NPWS

# Bunduff Lough and Machair/Trawalua/Mullaghmore SAC
# (site code: 625)

## Conservation objectives supporting document -
## Marine Habitats

Version 1

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## Introduction

Bunduff Lough and Machair/Trawalua/Mullaghmore SAC is designated for the marine Annex I qualifying interests of Mudflats and sandflats not covered by seawater at low tide, Large shallow inlets and bays and Reefs (Figures 1, 2 and 3). The Annex I habitat Large shallow inlets and bays is a large physiographic feature that may wholly or partly incorporate other Annex I habitats including mudflats and sandflats and reefs within its area.

A BioMar survey of this site was carried out in 1994 (Picton and Costello, 1997) and subtidal and intertidal surveys were undertaken in 2011 and 2012 (MERC, 2012a and b); InfoMar (Ireland's national marine mapping programme) data from the site was also reviewed. These data were used to determine the physical and biological nature of this SAC.

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 Bunduff Lough and Machair/Trawalua/Mullaghmore SAC, three community types are recorded. Their occurrences within each Annex I habitat are presented in table 1; a description of each community type is given below.

| | Habitats | | |
|---|---|---|---|
| | Mudflats and sandflats not covered by seawater at low tide (1140) | Large shallow inlets and bays (1160) | Reefs (1170) |
| Fine to very fine sand community complex | ✓ | ✓ | |
| Intertidal reef community complex | | ✓ | ✓ |
| *Laminaria*-dominated community complex | | ✓ | ✓ |

**Table 1** The community types recorded in Bunduff Lough and Machair/Trawalua/Mullaghmore and their occurrence the Annex I habitats for which the site is designated.

Estimated areas of each community type within the Annex I habitats, 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 Bunduff Lough and Machair/Trawalua/Mullaghmore 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 TO VERY FINE SAND COMMUNITY COMPLEX

This community complex occurs throughout the subtidal within this site in depths of between 0m to 44m approximately (Figure 4).

The substrate is that of sand with fine sand and very fine sand accounting for the major proportion of the sediment fractions (ranging from 31.9% to 62.4% and 11.31% to 67.4%, respectively). Negligible amounts of gravel (<1%) and silt-clay (<2%) are recorded here.

This community complex is distinguished by the phoronid *Phoronis* sp., the polychaetes *Goniada maculata* and *Spiophanes bombyx* and the molluscs *Angulus fabula, Chamelea striatula* and *Cylichna cylindracea* and the amphipod *Bathyporeia elegans*. Phoronids occur in depths greater than 10m and are recorded in low to moderate abundances. The remaining species are not recorded uniformly across the complex; where they do occur, *G. maculata* and *C. cylindracea* are recorded in low numbers while *A. fabula, C. striatula* and *C. cylindracea* occur in low to moderate abundances. *B. elegans* is recorded in moderate to high abundances in deeper water (>25m) (Table 2).

Other species present here include the polychaetes *Glycera tridactyla, Sigalion mathildae, Owenia fusiformis, Spiochaetopterus typicus* and *Lagis koreni*.

| Distinguishing species of Fine to very fine sand community complex | |
|---|---|
| *Phoronis* sp. | *Chamelea striatula* |
| *Goniada maculata* | *Cylichna cylindracea* |
| *Angulus fabula* | *Bathyporeia elegans* |

**Table 2** Distinguishing species of the Fine to very fine sand community complex.

A variant of this community occurs in the intertidal sediments at this site. The substrate is that of fine to medium sand (ranging from 15.9% to 79.9% and 6.5% to 51.5%, respectively); the proportions of gravel and silt-clay are negligible (<1%). The fauna is generally poor and consists of the amphipods *Haustorius arenarius* and *Eurydice pulchra* and the polychaete *Scolelepis squamata*. The exception to this is on Bunduff Strand where the fauna is more diverse; here the bivalve *Angulus tenuis* and the polychaetes *Spiophanes bombyx, Owenia fusiformis, Magelona mirabilis* and *Nephtys cirrosa* are recorded.

#### INTERTIDAL REEF COMMUNITY COMPLEX

This community complex is recorded around Mullaghmore Head, from south of Roskeeragh Point in the west to the pier at Mullaghmore Village. It also occurs on Trawalua Strand at Carrickfadda and Beltraw Rocks and at the eastern extreme of Bunduff Strand where it continues to the eastern margin of the site (Figure 4).

The substrate here is that of bedrock and boulder slopes with crevices and ledges in an exposure regime of exposed reef. The exception to this is a small area at Mullaghmore Pier where the boulder and cobble reef is moderately exposed.

The species associated with this community complex are the bivalve *Mytilus edulis*, the barnacle *Semibalanus balanoides* and a variety of algal species. The alga *Fucus vesiculosus*

occurs in great abundances here; other species of algae recorded include *Fucus serratus, Pelvetia canaliculata*, *Nemalion helminthoides, Porphyra umbilicalis, Chondrus crispus and Ulva intestinalis*.

On the most exposed shores a narrow band of *P. canaliculata* occurs; here *M. edulis*, *S. balanoides* and *Chthamalus* spp., the algal species *P. umbilicalis*, *U. intestinalis* and *F. vesiculosus* are also recorded. The limpet *Patella vulgata* occurs frequently throughout the site while *N. helminthoides*, *C. crispus* and the anemone *Actinia equina* are frequent where rock pools occur. The lichens *Verrucaria maura, Ramalina siliquosa* and *Armeria maritima* are recorded within this complex; with *V. maura* being the most dominant while *R. siliquosa* is recorded as frequent and *A. maritima* as occasional (Table 2).

In the area of moderately exposed boulder shores and on some of the exposed reefs, *Ulva intestinalis* formed extensive mats, covering 95% of rocks. This may be associated with a freshwater entering the site.

| Species associated with the Intertidal reef community complex | |
|---|---|
| *Fucus vesiculosus* | *Verrucaria maura* |
| *Pelvetia canaliculata* | *Ramalina siliquosa* |
| *Porphyra umbilicalis* | *Mytilus edulis* |
| *Chondrus crispus* | *Actinia equina* |
| *Ulva intestinalis* | *Chthamalus spp.* |
| *Nemalion helminthoides* | *Semibalanus balanoides* |
| *Fucus serratus* | *Armeria maritima* |
| *Patella vulgata* | |

**Table 3** Species associated with the Intertidal reef community complex.

Large beds of the invasive species *Sargassum muticum* were recorded at the bridge separating Trawalua Strand from Mullaghmore Harbour.

#### *LAMINARIA*-DOMINATED COMMUNITY COMPLEX

This community complex is recorded extensively from Mullaghmore to the western boundary of the site and in a smaller area on its south-eastern extreme (Figure 4). It is found in waters ranging from 0m – 27m depth, with the majority of the community complex occurring in waters of less than 22m depth. The exposure regime is that of exposed reef and the substrate is that of flat or sloping bedrock with crevices and ledges.

The species associated with this community complex include the algae *Laminaria hyperborea* and *Delesseria sanguinea*, the asteroid *Asterias rubens* and the sponge *Sycon ciliatum*; these species are recorded throughout the complex. Coralline crusts and foliose red algae, including *Phyllophora crispa, Ptilota gunneri, Phycodrys rubens, Polysiphonia* sp. *Plocamium cartilagineum, Hypoglossum hypoglossoides, Drachiella spectabilis* and *Nitophyllum punctatum* commonly occur here. The anemone *Urticina felina* and the echinoderms *Echinus esculentus, Holothuria (Panningothuria) forskali* and *Henricia oculata* are also recorded here (Table 4).

In deeper areas (>20m) and in the areas of vertical cliffs around Mullaghmore Head the corals *Alcyonium digitatum, Metridium senile, Corynactis viridis* and *Caryophyllia smithii* are commonly recorded. Dense clumps of the hydroid *Tubularia indivisa* occur on the cliffs while the ledges are colonised by sponges, most notable *Polymastia* species and *Stelligera stuposa*.

| Species associated with the *Laminaria*-dominated community complex | |
|---|---|
| *Laminaria hyperborea* | *Drachiella spectabilis* |
| *Delesseria sanguinea* | *Nitophyllum punctatum* |
| Corallinaceae indet. | *Echinus esculentus* |
| *Phyllophora crispa* | *Holothuria (Panningothuria) forskali* |
| *Ptilota gunneri* | *Urticina felina* |
| *Phycodrys rubens* | *Henricia oculata* |
| *Polysiphonia* sp. | *Sycon ciliatum* |
| *Plocamium cartilagineum* | *Alcyonium digitatum* |
| *Asterias rubens* | *Caryophyllia smithii* |
| *Hypoglossum hypoglossoides* | |

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

A variant of this community occurs in the south-western extreme of the site to the east of Dernish Island, in depths of between 6m to 7m. Here, in a tidal swept and sand scoured channel, the substrate is that of boulders and cobbles. Red and brown algae occur on the boulders namely, *Polyides rotundatus* and *Halidrys siliquosa*. The hydroid *Sertularia argentea* is commonly recorded; the anemone *Cereus pedunculatus* is common in the sediment between the boulders. The hydroids *Plumularia setacea* and *Obelia geniculata* and a variety of tunicates including *Polyclinum aurantium, Morchellium argus, Aplidium pallidum, A. punctum* and *Diplosoma listerianum* are recorded here.

# 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 Bunduff Lough and Machair/Trawalua/Mullaghmore 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 to very fine sand community complex. |

- A semi-quantitative description of this community type has been provided in Section 1.
- An interpolation of its likely distribution is provided in figure 4.
- The estimated area of this community type 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:

  - Fine to very fine sand community complex – 144ha

- Significant continuous or ongoing disturbance of community should not exceed an approximate area of 15% of the interpolated area of 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 the community 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 Reefs in Bunduff Lough and Machair/Trawalua/Mullaghmore SAC, which is defined by the following list of attributes and targets**

| **Target 1** | The permanent area is stable or increasing, subject to natural processes. |
|---|---|

- The area of this habitat represents the minimum estimated area of reef at this site and underestimates the actual area due to the many areas of sheer and steeply sloping rock within the reef habitat.
- 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** | The distribution of reefs is stable or increasing, subject to natural processes. |
|---|---|

- The likely distribution of reef habitat in this SAC is indicated in figure 2.
- This target refers to activities or operations that propose to permanently remove reef habitat, thus reducing the range over which this habitat occurs within the site. It does not refer to long or short term disturbance of the biology of reef habitats.
- Early consultation or scoping with the Department in advance of formal application is advisable for such proposals.

| | |
|---|---|
| **Target 3** | Conserve the following community types in a natural condition: Intertidal reef community complex; *Laminaria*-dominated 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 4.
- The estimated areas of the communities within the Reefs habitat given below are based on spatial interpolation and therefore should be considered indicative. In addition, as this habitat contains significant areas of sheer and steeply sloping rock, the mapped community extents will be underestimated:
  - Intertidal reef community complex - 83ha
  - *Laminaria*-dominated community complex - 1120ha
- This target relates to the structure and function of the reef and therefore it is of relevance to those activities that may cause disturbance to the ecology of the habitat.
- 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 Large shallow inlets and bays in Bunduff Lough and Machair/Trawalua/Mullaghmore 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 habitats Mudflats and sandflats not covered by seawater at low tide and Reefs. Targets for these habitats should be addressed in their own right.
- 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** | Conserve the following community types in a natural condition: Fine to very fine sand community complex; Intertidal reef community complex; *Laminaria*-dominated 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 4.
- The estimated areas of these communities given below are based on spatial interpolation and therefore should be considered indicative:
    - Fine to very fine sand community complex – 2580ha
    - Intertidal reef community complex - 83ha
    - *Laminaria*-dominated community complex - 1120ha
- 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). Subtidal sediment and Subtidal Reef Survey of Bunduff Lough and Machair/Trawalua/Mullaghmore SAC. Carried out by MERC on behalf of the Marine Institute in partnership with National Parks and Wildlife Service, Department of Environment, Heritage and Local Government.

MERC (2012b). Intertidal Benthic Survey and Intertidal reef survey of Bunduff Lough and Machair/Trawalua/Mullaghmore SAC. Carried out by MERC on behalf of the Marine Institute in partnership with National Parks and Wildlife Service, Department of Environment, Heritage and Local Government.

Picton, B.E. and Costello M. J. 1997. The BioMar biotope viewer: a guide to marine habitats, fauna and flora in Britain and Ireland, Environmental Sciences Unit, Trinity College, Dublin.

Figure 1. Extent of Mudflats and sandflats not covered by seawater at low tide in Bunduff Lough and Machair/Trawalua/Mullaghmore SAC

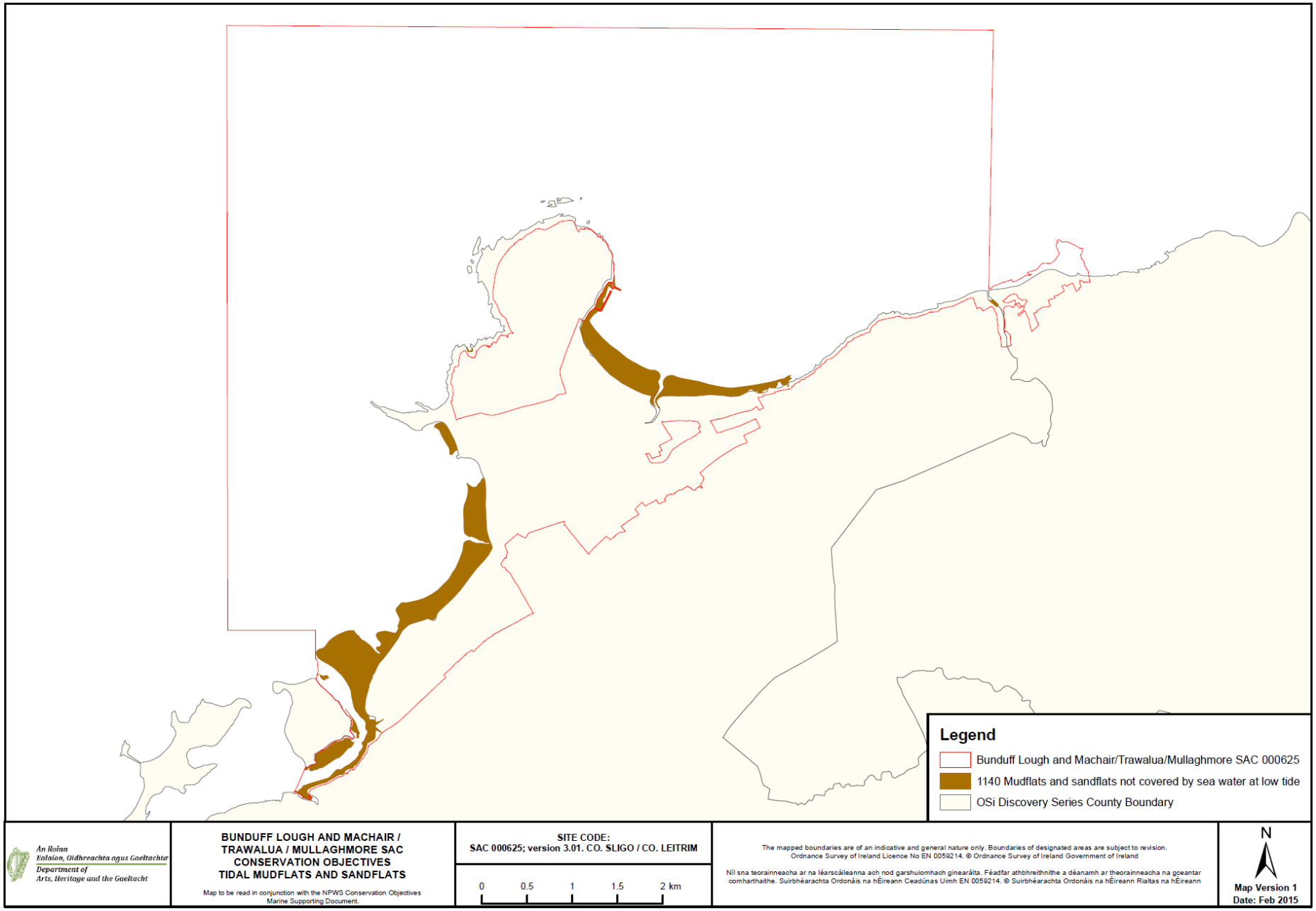

Figure 2. Extent of Reefs in Bunduff Lough and Machair/Trawalua/Mullaghmore SAC

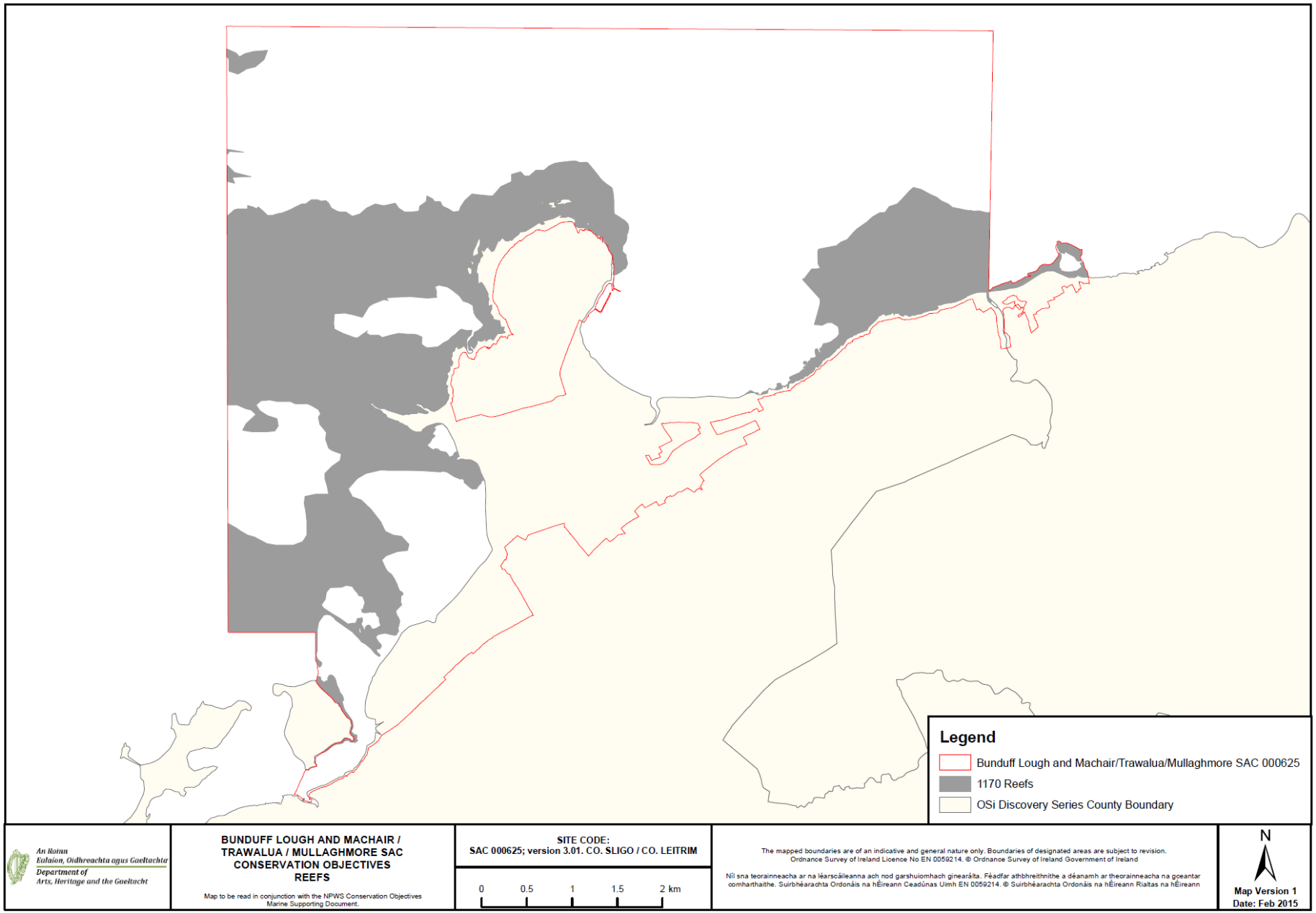

Figure 3. Extent of Large shallow inlets and bays in Bunduff Lough and Machair/Trawalua/Mullaghmore SAC

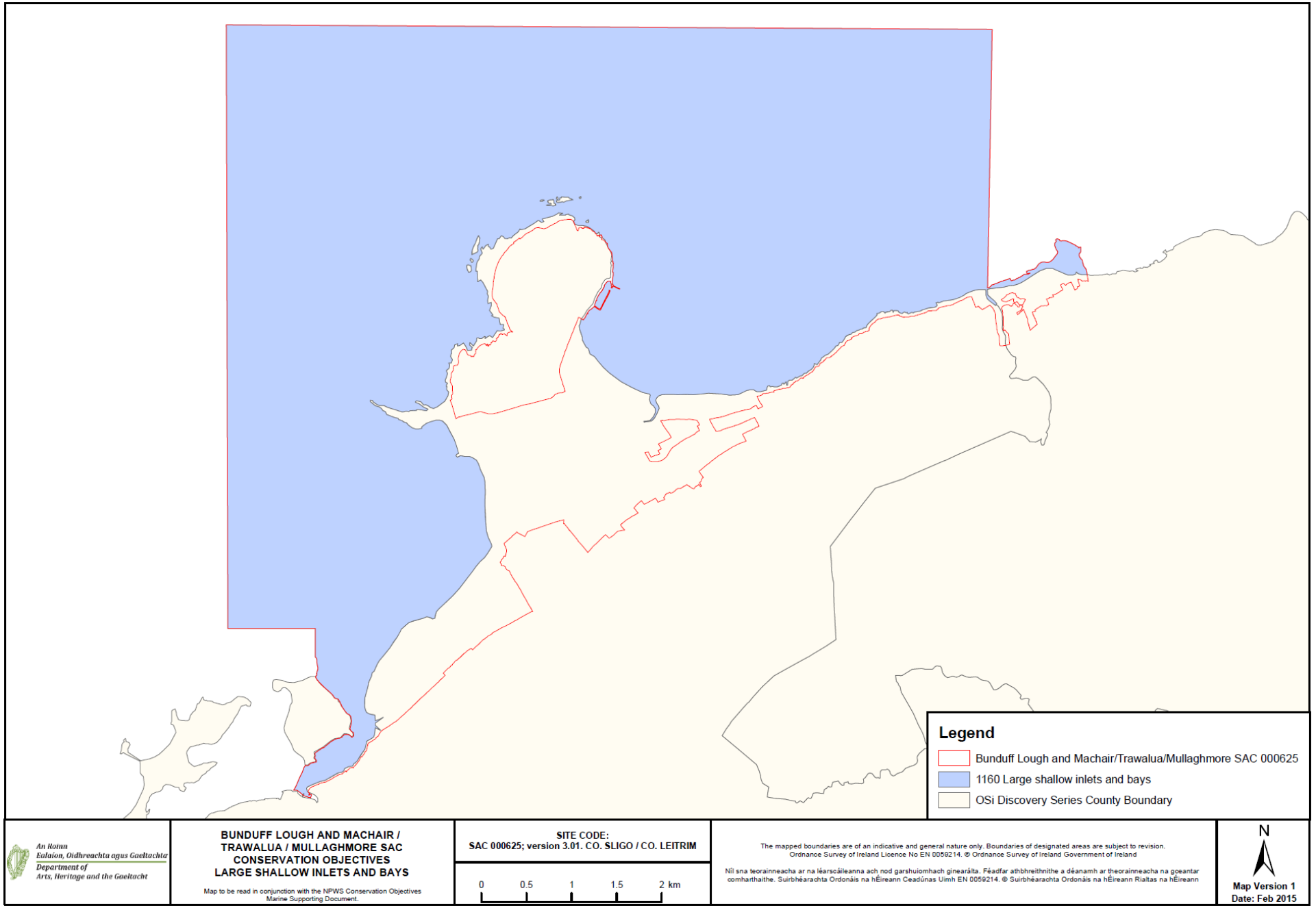

Figure 4. Distribution of community types in Bunduff Lough and Machair/Trawalua/Mullaghmore SAC