NPWS

Rogerstown Estuary SAC (site code: 208)

Conservation objectives supporting document - Marine habitats

Version 1

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Introduction

Rogerstown Estuary SAC is designated for the marine Annex I qualifying interests of Estuaries and Mudflats and sandflats not covered by seawater at low tide (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 2011 (MERC, 2012a; MERC, 2012b). Data on the *Zostera* beds were derived from the EPA national Water Framework Directive monitoring programme (http://www.epa.ie/whatwedo/wfd/monitoring/). These data were used to determine the physical and biological nature of this SAC and adjacent areas that are contained within the special protection area, i.e. Rogerstown Estuary SPA (site code 4015).

Aspects of the biology and ecology of Annex I habitats 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 Rogerstown Estuary SAC four community types are recorded; the Annex I habitats in which they are recorded and their occurrence 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)	
Sand to coarse sediment with *Nephtys cirrosa* and *Scolelepis squamata* community complex	✓	✓	✓
Estuarine sandy mud to mixed sediment with *Tubificoides benedii, Hediste diversicolor* and *Peringia ulvae* community complex	✓	✓	✓
Mytilus edulis-dominated community complex	✓	✓	✓
Zostera-dominated community	✓	✓	✓

Table 1 The community types recorded in Rogerstown Estuary SAC and their occurrence in the Annex I habitats and the overlapping SPA.

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 Rogerstown Estuary SAC 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.

SAND TO COARSE SEDIMENT WITH *NEPHTYS CIRROSA* AND *SCOLELEPIS SQUAMATA* COMMUNITY COMPLEX

This community complex is recorded on the eastern margins of this site from Rush south to the beach at Portraine. It extends westward to the pier at the mouth of the Rogerstown Estuary.

In the bay at the eastern margins of the site the sediment is that of fine sand becoming coarser in the channel of the estuary. Fine sand and gravel account for 3.9% to 78.1% and 1.2% to 13.4% of the sediment fractions, respectively. The remaining sand fractions account for between 0.1% and 23.5% of the sediment; silt-clay is negligible, generally <0.1%.

This community complex is characterised by low numbers of species and individuals. It is distinguished by the polychaetes *Nephtys cirrosa* and *Scolelepis squamata*; the oligochaete *Tubificoides benedii* is also recorded throughout the complex in low abundances. The bivalves *Angulus tenuis* and *Donax vittatus* are recorded in moderate abundance in the subtidal at the north-eastern margins of the site. The polychaete *Scoloplos armiger*, the isopod *Eurydice pulchra* and unidentified crustaceans of the Gammarid family are not uniformly distributed within the complex. Extensive mats of *Ulva* spp. cover large areas of the intertidal at the village of Portraine.

Distinguishing species of Sand to coarse sediment with *Nephtys cirrosa* and *Scolelepis squamata* community complex	
Nephtys cirrosa	*Eurydice pulchra*
Scolelepis squamata	Gammaridae
Tubificoides benedii	*Scoloplos armiger*
Angulus tenuis	*Ulva* sp.
Donax vittatus	

Table 2 Distinguishing species of the Sand to coarse sediment with *Nephtys cirrosa* and *Scolelepis squamata* community complex.

ESTUARINE SANDY MUD TO MIXED SEDIMENT WITH *TUBIFICOIDES BENEDII*, *HEDISTE DIVERSICOLOR* AND *PERINGIA ULVAE* COMMUNITY COMPLEX

This community complex is recorded extensively within the estuary to the west of Burrow. It occurs from the intertidal to the shallow subtidal (Figure 3).

The sediment ranges from sandy mud to mixed sediment, with silt-clay and gravel accounting for 1.8% to 87.9% and 0.1% to 45.5% of the sediment fractions, respectively; the remaining sand fractions range from 9.8% to 98.1%. In the inner reaches of the estuary the apparent anoxic layer appears to be close to the sediment surface and a strong odour of hydrogen sulphide is apparent.

This community complex is characterised by the presence of the oligochaetes *Tubificoides benedii*, the polychaete *Hediste diversicolor*, the gastropod *Peringia ulvae*. The polychaete *Pygospio elegans* and the oligochaetes *T. pseudogaster* and *Heterochaeta costata* also occur here (Table 3).

On the northern shore east of the railway bridge casts of the burrowing polychaete *Arenicola marina* are present in densities of 17 to 22m^{-2}; the green algae *Ulva* sp. also occurs along with unidentified fucoids where rock outcrops occur.

Distinguishing species of the Estuarine sandy mud to mixed sediment with *Tubificoides benedii, Hediste diversicolor* and *Peringia ulvae* community complex	
Tubificoides benedii	*Tubificoides pseudogaster*
Hediste diversicolor	*Heterochaeta costata*
Peringia ulvae	*Arenicola marina*
Pygospio elegans	*Ulva* sp.

Table 3 Distinguishing species of the Estuarine sandy mud to mixed sediment with *Tubificoides benedii, Hediste diversicolor* and *Peringia ulvae* community complex.

MYTILUS EDULIS-DOMINATED COMMUNITY COMPLEX

Dense beds of the bivalve *Mytilus edulis* are recorded on the lower intertidal at the narrows between Rogerstown and the Burrow; these beds overlay a substrate of muddy sand.

The complex is distinguished by dense aggregations of the bivalve *Mytilus edulis*; the gastropod *Littorina littorea* and small individuals of the crab *Carcinus maenas,* which are common here. The barnacles *Balanus balanus* and *Semibalanus balanoides* occur as heavy encrustations on the *M. edulis* shells; the fucoid *Fucus vesiculosus* is also recorded attached to mussel shells. Where the beds are less dense the algal species *Fucus serratus, F. vesiculosus, Ascophyllum nodosum* and *Ulva* sp., along with the polychaete *Arenicola marina* are recorded (Table 4).

Species associated with the *Mytilus edulis*-dominated community complex	
Mytilus edulis	*Tubificoides pseudogaster*
Tubificoides benedii	*Heterochaeta costata*
Hediste diversicolor	*Arenicola marina*
Peringia ulvae	*Ulva* sp.
Pygospio elegans	

Table 4 Species associated with the *Mytilus edulis*-dominated community complex.

ZOSTERA-DOMINATED COMMUNITY

This intertidal community occurs the inner estuary at Portraine with a single bed dominated by *Zostera noltii*.

The sediment is that of "Estuarine sandy mud to mixed sediment with *Tubificoides benedii* and *Hediste diversicolor* community complex".

The community is dominated by the *Zostera noltii* which has a percentage cover here of 50%. Dense aggregations of the gastropod *Hydrobia acuta neglecta* occur and the green algal species *Ulva* sp. is also abundant here. The polychaete *Arenicola marina* is recorded in densities of between 6 to 12m^{-2} and the crustaceans *Carcinus maenas* and *Crangon crangon* are also recorded within this community. The infauna is that of the "Estuarine sandy mud to mixed sediment with *Tubificoides benedii* and *Hediste diversicolor* community complex" (see Table 3).

Species associated with the *Zostera*-dominated community	
Zostera noltii	*Arenicola marina*
Hydrobia acuta neglecta	*Carcinus maenas*
Ulva sp.	*Crangon crangon*

Table 5 Species associated with the *Zostera*-dominated 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. 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 Estuaries in Rogerstown 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	Maintain the extent of the *Zostera*-dominated community and the *Mytilus edulis*-dominated community complex, subject to natural processes.

- 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. A *Mytilus edulis*-dominated community complex is considered to be structurally important within a habitat. It provides a substratum for epiflora and epifauna and also a variety of niches within its interstices. This results in higher biodiversity than the surrounding sediment. Intertidal mussel beds also provide an important food source for a number of bird species.

- Any significant anthropogenic disturbance to the extent of these community types should be avoided.
- An interpolation of the likely distribution of these community types is provided in figure 3. The areas given below are based on spatial interpolation and therefore should be considered indicative:
    - *Zostera*-dominated community – 1ha
    - *Mytilus edulis*-dominated community complex – 11ha

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 community is conserved. For example, percentage cover 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.
- Within the Rogerstown Estuary SAC, the percentage cover of *Zostera* at this site in 2011 was estimated at 50%.
- Whilst no site-specific data on shoot density 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 *Mytilus edulis*-dominated community complex, subject to natural processes.

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

Target 5	Conserve the following community types a natural condition: Sand to coarse sediment with *Nephtys cirrosa* and *Scolelepis squamata* community complex and Estuarine sandy mud to mixed sediment with *Tubificoides benedii, Hediste diversicolor* and *Peringia ulvae* 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 3.
- The estimated area of these community types within the Estuaries habitat given below is based on spatial interpolation and therefore should be considered indicative:
    - Sand to coarse sediment with *Nephtys cirrosa* and *Scolelepis squamata* community complex - 9ha
    - Estuarine sandy mud to mixed sediment with *Tubificoides benedii*, *Hediste diversicolor* and *Peringia ulvae* community complex - 242ha

- Significant continuous or ongoing disturbance of communities 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.

Objective **To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in Rogerstown 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	Maintain the extent of the *Zostera*-dominated community and the *Mytilus edulis*-dominated community complex, subject to natural processes.

- 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. A *Mytilus edulis*-dominated community complex is considered to be structurally important within a habitat. It provides a substratum for epiflora and epifauna and also a variety of niches within its interstices. This results in higher biodiversity than the surrounding sediment. Intertidal mussel beds also provide an important food source for a number of bird species.
- Any significant anthropogenic disturbance to the extent of these community types should be avoided.
- An interpolation of the likely distribution of these community types is provided in figure 3. The areas given below are based on spatial interpolation and therefore should be considered indicative:
    - *Zostera*-dominated community – 1ha
    - *Mytilus edulis*-dominated community complex – 11ha

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 community is conserved. For example, percentage cover 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.
- Within the Rogerstown Estuary SAC, the percentage cover of *Zostera* at this site in 2011 was estimated at 50%.
- 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 *Mytilus edulis*-dominated community complex, subject to natural processes.

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

Target 5	Conserve the following community types a natural condition: Sand to coarse sediment with *Nephtys cirrosa* and *Scolelepis squamata* community complex and Estuarine sandy mud to mixed sediment with *Tubificoides benedii, Hediste diversicolor* and *Peringia ulvae* 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 3.
- The estimated area of these community types within the Mudflats and sandflats not covered by seawater at low tide habitat given below is based on spatial interpolation and therefore should be considered indicative:
    - Sand to coarse sediment with *Nephtys cirrosa* and *Scolelepis squamata* community complex – 160ha
    - Estuarine sandy mud to mixed sediment with *Tubificoides benedii*, *Hediste diversicolor* and *Peringia ulvae* community complex – 198ha
- 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:

MERC (2012a). Inter-tidal benthic survey of Rogerstown Estuary SAC and Rogerstown Estuary SPA. Carried out by MERC on behalf of the Marine Institute on behalf of National Parks and Wildlife Service, Department of Environment, Heritage and Local Government.

MERC (2012b). Subtidal benthic survey of Rogerstown Estuary SAC and Rogerstown Estuary SPA. Carried out by MERC on behalf of the Marine Institute on behalf of National Parks and Wildlife Service, Department of Environment, Heritage and Local Government.

EPA http://www.epa.ie/whatwedo/wfd/monitoring/ and http://www.epa.ie/downloads/pubs/water/waterqua/name,31043,en.html

Figure 1. Extent of Estuaries in Rogerstown Estuary SAC

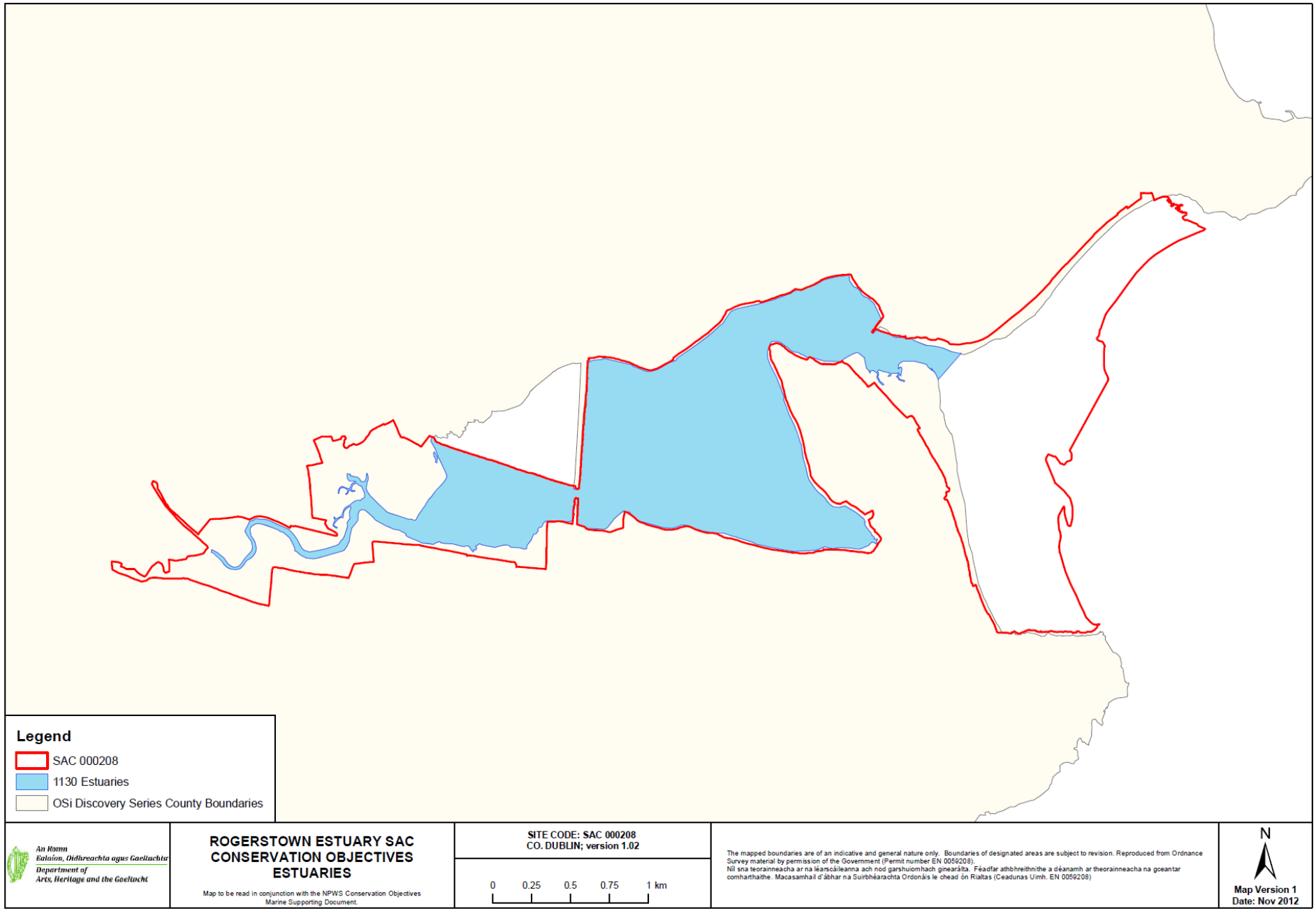

Figure 2. Extent of Mudflats and sandflats not covered by seawater at low tide in Rogerstown Estuary SAC

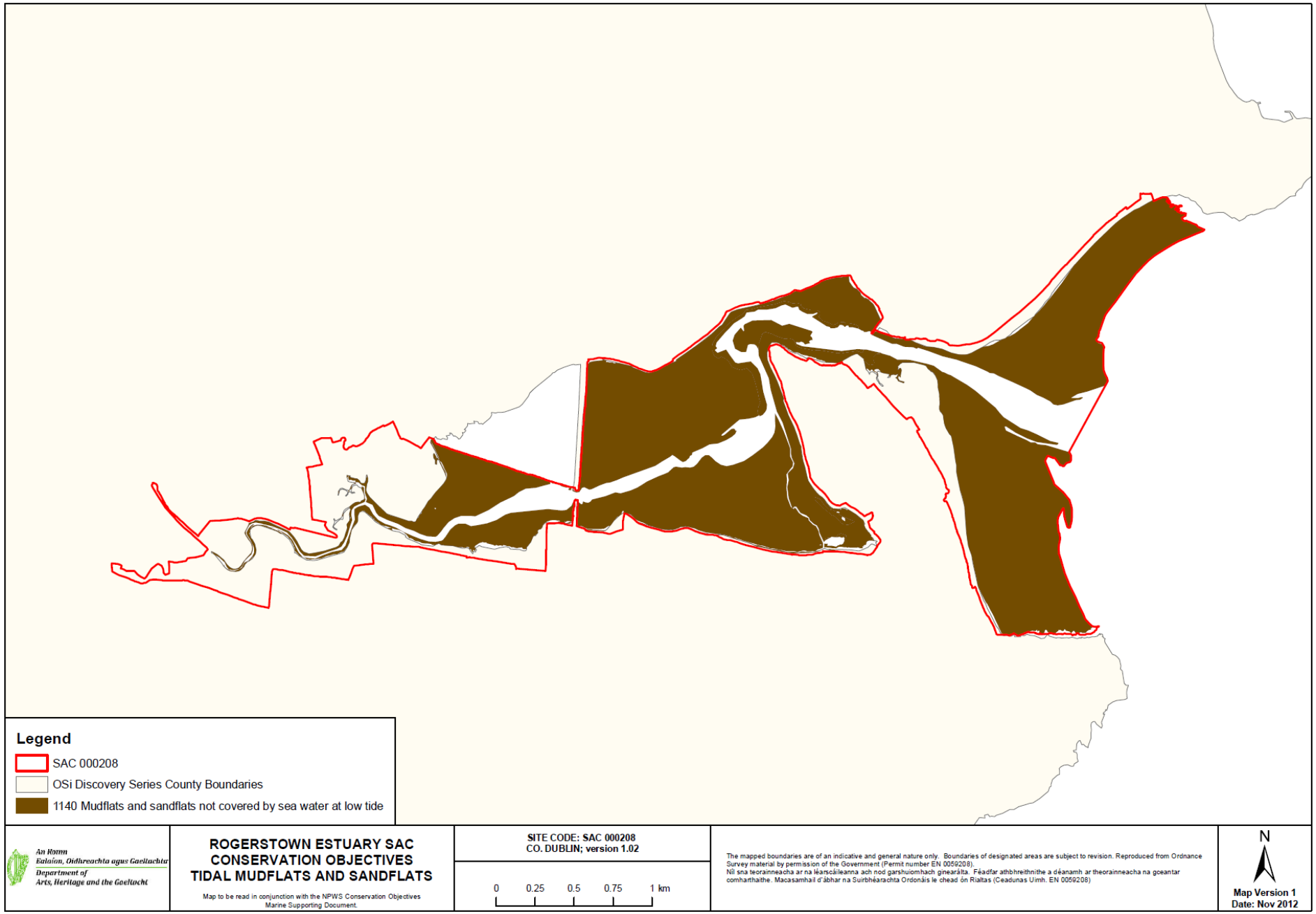

Figure 3. Distribution of community types in Rogerstown Estuary SAC