NPWS

Carrowmore Dunes SAC
(site code: 2250)

Conservation objectives supporting document -
Marine Habitats

Version 1

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Introduction

Carrowmore Dunes SAC is designated for the marine Annex I qualifying interest of Reefs (Figure 1).

Intertidal and subtidal surveys were undertaken in 2011 and 2012 (MERC, 2012 and MERC, 2013) and a BioMar survey of this site was carried out in 1996 (Picton and Costello, 1997). These data were used to determine the physical and biological nature of this SAC and overlapping Special Protection Area: Mid-Clare Coast SPA (site code 4182). Note that this SPA also overlaps with another SAC: Carrowmore Point to Spanish Point and Islands SAC (site code 1021).

Aspects of the biology and ecology of the Annex I habitat are provided in Section 1. The corresponding site-specific conservation objective 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 objective and targets in the completion of such assessments is provided in Section 2.

Section 1

Principal Benthic Communities

Within Carrowmore Dunes SAC, three 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
	Reefs (1170)	
Intertidal reef community complex	✓	✓
Laminaria-dominated community complex	✓	✓
Mobile sand community complex		✓

Table 1 The community types recorded in Carrowmore Dunes 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, and is 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 Carrowmore Dunes 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.

INTERTIDAL REEF COMMUNITY COMPLEX

This community complex is recorded on the northern and south-western extremes of the site on moderately exposed reef (Figure 2). The substrate here is that of flat or sloping bedrock.

The species associated with this community complex include the brown algae *Fucus vesiculosus* and *F. serratus*, the red algae *Osmundea pinnatifida, Calliblepharis jubata* and *Corallina officinalis,* the barnacle *Semibalanus balanoides*, polychaetes of the family Spirorbidae and the gastropods *Patella vulgata* and *Littorina saxatilis* (Table 2).

Other species recorded here include the lichens *Xanthoria parietina* and *Verrucaria maura*, the brown algae *Pelvetia canaliculata* and *Halidrys siliquosa*, the red alga *Chondrus crispus*, the green alga *Cladophora* sp., the gastropods *Littorina littorea*, *L. fabalis*, *Nucella lapillus* and *Phorcus lineatus*, the anemone *Actinia equina*, the crustacean *Porcellana platycheles*, the barnacle *Chthamalus montagui* and the echinoderm *Asterina gibbosa*.

This community is notable for the occurrence of species that are rare in Ireland, including the red algae *Phyllophora sicula* and *Pterosiphonia pennata* and the crustacean *Alpheus macrocheles*.

The brown alga *Bifurcaria bifurcata* which has a limited distribution in Ireland occurs here also.

Species associated with the Intertidal reef community complex	
Patella vulgata	*Littorina saxatilis*
Semibalanus balanoides	*Calliblepharis jubata*
Fucus vesiculosus	*Corallina officinalis*
Fucus serratus	Spirorbidae indet.
Osmundea pinnatifida	

Table 2 Species associated with the Intertidal reef community complex.

LAMINARIA-DOMINATED COMMUNITY COMPLEX

This community complex is recorded within the site in water depths of between 0m and 10m but occasionally extends down to approximately 20m depth (Figure 2). The exposure regime is that of exposed reef and the substrate is that of flat and sloping bedrock.

The species associated with this community are the kelp *Laminaria hyperborea*, the red algae Corallinaceae, *Cryptopleura ramosa*, *Membranoptera alata*, *Plocamium cartilagineum*, *Callophyllis laciniata*, *Heterosiphonia plumosa* and *Delesseria sanguinea*, the brown alga *Dictyota dichotoma*, the gastropods *Gibbula cineraria* and *Calliostoma zizyphinum*, the bryozoans *Electra pilosa* and *Membranipora membranacea*, the ascidian *Botryllus schlosseri*, the polychaete *Spirobranchus triqueter*, the anemone *Urticina felina* and the echinoderm *Asterias rubens* (Table 3).

The red algae *Acrosorium ciliolatum*, *Gelidium pusillum*, *Polyides rotundus* and *Dilsea carnosa*, the ascidians *Aplidium pallidum* and *Didemnum maculosum*, the bryozoan *Diplosoma listerianum* and the sponge *Halisarca dujardinii* are recorded from the *Laminaria* understorey.

Species associated with the *Laminaria*-dominated community complex	
Laminaria hyperborea	*Botryllus schlosseri*
Corallinaceae	*Plocamium cartilagineum*
Gibbula cineraria	*Dictyota dichotoma*
Cryptopleura ramosa	*Urticina felina*
Membranoptera alata	*Membranipora membranacea*
Spirobranchus triqueter	*Callophyllis laciniata*
Calliostoma zizyphinum	*Heterosiphonia plumosa*
Electra pilosa	*Delesseria sanguinea*
Asterias rubens	

Table 3 Species associated with the *Laminaria*-dominated community complex.

MOBILE SAND COMMUNITY COMPLEX

This community complex occurs on intertidal sediments throughout the site (Figure 3).

The substrate is largely that of medium to fine sand (ranging from 55.7% to 65.4% and 18.2% to 41.6% for medium and fine sand, respectively) with negligible amounts of gravel and silt-clay (>0.1%); however in Doonbeg Bay the sediment is mixed with higher levels of silt-clay and gravel recorded (21.3% and 11.1%, respectively).

The distinguishing species are the crustaceans *Pontocrates arenarius* and *Eurydice pulchra* and the polychaetes *Malacoceros fuliginosus*, *Scolelepis* (*Scolelepis*) *squamata* and *Capitella* sp. These species are not uniformly distributed throughout the complex but where they occur abundances are low.

The oligochaete *Tubificoides benedii* is recorded in high abundances in Doonbeg Bay, with the polychaete *Arenicola marina* occurring in low abundances here.

Distinguishing species of Mobile sand community complex	
Pontocrates arenarius	*Scolelepis* (*Scolelepis*) *squamata*
Malacoceros fuliginosus	*Capitella* sp.
Eurydice pulchra	

Table 4 Distinguishing species of the Mobile sand 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 Reefs in Carrowmore Dunes 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 1.
- 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 and *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 2.
- 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 - 65ha
  - *Laminaria*-dominated community complex - 146ha
- 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.

Bibliography:

MERC (2012). Subtidal Reef Survey of Carrowmore Point to Spanish Point and Islands SAC, Carrowmore Dunes SAC and Mid-Clare Coast SPA. 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 (2013). Intertidal Benthic Survey and Intertidal Reef Survey of Carrowmore Point to Spanish Point and Islands SAC, Carrowmore Dunes SAC and Mid-Clare Coast SPA. 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 Reefs in Carrowmore Dunes SAC

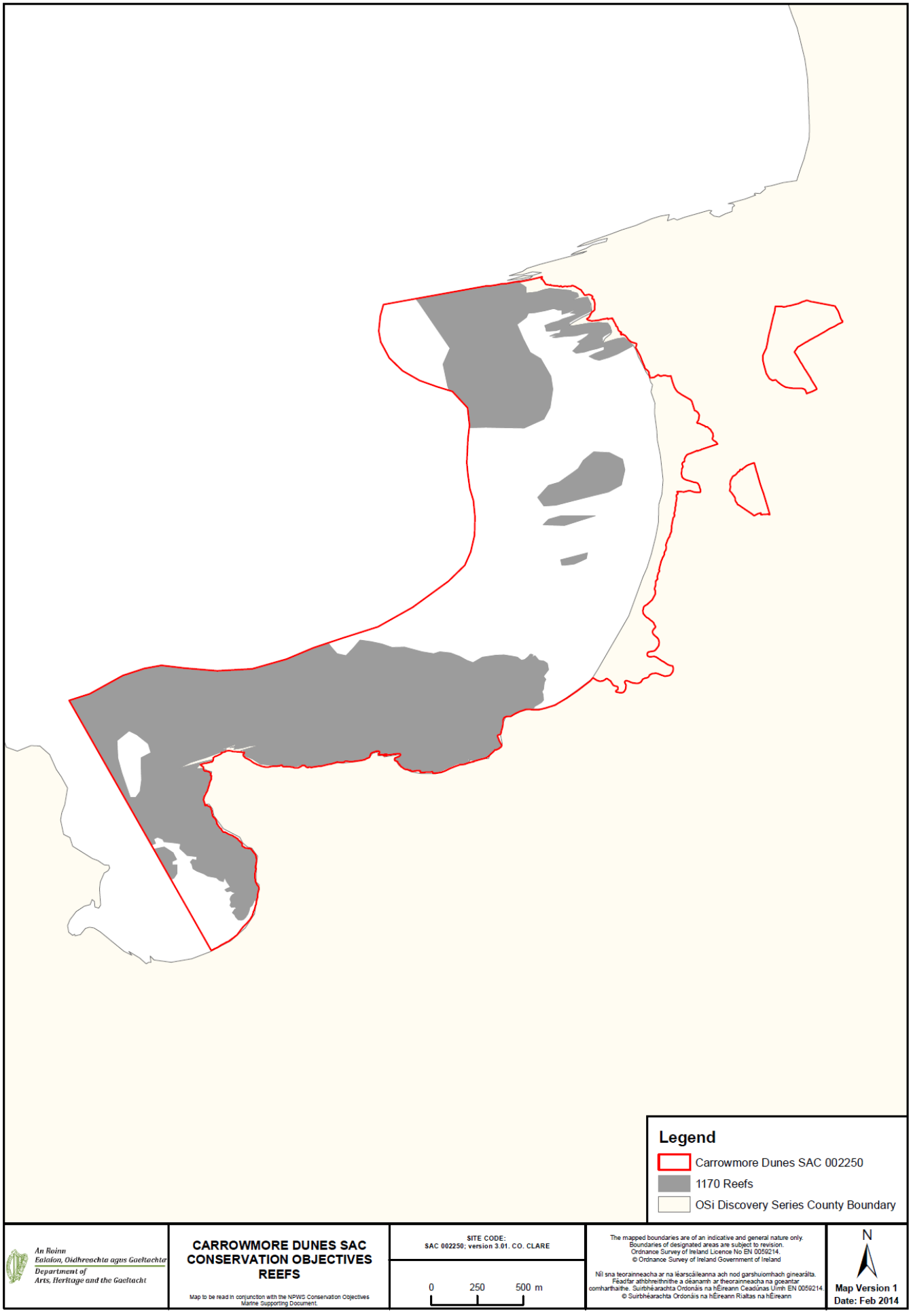

Figure 2. Distribution of community types in Carrowmore Dunes SAC