

NPWS (2011)

Donegal Bay (Murvagh) SAC (site code: 0133)

**Conservation objectives supporting document
- marine habitats and species**

**Version 1
November 2011**

Introduction

Donegal Bay (Murvagh) SAC is designated, *inter alia*, for the Annex I qualifying interest of Mudflats and sandflats not covered by sea water at low tide (Figure 1) and the Annex II species *Phoca vitulina* (harbour seal, also known as common seal).

Intertidal and subtidal surveys were undertaken in 2009 (Aquafact, 2010) and 2010 (RPS, 2010) and these data were used to determine the physical and biological nature of this SAC and adjacent areas that are contained within the Donegal Bay Special Protection Area (SPA). In addition to seal records compiled from historical Wildlife Service site visits and regional surveys (Summers *et al.*, 1980; Warner, 1983; Harrington, 1990; Lyons, 2004), a comprehensive survey of the Irish harbour seal population was carried out in 2003 (Cronin *et al.*, 2004). These surveys of habitat and species 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 Donegal Bay, three community complexes were recorded. Their occurrence in the Annex I habitat for which the SAC is designated and the larger SPA is presented in Table 1 and a description of each community type is given below.

Community Type	Mudflats and sandflats not covered by seawater at low tide (1140)	SPA
Estuarine fine sands dominated by polychaetes and oligochaetes community complex	✓	✓
Intertidal muddy sand to sand dominated by polychaetes, bivalves and crustaceans community complex	✓	✓
Subtidal fine sand with polychaetes and bivalves community complex		✓

Table 1 The community types recorded in Donegal Bay SAC and SPA and the Annex I habitat in which they occur.

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 Donegal Bay 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.

ESTUARINE FINE SANDS DOMINATED BY POLYCHAETES AND OLIGOCHAETES COMMUNITY COMPLEX

This community complex occurs in the inner reaches of the numerous small inlets that are present due east of Hassan's Point and the Murvagh Peninsula. Outside of this area it is recorded in the inner reaches of the small bay at Drumgun (Figure 2). This complex is associated with areas of freshwater influence, either from rivers or seepage off the surrounding land.

The sediment is largely that of fine sand, however muddier sediment is recorded in some areas of low energy. This is reflected in the variation in the proportions of the fines fraction,

with fine sand ranging from 26% to 92%, very fine sand from 0.2% to 56% and silt-clay from 0.2% to 51%.

The polychaete *Hediste diversicolor*, the oligochaetes *Tubificoides benedii*, *Heterochaeta costata* and Enchytraeidae spp. and Nematoda spp. are generally recorded in high to moderate abundances within this complex. The bivalves *Cerastoderma edule* and *Mya truncata* are also present here (Table 2).

Distinguishing species of the Estuarine fine sands dominated by polychaetes and oligochaetes community complex	
<i>Hediste diversicolor</i>	<i>Tubificoides benedii</i>
<i>Heterochaeta costata</i>	Nematoda spp.
Enchytraeidae spp.	<i>Cerastoderma edule</i>
<i>Mya truncata</i>	<i>Tubificoides pseudogaster</i>
<i>Pygospio elegans</i>	

Table 2 Distinguishing species of the Estuarine fine sands dominated by polychaetes and oligochaetes community complex.

INTERTIDAL MUDDY SAND TO SAND DOMINATED BY POLYCHAETES, BIVALVES AND CRUSTACEANS COMMUNITY COMPLEX

This community complex is recorded extensively within this site. It occurs on the sandy beaches due north of Hassan's Point and also the Murvagh Peninsula. In the rest of the site it occurs on the intertidal flats where it goes from muddy sand in the upper to mid shore to sand on the mid to lower shore (Figure 2).

The sediment is that of sand with no coarse material and low levels of silt-clay (<9%). The sand fractions vary, with medium sand ranging from 0.1% to 83%, fine sand from 16% to 95% and very fine sand from 0.2% to 56%.

Within this complex the occurrence of the polychaete *Arenicola marina* is patchy; it ranges from absent or occasional to estimated densities of up to 50m⁻². The polychaete *Scolelepis squamata*, the bivalve *Tellina tenuis* and the crustacean *Bathyporeia pilosa* occur in moderate abundances. The polychaete *Nephtys cirrosa* and the bivalves *Cerastoderma edule* and *Tellina fabula* are also recorded here (Table 3).

Distinguishing species of the Intertidal muddy sand to sand dominated by polychaetes, bivalves and crustaceans community complex	
<i>Scolelepis squamata</i>	<i>Arenicola marina</i>
<i>Tellina tenuis</i>	<i>Bathyporeia pilosa</i>
<i>Nephtys cirrosa</i>	<i>Cerastoderma edule</i>
<i>Tellina fabula</i>	<i>Pygospio elegans</i>

Table 3 Distinguishing species of the Intertidal muddy sand to sand dominated by polychaetes, bivalves and crustaceans community complex.

In addition to the above communities, the following community complex is recorded within this SAC but outside the Annex I habitat for which the site is designated. It is also widely distributed throughout Donegal Bay SPA.

SUBTIDAL FINE SAND WITH POLYCHAETES AND BIVALVES COMMUNITY COMPLEX

This complex occurs throughout Donegal Bay from the outer bay into the subtidal channels of the Eske and Erne Estuaries (Figure 1).

The sediment here is fine sand (ranging from 61% to 88%) with variable amounts of medium sand (0.8% to 34%) and very fine sand (0.6% to 25%).

The bivalve *Donax vittatus*, the polychaetes *Chaetozone christiei*, *Magelona filiformis* and *Nephtys cirrosa* and Nemertea spp. are all recorded in moderate abundances within this complex. The bivalve *Tellina fabula* is also present (Table 4).

Distinguishing species of the Subtidal fine sand with polychaetes and bivalves community complex	
<i>Donax vittatus</i>	<i>Chaetozone christiei</i>
<i>Magelona filiformis</i>	<i>Nephtys cirrosa</i>
Nemertea spp.	<i>Tellina fabula</i>

Table 4 Distinguishing species of the Subtidal fine sand with polychaetes and bivalves community complex.

In more estuarine conditions an impoverished variant of this community occurs, containing just two species. The polychaete *Chaetozone christiei* is the dominant species with *Platynereis dumerilii* also being recorded here.

Finally, there are small areas of two other community types shown in figure 2. These are intertidal hard substrate and shingle beach, which are both outside the Annex I habitat.

Annex II Marine Mammals

PHOCA VITULINA (HARBOUR SEAL)

This marine mammal species occurs in estuarine, coastal and offshore waters but also utilises a range of intertidal and terrestrial habitats for important life history functions such as breeding, moulting, resting and social activity. Its aquatic range for foraging and inter-site movement extends into continental shelf waters. When hauling out ashore harbour seals tend to prefer comparatively sheltered locations where exposure to wind, wave action and precipitation, for example, are minimised. Thus in Ireland the species is more commonly found ashore in sheltered bays, inlets and enclosed estuaries.

Harbour seals in Donegal Bay (Murvagh) SAC occupy both aquatic habitats and intertidal shorelines that become exposed during the tidal cycle. The species is present at the site throughout the year during all aspects of its annual life cycle, which includes breeding (May-July approx.), moulting (August-September approx.) and non-breeding foraging and resting phases. Comparatively limited information is available from this last period in the annual cycle spanning the months of October to May. In acknowledging the limited understanding of aquatic habitat use by the species within the site it should be noted that all suitable aquatic habitat is considered relevant to the species range and ecological requirements at the site and is therefore of potential use by harbour seals.

Harbour seals are vulnerable to disturbance during periods when time is spent ashore or in shallow waters by individuals or groups of animals. This occurs immediately prior to and during the annual breeding season, which takes place predominantly during the months of May-July. Pups are born on land, usually on sheltered shorelines, islets or skerries and uninhabited islands removed from the risk of predation and human interference. While there may be outliers in any year specific established locations tend to be used annually for breeding-associated behaviour by adult males, adult females and their newborn pups. Such habitats are critical to the maintenance of the species within any site. Pups are able to swim soon after birth and may be observed accompanying their mother close to shore in the early days or weeks of life. They are nursed for a period of several weeks by the mother prior to weaning and abandonment. During this period adult females mate with adult males, an activity that takes place in the water. Known and suitable habitats for the species in Donegal Bay (Murvagh) SAC during the breeding season are indicated in figure 3. Current sites are broadly within the following areas: sandbank areas in inner Donegal Bay; to the west of the Murvagh (Lower) Peninsula; and to the north of Inishpat with an additional record off Hassan's Point.

The necessity for individual seals to undergo an annual moult (i.e. hair shedding and replacement), which generally results in seals spending more time ashore during a relatively discrete season, provides an opportunity to record the minimum number of harbour seals occurring in a given area (i.e. minimum population estimate). Moulting is considered an intensive, energetically-demanding process which incurs further vulnerability for individuals during this period. Terrestrial or intertidal locations where seals can be found ashore are known as haul-out sites. The harbour seal moult season takes place predominantly during the months of August-September. A total of 148 harbour seals were recorded ashore within Donegal Bay (Murvagh) SAC in August 2003 during a national aerial survey for the species. Suitable habitat for the species along with known moult haul-out locations in Donegal Bay (Murvagh) SAC are indicated in figure 4, broadly consisting of sandbank areas to the north and west of Inishpat.

Harbour seal is a successful aquatic predator that feeds on a wide variety of fish, cephalopod and crustacean species. For individual harbour seals of all ages intervals between foraging trips in coastal or offshore waters are spent resting ashore at terrestrial or intertidal haul-out sites, or in the water. Outside the breeding and moulting seasons (i.e. from October-April) the location and composition of haul-out groups and individual seals may be different to those normally observed during breeding or moulting. Current information on resting locations selected by harbour seals in Donegal Bay (Murvagh) SAC outside the breeding and moulting seasons is comparatively limited. Known and suitable habitats for resting by the species are indicated in figure 5. Current sites described in Donegal Bay (Murvagh) SAC are broadly within the following areas: sandbank areas in inner Hassan's Point, at St. Ernan's Island, to the west of Rooney's Island and east of Rossilly adjacent to Inishnevin.

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 the Annex I habitat and Annex II species 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 Donegal Bay (Murvagh) 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	Conserve the following community types in a natural condition: Estuarine fine sands dominated by polychaetes and oligochaetes community complex; and Intertidal muddy sand to sand dominated by polychaetes, bivalves and crustaceans community complex.
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- A semi-quantitative description of these 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 Mudflats and sandflats not covered by seawater at low tide habitat given below are based on spatial interpolation and therefore should be considered indicative:

- Estuarine fine sands dominated by polychaetes and oligochaetes community complex - 309ha
- Intertidal muddy sand to sand dominated by polychaetes, bivalves and crustaceans community complex - 759ha
- 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 harbour seal in Donegal Bay (Murvagh) SAC, which is defined by the following list of attributes and targets**

Target 1	Species range within the site should not be restricted by artificial barriers to site use.
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- This target may be considered relevant to proposed activities or operations that will result in the permanent exclusion of harbour seal from part of its range within the site, or will permanently prevent access for the species to suitable habitat therein.
- It does not refer to short-term or temporary restriction of access or range.
- Early consultation or scoping with the Department in advance of formal application is advisable for proposals that are likely to result in permanent exclusion.

Target 2	The breeding sites should be maintained in a natural condition.
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- This target is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) breeding behaviour by harbour seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used during the annual breeding season.
- Operations or activities that cause displacement of individuals from a breeding site or alteration of natural breeding behaviour, and that may result in higher mortality or reduced reproductive success, would be regarded as significant and should therefore be avoided.

Target 3 The moult haul-out sites should be maintained in a natural condition.

- This target is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) moulting behaviour by harbour seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used during the annual moult.
- Operations or activities that cause displacement of individuals from a moult haul-out site or alteration of natural moulting behaviour to an extent that may ultimately interfere with key ecological functions would be regarded as significant and should therefore be avoided.

Target 4 The resting haul-out sites should be maintained in a natural condition.

- This target is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) resting behaviour by harbour seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used for resting.
- Operations or activities that cause displacement of individuals from a resting haul-out site to an extent that may ultimately interfere with key ecological functions would be regarded as significant and should therefore be avoided.

Target 5 Human activities should occur at levels that do not adversely affect the harbour seal population at the site.

- Proposed activities or operations should not introduce man-made energy (e.g. aerial or underwater noise, light or thermal energy) at levels that could result in a significant negative impact on individuals and/or the population of harbour seal within the site. This refers to both the aquatic and terrestrial/intertidal habitats used by the species in addition to important natural behaviours during the species' annual cycle.
- This target also relates to proposed activities or operations that may result in the deterioration of key resources (e.g. water quality, feeding, etc) upon which harbour seals depend. In the absence of complete knowledge on the species ecological requirements in this site such considerations should be assessed where appropriate on a case-by-case basis.
- Proposed activities or operations should not cause death or injury to individuals to an extent that may ultimately affect the harbour seal population at the site.

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Figure 1 - Extent of Annex I habitat Mudflats and sandflats not covered by seawater at low tide in Donegal Bay (Murvagh) SAC.



Figure 2 - Broadscale community distribution in Donegal Bay (Murvagh) SAC and adjacent areas.

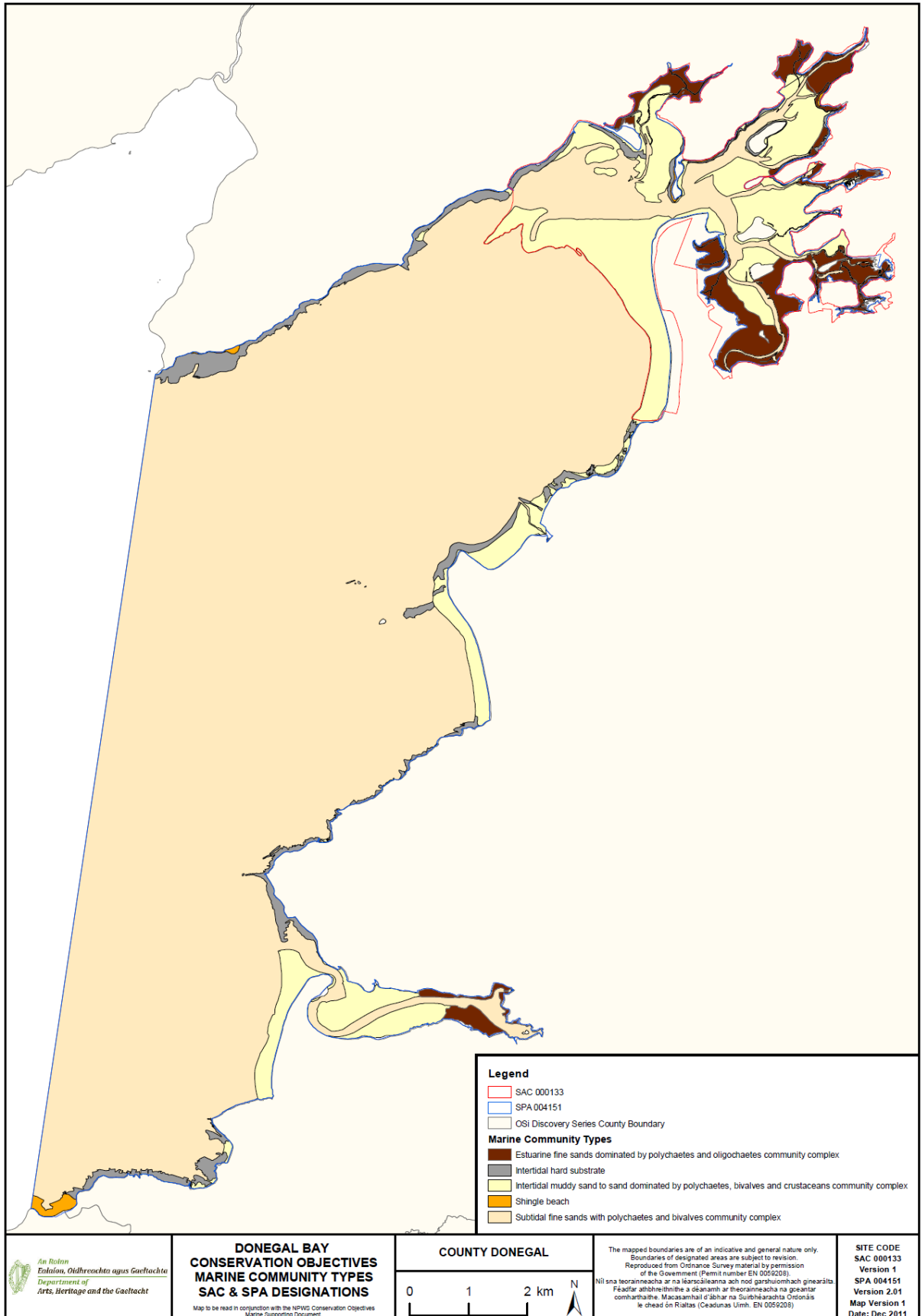


Figure 3. - *Phoca vitulina* - Known breeding sites in Donegal Bay (Murvagh) SAC.

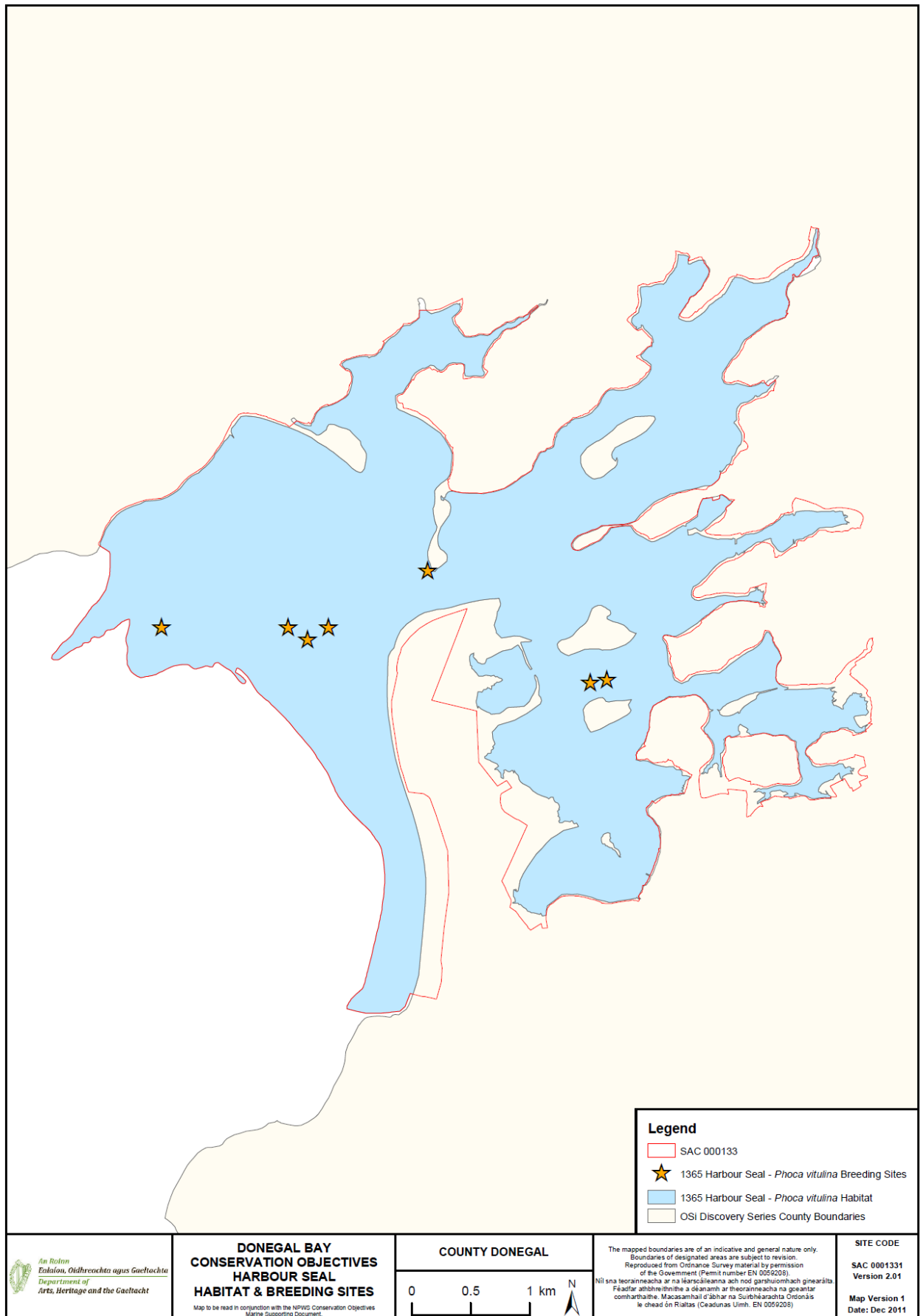


Figure 4. - *Phoca vitulina* - Known moult haul out sites in Donegal Bay (Murvagh) SAC.

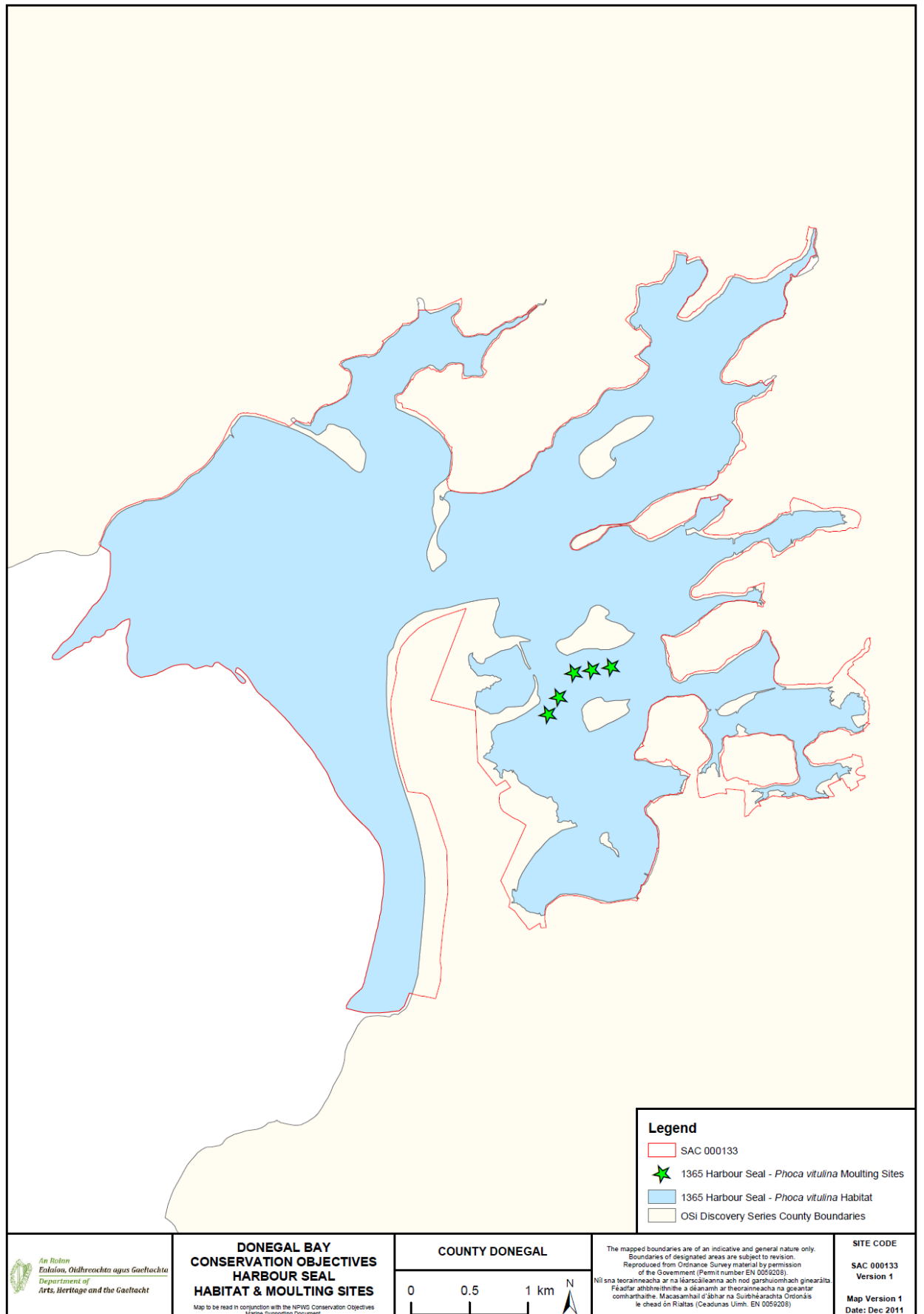


Figure 5. - *Phoca vitulina* - Known resting haul-out sites (non-breeding) in Donegal Bay (Murvagh) SAC.

