

NPWS

**South Dublin Bay SAC
(site code: 0210)**

**Conservation objectives supporting document -
Marine Habitat**

**Version 1
July 2013**

Introduction

South Dublin Bay SAC is designated for the marine Annex I qualifying interest of Mudflats and sandflats not covered by seawater at low tide (Figure 1).

Intertidal surveys were undertaken in 2006 (Aquafact, 2006) and 2011 (MERC, 2012). These data were used to determine the physical and biological nature of this SAC and overlapping Special Protection Areas (SPA) of South Dublin Bay and Tolka River Estuary (site code 4024).

Aspects of the biology and ecology of the Annex I habitat are 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

Principal Benthic Communities

Within South Dublin Bay SAC and the overlapping SPA, five community types are recorded. Their occurrence within the Annex I habitat and the SPA is presented in table 1; a description of each community type is given below.

Community Type	SAC Annex I Habitat	SPA
	Mudflats and sandflats not covered by seawater at low tide (1140)	
Fine sands with <i>Angulus tenuis</i> community complex	✓	✓
<i>Zostera</i> -dominated community	✓	✓
Intertidal reef community		✓
Fine sand to sandy mud with <i>Pygospio elegans</i> and <i>Crangon crangon</i> community complex		✓
Fine sand with <i>Spio martinensis</i> community complex		✓

Table 1 The community types recorded in South Dublin Bay SAC and their occurrence in the Annex I habitat and the adjacent SPA.

Estimated areas of each community type within the 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 South Dublin 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.

FINE SANDS WITH *ANGULUS TENUIS* COMMUNITY COMPLEX

This community occurs throughout the site from the intertidal to a depth of approximately 6m (Figure 2).

The sediment of this community complex is predominantly fine sands (52.7% to 99.4% very fine and fine sand) with negligible amounts of silt-clay (<0.2%). Quantities of coarse material

are generally low (coarse sand <1.1%, gravel <0.22%), occasional increases in the coarser fractions are attributed to localised deposits of shell debris.

The distinguishing species of this community are the bivalve *Angulus tenuis* and the polychaetes *Scoloplos (Scoloplos) armiger*, *Pygospio elegans* and *Nephtys cirrosa* (Table 2). These species are not uniformly distributed across the site and are generally recorded in low abundances.

The gastropod *Peringia ulvae*, the polychaetes *Sigalion mathildae*, *Capitella* sp. and *Paraspio decorata* and the bivalves *Cerastoderma edule* and *Angulus fabula* are also recorded within this community complex. *Ulva* sp. is also recorded as occasional to abundant on the mid and low shores at Sandymount and to the north of Blackrock.

The polychaete *Lanice conchilega* and the bivalve *Ensis ensis* are commonly recorded to the north of Blackrock, in this area and also at Sandymount *L. conchilega* and *Arenicola marina* also commonly occur.

Species associated with the Fine sands with <i>Angulus tenuis</i> community complex	
<i>Angulus tenuis</i>	<i>Sigalion mathildae</i>
<i>Scoloplos (Scoloplos) armiger</i>	<i>Capitella</i> sp.
<i>Pygospio elegans</i>	<i>Paraspio decorata</i>
<i>Nephtys cirrosa</i>	<i>Cerastoderma edule</i>
<i>Peringia ulvae</i>	<i>Angulus fabula</i>

Table 2 Species associated with the Fine sands with *Angulus tenuis* community complex.

ZOSTERA-DOMINATED COMMUNITY

This intertidal community occurs on the upper shore at the Merrion Gates (Figure 2). The sediment of this community is muddy sand.

The distinguishing species of this community are the sea grass *Zostera noltii*, the polychaete *Arenicola marina* and the bivalve *Cerastoderma edule*. *Z. noltii* is not uniformly distributed but is generally recorded as frequent to abundant (<10 individual m⁻²). *A. marina* occurs in moderate to high abundances (<8m⁻²). *C. edule* occurs in moderate to low abundances (<5m⁻²). The crab *Carcinus maenas* is also recorded here.

The green alga *Ulva* sp. occurs within this community. Coverage is not uniform and is localised to where fronds become entangled in *Z. noltii* blades.

Species associated with the <i>Zostera</i> -dominated community	
<i>Zostera noltii</i>	<i>Cerastoderma edule</i>
<i>Arenicola marina</i>	<i>Carcinus maenas</i>

Table 3 Species associated with the *Zostera*-dominated community.

INTERTIDAL REEF COMMUNITY

An intertidal reef community occurs in the south of the site along the shore from Booterstown to Monkstown (Figure 2). The community occurs on a hard substrate which is predominantly flood defences with some areas of bedrock, cobble and boulders.

The species associated with this community are the brown algae *Fucus vesiculosus*, *F. serratus*, *F. spiralis*, *Ascophyllum nodosum* and *Pelvetia canaliculata*, unidentified red algae, the gastropods *Patella vulgata* and *Littorina littorea*, the barnacle *Semibalanus balanoides*, and the bivalve *Mytilus edulis* (Table 3).

The red algae *Rhodothamniella floridula* and *Porphyra purpurea* and the green alga *Ulva* sp. are also recorded from this community.

Species associated with the Intertidal reef community	
<i>Fucus vesiculosus</i>	Red algae indet.
<i>Fucus serratus</i>	<i>Patella vulgata</i>
<i>Fucus spiralis</i>	<i>Littorina littorea</i>
<i>Ascophyllum nodosum</i>	<i>Semibalanus balanoides</i>
<i>Pelvetia canaliculata</i>	<i>Mytilus edulis</i>

Table 3 Species associated with the Intertidal reef community.

FINE SAND TO SANDY MUD WITH *PYGOSPIO ELEGANS* AND *CRANGON CRANGON* COMMUNITY COMPLEX

This intertidal community complex is recorded on the north shore of Dublin Bay on the shore from Clontarf to Marino (Figure 2).

The sediment of this community complex is largely that of fine sand. On the upper shore there is a surface covering of cobble, pebbles and stones with intermittent boulders and larger stones. From the North Bull Wall to the disused saltwater swimming pool at Clontarf this veneer is ubiquitous while to the west of this point it gradually decreases in cover.

The fauna of this community complex is distinguished by the polychaete *Pygospio elegans* and the crustacean *Crangon crangon*. These species are not uniformly distributed within the complex; where they do occur *P. elegans* is recorded in moderate to low abundances while *C.*

crangon is recorded in low abundances. The polychaetes *Scoloplos armiger*, *Tharyx* sp. and *Capitella* sp., the bivalve *Cerastoderma edule* and the amphipod *Corophium volutator* are also occur here and again are not uniformly distributed. With the exception of *C. volutator*, which occurs in low abundances, the remaining species are recorded in moderate to low abundances. At the sea wall at the western extreme of the site the polychaete *Arenicola marina* occurs in moderate abundances (<10m⁻²) (Table 4).

Larger rocks and boulders where they occur host the algae *Fucus vesiculosus*, the limpet *Patella* sp. and the barnacle *Semibalanus balanoides*. Patches of *Ulva* sp. occur but are not uniformly distributed.

Distinguishing species of the Fine sand to sandy mud with <i>Pygospio elegans</i> and <i>Crangon crangon</i> community complex	
<i>Pygospio elegans</i>	<i>Capitella</i> sp.
<i>Crangon crangon</i>	<i>Cerastoderma edule</i>
<i>Scoloplos armiger</i>	<i>Corophium volutator</i>
<i>Tharyx</i> sp.	<i>Arenicola marina</i>

Table 4 Distinguishing species of the Fine sand to sandy mud with *Pygospio elegans* and *Crangon crangon* community complex.

FINE SAND WITH *SPIO MARTINENSIS* COMMUNITY COMPLEX

This community complex is recorded in the subtidal south of the Bull Wall (Figure 2); it extends from the intertidal into the shallow subtidal (<5m).

The sediment of this community complex is largely that of fine sand with negligible amounts of coarse material recorded here (<0.7%)

In general the fauna of this community complex occur in low abundances, of these the polychaete *Spio martinensis* is the most dominant species. The polychaete *Nephtys cirrosa*, the crustaceans *Bathyporeia guilliamsoniana*, *Corophium volutator* and *Praunus flexuosus* and the bivalves *Cerastoderma edule* and *Tellina tenuis* are all recorded here. The oligochaete *Tubificoides benedii* and the gastropod *Peringia ulvae* also occur here (Table 5).

Distinguishing species of the Fine sand with <i>Spio martinensis</i> community complex	
<i>Spio martinensis</i>	<i>Bathyporeia guilliamsoniana</i>
<i>Cerastoderma edule</i>	<i>Corophium volutator</i>
<i>Nephtys cirrosa</i>	<i>Tellina tenuis</i>
<i>Praunus flexuosus</i>	<i>Tubificoides benedii</i>
<i>Peringia ulvae</i>	

Table 5 Distinguishing species of the Fine sand with *Spio martinensis* 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. General guidance on the completion of such assessments has been prepared and is available at 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 South Dublin 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.
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- 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 <i>Zostera</i> -dominated community, subject to natural processes.
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- A *Zostera*-dominated community is considered to be a 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.
- 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 area given below is based on spatial interpolation and therefore should be considered indicative:

- *Zostera*-dominated community - 4ha

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.

Target 5 Conserve the following community type in a natural condition: Fine sands with *Angulus tenuis* community complex.

- A semi-quantitative description of these community types has been provided in Section 1.
- An interpolation of their likely distribution is provided in figure 2.
- The estimated areas of these community types 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:
 - Fine sands with *Angulus tenuis* community complex - 716ha
- 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.

Bibliography:

Aquafact (2006). A survey of Intertidal mudflats and sandflats in Ireland. Produced by Aquafact on behalf of the National Parks & Wildlife Service.

MERC (2012). Intertidal benthic survey of South Dublin Bay and South Dublin Bay SAC and River Tolka Estuary SPA. Carried out by MERC on behalf of the Marine Institute in partnership with National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

Figure 1. Extent of Mudflats and sandflats not covered by seawater at low tide in South Dublin Bay SAC



Figure 2. Distribution of community types in South Dublin Bay SAC

