	
Intertidal estuarine mud and fine sand with *Hediste diversicolor* and *Corophium volutator* community	✓	✓	✓
Fine sand dominated by bivalves community complex		✓	✓
Subtidal fine sand dominated by polychaetes community	✓		✓

Table 1 The community types recorded in Boyne Coast and Estuary SAC and overlapping Boyne Estuary SPA, and the Annex I habitats in which they occur.

Estimated areas of each community type per Annex I habitat are based on interpolation and 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 Boyne Coast and Estuary 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.

INTERTIDAL ESTUARINE MUD AND FINE SAND WITH *HEDISTE DIVERSICOLOR* AND *COROPHIUM VOLUTATOR* COMMUNITY

This community occurs on the mudflats of the Boyne River from the Boyle Bridge in Drogheda town eastwards to the mouth of the river (Figure 3). The mudflats are most extensive on the southern shore of the estuary from Mornington to Burrow Point.

The sediment of this community is largely that of fine material with fine sand ranging from 11% to 51%, very fine sand from 7% to 24% and silt-clay from 36% to 68%. The coarser fractions are generally less than 6%.

This community is distinguished by the presence of the polychaete *Hediste diversicolor* and the crustacean *Corophium volutator* which occur in high abundances; the gastropod *Hydrobia ulvae* and the crustacean *Crangon crangon* are recorded in moderate abundances here (Table 2).

Intertidal estuarine mud and fine sand with *Hediste diversicolor* and *Corophium volutator* community	
Hediste diversicolor	*Corophium volutator*
Hydrobia ulvae	*Crangon crangon*
Macoma balthica	*Carcinus maenas*

Table 2 Distinguishing species of the Intertidal estuarine mud and fine sand with *Hediste diversicolor* and *Corophium volutator* community.

FINE SAND DOMINATED BY BIVALVES COMMUNITY COMPLEX

This community complex occurs in the coastal portion of the site from its northern boundary at Termonfeckin to Bettystown at its southern margin (Figure 3). It is recorded intertidally and subtidally to a depth of approximately 1m.

The sediment is largely that of fine sand (ranging from 28% to 82%) with variable proportions of remaining sand fractions (coarse sand ranges from 0% to 15%, medium sand from 0% to 12%, very fine sand from 10% to 26%). The amounts of silt-clay and very coarse material are negligible (< 9% and <4%, respectively).

The fauna is dominated by the bivalves *Donax vittatus* and *Tellina tenuis* with the polychaete *Nephtys cirrosa* and the bivalve *Nucula nitidosa* also recorded here in moderate abundances (Table 3). The polychaete *Arenicola marina* occasionally occurs here.

Fine sand dominated by bivalves community complex	
Donax vittatus	*Tellina tenuis*
Nephtys cirrosa	*Nucula nitidosa*
Arenicola marina	

Table 3 Distinguishing species of the Fine sand dominated by bivalves community complex.

SUBTIDAL FINE SAND DOMINATED BY POLYCHAETES COMMUNITY

This community occurs in the channel of the Boyne River from Tom Roe's Point to the mouth of the river. It occurs in depths of between 1m and 5m (Figure 3).

The sediment is largely that of fine sand (ranging from 7% to 70%) with a gradient of increasing fine material towards the inner reaches of the estuary (very fine sand ranging from 7% to 60% and silt-clay from 2% to 78%); coarser material is negligible (< 6%).

The faunal community is dominated by polychaetes *Nephtys kersivalensis*, *Streblospio shrubsolii*, *Nephtys cirrosa*, *Spio filicornis* and *Glycera tridactyla* (Table 4). Stands of the polychaete *Lanice conchilega* are recorded in the northern part of the river channel from Quinnsborough to the Haven. The bivalve *Mytilus edulis* occurs in the eastern confines of the Boyne River channel near Burrow Point.

Subtidal fine sand dominated by polychaetes community	
Nephtys kersivalensis	*Streblospio shrubsolii*
Nephtys cirrosa	*Spio filicornis*
Glycera tridactyla	*Lanice conchilega*
Mytilus edulis	

Table 4 Distinguishing species of the Subtidal fine sand dominated by polychaetes community.

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 the Boyne Coast and Estuary 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 types in a natural condition: Intertidal estuarine mud and fine sand with *Hediste diversicolor* and *Corophium volutator* community; and Fine sand dominated by bivalves 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 considered indicative:
    - Intertidal estuarine mud and fine sand with *Hediste diversicolor* and *Corophium volutator* community –159ha
    - Fine sand dominated by bivalves community complex – 244ha
- 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.

Objective To maintain the favourable conservation condition of Estuaries in the Boyne Coast and Estuary 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 habitat also encompasses the Annex I habitat of Mudflats and sandflats not covered by seawater at low tide. In such areas, the specific targets for that Annex I habitat will address requirements within the Annex I habitat Estuaries.
- 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 types in a natural condition: Intertidal estuarine mud and fine sand with *Hediste diversicolor* and *Corophium volutator* community; and Subtidal fine sand dominated by polychaetes community.

- A semi-quantitative description of these communities has been provided in Section 1.
- An interpolation of their likely distribution is provided in figure 3.
- The estimated area of these communities within the Estuaries habitat given below is based on spatial interpolation and therefore should be considered indicative:
    - Intertidal estuarine mud and fine sand with *Hediste diversicolor* and *Corophium volutator* community – 159ha
    - Subtidal fine sand dominated by polychaetes community – 54ha
- 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

ASU (2011). An intertidal soft sediment survey of the Boyne Coast and Estuary. Carried out by ASU on behalf of Marine Institute in partnership with National Parks & Wildlife Service.

EcoServe (2011). Benthic Survey of the Boyne Coast and Estuary Special Area of Conservation and Boyne Estuary Special Protection Area. Carried out by EcoServe on behalf of 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 the Boyne Coast and Estuary SAC.

Figure 2 Extent of the Annex I habitat Estuaries in the Boyne Coast and Estuary SAC.

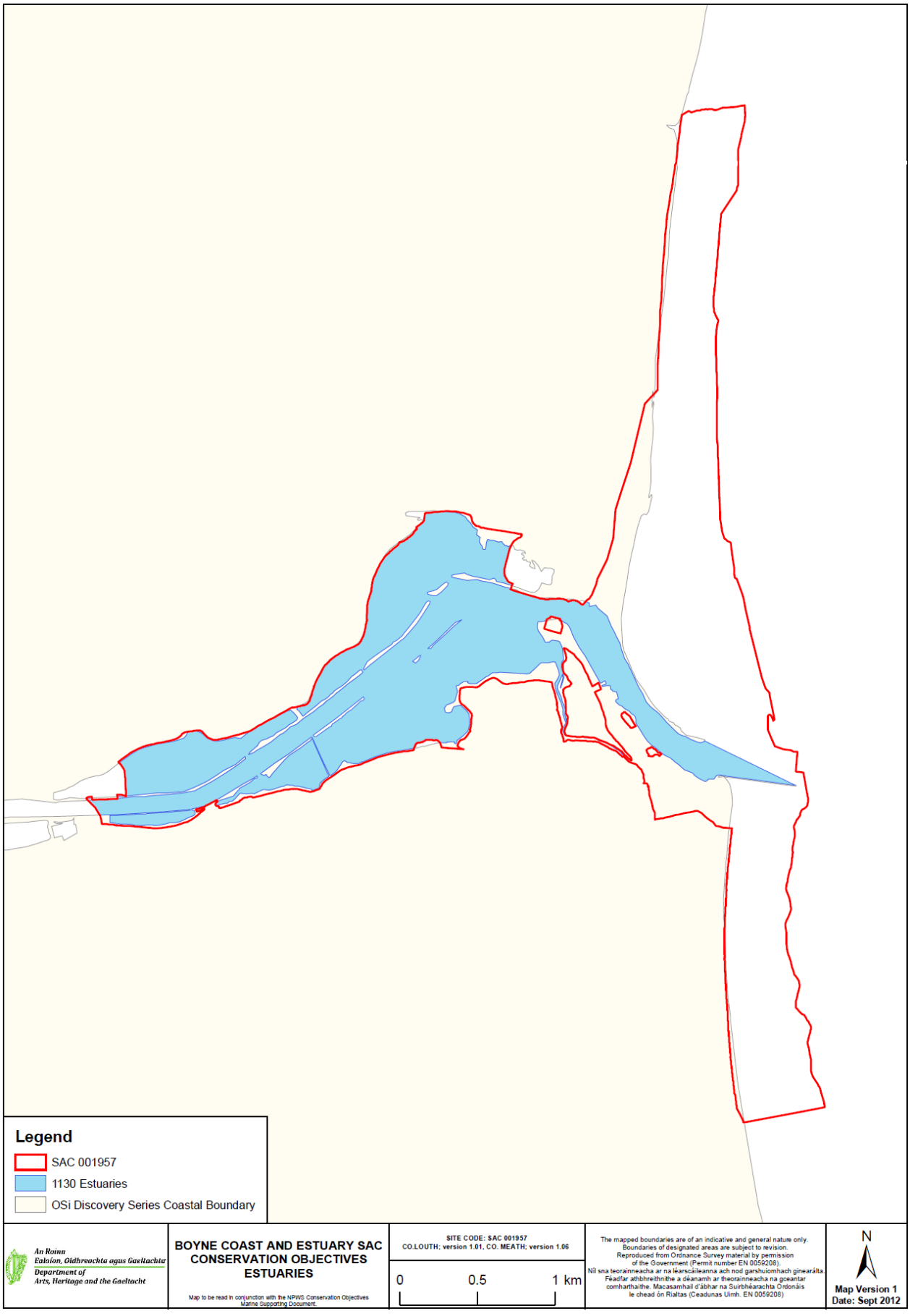

Figure 3 Broadscale community distribution in the Boyne Coast and Estuary SAC and adjacent areas.