NPWS

Kenmare River SAC (site code: 2158)

Conservation objectives supporting document - Marine habitats and species

Version 1

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Introduction

Kenmare River SAC is designated for the marine Annex I qualifying interests of Large shallow inlets and bays (1160), Reefs (1170) and Submerged or partially submerged seacaves (8330) (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 Reefs and Submerged seacaves within its area.

Habitat surveys of Kenmare River SAC were undertaken in 2002 (Aquafact, 2003) and 2009 (ERM, 2009), in addition to the BioMar survey undertaken in 1995 (Picton & Costello, 1997). In 2009, a dive survey was carried out to map sensitive communities at this site (MERC, 2009). These data were used to determine the physical and biological nature of this SAC.

The distribution and ecology of intertidal or subtidal seacaves has not previously been the subject of scientific investigation in Ireland and the extents of very few individual caves have been mapped in detail. However, the 1995 BioMar survey (op. cit.) identified seacaves on the southern shore of Kenmare River, south west of Kidney Rock. Here a series of seacaves stretch back into the cliff along a geological fault/intrusion. An initial description of the fauna of these caves was undertaken during this survey. Analysis of the imagery from the Department of Communications, Marine and Natural Resources coastal oblique aerial survey yielded some information concerning the expected location of partially submerged seacaves in Kenmare River SAC (Figure 3). There is no additional information available concerning the likely distribution of permanently submerged seacaves in the site at present. Whilst surveys undertaken in the UK indicate the structure and functions of seacaves are largely influenced by hydrodynamic forces and water quality, no such information is yet available for Ireland.

In addition to the records compiled from historical Wildlife Service site visits and regional surveys (Summers *et al.*, 1980; Warner, 1983; Harrington, 1990; Lyons, 2004; Heardman *et al.*, 2006), a comprehensive survey of the Irish harbour seal population was carried out in 2003 (Cronin *et al.*, 2004; Cronin *et al.*, 2007). Subsequently, a number of detailed studies of harbour seal ecology and both terrestrial and aquatic habitat use have been conducted in the area (i.e., Roycroft *et al.*, 2006; Cronin, 2007; Cronin *et al.*, 2008; Cronin *et al.*, 2009). Annual monitoring surveys for harbour seal within Kenmare River SAC have also been carried out within the site since 2009 (NPWS, 2010; NPWS, 2011; NPWS, 2012).

All the above surveys 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 the Kenmare River SAC eleven community types are recorded within the Annex I habitats for which the site is designated; their occurrence in these habitats is presented in table 1 and a description of each of the community types is given below.

	Habitats		
	Large shallow inlets and bays (1160)	Reef (1170)	Submerged or partially submerged seacaves (8330)[1]
Intertidal mobile sand community complex	✓		
Zostera-dominated community	✓		
Maërl-dominated community	✓		
Pachycerianthus multiplicatus community	✓		
Muddy fine sands dominated by polychaetes and *Amphiura filiformis* community complex	✓		
Fine to medium sand with crustaceans and polychaetes community complex	✓		
Coarse sediment dominated by polychaetes community complex	✓		
Shingle	✓		
Intertidal reef community complex	✓	✓	
Laminaria-dominated community complex	✓	✓	
Subtidal reef with echinoderms and faunal turf community complex	✓	✓	✓

[1] Caves have not been fully surveyed, so other community types may occur

Table 1 The community types recorded in Kenmare River SAC and their occurrence in the Annex I habitats for which the site is designated.

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 Kenmare River 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 MOBILE SAND COMMUNITY COMPLEX

This community complex occurs most extensively in Darrynane Bay in the western reaches of the site. Within the bay it occurs as small sandy beaches as far east as Rossdohan on the northern shore and Leaghillaun on the southern shore. Elsewhere it occurs as small patches between largely hard substrate (Figure 4a).

The sediment comprises clean sands. The faunal composition varies with the degree of exposure, from very barren mobile sands with few inhabitants to moderately exposed mobile sands where talitrids are present on the upper shores and polychaetes including *Scolelepis foliosa* and *Arenicola marina*, the echinoderm *Echinocardium cordatum*, the bivalve *Ensis arcuatus* and amphipods also occur (Table 2).

Distinguishing species of Intertidal mobile sand community complex	
Scolelepis foliosa	*Ensis arcuatus*
Arenicola marina	Amphipods
Echinocardium cordatum	*Caulleriella alata*
Tubulanus polymorphus	Edwardsiidae
Virgularia mirabilis	Talitridae

Table 2 Distinguishing species of the Intertidal mobile sand community complex.

ZOSTERA-DOMINATED COMMUNITY

Within Kenmare River SAC, the seagrass community dominated by *Zostera marina* is widespread at depths of between 2m to 6m. The most extensive area occurs on the north shore, off Templenoe; on this shore it also occurs in Coongar Harbour, north of Leaghillaun and on the north western extreme of the site at Darrynane Harbour. On the southern shore it is recorded in Ballycrovane Harbour (Figure 4a and 4b).

The sediment ranges from mud and muddy sand to coarse sand.

Within this community the density of *Z. marina* ranges from abundant (12 individuals per m^2) to frequent (6 to 11 individuals per m^2). A number of species, namely the anthozoans *Anemonia viridis* and *Anthopleura ballii,* the asteroid *Marthasterias glacialis*, the green alga *Ulva lactuca* and the decapod *Necora puber* are associated with this complex. The polychaete *Chaetopterus variopedatus* and the anthozoan *Haliclystus auricula* are also recorded here (Table 3).

Species associated with the *Zostera*-dominated community	
Zostera marina	*Ulva lactuca*
Anemonia viridis	*Necora puber*
Anthopleura ballii	*Chaetopterus variopedatus*
Marthasterias glacialis	*Haliclystus auricula*

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

MAËRL-DOMINATED COMMUNITY

This community is recorded on the northern shore in the mid Kenmare River area from off the quay at Gleesk to off Templenoe (Figure 4b). The beds occur in depths of between 5m and 6m.

The species associated with this community include the decapods *Necora puber*, *Pisidia longicornis*, and *Liocarcinus depurator* and the polychaete *Eupolymnia nebulosa*; the asteroid *Marthasterias glacialis* and the polychaete *Chaetopterus variopedatus* are also recorded here (Table 4b).

Species associated with the Maërl-dominated community	
Unidentified maërl species	*Liocarcinus depurator*
Necora puber	*Eupolymnia nebulosa*
Pisidia longicornis	*Marthasterias glacialis*
Pagurus bernhardus	*Chaetopterus variopedatus*

Table 4 Species associated with the Maërl-dominated community.

PACHYCERIANTHUS MULTIPLICATUS COMMUNITY

Kenmare River is one of a very small number of sites in Ireland where the large, tube-dwelling anthozoan *Pachycerianthus multiplicatus* is known to occur (Figure 4b). This species with its 1m long tube is reported to provide a variety of microniches, thus resulting in localised increases in biodiversity.

It occurs between Inishkeragh and Rossdohan Island in depths of approximately 15m.

The infauna is that of the coarse sediment dominated by polychaetes community complex (see Table 7). The seafan *Swiftia pallida* is recorded from rocky outcrops in this area and the anemones *Cerianthus lloydii* and *Peachia cylindrica* also occur here.

MUDDY FINE SANDS DOMINATED BY POLYCHAETES AND *AMPHIURA FILIFORMIS* COMMUNITY COMPLEX

This community complex occurs extensively throughout the site from its western extreme throughout the central channel of the Kenmare River to the eastern boundary of the site (Figure 4a and b). It is recorded in depths of between 0m to 84m.

The substrate here is that of fine material with silt-clay and very fine sand fractions dominating (98.5-60.7%) and fine sand ranging from 30.2-0.5%. Coarser fractions are generally less than 5%.

The fauna of this species-rich complex is distinguished by the polychaetes *Diplocirrus glaucus, Scalibregma inflatum, Melinna palmata* and *Spiophanes kroyeri,* the ophiuroid *Amphiura filiformis* and the bivalve *Mysella bidentata*. In depths greater than 40m, *D. glaucus* and *A. filiformis* dominate while in shallower depths (<40m) it is the polychaetes *Nephtys cirrosa* and *M. palmata* and the phoronid, *Phoronis* sp. that are more dominant (Table 5).

A notable species recorded within this community complex is the anthozoan *Virgularia mirabilis.* It occurs from the eastern boundary of the site at Dunkerron Island (*c.* 4m depth) west to Rossdohan Island (*c*. 40m depth). The crustacean *Nephrops norvegicus* is also recorded with *V. mirabilis* within this area.

Distinguishing species of Muddy fine sands dominated by polychaetes and *Amphiura filiformis* community complex	
Diplocirrus glaucus	*Notomastus* sp.
Amphiura filiformis	*Hyala vitrea*
Scalibregma inflatum	*Abyssoninoe hibernica*
Kurtiella bidentata	*Protodorvillea kefersteini*
Spiophanes kroyeri	*Terebellides stroemi*
Melinna palmata	Nemertea
Abra nitida	*Nephtys* sp.
Phoronis sp.	*Nephtys hombergii*
Pholoe baltica	Nematoda
Magelona alleni	*Lumbrineris gracilis*
Amphiura chiajei	*Euclymene oerstedii*
Cylichna cylindracea	*Aonides oxycephala*
Ancistrosyllis groenlandica	*Terebellides stroemi*
Tubulanus polymorphus	*Caulleriella alata*
Virgularia mirabilis	Edwardsiidae

Table 5 Distinguishing species of the Muddy fine sands dominated by polychaetes and *Amphiura filiformis* community complex.

A variant of this community occurs in some of the sheltered harbours and off small headlands within Kenmare Bay; it is recorded at Cove Harbour and in its inner reaches east of Parknasilla. It is recorded from the intertidal to a depth of 53m. Here the sediment varies in the proportion of silt-clay and gravel resulting in the substrate ranging from muddy sandy gravel to gravelly sandy mud. The gravel fraction ranges from 52% to 1.2% with silt-clay ranging from 38.9% to 6.6%. Coarse sand ranges from 24.1% to 1.7%, while very coarse sand ranges from 24.2% to 4.4%. The sand fractions (medium, fine and very fine) typically range between 22% and 3%.

The mixed nature of the sediment results in a very high number of species occurring in moderate to low abundances within the variant. The polychaetes *Melinna palmata, Pholoe baltica, Euclymene oerstedii, Aonides oxycephala, Scalibregma inflatum, Lumbrineris gracilis, Terebellides stroemi* and *Caulleriella alata* are recorded in moderate abundances here. Burrowing anemones of the family Edwardsiidae, along with the seapen *Virgularia mirabilis*, also occur within this variant.

FINE TO MEDIUM SAND WITH CRUSTACEANS AND POLYCHAETES COMMUNITY COMPLEX

This community complex occurs in patches along the shores of Kenmare Bay from the Lackeen Rocks in the east to the western extreme of the site; it is also recorded in smaller bays and harbours where breaks in the reef are found (Figure 4a and 4b). It is recorded in depths of between 0m and 42m.

The substrate of this community complex is that of fine to medium sand, with fine sand ranging from 71.3% to 28.9%, and medium sand from 52.3% to 3%. Very fine sand ranges from 41.6% to 1.4%, with the highest values recorded in the outer reaches of Kenmare River SAC. Coarse sand ranges from 13% to 0.6% and very coarse sand from 7% to 0.1%. Silt-clay and gravel are generally less than 10% and 4%, respectively.

This community complex is distinguished by the crustaceans *Bathyporeia elegans*, *Ampelisca brevicornis* and *Iphinoe trispinosa*, the polychaetes *Spiophanes bombyx*, *Nephtys cirrosa*, and *Owenia fusiformis* and the gastropod *Polinices pulchellus*. The polychaete *Caulleriella alata* and the cumacean *Iphinoe trispinosa* are recorded in high abundance at the entrance of Kilmakilloge and Ardgroom Harbour. The amphipods *Pontocrates altamarinus* and *Nototropis swammerdamei* are recorded in high abundances in Darrynane Bay and Ballydonegan Bay. The polychaete *Chaetozone christiei* occurs in low abundance in the outer reaches of Kenmare River; however it is recorded in high abundance at Rath Strand. (Table 6).

Distinguishing species of Fine to medium sand with crustaceans and polychaetes community complex	
Bathyporeia elegans	*Pontocrates altamarinus*
Spiophanes bombyx	*Nototropis swammerdamei*
Nephtys cirrosa	*Caulleriella alata*
Polinices pulchellus	*Eurydice spinigera*
Iphinoe trispinosa	Aoridae
Fabulina fabula	*Chaetozone christiei*
Phaxas pellucidus	*Echinocyamus pusillus*
Nemertea	*Cumopsis fagei*

Table 6 Distinguishing species of the Fine to medium sand with crustaceans and polychaetes community complex.

COARSE SEDIMENT DOMINATED BY POLYCHAETES COMMUNITY COMPLEX

This community complex is recorded extensively in the western extreme of the site and into the bay along both shores. It occurs in depths of between 4m and 68m (Figure 4a and 4b).

The sediment of this community complex is that of coarse material, with gravel, very coarse and coarse sand accounting for 94.7% to 76.4% of the sediment here. Medium sand and fine sand range from 11.3% to 0.2% and 5.1% to 0.2%, respectively; fine material accounts for less than 10% of the sediment fractions.

The community of this complex is distinguished by the polychaetes *Mediomastus fragilis, Glycera lapidum, Protodorvillea kefersteini, Sphaerosyllis bulbosa* and unidentified polynoids (scaleworms) and unidentified nematodes and nemerteans. *G. lapidum* occurs in moderate abundance throughout the complex while *M. fragilis, P. kefersteini* and the holothurian *Thyone fusus* are recorded in higher abundance at the outer reaches of Kenmare River. The crustacean *Pisidia longicornis* occurs in high abundances off Iniskeragh Island. The chiton *Stenosemus albus* has a patchy distribution within the complex, it occurs in high abundances in the inner reaches of the site at Iniskeragh Island, at Ormond's Island, Coongar Harbour and in the western reaches of the site off Kilcatherine's Point. The amphipods *Leptocheirus hirsutimanus, L. tricristatus* and *Tryphosella sarsi* are recorded off Kilcatherine's Point and in Coongar Harbour (Table 7).

Distinguishing species of Coarse sediment dominated by polychaetes community complex	
Mediomastus fragilis	*Amphipholis squamata*
Glycera lapidum	*Pholoe baltica*
Protodorvillea kefersteini	*Polycirrus* sp.
Nematoda	*Pomatoceros lamarcki*
Sphaerosyllis bulbosa	*Pisidia longicornis*
Nemertea	*Diplocirrus* sp.
Polynoidae	*Leptocheirus hirsutimanus*
Stenosemus albus	*Leptocheirus tricristatus*
Thyone fusus	*Tryphosella sarsi*
Notomastus sp.	

Table 7 Distinguishing species of the Coarse sediment dominated by polychaetes community complex.

SHINGLE

Shingle (pebbles and gravel) are present in a number of areas in the inner reaches of Kenmare Bay, particularly on the southern shore. They occur on the upper shore usually behind fucoid dominated reef. Talitrid amphipods are recorded where dead algae accumulates here.

INTERTIDAL REEF COMMUNITY COMPLEX

This community complex occurs extensively on both shores of the Kenmare River and along the mainland and islands at the western extreme of the site (Figure 4a and 4b).

The substrate is that of vertical rock walls, interspersed amongst flat and sloping bedrock and boulder fields. However, in more sheltered areas cobbles and boulders occurring on bedrock or as fields are recorded. Extensive areas of vertical rock walls occur west of Raheercarrig on the northern shore and west of Leaghillaun on the southern shore.

The exposure regime ranges from exposed at the outer reaches of Kenmare Bay, moderately exposed within the bay to moderately sheltered in the inner reaches of the bay and within the small inlets and harbours.

The brown algal species *Pelvetia canaliculata, Fucus spiralis, Fucus vesiculosus, Fucus serratus, Laminaria digitata* and *Himanthalia* sp. are among the more prominent seaweeds recorded throughout the shore. Red algae including *Mastocarpus stellatus, Lomentaria articulata, Porphyra umbilicalis, Osmundea pinnatifida* and *Palmaria palmata* are also recorded here. The macrofauna recorded here include the gastropods *Littorina neritoides Littorina saxatilis, Patella vulgata, Patella ulyssiponensis, Littorina littorea, Gibbula cineraria* and *Nucella lapillus,* the anemone *Actinia equina,* the sponges *Hymeniacidon* sp., *Halichondria* sp. and *Ophlitaspongia* sp. and the barnacles *Elminius modestus, Semibalanus balanoides* and *Chthamalus stellatus.* A variety of lichens (*Xanthoria parietina, Verrucaria maura, Ochrolechia parella, Ramalina* sp., *Anaptychia runcinata* and *Lecanora atra*) can be found in more exposed areas of the shore (Table 8).

In sheltered locations it is the brown alga *Ascophyllum nodosum* that predominates.

Species associated with the Intertidal reef community complex	
Fucus serratus	*Nucella lapillus*
Pelvetia canaliculata	*Actinia equina*
Ascophyllum nodosum	*Elminius modestus*
Fucus spiralis	*Semibalanus balanoides*
Fucus vesiculosus	*Chthamalus stellatus*
Laminaria digitata	*Xanthoria parietina*
Himanthalia sp	*Verrucaria maura*
Mastocarpus stellatus	*Ochrolechia parella*
Lomentaria articulata	*Ramalina* sp.
Porphyra umbilicalis	*Anaptychia runcinata*
Osmundea pinnatifida	*Lecanora atra*
Palmaria palmata	*Patella vulgata*
Littorina neritoides	*Patella ulyssiponensis*
Littorina saxatilis	*Hymeniacidon* sp.
Littorina littorea	*Halichondria* sp.
Gibbula cineraria	*Ophlitaspongia* sp.

Table 8 Species associated with the Intertidal reef community complex.

LAMINARIA-DOMINATED COMMUNITY COMPLEX

This community complex is recorded extensively throughout the site from the inner reaches of Kenmare Bay to the western boundaries of the site. It is also recorded at the southern extreme of the site in Dursey Sound. It occurs at depths of between 4m and 22m (Figure 4a and 4b).

The substrate here consists of ridges of bedrock often covered with a veneer of silt and shelly gravel. The exposure regime ranges from sheltered in the inner reaches to extremely exposed reef to the west of Scariff Island.

The biota is dominated by the kelp species *Laminaria hyperborea*. The associated flora includes the brown algae *Dictyota dichotoma,* coralline red algae and the red algal species *Bonnemaisonia asparagoides, Plocamium cartilagineum, Cryptopleura ramosa, Delessaria sanguinea* and *Brongniartella byssoides.* The bryozoan *Membranipora membranacea* and the boring sponge *Cliona celata* are also recorded here (Table 9).

Species associated with the *Laminaria*-dominated community complex	
Laminaria hyperborea	*Bonnemaisonia asparagoides*
Coralline red algae	*Dictyota dichotoma*
Delessaria sanguinea	*Cryptopleura ramosa*
Brongniartella byssoides	*Plocamium cartilagineum*
Membranipora membranacea	*Cliona celata*

Table 9 Species associated with the *Laminaria*-dominated community complex.

SUBTIDAL REEF WITH ECHINODERMS AND FAUNAL TURF COMMUNITY COMPLEX

This community complex occurs from Ormond's Island in the east to the western boundaries of the site (Figure 4a and 4b).

The substrate ranges from flat or sloping bedrock, to a mosaic of cobble/boulder on bedrock or as cobble/boulder fields and occurs in depths between 15m and 50m. Vertical rock walls can be found south east of Illaunnaweelaun and off Rath in 40m to 50m of water.

The exposure regime ranges from exposed to sheltered reef, with the latter occurring in the inner reaches of the river and within Kilmakilloge and Ardgroom Harbours. Moderately exposed reef largely occurs in the main channel from Lackeen Point to Kilmakilloge Harbour and the outer reaches of Sneem Harbour; exposed reef is recorded in the outer third of the SAC and at the western extremes of the site.

Species associated with this reef community complex include the anthozoan *Caryophyllia smithii,* the bryozoan *Parasmittina trispinosa,* the echinoderms *Echinus esculentus, Aslia lefevre, Holothuria forskali, Luidia ciliaris, Marthasterias glacialis* and *Asterias rubens,* and the boring sponge *Cliona celata*. The brachiopod *Neocrania anomala* is also recorded here (Table 10).

Some species such as the anthozoan *Alcyonium glomeratum* occur over the entire depth range within this complex. Others including the echinoderms *Antedon bifida* and *Pawsonia saxicola* and the anthozoan *Alcyonium digitatum* are associated with the shallower areas (15m to 25m), whereas the anthozoans *Caryophyllia smithii* and *Swiftia pallida* occur in deeper water (>20m).

A variant of this community occurs within the surveyed seacaves on the vertical walls and overhanging bedrock. A large variety of sponge species (including *Dysidea fragilis*, *Leuconia nivea*, *Clathrina coriacea*, *Pachymatisma johnstonia*, *Protosuberites incrustans*, *Haliclona* sp., *Haliclona simulans, Aplysilla rosea* and *Aplysilla sulfurea*) as well as the anthozoans *Corynactis viridis* and *Caryophyllia smithii,* the polychaete *Pomatoceros triqueter*, encrusting

and erect bryozoans, tunicates of the Didemnidae family and the crustacean *Palaemon serratus* are recorded as common or frequent here. The depth of the seabed within surveyed caves does not exceed 4m.

Many of the species recorded from the caves are typical of steeply sloping rock or overhangs found elsewhere within this site.

Species associated with the Subtidal reef with echinoderms and faunal turf community complex	
Caryophyllia smithii	*Corynactis viridis*
Aslia lefevre	*Dysidea fragilis*
Echinus esculentus	*Pomatoceros triqueter*
Marthasterias glacialis	Encrusting bryozoans
Parasmittina trispinosa	*Alcyonium digitatum*
Holothuria forskali	*Antedon bifida*
Luidia ciliaris	*Calliostoma zizphinum*
Asterias rubens	Tunicates
Cliona celata	Erect bryozoans
Coralline red algae	Encrusting sponges

Table 10 Species associated with the Subtidal reef with echinoderms and faunal turf community complex.

The following community type occurs outside the marine Annex I habitats for which the site is selected:

ESTUARINE MUD

Within the Sneem River and the River Blackwater Estuaries areas of soft mud occur. Such sediments are characterised by small polychaetes and oligochaete species.

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 Kenmare River 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 to July approx.), moulting (August to September approx.) and non-breeding foraging and resting phases. Comparatively limited information is available from the months of October to May coinciding with the species non-breeding foraging and resting phases. However research into the haul-out behaviour, movements and aquatic habitat use of a sample of seals tagged in Kenmare River indicates widespread use of the site and adjacent coastal waters by harbour seals that haul out ashore within the SAC. In acknowledging this 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 in which 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 to 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 Kenmare River SAC during the breeding season are indicated in figure 5. Current sites are broadly within the following areas: Dronnoge, the Greenane Islands, Illaunakilla, Cappanacush Island and Brennel Island in inner Kenmare River, Carrignaronomore, Hog Island, Killmackilloge Harbour, Ardgroom Harbour, Coongar Harbour, Rossdohan Island, Brown Island and adjacent skerries,

inner Sneem Harbour, outer Sneem Harbour and Parknasilla, Potato Island, Illaunsillagh, and Cove Harbour (West Cove).

The necessity for 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 to September. A total of 391 harbour seals were recorded ashore within Kenmare River SAC in August 2003 during a national aerial survey for the species (Cronin *et al.*, 2004). Suitable habitat for the species along with known moult haul-out locations in Kenmare River SAC are indicated in figure 6, broadly consisting of: Dronnoge, the Greenane Islands, Illaunakilla, Cappanacush Island, Dunkerrow Island West, Illaungowla and Brennel Island in inner Kenmare River, Carrignaronomore, Ormonde's Island, Hog Island, Killmackilloge Harbour, Ardgroom Harbour, Coongar Harbour, Rossdohan Island, Brown Island and adjacent skerries, inner Sneem Harbour, outer Sneem Harbour and Parknasilla, Potato Island, Sherky Island, Illaunanadan-Inishkeragh, Inishkeelaghmore, Eyeries Island and Illaunnameanla in Coulagh Bay/Ballycrovane Harbour, Illaunsillagh and Cove Harbour (West Cove).

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 to 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 Kenmare River SAC outside the breeding and moulting seasons is comparatively limited. Known and suitable habitats for resting by the species are indicated in figure 7. Current sites described in Kenmare River SAC are broadly within the following areas: the Greenane Islands, Cappanacush Island and Brennel Island in inner Kenmare River, Carrignaronomore, Hog Island, Killmackilloge Harbour, Coongar Harbour, Rossdohan Island, Brown Island and adjacent skerries, inner Sneem Harbour, Illaunslea, outer Sneem Harbour and Parknasilla, Illaunnameanla in Ballycrovane Harbour, Illaunsillagh and Cove Harbour (West Cove).

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 Large shallow inlets and bays in Kenmare River 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 Reefs and Submerged or partially submerged seacaves. 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	Maintain the extent of *Zostera*- and maërl-dominated communities and the *Pachycerianthus multiplicatus* community, subject to natural processes.

- *Zostera*- and maërl-dominated communities are considered to be keystone communities that are of considerable importance to the overall ecology and biodiversity of a habitat by virtue of their physical complexity, e.g. they serve as important nursery grounds for commercial and non-commercial species. This site is one of only a few records in Ireland of the large, tube-dwelling anthozoan *Pachycerianthus multiplicatus* whose presence is reported to result in increased local biodiversity.

- 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 4a and 4b. The areas given below are based on spatial interpolation and therefore should be considered indicative:
    - *Zostera*-dominated community - 20ha
    - Maërl-dominated community – 47ha
    - *Pachycerianthus multiplicatus* community – 6ha

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 the *Zostera*-dominated community 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.
- Within this SAC, the density of *Zostera* in 2009 was estimated to range from abundant to frequent on the AFOR scale (semi-quantitative abundance measure).
- Any significant anthropogenic disturbance to the quality (i.e. shoot density) of this community should be avoided.

Target 4	Conserve the high quality of the maërl-dominated community, subject to natural processes.

- Every effort should be made to avoid any death to living maërl.
- Any significant anthropogenic disturbance to the quality of the maërl-dominated community (i.e. volume of live maërl, thallus structure) should be avoided.

Target 5	Conserve the high quality of the *Pachycerianthus multiplicatus* community, subject to natural processes.

- Every effort should be made to avoid any death or damage to *Pachycerianthus multiplicatus*.
- Any significant anthropogenic disturbance to the quality of this community should be avoided

Target 6	Conserve the following community types in a natural condition: Intertidal mobile sand community complex; Muddy fine sands dominated by polychaetes and *Amphiura filiformis* community complex; Fine to medium sand with crustaceans and polychaetes community complex; Coarse sediment dominated by polychaetes community complex; Shingle; Intertidal reef community complex; Subtidal reef with echinoderms and faunal turf 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 4a and 4b.
- The estimated areas of these communities given below are based on spatial interpolation and therefore should be considered indicative:
    - Intertidal mobile sand community complex - 63ha
    - Muddy fine sands dominated by polychaetes and *Amphiura filiformis* community complex – 20150ha
    - Fine to medium sand with crustaceans and polychaetes community complex – 1989ha
    - Coarse sediment dominated by polychaetes community complex – 8314ha
    - Shingle – 1ha
    - Intertidal reef community complex - 526ha
    - Subtidal reef with echinoderms and faunal turf community complex – 4808ha
    - *Laminaria*-dominated community complex - 3358ha
- 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 Reefs in Kenmare River SAC, which is defined by the following list of attributes and targets**

Target 1	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 2	The permanent area is stable, 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 3	Conserve the following community types in a natural condition: Intertidal reef community complex; Subtidal reef with echinoderms and faunal turf 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 4a and 4b.
- 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 - 681ha
  - Subtidal reef with echinoderms and faunal turf community complex – 4838ha
  - *Laminaria*-dominated community complex - 3678ha

- 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 Submerged or partially submerged seacaves in Kenmare River SAC, which is defined by the following list of attributes and targets**

Target 1	The distribution of seacaves is stable, subject to natural processes.

- The distribution of all seacaves in this SAC has not yet been fully evaluated (Figure 3).
- This target refers to activities or operations that propose to permanently remove sea cave 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 sea cave habitats.
- Early consultation or scoping with the Department in advance of formal application is advisable for such proposals.

Target 2	Human activities should occur at levels that do not adversely affect the ecology of seacaves at the site.

- This target relates to proposed activities or operations that may result in the deterioration of key resources (e.g. water quality) that are likely to drive or influence community structure of seacaves in the site. In the absence of complete knowledge on these elements in this site, such considerations should be assessed where appropriate on a case-by-case basis.

Objective **To maintain the favourable conservation condition of harbour seal in Kenmare River SAC, which is defined by the following list of attributes and targets**

Target 1	Species range is not restricted by artificial barriers to site use.

- 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	Conserve the breeding sites in a natural condition.

- 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	Conserve the moult haul-out sites 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	Conserve the resting haul-out sites 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 Large shallow inlets and bays in Kenmare River SAC

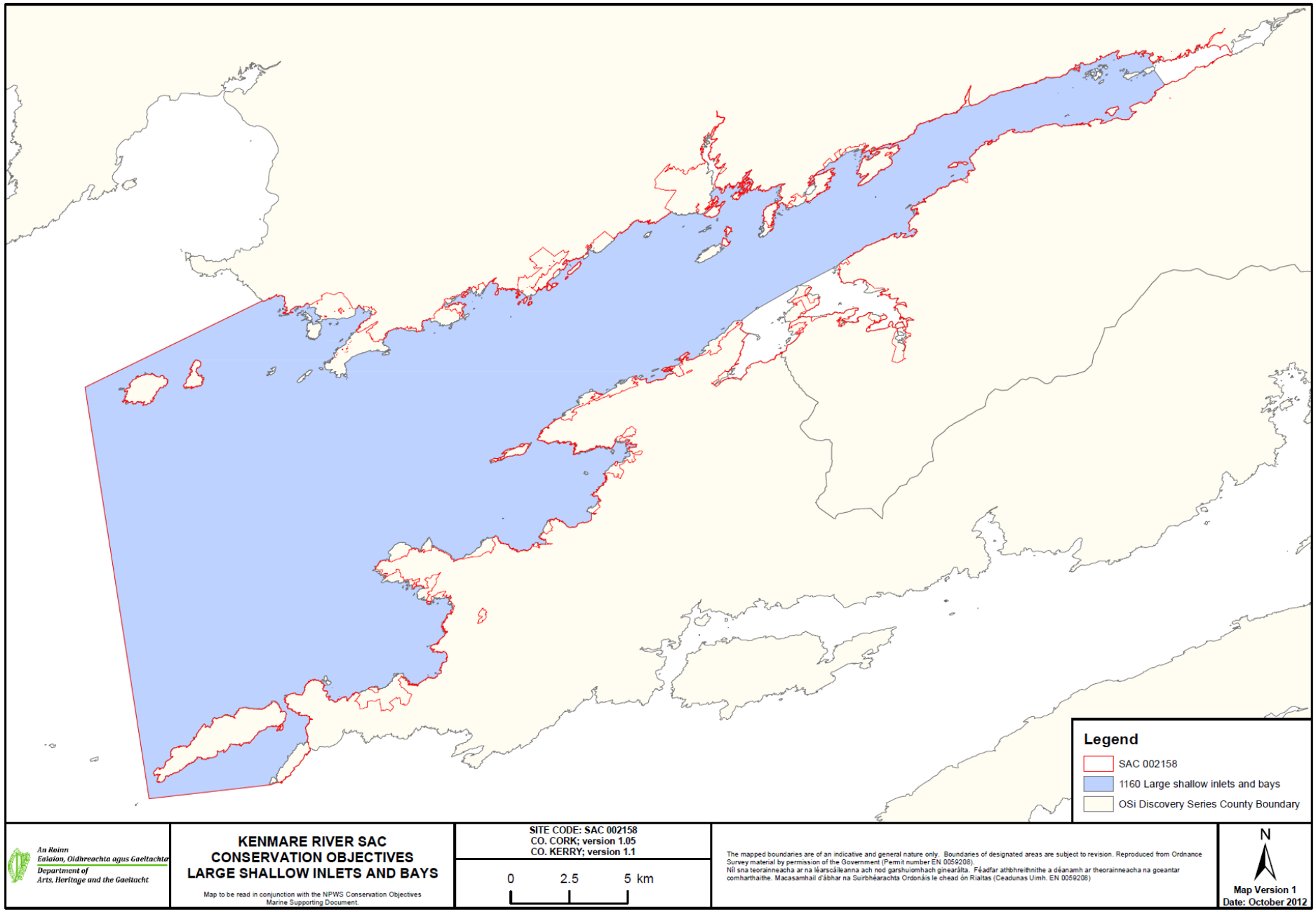

Figure 2. Extent of Reefs in Kenmare River SAC

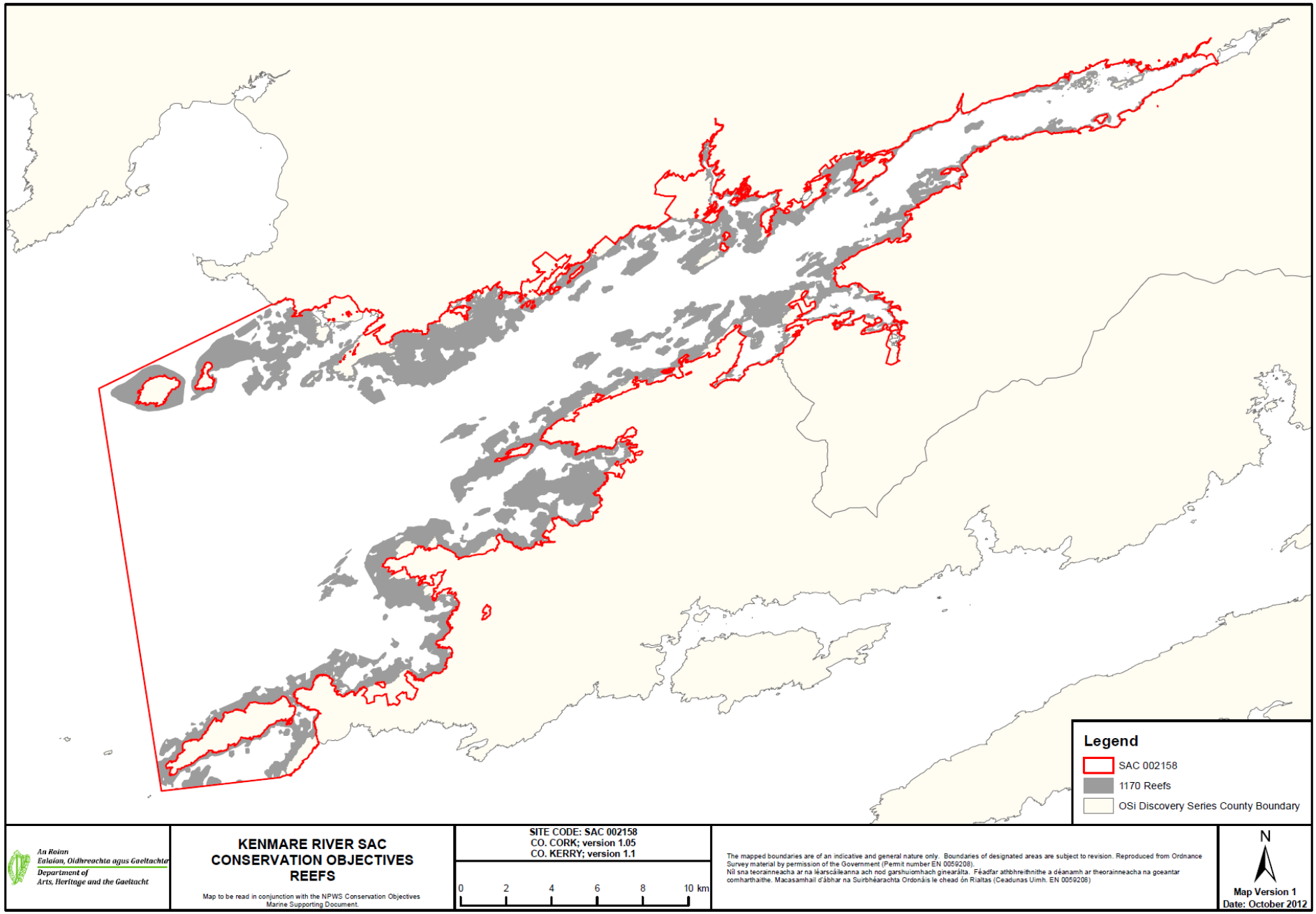

Figure 3. The expected distribution of seacaves in Kenmare River SAC

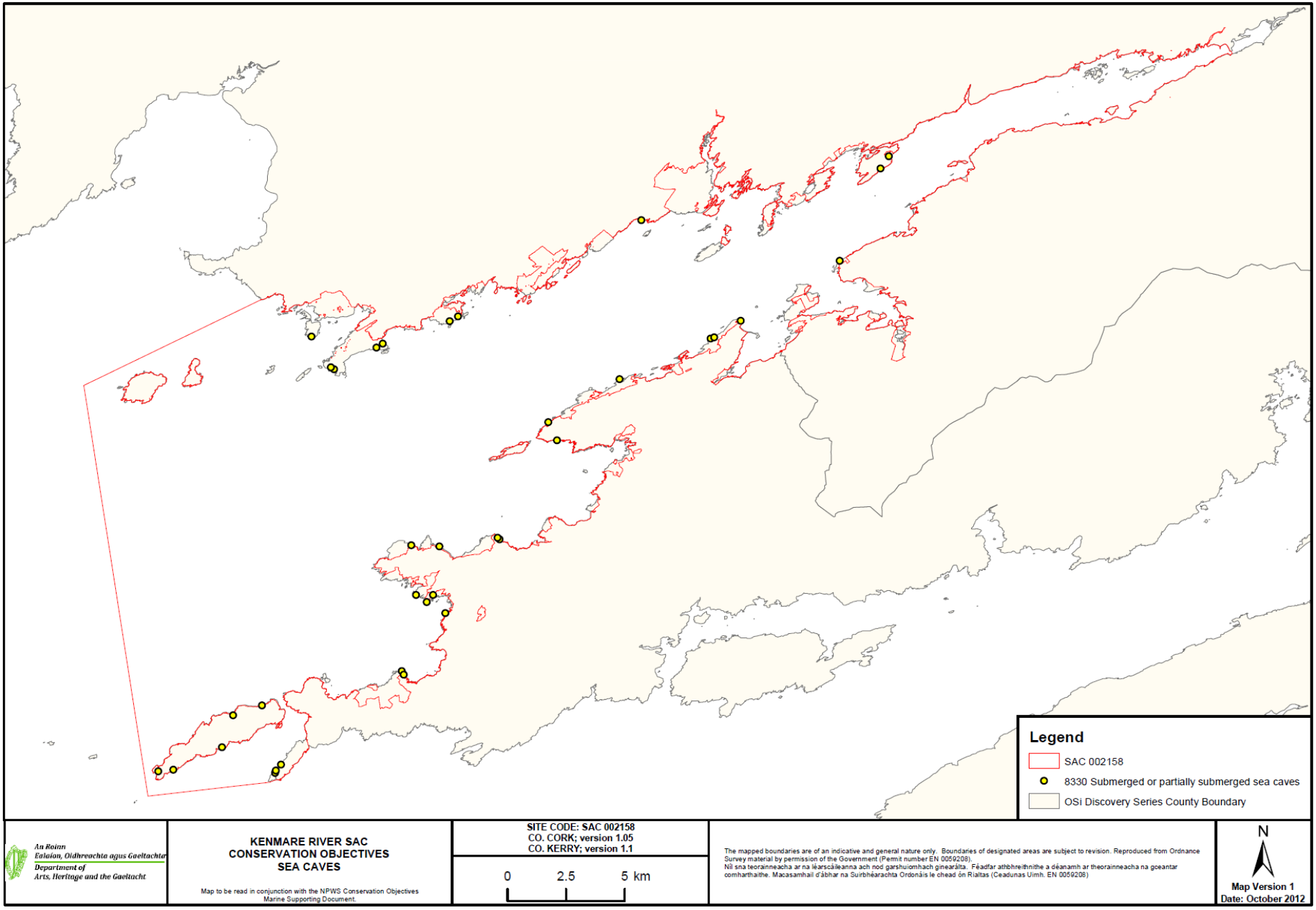

Figure 4a Distribution of community types in Kenmare River SAC

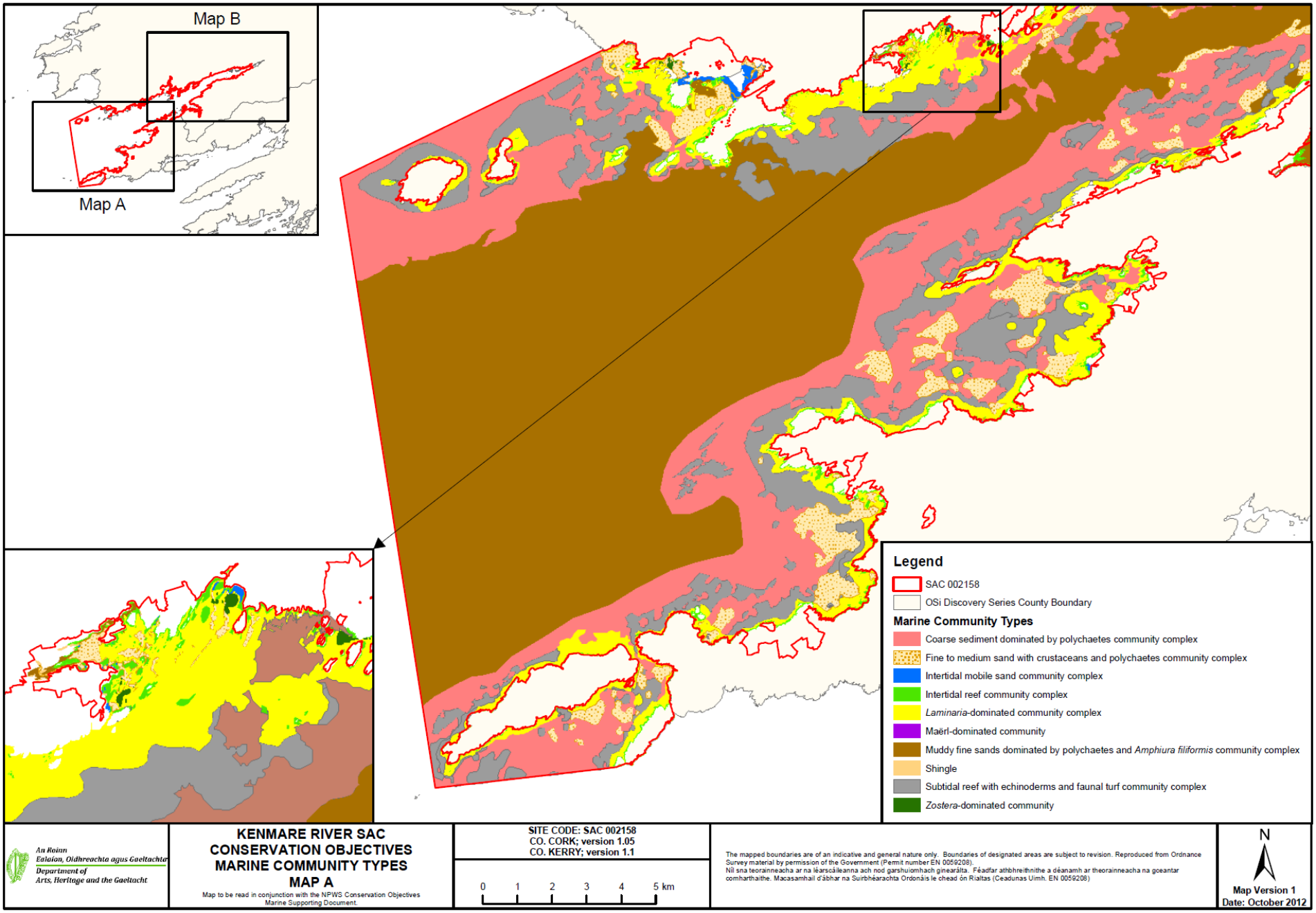

Figure 4b Distribution of community types in Kenmare River SAC

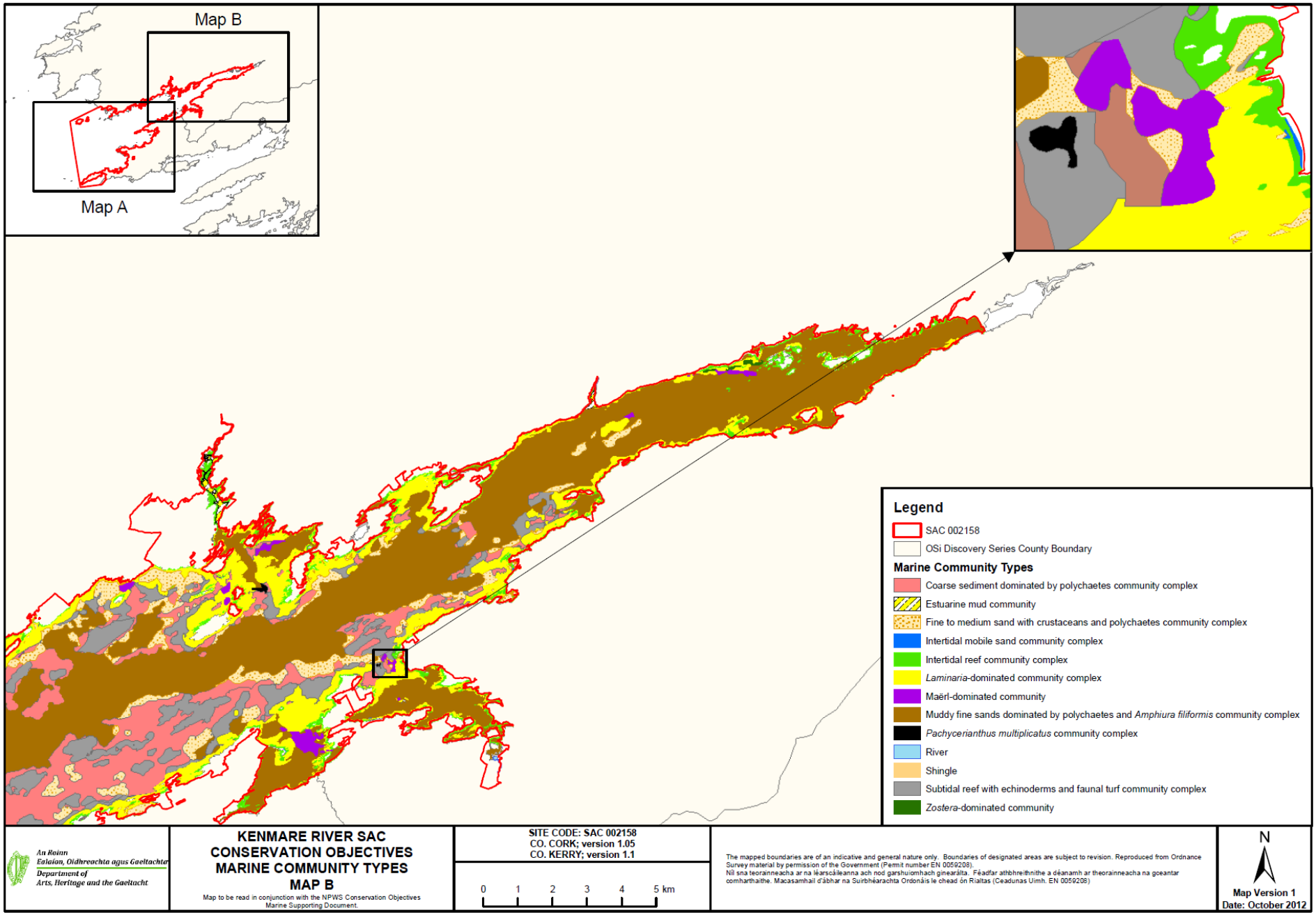

Figure 5. *Phoca vitulina* - Known breeding sites in Kenmare River SAC

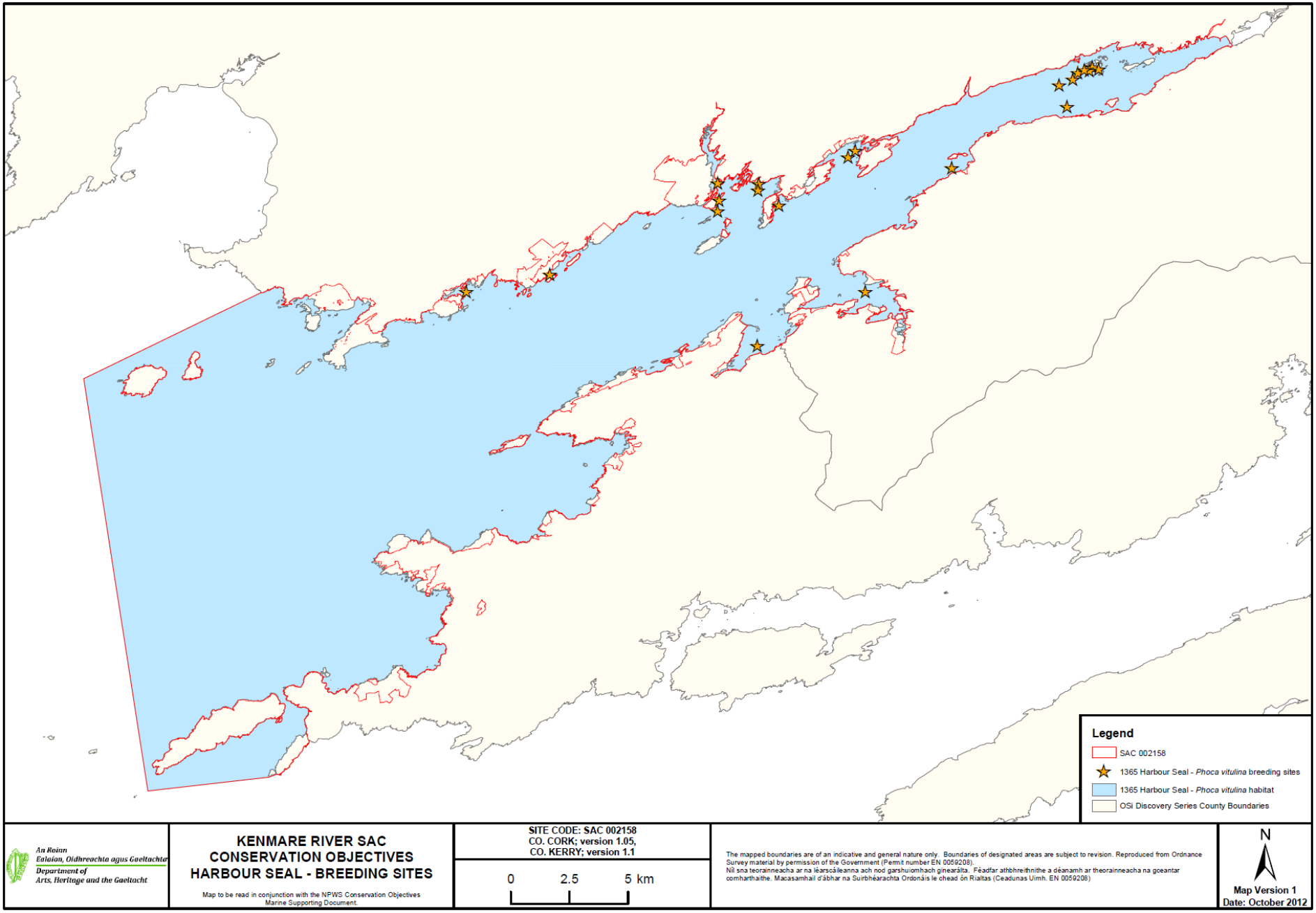

Figure 6. *Phoca vitulina* - Known moult haul out sites in Kenmare River SAC

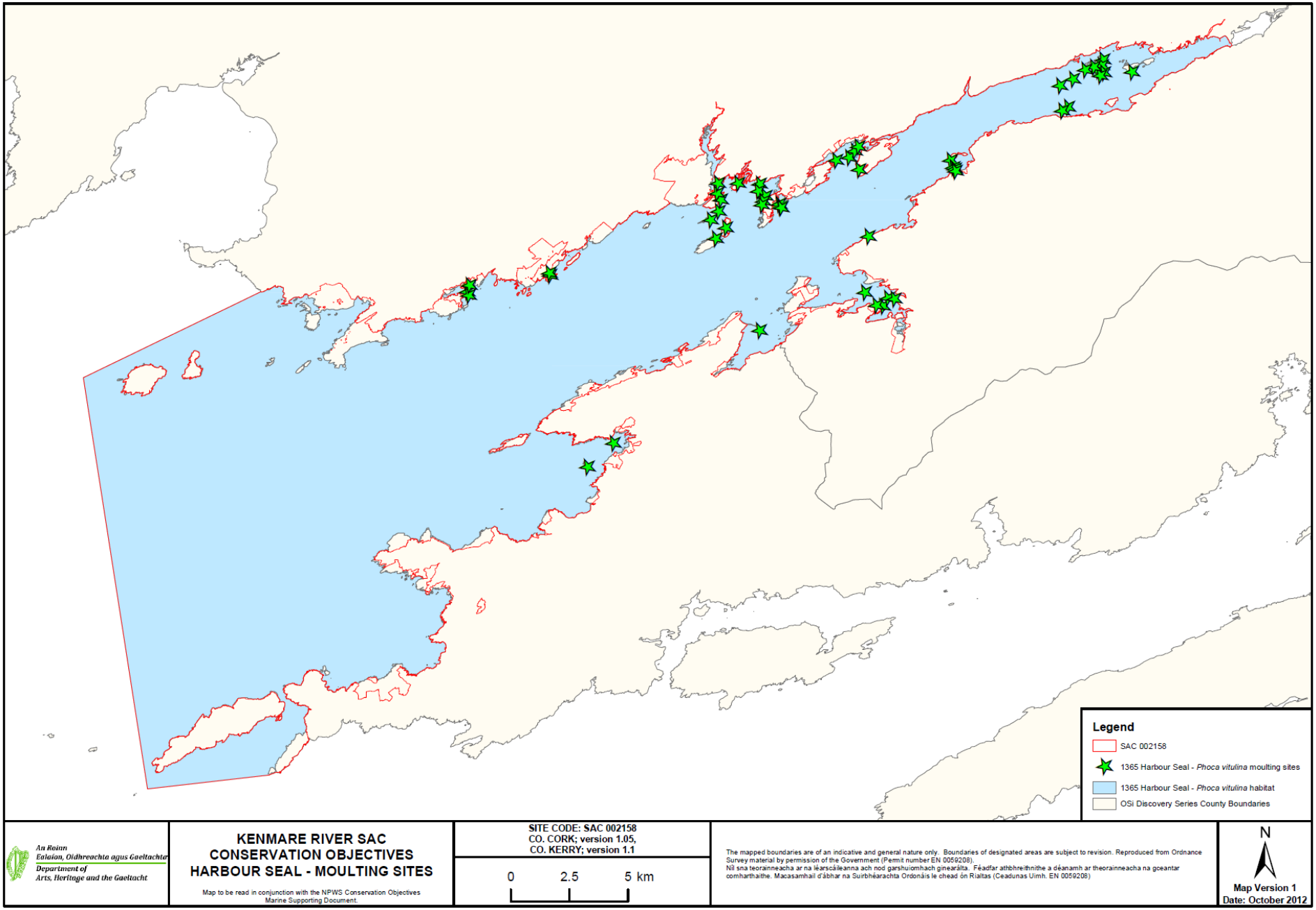

Figure 7. *Phoca vitulina* - Known resting haul-out sites (non-breeding) in Kenmare River SAC