West of Ardara/Maas Road SAC (site code 197) Conservation objectives supporting document -coastal habitats

NPWS

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Please note that the opinions expressed in the site reports from the Saltmarsh Monitoring Project (SMP), the Coastal Monitoring Project (CMP) and the Sand Dunes Monitoring Project (SDM) are those of the authors and do not necessarily reflect the opinion or policy of NPWS.

Please note that this document should be read in conjunction with the following report: NPWS (2015). Conservation Objectives: West of Ardara/Maas Road SAC 000197. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

1 Introduction

Achieving Favourable Conservation Status (FCS) is the overall objective to be reached for all Annex I habitat types and Annex II species of European Community interest listed in the Habitats Directive 92/43/EEC (Commission of the European Communities, 2007). It is defined in positive terms, such that a habitat type or species must be prospering and have good prospects of continuing to do so.

West of Ardara/Maas Road SAC is an extensive site that occupies the area of coast immediately north of Ardara in south west Donegal. From there, it continues northwards around the coast, and then up the Gweebara River to Doocharry. Most of the coastal parts are underlain by metamorphic rocks, in particular Loughros Group and Upper Falcarragh Pelites and Falcarragh limestone. This SAC exhibits a highly diverse range of both coastal and terrestrial habitats which is of great scientific value. The estuaries of the Gweebarra, Owenstocker and Owenea Rivers merge with shallow marine waters. Onshore sand dunes and machair have formed in a number of locations. The areas of machair in this site are noted for their species richness and for the interesting vegetation transitions which are present. Land use is varied across the SAC. Part of the Sheskinmore area is a BirdWatch Ireland Reserve, while another section is owned by National Parks and Wildlife Service (NPWS). Part of the area is protected by a management agreement between NPWS and local farmers.

A good population of the Annex II mollusc, *Vertigo geyeri* was recorded in dune slacks and flushed fen habitats in the vicinity of Sheskinmore Lough by Moorkens (1998). This is the most northerly population for this species and is considered to be one of the most important molluscan sites in the country (Moorkens, 1998). The Annex II plant species, *Petallophyllum ralfsii* also occurs within the SAC.

West of Ardara/Maas Road SAC (site code: 197) is designated for a range of coastal habitats including vegetated saltmarsh and sand dunes. The following nine coastal habitats are included in the list of qualifying interests for the site (* denotes a priority habitat):

- Atlantic salt meadows (Glauco-Puccinetalia maritimae) (1330) (ASM)
- Mediterranean salt meadows (*Juncetalia maritimi*) (1410) (MSM)
- Shifting dunes along the shoreline with *Ammophila arenaria* (2120)
- Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130)*
- Decalcified fixed dunes with *Empetrum nigrum* (2140)*
- Atlantic decalcified fixed dunes (Calluno-Ulicetea) (2150)*
- Dunes with *Salix repens ssp. argentea* (*Salix arenariae*) (2170)
- Humid dune slacks (2190)
- Machair (21A0)*

The first two habitats are saltmarsh habitats; the last seven are associated with sand dune systems. All nine of these habitats are usually found in close association with each other. Other Annex I habitats that were recorded at the site by the Saltmarsh Monitoring Project SMP (McCorry& Ryle, 2009; Ryle *et* al., 2009) and the Coastal Monitoring Project (CMP) but that are not listed as qualifying interests include Perennial vegetation of stony banks, *Salicornia* flats, Annual vegetation of driftlines and Embryonic dunes

The distribution of saltmarsh habitats within West of Ardara/Maas Road SAC is presented in Appendix I. The distribution of sand dune habtiats is presented in Appendix II.

This backing document sets out the conservation objectives for the nine coastal habitats listed above in West of Ardara/Maas Road SAC, which is defined by a list of parameters, attributes and targets. The main parameters are (a) Range (b) Area and (c) Structure and Functions, the last of which is broken down into a number of attributes, including physical structure, vegetation structure and vegetation composition.

The targets set for the **saltmarsh habitats** are based primarily on the results of the Saltmarsh Monitoring Project (SMP) (McCorry & Ryle, 2009) and this document should be read in conjunction with that report. The SMP surveyed two saltmarsh sites within West of Ardara/Maas Road SAC (McCorry & Ryle, 2009):

1. Sheskinmore-Beagh
2. Roshin Point

Sheskinmore is located in west Donegal, midway between Ardara and Portnoo and is a large coastal site supporting a range of habitats. The saltmarsh which is associated with the sand dune system occurs towards the southern boundary of the site and is approximately 3km north-west of Ardara. The saltmarsh is confined to low-lying ground around the Bellanagoal River and a second unnamed river entering the intertidal zone to the north Derryness townland. Some saltmarsh also extends up the Bellanagoal River (McCorry & Ryle, 2009).

Roshin Point is a rocky headland that is connected to the mainland by a sandy isthmus. The site is located along the southern side of Gweebara Bay. The saltmarsh is mainly situated along the eastern side of the isthmus at Roshin Point and extends southwards towards the townland of Clashagh. Most of the saltmarsh is located within the Bay although a small area is located on the southern side of a local road (R261) that crosses along part of the southern shoreline of the bay. The substrate is largely sandy, although the ground gets wetter in the upper limits and the soils are replaced by a mixture of peats or gleys (McCorry & Ryle, 2009).

Sheskinmore-Beagh and Roshin Point are two of four saltmarsh systems within West of Ardara/Maas Road SAC, Curtis and Sheehy Skeffington (1998) also recorded the presence of saltmarsh at the following sites:

1. Lettermacaward
2. Loughros More Bay-Ardara

The conservation objectives for the saltmarsh habitats in this SAC are based primarily on the findings from the Saltmarsh Monitoring Project (SMP) (McCorry & Ryle, 2009), as well as a combination of sources including NPWS internal files and the Coastal Monitoring Project (Ryle *et al*., 2009).

The targets set for the **sand dune habitats** are based primarily on the results of the Coastal Monitoring Project (CMP) (Ryle *et al.*, 2009) and the Sand Dunes Monitoring Project (SDM) (Delaney *et al*., 2013). This document should be read in conjunction with those reports. Crawford *et al*. (1996) and Gaynor (2006, 2008) provide additional information on machair in Ireland. The distribution of sand dune habitats within West of Ardara/Maas Road SAC is presented in Appendix II.

The CMP was a comprehensive national baseline survey of all known sand dune systems in Ireland. A total of four sub-sites were surveyed, mapped and assessed within West of Ardara/Maas Road SAC. The sub-sites are:

1. Clooney
2. Roshin Point
3. Lettermacaward/Dooey Point
4. Sheskinmore

As part of the Coastal Monitoring Project (CMP) detailed individual reports and habitat maps were produced for all sub-sites and those compiled for Clooney, Roshin Point and Lettermacaward/Dooey Point are included in a set of Appendices to this document (Appendices V to VII).

The SDM subsequently reviewed and modified the methodology used during the CMP to map and assess the conservation status of dune habitats. A subset of 40 sites (including Sheskinmore) was selected as a representative sample of the national dune resource for the SDM survey.

As part of the SDM, detailed individual reports and habitat maps (a revised baseline habitat map and an updated habitat map) were produced for each sub-site and the relevant ones for Sheskinmore are included in Appendix VIII.

Sheskinmore sand dune system and machair is located in the southern part of the cSAC and stretches from the townland of Mullyvea southwards to the townland of Derryness. It is a vast dune system on the north side of a drowned estuary. A series of high fixed dune ridges flank Trawmore (in the west) and Ballineavy strand (in the east) and are bounded by two rocky headlands. Numerous dune slacks and small water bodies lie between the fixed dune ridges.

Clooney encompasses three large sandy beaches and the sand dune system includes the priority habitats machair and fixed dune. Some of the habitats have been affected by the presence of an 18-hole giolf course (Naran and Portnoo Golf Course) and a caravan park (Gaynor & Browne, 1999). At the time of the CMP survey the site at Clooney was part of a LIFE funded project 'Integrated Coastal Zone Management of Beach and Dune systems in Donegal' which was carried out by Donegal County Council and the University of Coleraine. The project aims to produce management plans for beaches and dunes in Donegal.

Roshin Point sand dunes are situated in Gweebarra Bay, close to the towns of Maas and Clooney. The site is adjacent to Clooney and Lettermacaward sand dunes. Roshin Point is a tomobolo composed of a shingle bar, connecting the island to the mainland. The shingle developed in front of a rocky outcrop and has over time been overlain with sand. This has allowed a wide variety of vegetation types to develop. The site has an interesting and varied geological structure which accounts for much of the ecological variation (Ryle *et al*., 2009).

The conservation objectives for the sand dune habitats (including machair) in West of Ardara/Maas Road SAC are based on the findings of the individual reports for each of these sites from both the CMP (Ryle et al., 2009) and the SDM (Delaney *et al*., 2013), combined with the results of Gaynor (2008). It is thought that the four sub-sites as surveyed by the CMP and SDM represent the total area of sand dunes within West of Ardara/Maas Road SAC.

2 Conservation Objectives

A conservation objective aims to define the favourable conservation condition of a habitat or species at a particular site. Implementation of the objective will help to ensure that the habitat or species achieves favourable conservation status at a national level.

3 Saltmarsh habitats

Saltmarshes are stands of vegetation that occur along sheltered coasts, mainly on mud or sand, and are flooded periodically by the sea. They are restricted to the area between mid neap tide level and high water spring tide level. In Ireland, there are four saltmarsh habitats listed under Annex I of the EU Habitats Directive (92/43/EEC):

- *Salicornia* and other annuals colonising mud and sand (1310)
- **Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) (1330) (ASM)**
- **Mediterranean salt meadows (*Juncetalia maritimi*) (1410) (MSM)**
- Mediterranean and thermo-Atlantic Halophilous scrubs (Sarcocornetea fruticosi)

The second two habitats (in bold) are listed as Qualifying Interests for West of Ardara/Maas Road SAC. The last habitat is restricted in its distribution to sites in the southeast of the country. A small area of *Salicornia flats* was recorded at Sheskinmore-Beagh by the SMP (McCorry & Ryle, 2009), but this habitat is not a qualifying interest for this SAC.

Curtis and Sheehy Skeffington (1998) recorded the presence of saltmarsh at the following sites:

1. Lettermacaward
2. Roshin Point
3. Sheskinmore-Beagh
4. Loughros More Bay-Ardara

The sub-sites, Lettermacaward and Sheskinmore-Beagh support sand flats-type saltmarsh that is mostly underlain by a sand and sand/peat substrate, while Roshin Point is a bay type with a sand/peat substrate and Loughros More Bay- Ardara is a fringe type with a mud/cut-over peat substrate (Curtis & Sheehy Skeffington, 1998).

3.1 Overall Objectives

The overall objective for 'Atlantic salt meadows' in West of Ardara/Maas Road SAC is to '*restore the favourable conservation condition*'.

The overall objective for 'Mediterranean salt meadows' in West of Ardara/Maas Road SAC is to '*maintain the favourable conservation condition*'.

This objective is based on an assessment of the recorded condition of each habitat under a range of attributes and targets. The assessment is divided into three main headings (a) Area (b) Range and (c) Structure and Functions.

3.2 Area

3.2.1 Habitat extent

Habitat extent is a basic attribute to be assessed when determining the condition of a particular habitat. The target is no decrease in extent from the baseline which was established by McCorry and Ryle (2009). Bearing in mind that coastal systems are naturally dynamic and subject to change, this target is assessed subject to natural processes, including erosion and succession.

Baseline habitat maps were produced for the saltmarsh in West of Ardara/Maas Road during the SMP. These maps are included with the individual site reports in an Appendix at the end of this document. A total of 48.03ha of saltmarsh habitat was mapped by the SMP within the SAC at the two sub-sites and an additional 31.34ha of potential saltmarsh habitat was identified using aerial photographs, to give a total estimated area of 79.37ha for the SAC.

The following rules were applied when calculating the areas for habitat mosaics for the site's conservation objectives:

1. Where a polygon was identified as a mosaic of an Annex I habitat and a non-Annex I habitat, then the entire area was counted as the Annex I habitat.
2. Where a polygon was identified as a mosaic of two Annex I habitats, the area was divided 50:50 for each habitat.

The total areas of each potential saltmarsh habitat within the SAC as estimated and mapped by the SMP are presented in the following table.

Sub-site	Total area (ha) of ASM (excluding mosaics) from SMP	Total area (ha) of ASM within SAC boundary (including mosaics)
Sheskinmore-Beagh	15.90	13.48
Roshin Point	2.18	1.69
Potential habitat	16.84	16.84
Total	**34.92**	**32.01**

Sub-site	Total area (ha) of MSM (excluding mosaics) from SMP	Total area (ha) of MSM within SAC boundary (including mosaics)
Sheskinmore-Beagh	28.97	28.67
Roshin Point	4.76	4.34
Potential habitat	14.39	14.39
Total	**48.12**	**47.41**

For all of the saltmarsh habitats, the target is that the area should be stable or increasing, subject to natural processes, including erosion and succession.

3.3 Range

3.3.1 Habitat distribution

Saltmarsh is currently known to display a wide distribution throughout the site with the most important areas at Sheskinmore-Beagh, Roshin Point as well as at Lettermacaward and Loughros More Bay-Ardara (McCorry & Ryle, 2009; Curtis & Sheehy Skeffington, 1998). The distribution of saltmarsh habitats within the SAC is presented in Appendix I.

At Sheskinmore-Beagh, MSM accounts for more than 60% of the total saltmarsh area that was mapped by the SMP, whilst ASM occupies most of the remaining land.

The target is that there should be no decline or change in the distribution of these saltmarsh habitats, unless it is the result of natural processes, including erosion, accretion and succession.

3.4 Structure and Functions

The location, character and dynamic behaviour of saltmarshes are governed by sediment supply, tidal regime, wind-wave climate and sea level change. The slope of the saltmarsh allows the development of several ecological gradients such as tidal submergence and

salinity, and this influences the development of distinctive zones of halophytic and salt tolerant plant communities. Maintaining the favourable conservation condition of the saltmarsh habitat in West of Ardara/Maas Road SAC in terms of its structure and functions depends on a range of attributes for which targets have been set as outlined below.

3.4.1 Physical structure: sediment supply

Accretion and erosion are natural elements of saltmarsh systems. Maintaining the sediment supply is vital for the continued development and natural functioning of a saltmarsh system. Interruption to the sediment circulation through physical structures can starve the system and lead to accelerated erosion rates.

The target is to maintain and where possible restore the natural circulation of sediment and organic matter, without any physical obstructions.

3.4.2 Physical structure: creeks and pans

Saltmarshes can contain a distinctive topography with an intricate network of creeks and pans occurring on medium to large-sized sites. Creek density is influenced by vegetation cover, sediment supply and tidal influence. Creeks absorb tidal energy and assist with delivery of sediment into the saltmarsh. The efficiency of this process depends on creek pattern. Creeks allow pioneer vegetation to become established along their banks higher up into the saltmarsh system. Major erosion of saltmarsh is indicated by internal dissection and enlargement of the drainage network, ultimately leading to the creation of mud basins.

At Sheskinmore, some sections of the ASM display excellent examples of salt pan and natural creek drainage. The MSM at this site is in good condition and exhibit many characteristic features that might be expected from this habitat (McCorry & Ryle, 2009).

At Roshin Point, although the ASM is not extensive, most of the habitat is in adequate condition and only isolated areas of habitat is damaged. The MSM at this site has a favourable habitat structure though the structure of one section has been significantly modified in the past from peat cutting (McCorry & Ryle, 2009).

The target is to maintain creek and pan networks where they exist and to restore areas that have been altered.

3.4.3 Physical structure: flooding regime

The regular ebb and flow of the tide brings salinity, but also nutrients, organic matter and sediment, which are central to the development, growth and indeed survival of saltmarshes. Saltmarsh vegetation consists of a limited number of halophytic (salt-tolerant) species that are adapted to regular immersion by the tides. Species in the lowest part of the saltmarsh require regular inundation, while those higher up on the marsh can only tolerate occasional inundation.

The target is to maintain a flooding regime whereby the lowest levels of the saltmarsh are flooded daily, while the upper levels are flooded occasionally (e.g. highest spring tides).

3.4.4 Vegetation structure: zonation

Saltmarshes are naturally dynamic coastal systems. Unlike the majority of Irish saltmarshes, MSM is the dominant saltmarsh habitat at West of Ardara/Maas road where it occurs in a mosaic with other saltmarsh habitats, including 'Atlantic salt meadows'. In order to ensure the ecological functioning of all of the saltmarsh habitats it is vital to maintain the zonations and transitions to other habitats, including intertidal, shingle and sand dune habitats.

At Sheskinmore-Beagh, the ASM is one part of a larger coastal ecosystem and there are natural transitions to other habitats including MSM and machair. At this site the SMP noted evidence of zonation in the ASM throughout the site, ranging from low to mid and upper marsh.

The MSM at Sheskinmore is extensive and highly diverse, with a number of transitions evident throughout the site. The large peaty plains dominated by MSM, still retain relics of the blanket bog origins and there are still relatively large stands of peat that have not been harvested throughout the site, increasing the structural heterogeneity and vegetation complexity of the saltmarsh system. Transitional vegetation is a feature of the MSM at Sheskinmore, especially at the back of the marsh, where the low-lying ground starts to climb on to the rocky headland. The MSM grades into transitional MSM and transitional wet grasslands where the freshwater influence draining off the surrounding hilly ground dilutes the impact of the saline waters (McCorry & Ryle, 2009).

At Roshin Point, the ASM forms part of a larger coastal ecosystem and there are natural transitions to other habitats along the isthmus and rock headland including fixed dune, machair, wet grassland and MSM. Whilst there is greater differentiation in zonation, from lower to upper ASM communities than the MSM, they are rarely extensive and confined to

narrow bands. Also at this site there is some transitional vegetation present where MSM is intermixed with modified blanket bog vegetation on the deeper peat (McCorry & Ryle, 2009).

The target is to maintain the range of coastal habitats, including transitional zones, subject to natural processes including erosion and succession.

3.4.5 Vegetation structure: vegetation height

A varied vegetation structure is important for maintaining species diversity and is particularly important for invertebrates and birds. Grazing is often used as a tool for maintaining structural diversity in the sward but stocking levels need to be appropriate. Overgrazing can lead to loss of species and destruction of the vegetation cover, while undergrazing can lead to a loss of plant diversity due to competitive exclusion.

At Sheskinmore, the level of grazing in general noted by the SMP is rarely excessive. Cattle and sheep are allowed to graze but their range is sometimes limited by the network of rivers and drainage channels which bisect the site. There are also some areas where excessive grazing occurs and damage evident (McCorry & Ryle, 2009).

At Roshin Point, grazing intensity varies from area to area. Most of the ASM recorded from this subsite and some of the MSM is grazed moderately, particularly that recorded on the southern side of the road. Some sections are fenced off and are not grazed. Some sections are heavily poached and overgrazed. Elsewhere, livestock are occasionally brought across the intertidal sands to the fields on the eastern side of the site and cattle are sometimes allowed to roam freely during low tide causing damage to the fringing ASM mostly from poaching along access points to fields (McCorry & Ryle, 2009).

The target is to maintain structural variation within the sward. A general guideline is that there should be a sward ratio of 30% tall:70% short across the entire saltmarsh.

3.4.6 Vegetation structure: vegetation cover

Vegetation cover can have a major effect on saltmarsh development by reducing the velocity of the tide and thereby enhancing the deposition of sediment. Excessive bare mud, however, is often a sign of overuse by livestock or humans and can lead to destabilisation and accelerated erosion of the system.

At Sheskinmore, trails were occasionally encountered by the SMP although they were associated with livestock rather than recreational visitors. The trails were also observed in the

MSM where it was possible to see the impacts of trampling through the taller vegetation (McCorry & Ryle, 2009).

The target is to maintain 90% of the area outside of the creeks vegetated.

3.4.7 Vegetation composition: typical species & sub-communities

Saltmarshes contain several distinct zones that are related to elevation and frequency of flooding. The lowest part along the tidal zone is generally dominated by the most halophytic (salt-tolerant) species including common saltmarsh-grass (*Puccinellia maritima*) and species more usually associated with *Salicornia* muds. The mid-marsh zone is generally characterised by sea thrift (*Armeria maritima*), sea plantain (*Plantago maritima*) and sea aster (*Aster tripolium*). This mid-zone vegetation generally grades into an herbaceous community in the upper marsh, dominated by red fescue (*Festuca rubra*), sea milkwort (*Glaux maritima*) and saltmarsh rush (*Juncus gerardii*).

The target for this attribute is to ensure that a typical flora of saltmarshes is maintained, as are the range of sub-communities within the different zones. Below are lists of typical species for the different saltmarsh zones, although some of these species have a restricted distribution nationally and may not occur in the West of Ardara/Maas Road area.

Typical species		
Lower marsh	**Low-mid marsh**	**Mid-upper marsh**
Salicornia spp. *Suaeda maritima* *Puccinellia maritima* *Aster tripolium*	*Puccinellia maritima* *Triglochin maritima* *Plantago maritima* *Atriplex portulacoides* *Aster tripolium* *Spergularia* sp. *Suaeda maritima* *Salicornia* spp. *Glaux maritima* Turf fucoids	*Festuca rubra* *Juncus gerardii* *Armeria maritima* *Agrostis stolonifera* *Limonium humile* *Glaux maritima* *Seriphidium maritimum* *Plantago maritima* *Aster tripolium* *Juncus maritimus* *Triglochin maritima* *Blysmus rufus* *Eleocharis uniglumis* *Leontodon autumnalis* *Carex flacca* *Carex extensa* Turf fucoids

3.4.8 Vegetation structure: negative indicator species

The only invasive and non-native species recorded on saltmarshes during the SMP was common cordgrass (*Spartina anglica*). This species was not recorded in West of Ardara/Maas Road SAC by the SMP (McCorry & Ryle, 2009) nor has it been recorded in the surrounding area (Preston *et al*., 2002).

The aim is that negative indicators such as *Spartina* should be absent or under control. The current target for this particular site is that the species should not be introduced..

4 Sand dune habitats

Sand dunes are hills of wind-blown sand that have become progressively more stabilised by a cover of vegetation. In general, most sites display a progression through strandline, foredunes, mobile dunes and fixed dunes. Where the sandy substrate is decalcified, fixed dunes may give way to dune heath. Wet hollows, or dune slacks, occur where the dunes have been eroded down to the level of the water table. Transitional communities can occur between dune habitats and they may also form mosaics with each other. Dune systems are in a constant state of change and maintaining this natural dynamism is essential to ensure that all of the habitats present at a site achieve favourable conservation condition.

In Ireland, there are nine sand dune habitats (including annual vegetation of drift lines) listed under Annex I of the EU Habitats Directive (92/43/EEC) (* denotes a priority habitat):

- Annual vegetation of drift lines (1210)
- Embryonic shifting dunes (2110)
- **Shifting dunes along the shoreline with *Ammophila arenaria* (2120)**
- **Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130) ***
- **Decalcified dunes with *Empetrum nigrum* (2140) ***
- **Decalcified dune heath Atlantic decalcified fixed dunes (Calluno-Ulicetea) (2150)***
- **Dunes with *Salix repens* (2170)**
- **Humid dune slacks (2190)**
- **Machair (21AO) ***

Ten dune habitats were recorded by Ryle *et al*. (2009) but only the seven habitats indicated in bold above are listed as Qualifying Interests for West of Ardara/ Maas Road SAC. These habitats include mobile areas at the front as well as more stabilised parts of dune systems.

Annual vegetation of drift lines was recorded at Clooney; Embryo dunes at Sheskinmore and Perennial vegetation of stony banks at Clooney (Ryle *et al.,* 2009; Delaney *et al*., 2013).

Annual vegetation of drift lines is found on beaches along the high tide mark, where tidal litter accumulates. It is dominated by a small number of annual species (i.e. plants that complete their life-cycle within a single season). Tidal litter contains the remains of marine algal and faunal material, as well as a quantity of seeds. Decaying detritus in the tidal litter releases nutrients into what would otherwise be a nutrient-poor environment. The habitat is often represented as patchy, fragmented stands of vegetation that are short-lived and subject to frequent re-working of the sediment. The vegetation is limited to a small number of highly specialised species that are capable of coping with salinity, wind exposure, an unstable substrate and lack of soil moisture. Typical species include spear-leaved orache (*Atriplex prostrata*), frosted orache (*A. laciniata*), sea rocket (*Cakile maritima*), sea sandwort (*Honckenya peploides*) and prickly saltwort (*Salsola kali*).

Embryonic dunes are low accumulations of sand that form above the strandline. They are sometimes referred to as foredunes, pioneer dunes or embryo dunes, as they can represent the primary stage of dune formation. They are characterised by the presence of the salt-tolerant dune grasses sand couch (*Elytrigia juncea*) and lyme grass (*Leymus arenarius*), which act as an impediment to airborne sand. Strandline species can remain a persistent element of the vegetation.

Where sand accumulation is more rapid, marram grass (*Ammophila arenaria*) invades, initiating the transition to mobile dunes (Shifting dunes along the shoreline with *Ammophila arenaria*). Marram growth is actively stimulated by sand accumulation. These unstable and mobile areas are sometimes referred to as ‘yellow dunes’ (or white dunes in some European countries), owing to the areas of bare sand visible between the tussocks of marram.

Fixed dunes refers to the more stabilised area of dune systems, generally located in the shelter of the mobile dune ridges, where the wind speed is reduced and the vegetation is removed from the influence of tidal inundation and salt spray. This leads to the development of a more or less closed or ‘fixed’ carpet of vegetation dominated by a range of sand-binding species (Gaynor, 2008).

At the older landward edge of the fixed dunes, leaching of basic minerals and nutrients can lower the pH over time and create conditions suitable for colonisation by heath species. As these decalcified or acidic conditions can only form on the older, landward extremes of dune systems, they are often vulnerable to housing or other developments. Well-developed dune heath communities containing the classic dwarf ericoid shrubs, such as *Calluna vulgaris*

(Heather), and *Erica* spp., that are generally regarded as characterising the habit, are not well represented in Ireland.

Decalcified *Empetrum* dune habitat is also generally found on the landward edge of dune systems where the surface layers of sand have been leached of their calcium content, or where sand has blown up over rock that is siliceous (silica-rich) in nature. It is characterised by the presence of crowberry (*Empetrum nigrum*) which differentiates it from the other dune heath habitat. This heath-like habitat does not appear to be well developed in Ireland and is thought to be restricted to a small number of sites along the north-west coast.

Humid dune slacks are wet or moist depressions between dune ridges. They are characterised by the occurrence of a water table that is maintained by a combination of groundwater (which may or may not be slightly saline), precipitation and an impermeable layer in the soil. In the winter, the water table normally rises above the soil surface and inundation occurs. In spring and summer, the water table drops, but the top layer of the soil remains wet. Proximity of the water table to the surface is evidenced in the vegetation, in which rushes, sedges and moisture-loving herbs such as marsh pennywort (*Hydrocotyle vulgaris*), bog pimpernel (*Anagallis tenella*), grass of Parnassus (*Parnassia palustris*), common marsh-bedstraw (*Galium palustre*) and marsh helleborine (*Epipactis palustris*) are obvious features. The frequency and duration of flooding, as well as the level of salinity, determines the vegetation composition. In addition, nutrient-enrichment can occur as a result of leaching from the surrounding dune ridges (Gaynor, 2008).

Dunes with creeping willow (*Salix repens*) occur where this shrub forms a dense ground cover and are found in close association with dune slacks. The distinguishing feature is the proximity of the water-table to the surface, which in the case of dunes with *S. repens* is below a level where it exerts an influence on the vegetation. As a result, the moisture-loving plants generally associated with dune slacks are noticeably reduced or absent. Dunes with *S. repens* are often found on sandy hummocks within slacks, or on the sides of dune ridges adjacent to slacks.

Machair (21A0) is a highly specialised and complex dune habitat that is confined globally to the north-west coasts of Ireland and Scotland. It comprises a flat or gently undulating sandy plain that develops in an oceanic location with a cool moist climate. Machair systems are highly calcareous, the sediments usually containing a high percentage of shell fragments and having pH values in excess of 7. The vegetation is herbaceous, with low frequency of sand-binding species (Gaynor, 2006). Irish machair is a priority habitat under the EU Habitats Directive.

In 1996, the Biomar Machair Survey surveyed all sand dune sites at which machair formed a significant element (Crawford *et al*., 1996). Comparison of the CMP with this 1996 survey revealed considerable degradation of machair habitat, which could be attributed to changes in farming practices that has seen many machair commonages being fenced (stripped) resulting in greater concentration of livestock in confined areas, overgrazing, supplementary feeding and poaching of the land (Ryle *et al.,* 2009).

All of the dune habitats indicated above occur as a complex mosaic of constantly changing and evolving vegetation communities. They are inextricably linked in terms of their ecological functioning and should be regarded as single geomorphological units. As such, no dune habitat should be considered in isolation from the other dune habitats present at a site, or the adjoining semi-natural habitats with which they often form important transitional communities.

The CMP surveyed four sub-sites within West of Ardara/Maas Road SAC:

1. Clooney
2. Roshin Point
3. Lettermacaward/Dooey Point
4. Sheskinmore

As part of the Coastal Monitoring Project (CMP) detailed individual reports and habitat maps were produced for all sub-sites and those compiled for Clooney, Roshin Point and Lettermacaward/Dooey Point are included in Appendices V to VII. The updated site reports and habitat maps for Sheskinmore from the Sand Dunes Monitoring Project (SDM) are included in Appendix VIII.

The combined data from the CMP for the sub-sites at Clooney, Roshin Point and Lettermacaward/Dooey Point, along with the data from the SDM for the sub-site at Sheskinmore is presented in Appendix II.

4.1 Overall objectives

The overall objective for ‘Shifting dunes along the shoreline with *Ammophila arenaria* (white dune)’ in West of Ardara/Maas Road SAC is to ‘maintain the favourable conservation condition’.

The overall objective for ‘Fixed coastal dunes with herbaceous vegetation’ in West of Ardara/Maas Road SAC is to ‘restore the favourable conservation condition’.

The overall objective for 'Decalcified fixed dunes with *Empetrum nigrum'* in West of Aradara/Maas Road SAC is to 'maintain the favourable conservation condition'.

The overall objective for 'Atlantic decalcified fixed dunes (Calluno-Ulicetea)' in West of Ardara/Maas Road SAC is to 'maintain the favourable conservation condition'.

The overall objective for 'Dunes with *Salix repens ssp argentea*' in West of Ardara/Maas Road SAC is to 'maintain the favourable conservation condition'.

The overall objective for 'Humid dune slacks' in West of Ardara/Maas Road SAC is to 'maintain the favourable conservation condition'.

The overall objective for 'Machair' in West of Ardara/Maas Road SAC is to 'restore the favourable conservation condition'.

These objectives are based on an assessment of the recorded condition of each habitat under a range of attributes and targets. The assessment is divided into three main headings (a) Area (b) Range and (c) Structure and Functions.

4.2 Area

4.2.1 Habitat extent

Habitat extent is a basic attribute to be assessed when determining the condition of a particular habitat. A baseline habitat map was produced for the sand dune habitats at each sub-site in West of Ardara/Maas Road SAC during the Coastal Monitoring Project (CMP) (Ryle *et al*., 2009). The maps are included with the individual site reports for Clooney, Roshin Point and Lettermacaward/Dooey Point in the Appendices at the end of this document. The baseline habitat maps for Sheskinmore were reviewed and updated during the Sand Dunes Monitoring Project (SDM) (Delaney *et al*., 2013) and these updated maps are included with the individual site report in Appendix VIII at the end of this document. The data from the CMP and SDM has been combined to the produce the habitat map presented in Appendix II.

The total areas of each sand dune habitat within the SAC are presented in the final column of the following tables.

2120 Shifting dunes along the shoreline with *Ammophila arenaria*

Sub-site	Data source used	Total area within SAC boundary (ha)
Clooney	CMP	2.73
Roshin Point	CMP	0.39
Lettermacaward/Dooey Point	CMP	7.35
Sheskinmore	SDM	9.15
Total		**19.62**

2130* Fixed dunes with herbaceous vegetation

Sub-site	Data source used	Total area within SAC boundary (ha)
Clooney	CMP	41.29
Roshin Point	CMP	3.59
Lettermacaward/Dooey Point	CMP	112.08
Sheskinmore	SDM	251.68
Total		**408.64**

2140* Decalcified fixed dunes with *Empetrum nigrum*

Sub-site	Data source used	Total area within SAC boundary (ha)
Clooney	CMP	-
Roshin Point	CMP	-
Lettermacaward/Dooey Point	CMP	-
Sheskinmore	CMP* (not SDM)	0.75
Total		**0.75**

2150* Atlantic decalcified fixed dunes (Calluno-Ulicetea)

Sub-site	Data source used	Total area within SAC boundary (ha)
Clooney	CMP	-
Roshin Point	CMP	-
Lettermacaward/Dooey Point	CMP	-
Sheskinmore	SDM	10.20
Total		**10.20**

2170 Dunes with *Salix repens* ssp. *argentea (Salix arenariae)*

Sub-site	Data source used	Total area within SAC boundary (ha)
Clooney	CMP	-
Roshin Point	CMP	-
Lettermacaward/Dooey Point	CMP	-
Sheskinmore	SDM	2.50
Total		**2.50**

2190 Humid dune slacks

Sub-site	Data source used	Total area within SAC boundary (ha)
Clooney	CMP	-
Roshin Point	CMP	-
Lettermacaward/Dooey Point	CMP	-
Sheskinmore	SDM	12.31
Total		**12.31**

21A0* Machair

Sub-site	Data source used	Total area within SAC boundary (ha)
Clooney	CMP	8.82
Roshin Point	CMP	5.19
Lettermacaward/Dooey Point	CMP	53.29
Sheskinmore	SDM	21.28
Total		**88.55**

The general target for this attribute in the case of each habitat is that the area should be stable, or increasing. Bearing in mind that coastal systems are naturally dynamic and subject to change, this target is always assessed subject to natural processes, including erosion and succession.

4.3 Range

4.3.1 Habitat distribution

The distribution of sand dune habitats as mapped by Ryle *et al*. (2009) and Delaney *et al*. (2013) is presented in Appendix II.

Marram dunes, fixed dunes and machair occur at all sub-sites. All seven qualifying interest habitats occur at the Sheskinmore sub-site (Ryle *et al.* 2009; Delaney *et al*., 2013).

The target is that there should be no decline or change in the distribution of these sand dune habitats, unless it is the result of natural processes, including erosion, accretion and succession.

4.4 Structure and Functions

The location, character and dynamic behaviour of sand dunes are governed by a combination of geographic, climatic, edaphic and anthropogenic factors. Sand dunes are highly complex, dynamic systems, where the habitats occur in a complex and constantly evolving and changing mosaic. They function as systems in terms of geomorphology and hydrology and maintaining the favourable conservation condition of the habitats present depends on allowing these processes to continue unhindered. Maintaining the favourable conservation condition of all of the sand dune habitats in West of Ardara/Maas Road SAC in terms of structure and functions depends on a range of attributes for which targets have been set as outlined below.

4.4.1 Physical structure: functionality and sediment supply

Coastlines naturally undergo a constant cycle of erosion and accretion. There are two main causes of erosion: (a) those resulting from natural causes and (b) those resulting from human interference. Natural causes include the continual tendency towards a state of equilibrium between coasts and environmental forces, climatic change (particularly an increase in the frequency of storms or a shift in storm tracks), relative sea level rise and natural changes in the sediment supply. Human interference is usually associated with changes in the sediment budget, either directly, through the removal of beach or inshore sediment, or indirectly, by impeding or altering sediment movement. It is important to recognise that the process of coastal erosion is part of a natural tendency towards equilibrium. Natural shorelines attempt to absorb the energy entering the coastal zone by redistributing sediment.

Dunes are naturally dynamic systems that require continuous supply and circulation of sand. Sediment supply is especially important in the embryonic dunes and mobile dunes, as well as the strandline communities where accumulation of organic matter in tidal litter is essential for trapping sand and initiating dune formation. The construction of physical barriers such as sea defences can interrupt longshore drift, leading to beach starvation and increased rates of erosion. Sediment circulation and erosion also has a role to play in the more stabilised dune habitats. Cycles of erosion and stabilisation are part of a naturally functioning dune system, where the creation of new bare areas allows pioneer species and vegetation communities to develop, increasing biodiversity. The construction of physical barriers can interfere with the sediment circulation by cutting the dunes off from the beach resulting in fossilisation or over-stabilisation of dunes.

At Lettermacaward, the CMP noted accretion of sand at the most northerly part of the beach, where there is good development if mobile dunes fronting a previously eroded fixed dune face, however, the mobile dune habitat at this site is under threat from erosion especially

where the affects of natural erosion have been exacerbated by tracks created by pedestrian traffic (Ryle *et al.,* 2009).

At Roshin Point, the CMP noted that recent accretion has facilitated the re-development of fore-dunes and strandline at this sub-site (Ryle *et al.,* 2009).

At Clooney, the mobile dunes had eroded naturally in the past which had been exacerbated by overuse and trampling and walking on the top of dunes (Ryle *et* al., 2009).

At Sheskinmore, wide bands of freshly accreting mobile dunes were noted at Trawmore and Ballinreavy Strand (Ryle *et al*., 2009; Delaney *et al*., 2013).

The target for this attribute is to maintain and where possible restore the natural circulation of sediment and organic matter throughout the entire dune system, without any physical obstructions.

4.4.2 Physical structure: hydrological and flooding regime

The conservation of dune slacks and dunes with *S. repens* is inextricably linked with the local hydrological regime. Dune slacks are characterised by the proximity of a groundwater table that is maintained by the combination of an impermeable layer in the soil, or deeper salt water and precipitation. Dunes with *S. repens* are closely associated with dune slacks but are distinguished from them by a water table that is at a depth that no longer exerts an influence on the vegetation. Most dune slacks are fed by a range of water sources, including precipitation, surface water or groundwater. The latter two sources are usually somewhat calcareous while the former is acid.

The most important influence on the nature and vegetation of a dune slack is the groundwater table, which can fluctuate considerably throughout the year. The frequency and duration of periods of flooding or inundation determines the vegetation composition. The water table depth has been identified as the primary determining factor in vegetation variation, followed by weak trends in calcium and sodium availability. Other contributing factors include stage of development, precipitation, distance from the sea, the grazing regime, recreational pressure, nature of the sediment, soil pH and the porosity of the sediment.

Dune slack habitats should never be considered in isolation, but as part of the larger dune system that functions as an eco-hydrological unit. Dune slacks are highly sensitive to human influences on their hydrology, either through water abstraction or drainage works. Most dune slacks are fed by a range of water sources, including precipitation water, surface water or groundwater. Generally, the maintenance of a naturally functioning dune slack depends on

both the amount of (a) precipitation and (b) groundwater discharge. Water abstraction interferes with the local hydrology, potentially having serious implications for the plant and animal communities of slacks. Abstraction can lower the level of the groundwater-table, causing the slacks to dry out. It can also lead to saline infiltration in slacks formed close to the front of a dune system and particularly where the underlying substrate is highly permeable (e.g. shingle).

Dune slack and dunes with *Salix repens* were recorded at the Sheskinmore sub-site by the CMP and SDM. Dune slacks were recorded in fixed dunes backing Trawmore strand and along the east of the central headland at Magheramore. Some of these slacks are deep and contain standing water or marsh vegetation (Ryle *et al*., 2009; Delaney *et al*., 2013).

There is a small area of 'Dunes with *Salix repens*' edging an old dry dune slack in the fixed dunes at Sandfield within the Sheskinmore subsite. A larger area (1.6ha) occurs in the fixed dune edging the western side of the river outlet and another area occurs in transition with machair/wet grassland west of Sheskinmore Lough (Ryle *et al*., 2009; Delaney *et al*., 2013).

Typically the true machair plain represents the area where wind erosion has eroded a dune system to a level just above the water table, where the wet consistency of the sand prevents further erosion. In general, the degree of flatness depends on the age of the system, as well as the underlying topography, geology, outcropping of local rocks and historical management. Machair plains can be terminated on the landward side by a lake or associated marsh/fen (Gaynor, 2006). Consequently, the condition and conservation of the machair habitat can be inextricably linked to the local hydrology.

Wet machair can essentially be compared to humid dune slacks due to the periodic fluctuations and the proximity of the groundwater table to the surface throughout the year. The frequency and duration of periods of flooding or inundation determines the vegetation composition. The water table depth has been identified as the primary determining factor in vegetation variation, followed by weak trends in calcium and sodium availability. Other contributing factors include stage of development, precipitation, distance from the sea, the grazing regime, recreational pressure, nature of the sediment, soil pH and the porosity of the sediment.

Like dune slacks, machair is highly sensitive to human influences on hydrology, either through water abstraction, drainage works or increased nutrient inputs. Water abstraction interferes with the local hydrology, potentially having serious implications for the plant and animal communities of wet machair communities.

The target is to ensure that the hydrological regime continues to function naturally and that there are no increased nutrient inputs in the groundwater.

4.4.3 Vegetation structure: zonation

The range of vegetation zones on a dune system should be maintained. Gaynor (2008) highlights the highly transitional nature of much of the vegetation; therefore, it is important that the transitional communities are also conserved, including those to the saltmarsh communities.

At Sheskinmore, the vast dune system supports a variety of habitats occurring in close association. At Trawmore a series of high fixed dune ridges flank Trawmore (in the west) and Ballinreavy strand (in the east), and are bounded by two rocky headlands. Numerous dune slacks and small water bodies lie between fixed dune ridges. At Mullyvea, an area of dunes dominated by juniper (*Juniperus communis*) sweeps over a gently sloping rocky ridge. Small patches of dune heath (Decalcified fixed dunes with *Empetrum nigrum* and Atlantic decalcified fixed dunes (Calluna-Ulicetea) edge the exposed rock at Magheramore, on the central rocky headland. The fixed dune grades in to a lower plain of machair, wet grassland and fen eastward towards Sheskinmore Lough (Ryle *et al.,* 2009; Delaney *et al*., 2013).

The target is to maintain the range of coastal habitats, including transitional zones, subject to natural processes, including erosion and succession.

4.4.4 Vegetation structure: bare ground

This target applies to fixed dunes, dunes with *S. repens* and dune slacks. It does not apply to the other habitats present where high levels of bare sand are a natural component of the habitat. In the fixed and slack areas some degree of instability is vital. Constant cycles of erosion and stabilisation provide the necessary conditions for the establishment of pioneer species and species that favour open conditions such as petalwort (*Petalophyllum ralfsii*) and a range of invertebrates, helping to increase biodiversity.

The target is to achieve up to 10% bare sand, with the exception of pioneer slacks which can have up to 20% bare sand. This target is assessed subject to natural processes.

4.4.5 Vegetation composition: plant health of dune grasses

The health of the dune grasses (particularly *Ammophila arenaria* and *Elytrigia juncea*) are assessed by the plant parts above the ground (they should be green) and the presence of flowering heads. This gives a clear indication of the status of the supply of blown sand, which is required for these species to thrive.

The target for this attribute is that more than 95% of the dune grasses should be healthy.

4.4.6 Vegetation structure: vegetation height

This attribute applies to the more fixed habitats (machair, fixed dunes, dune heath, dunes with *S. repens* and dune slacks). A varied vegetation structure is important for maintaining species diversity and is particularly important for invertebrates and birds. The ecological benefits of moderate levels of grazing on dunes have been well documented (Gaynor, 2008). Moderate grazing regimes lead to the development of a species-rich vegetation cover. The animals increase biodiversity by creating micro-habitats through their grazing, dunging and trampling activities. Grazing slows down successional processes and in some cases reverses them, helping to achieve a diverse and dynamic landscape. The effects of trampling assist the internal movement of sand through the development of small-scale blowouts, while dunging can eutrophicate those dune habitats whose nutrient-poor status is crucial for the survival of certain vegetation types. Many species, from plants to invertebrates, benefit immensely from the open and diverse system created by a sustainable grazing regime. Many dune species are small in size and have relatively low competitive ability. Consequently, the maintenance of high species diversity on a dune system is dependent on the existence of some control to limit the growth of rank coarse vegetation (Gaynor, 2008).

At Clooney the machair habitat is lightly grazed but in places is undergrazed. The fixed dunes at this sub-site are grazed by cattle, sheep, horses and rabbits but are not heavily grazed. (Ryle *et al.,* 2009)

At Lettermacaward sub-site, the fixed dunes are grazed by sheep and rabbits and overgrazing has occurred in places (Ryle et al., 2009).

The machair and fixed dune at Roshin Point are grazed lightly by cattle and this level of grazing is having a positive influence. The CMP noted that some areas in this sub-site were also undergrazed (Ryle *et al.,* 2009).

At Sheskinmore, winter grazing is having a positive influence on the fixed dunes resulting in a high species diversity. The grazing regime is part of a conservation management plan for the

site between NPWS and local farmers. At Trawmore the fixed dunes are largely ungrazed. All areas of dune heath, dune slack and dunes with *Salix repens* were noted by the CMP to be lightly grazed (Ryle *et al*., 2009; Delaney *et al*., 2013).

The target for this attribute is to maintain structural variation within the sward.

4.4.7 Vegetation structure: vegetation cover

The only habitat where this is a specific attribute is humid dune slacks where that target is to maintain less than 40% cover of *S. repens.* This species forms a natural component of many dune slack communities in Ireland. However, high covers of this shrub can lower the level of water table causing the slacks to dry out. It can also form a dense canopy that shades out slack species leading to a reduction in biodiversity.

The target is therefore to keep the cover of *S. repens* below 40%.

4.4.8 Vegetation composition: typical species & sub-communities

Species diversity and plant distribution in dunes is strongly controlled by a range of factors, including mobility of the substrate, grazing intensities, moisture gradients, nutrient gradients and human disturbance. In the younger, more mobile dunes, marram (*Ammophila arenaria*) is common, while groundsel (*Senecio vulgaris*), sea rocket (*Cakile maritima*) and dandelion (*Taraxacum* sp.) are also present. The fixed, more stable dune vegetation includes lady's bedstraw (*Galium verum*), common birdsfoot trefoil (*Lotus corniculatus*), wild thyme (*Thymus praecox*), kidney vetch (*Anthyllis vulneraria*), wild pansy (*Viola tricolor*) and biting stonecrop (*Sedum acre*).

The Annex II plant species *Petallophylum ralfsii* was recorded at Shekinmore on fixed dune slopes at Magheramore (south west of Sheskinmore Lough) (Lockhart, 1998).

At Mullyvea in the Sheskinmore sub-site, an area of dunes dominated by *Juniper communis* occurs on a gently sloping rocky ridge. Small patches of dune heath, i.e., Decalcified fixed dunes with *Empetrum nigrum* and Atlantic decalcified fixed dunes (Calluna Ulicetea), edge the exposed rock at Magheramore on the central rocky headland (Ryle et al., 2009).

At Clooney sub-site the Red Data Book species hoary whitlow grass (*Draba incana*) was recorded in the fixed dunes by the CMP (Ryle *et al*., 2009).

At Lettermacaward, the dunes are species-rich and the CMP noted an abundance of orchids such as pyramidal orchid (*Anacamptis pyrimidalis*) and fragrant orchid (*Gymnadenia conopsea*).

The vegetation of machair is often composed of both wet and dry communities and although there is generally an obvious distinction between the dry and wet types, transitional communities are common (Gaynor, 2006). No suite of species is unique to machair and the vegetation can best be described as a mosaic of calcareous fixed dune, mesotrophic grassland and dune slack communities (Gaynor, 2006).

The following table lists the dominant species listed in dry and wet Irish machair from Gaynor (2006). Differences in the dominant species between the two types of machair plain are indicated by *.

Dry machair	**Wet machair**
Festuca rubra	*Trifolium repens*
Plantago lanceolata	*Agrostis stolonifera*
Trifolium repens	*Calliergonella cuspidata*
Lotus corniculatus	*Festuca rubra*
Bellis perennis	*Bellis perennis*
*Galium verum**	*Plantago lanceolata*
Carex arenaria	*Carex arenaria*
*Rhytidiadelphus squarrosus**	*Potentilla anserina*
*Leontodon taraxacoides**	*Hydrocotyle vulgaris*
*Poa pratensis (subcaerulea)**	*Lotus corniculatus*
*Homalothecium lutescens**	*Prunella vulgaris*

Other species typically recorded on Irish machair include common yarrow (*Achillea millefolium*), early hair grass (*Aira praecox*), common mouse-ear (*Cerastium fontanum*), smooth hawksbeard (*Crepis capillaris*), common storksbill (*Erodium cicutarium*), eyebright (*Euphrasia officinalis*), common flax (*Linum catharticum*), red bartsia (*Odontites verna*), yellow rattle (*Rhinanthus minor*), biting stonecrop (*Sedum acre*), wild thyme (*Thymus poytrichus*) and violets (*Viola* spp.) (Ryle *et al*., 2009). The calcareous nature of the substrate can be reflected by the presence of thyme-leaved sandwort (*Arenaria serpyllifolia*), crested hair grass (*Koeleria macrantha*), ox-eye daisy (*Leucanthemum vulgare*) and squinancywort (*Asperula cynanchica*).

The target for this attribute is to maintain a typical flora for the particular sand dune habitat.

4.4.9 Vegetation composition: negative indicator species

Negative indicators include non-native species (e.g. *Hippophae rhamnoides*), species indicative of changes in nutrient status (e.g. *Urtica dioica*) and species not considered characteristic of the habitat. Sea-buckthorn (*Hippophae rhamnoides*) should be absent or effectively controlled.

The main invasive species identified in Gaynor (2008) were bracken (*Pteridium aquilinum)* and sea buckthorn (*Hippophae rhamnoides)*. The invasion of non-native species compromises the typical plant community structure. Bracken (*Pteridium aquilinum)* is becoming increasingly dominant, particularly where sites have been abandoned or where grazing levels have been significantly reduced. The vegetation retains many elements of the original vegetation cover, but there is a reduction in biodiversity. As the canopy becomes taller and ranker, many of the low-growing species disappear. In this case, the vegetation is treated as a sub-community of the original community that was invaded. This is always the case unless the original vegetation cover has been completely destroyed, as can happen with *H. rhamnoides*, which can form dense impenetrable thickets.

At Clooney, the CMP noted a stand of *Hippophae rhamnoides* towards the front of the fixed dunes near the car park. In parts of the fixed dunes at this sub-site bracken (*Pteridium aquilinum*) dominated (Ryle *et al.,* 2009).

At Roshin Point, bracken (*Pteridium aquilinum*) is present in a large clump at the northern end of the fixed dune (Ryle *et al.* 2009).

The target is that negative indicators (including non-native species) such as *Hippophae* should make up less than 5% of the vegetation cover.

4.4.10 Vegetation composition: bryophytes

This attribute applies to machair. Bryophytes are an important element of the machair flora. Moss cover is well developed within the machair habitat at this SAC and typically attains 90% cover. Frequently occurring species include *Campylium stellatum, Drepanocladus revolvens, Ctenidium molluscum* and *Philontis fontana*, most of which are indicative of wet, base-rich conditions.

The target for this attribute therefore is that the cover of bryophytes should and should always be at least an occasional component of the vegetation (Ryle *et al*., 2009).

4.4.11 Vegetation composition: scrub/trees

This attribute only applies to the fixed dunes, dune slacks and machair. Scrub encroachment leads to reduction in dune biodiversity and needs to be controlled. The presence of scrub and trees which have deep roots can also lower the groundwater table which can have significant impacts on the slack communities.

Sycamore (*Acer pseudoplatanus*), blackthorn (*Prunus spinosa*) and Burnet rose (*Rosa pimpinellifolia*) was recorded in the fixed dune at Clooney by the CMP (Ryle *et al*., 2009).

At Lettermacaward, some scrub encroachment was noted by the CMP in the southeastern part of the intact machair (Ryle *et al*., 2009)

The target for this attribute therefore is that the cover of scrub and tree species should be under control, or make up less than 5% of the vegetation cover.

5 References

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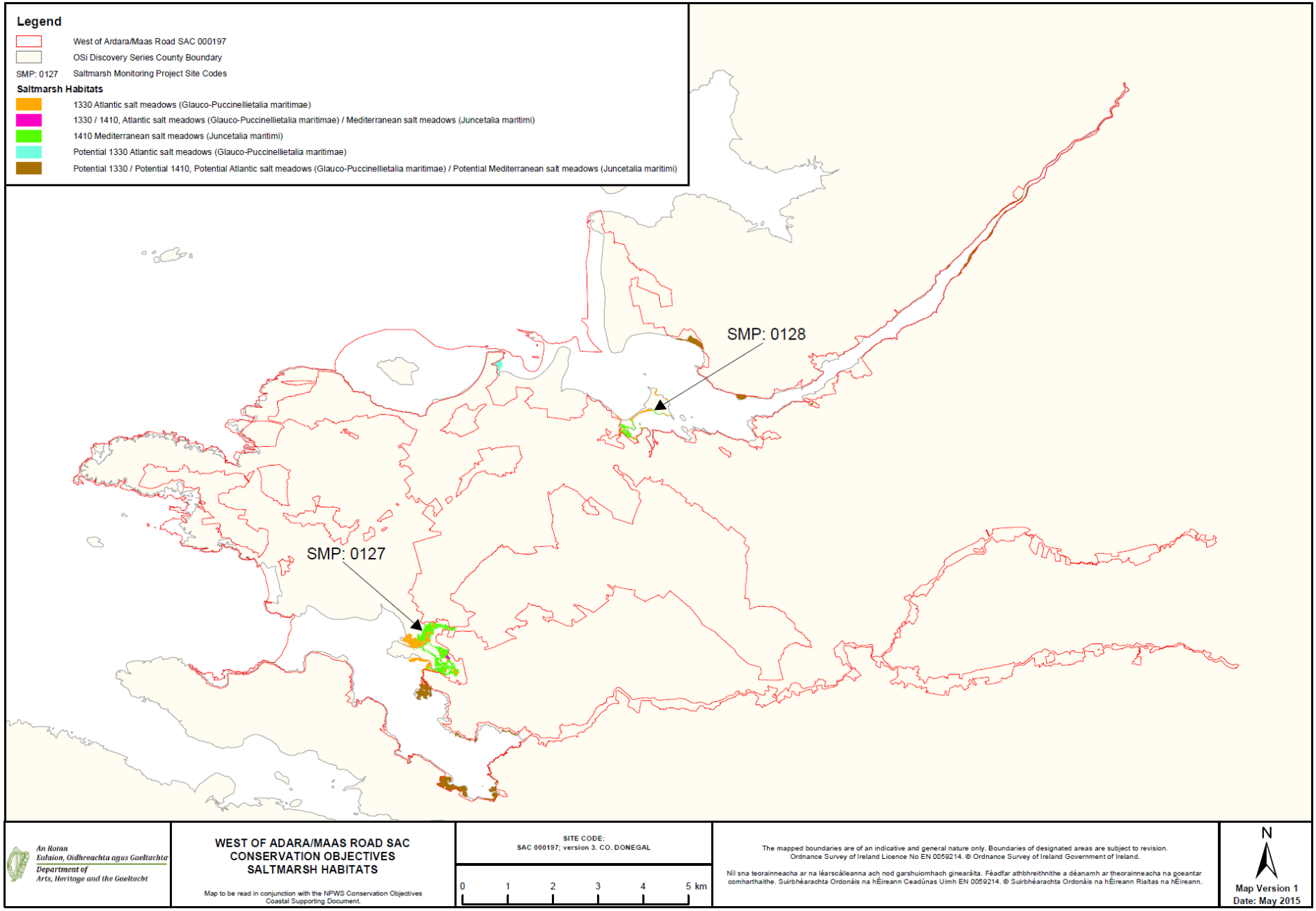
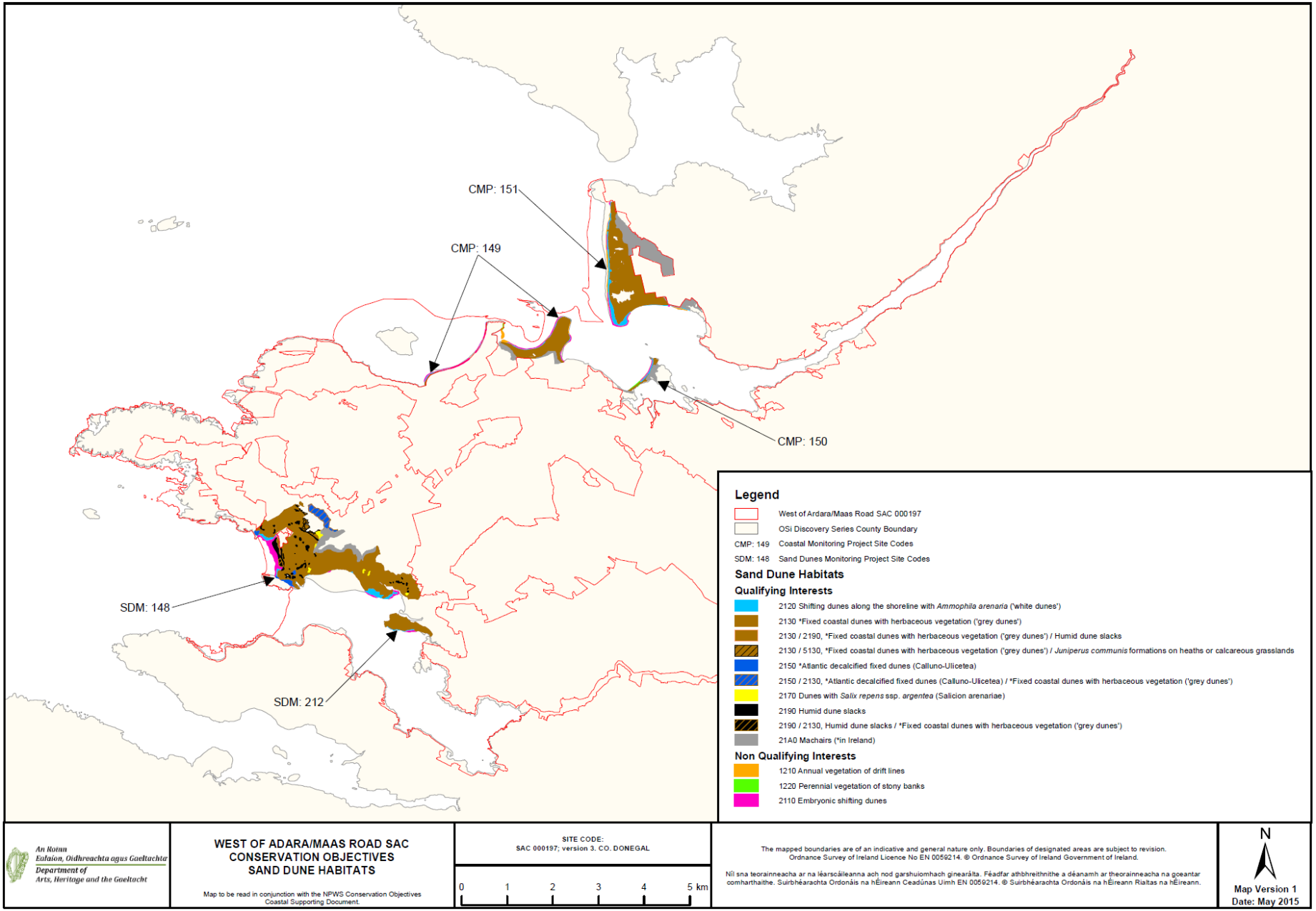
Appendix I: Distribution map of known saltmarsh sites within West of Ardara/Maas Road SAC



Appendix II – Distribution map of sand dune habitats within West of Ardara/Maas Road SAC**.**



Appendix III – Sheskinmore-Beagh site report and habitat map from the SMP (McCorry & Ryle, 2009)

1 SITE DETAILS

SMP site name: **Sheskinmore-Beagh**		SMP site code: **0127**
Dates of site visit: **18 and 19 September 2008**		CMP site code: **148**
SM inventory site name: **Sheskinmore-Beagh**		SM inventory site code: **23**
NPWS Site Name: **West of Ardara/Mass Road**		
NPWS designation	cSAC: **197**	MPSU Plan: **Old Format – Draft 2: Consultation**
	pNHA: **197**	SPA: **4090**
County: **Donegal**		Discovery Map: **10** Grid Ref: **171110, 393735**
Aerial photos (2000 series): **O 0390-D; O 0416-B,D; O 0417-A**		6 inch Map No: **Dg073**

Annex I habitats currently listed as qualifying interests for West of Ardara/Maas Road cSAC:

H1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)

H1410 Mediterranean salt meadows (Juncetalia maritimi)

Other SMP sites within this SAC/NHA: **Roshin Point**

Saltmarsh type: **Sand flats** Substrate type: **Sand:peat**

2 SITE DESCRIPTION

Sheskinmore is located on the west Donegal, midway between Ardara and Portnoo off the R261 road. It is a large coastal site that is situated near the northern entrance to Loughros More Bay. It is located in a largely rural setting where the housing is mostly dispersed and the available land is given over to agriculture. Sheskinmore is notable for its extensive machair system (Ryle *et al*. 2009) in which a number of freshwater lagoons and loughs are found. Sheskinmore Lough is the largest and most impressive. It is an internationally important wetland, renowned for its wintering Greenland White-Fronted and Barnacle Geese (Birdwatch Ireland, 2007).

The saltmarsh, which is associated with the sand dune system, occurs towards the southern boundary of the site and is approximately 3 kilometres north-west of Ardara. The saltmarsh is located in three adjacent townlands, namely Murvaghveagh, Beagh and Derryness. It is confined to low-lying ground around the Bellanagoal River crossing under Beagh Bridge and a second unnamed river entering the intertidal zone to the north of Derryness Townland. A small section of the site is bisected by the R261 at Beagh Bridge, where there was some saltmarsh extending further upstream along the Bellanagoal River.

Sheskinmore-Beagh is one of four saltmarsh systems within the the West of Ardara/Maas Road candidate Special Area of Conservation (cSAC) that are listed in the national inventory (Curtis and Sheehy-Skeffington 1998). The others include Lettermacaward, Roshin Point and

Loughros More Bay-Ardara, although only Roshin Point was visited as part of this survey. The cSAC covers an extensive area across south-west Donegal. The region is topographically variable and is characterised by its extensive hard rock landscape, which shapes the distribution of many of the habitats. A comprehensive list of 23 habitats has been selected as qualifying interests for the site, most of which cover the intertidal, coastal and blanket bog communities. A number of the habitats including machair, fixed grey dunes, decalcified dune heath, decalcified *Empetrum* dunes, Blanket Bog and orchid-rich calcareous grassland are priority habitats. In terms of the listed saltmarsh habitats, both Atlantic salt meadows - H1330 (ASM) and Mediterranean salt meadows H1410 (MSM) are recorded at Sheskinmore. A number of Annex II plant and animal species have been listed for the site, but none are specifically associated with saltmarsh habitats. Notable species, however, that were recorded at this site included Saltmarsh Flat Sedge (*Blysmus rufus*) which was generally associated with the upper saltmarsh boundary and Tasselweed (*Ruppia* spp.), a submerged aquatic that was found in a number of drains in the MSM and Blanket bog transitions.

This is a large site and it is possible to access it at a number of locations, although most involve crossing private land to reach the saltmarsh. A large part of the coastal system at Sheskinmore has been designated as a nature reserve and some of the land is owned by the state and is managed for conservation purposes by the NPWS. However most of the site is privately owned. A public right of way onto the machair exists at Murvaghveagh, near the football pitch. Elsewhere several landowners were identified and permission sought from all to carry out the survey on private land.

3 SALTMARSH HABITATS

3.1 General description

Sheskinmore-Beagh is a large site that is found along the southern extent of the Sheskinmore machair complex. The saltmarsh has developed along the north-eastern side of the Loughros More Bay and is associated with two river plains on either side of a rocky headland in the townland of Beagh. The saltmarsh is contiguous however and the two river plains are connected by a band of saltmarsh that extended around the low-lying parts of the headland.

In the national inventory (Curtis and Sheehy-Skeffington 1998), the saltmarsh type is listed as sandflats, and the substrate is sand and peat. It is intimately associated with the sand dune system at Sheskinmore, which was characterised during the Coastal Monitoring Project survey, as a large and complex sand dune system (Ryle *et al* 2009).

Three Annex I habitats were recorded at Sheskinmore-Beagh. These included *Salicornia* and other annuals colonizing mud and sand – H1310 (*Salicornia flats*), Atlantic salt meadows -

H1330 (ASM) and Mediterranean salt meadows – H1410 (MSM). There was no development of Common Cordgrass (*Spartina anglica*) swards at the site. The total area of the individual habitats is listed in Table 3.1, although a further breakdown into the various mosaics that were recorded is listed in Appendix 1.

It should be noted that not all of the saltmarsh vegetation that occurred in Loughros More Bay was surveyed. Further south of Derryness, a large extent of almost contiguous saltmarsh vegetation was observed to extend towards Ranny Point North. It is separated from the saltmarsh at Sheskinmore-Beagh by a small gap in the vegetation around Derryness Isle. This saltmarsh, which is listed in Curtis and Sheehy-Skeffington's (1998) National Inventory is known as Loughros More Bay-Ardara.

The MSM at Sheskinmore accounts for approximately 64% of the total saltmarsh area that is mapped, whilst the ASM occupies most of the remaining land. The *Salicornia* flats are mostly negligible (<0.001%) and occur as a single small patch only. In general, the ASM is typically located towards the seaward side of the marsh plain, where it extensively occurs on a low sandy plain. However, small outliers of ASM vegetation can occur some considerable distance from the intertidal zone, where it is mostly found along creeks and regularly flooded depressions within the MSM-dominated saltmarsh along the Bellanagoal River. There are tall saltmarsh cliffs along this river channel where peat is exposed. For the most part, however, the ASM is naturally low and is in most parts grazed. Where it does not grade into MSM, there are transitions to machair/fixed dune grassland as well as wet grassland along with minor patches of Reeds (*Phragmites australis*). These stands have been classified and mapped as CM2 or other Non-Annex saltmarsh vegetation in accordance with the SMP project classification.

The MSM dominates the landward side of the marsh and displays a greater structural heterogeneity than the ASM, which is in part related to the topography, but also the previous land management of the area. There is a greater diversity in vegetation communities and transitions between the MSM and other habitat types are not uncommon. Much of the landward side of the saltmarsh occurs over extensive blanket peat, which has in areas historically been extracted for domestic use. Sometimes there is a clear distinction between the MSM and the blanket bog, such as where the cut-face of the bog is still identifiable. However, in most cases, the MSM grades into the blanket bog or other wet grassland vegetation and there is a subtle difference between these two habitats that is difficult to map, especially in areas where they form complicated mosaics due to the variable underlying topography. In parts of the MSM, patches of Reeds and Common Sea-Rush (*Bolboschoenus maritimus*) or Grey Sea-Rush (*Schoenoplectus lacustris spp. tabernaemontani*) occurred. These stands have been classified and mapped as CM2 or other Non-Annex saltmarsh vegetation in accordance with the SMP project classification. These were often in wetter

situations, along creeks or drains where the freshwater influence flushing over the landscape overwhelmed any saline influence.

Most of the saltmarsh habitat that is mapped at this site is located within the cSAC boundary. The relatively insignificant patches of both ASM and MSM that were recorded outside of the boundary merely reflect inaccuracies between what is marked on the OSI 2nd edition 6inch map and that which is encountered on the ground.

Table 3.1. Area of saltmarsh habitats mapped at Sheskinmore-Beagh.

EU Code	Habitat	Area (ha)
H1310	*Salicornia* and other annuals colonizing mud and sand	0.0001
H1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	15.90
H1410	Mediterranean salt meadows (Juncetalia maritimi)	28.97
	Total	**44.87**

*note that saltmarsh habitat may continue outside the mapped area.

3.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

A single, negligible patch of *Salicornia*-dominated vegetation was recorded at Sheskinmore (Table 3.1). It was located in a salt pan where the upper boundary of ASM meets the MSM. It is not extensive and there was no indication that the vegetation occurred on the intertidal sandflats elsewhere in the site.

The habitat was typified by the presence of the eponymously-named species, although other species include Annual Sea-Blite (*Suaeda maritima*), Common Sea-spurrey (*Spergularia media*) along with a small amount of Common Saltmarsh-grass (*Puccinellia maritima*), which commonly extended discontinuously around the frontline of the saltmarsh and further across the lower ASM vegetation.

3.3 Atlantic salt meadows (H1330)

The majority of the 15.8ha of ASM habitat that was recorded at Sheskinmore occurred within the cSAC boundary and only a small number of patches measuring in total, 0.054ha, were recorded outside the cSAC. Most of the ASM was recorded along the front of the saltmarsh and occupied a relatively large expanse, although smaller patches were recorded further inland along creeks throughout the MSM-dominated mosaic.

Throughout the ASM habitat, there was some differentiation within the vegetation and discernible zonation was evident. Apart from pure ASM vegetation, a small area of ASM/MSM mosaic was recorded. It was not extensive and accounted for less than 0.1ha (Table 8.1).

Pioneer vegetation is found at this site and was only occasionally recorded on accretional ramps. The saltmarsh south of Derryness Point is currently accreting and a pioneer

community is found along the seaward side of this saltmarsh. Common Saltmarsh Grass is the main species that is recorded although Sea Milkwort (*Glaux maritima*) was locally abundant and in one monitoring stop accounted for over 75% of the total ground cover. Another infrequently recorded species includes Glasswort (*Salicornia* spp.).

There is a greater abundance of lower marsh vegetation at Sheskinmore compared to other sites but it is nonetheless rarely extensive. The vegetation is often characterised by abundant Common Saltmarsh Grass but differed from pioneer vegetation in that in additional species such as Thrift (*Armeria maritima*), Sea Aster (*Aster tripolium*) and Sea Plantain (*Plantago maritima*) were present and the sward was closed with close to 100% vegetation cover. Occasionally, minor amounts of Glasswort were recorded, but these were often associated with subtle depressions or runnels in the marsh topography.

Unlike the earlier ASM zones, the mid marsh is very much more extensive and occurs along large stretches of the seaward part of this site. The vegetation is characterised by a naturally low sward which is often homogenously vegetated by Thrift, Sea Milkwort and Sea Plantain along with Sea Aster and occasional Common Scurvy Grass (*Cochlearia officinalis*). Other species that are locally abundant include Common Saltmarsh Grass and Saltmarsh Rush (*Juncus gerardii*). The saltmarsh structure in this zone is moderately well-developed along the site and this zone contains some well developed pans, particularly along the Bellanagoal River channel.

A greater diversity of species is encountered in the upper marsh, which occupies the greatest area of the ASM vegetation that was recorded at Sheskinmore-Beagh. This community is dominated by Red Fescue (*Festuca rubra*) and also contains small amounts of Autumn Hawksbill (*Leontodon autumnalis*), Sea Plantain, Sea Arrow Grass (*Triglochin maritimum*), Creeping Bent (*Agrostis stolonifera*) and Saltmarsh Rush. The latter two species may be occasionally more abundant in places.

3.4 Mediterranean salt meadows (H1410)

The MSM is largely distinguished from the ASM by the presence of dense Sea Rush (*Juncus maritimus*), which is characteristically taller than much of the surrounding saltmarsh vegetation**.** In total, 28.7 ha of MSM habitat was recorded at Sheskinmore, the majority of which 28.605ha occurred inside the cSAC boundary (Table 3.1). It is largely confined to the upper stretches of the saltmarsh, where it is characterised as upper marsh. Occasionally, small patches of MSM were recorded along the frontline, particularly around the rocky headland south of the intertidal zone at the Bellanagoal River. Rarely, however, does the vegetation occur on the sandflats except where there has been some slumping along the river bank.

Asides from the occurrence of Sea Rush, grasses accounted for a significant proportion of the MSM and species such as Red Fescue and Creeping Bent were ubiquitously recorded, a fact reflected by its presence in almost all of the monitoring stops, where they typically accounted for 10-40% of ground cover, but on occasion was as high as 75%. Uncharacteristically for MSM habitat in Ireland, the vegetation is somewhat more diverse than seen at other sites. This is as a result of the complex vegetation mosaic that was recorded at Sheskinmore-Beagh. Sea Plantain, White Clover (*Trifolium repens*), Common Scurvy Grass, Sea Milkwort and Autumn Hawksbit were all common associates. Infrequently recorded species included Thrift, Brookweed (*Samolus valerandi*), Sea Aster, and Sea Arrow Grass as well as Distant and Long-bracted Sedges (*Carex distans* & *C. extensa*). Interestingly, Saltmarsh Rush was not a common component of the MSM, and where recorded was usually associated with transitional MSM or ASM/MSM vegetation. The MSM located in the northern section at Murvaghveagh adjacent to the machair grassland also contained small amounts of other species more typical of wet Machair such as Glaucous Sedge (*Carex flacca*). Much of the Sea Rush dominated sward along the upper boundary of the MSM contained this species, which became frequent in some of the sward and represented an upper transition to terrestrial grassland. The abundance of this species was used in places to map the upper saltmarsh boundary and where it was dominant the habitat was marked as wet grassland.

The MSM is extensive and highly diverse, with a number of transitions evident throughout the site. The large peaty plains dominated by MSM, still retain relics of the blanket bog origins and there are still relatively large stands of peat that have not been harvested throughout the site, increasing the structural heterogeneity and vegetation complexity of the saltmarsh system. In most parts the MSM and blanket bog habitats are easily separated, although many small individual relic mounds are not uncommon within the MSM. Elsewhere the distinction between MSM and blanket bog vegetation is less clear and the vegetation is very much more transitional with some Purple Moor Grass (*Molinia caerulea*), Black-bog Rush (*Schoenus nigricans*), Ling (*Calluna vulgaris*) or even Deer Grass (*Trichophorum caespitosum*) present in Sea Rush dominated sward.

Transitional vegetation is very much a feature of the MSM, especially at the back of the marsh, where the low-lying ground starts to climb onto the rocky headland. The MSM grades into transitional MSM and transitional wet grasslands where the freshwater influence draining off the surrounding hilly ground dilutes the impact of saline waters. The upper boundaries of the habitat were sometimes difficult to map due to the complicated mosaics that developed due to the underlying topography. Other transitions include relatively small patches of Reeds or Sea Club-Rush, both of which rarely occur together. Not surprisingly, the greatest occurrence of reed/MSM transition or pure stands of reeds is found at the eastern side of the Beagh Bridge. There is a dramatic decrease in the area of saltmarsh vegetation here which indicates the upper limit of the saline influence along the river as well as the land use. Many of the fields in the low-lying ground along this section of the river are mostly derelict as the ground is regularly flooded.

4 IMPACTS AND ACTIVITIES

The list of all impacts and activities that were recognised at the site are included in Table 4.1. This is largely a rural site, and unlike elsewhere in the Sheskinmore machair system, access onto the saltmarsh areas is limited. Much of the land is where the saltmarsh occurs is under agricultural management, which is rarely intensive. The list of current activities from within and outside of the site is not extensive and reflects the different activities that are recognised in having an impact on the extent and condition of the saltmarsh habitats.

Much of the saltmarsh is modified and still retains evidence of its former attempts at management. Parts of the saltmarsh have undoubtedly been lost to agricultural improvement such as draining. There is still evidence of minor amounts of saltmarsh vegetation occurring inland along small drains. Elsewhere, larger drains were created to drain the extensively waterlogged ground. This improved access and enabled in places, a better quality of grazing land to be developed. It also facilitated the harvesting of peat for domestic use. Other changes which have resulted in the modification of the saltmarsh include the construction of the Beagh Bridge as part of the scheme to link Ardara with Portnoo. These changes have been in place for some considerable time as it is shown on the 2nd edition 6 inch map. None of these impacts are assessed as they occurred outside of the current monitoring period.

Much of the saltmarsh is under the ownership of a small number of people. A large percentage of the saltmarsh is enclosed, and although used for grazing purposes, is still largely derelict in that the ground conditions make it unfeasible to drain and improve. Rough Grazing (140) is the main agricultural activity in the area although some limited cutting of grass (102) was noted in the Murvaghveagh area, some of which included transitional saltmarsh vegetation. In general, the level of grazing is rarely excessive. It is evident that cattle and some sheep are allowed to graze, but their range is sometimes limited by the

network of rivers and drainage channels which bisect the site. There are some areas where excessive grazing occurs and where damage (143) was evident. Trampling was observed, particularly at crossing points or in wetter depressions among saltmarsh/other habitat mosaics.

Trails (501) were occasionally encountered, although they were associated with livestock rather than recreational visitors. The trails were more readily observed in the MSM, where it was possible to see the impacts of trampling through the taller vegetation.

A community football pitch was created on the sandy machair plain in the past, at the northern tip of the saltmarsh (607). It is not well marked and cars are often parked around it. This activity has had some impact of the surrounding saltmarsh, especially, when unsocial activities, which were anecdotally reported, occur, with frequent wheel-ruts in the saltmarsh (622).

Erosion (900) is a natural feature of the saltmarsh, although it is often difficult to measure its impact. There is no discernible difference in the extent of most the saltmarsh vegetation. The limited evidence included slumping along the lower banks of the Bellanagoal River, which appeared to have affected the ASM vegetation. However, the slumping was not extensive and is typical of bank cutting along a river channel. No measurable loss of habitat could not be seen when the year 2000 and series 2005 aerial photographs were compared. And although the *Salicornia* flats were insignificant in extent, recent damage to the ASM frontline had resulted in flooding and erosion of the *Salicornia* pan. Erosion is assessed as having a neutral impact on a small portion of the saltmarsh and is being more than being compensated by accretion at the site.

There are also some signs of fairly significant natural habitat change (990) at this site when the OSI 2nd edition 6 inch map is compared to the current aerial photos. The most significant change is that the 6 inch map marks the point at which the highest tides flow along the Bellanagoal River as quite far downstream of the current point east of Beagh Bridge. If this was correct on the 6 inch map it would mean that there was much less saltmarsh development at this site compared to now. However, this trend of saltmarsh retreating significantly landward has not been seen at other sites so it may possibly be due to a mapping error. A similar trend can be seen in the smaller stream to the south of the Bellanagoal River. There are more obvious changes in the profile of the shoreline during these period where have mainly affected the machair plain at the seaward side of the saltmarsh at Murvaghveagh. The small ridge at Derryness Point is mapped as being covered by spring tides (an indication of saltmarsh) but there is now a sandy ridge (sand hills somewhat improved to agricultural grassland). These changes indicate that this part of Loughros More Bay is quite dynamic and subject to change due to geomorphological processes. These impacts are not assessed as they mainly occurred outside the current monitoring period.

The accretion and build-up of new sediment (910) along the intertidal frontline of this site is difficult to quantify with any certainty. Some measurable accretion of ASM vegetation, clearly occurred however, and is evident when the year 2000 and series 2005 aerial photographs are examined. An area of approximately 3ha of lower ASM is mapped developing on a gently sloped accretional ramp on the sandflats to the south of Derryness point.

The ecological value of the saltmarsh at Sheskinmore is enhanced due to the range and pattern of the transitional vegetation that is recorded at the site. However, some of the land is largely derelict and in places all agricultural management has been abandoned, to the possible detriment of the saltmarsh vegetation. Although there are no comparable vegetation maps with which to compare the extent of the reeds, it would appear that Reeds are in places spreading (954). It is not a serious problem and is mainly associated with the small area of saltmarsh that is found on the eastern side of the Beagh Bridge.

Outside of the cSAC boundary, the list of impacts is even smaller. Most are continuations of activities that have been recorded inside the saltmarsh including grazing levels, the abandonment of land from formal agricultural management and the spread of species at the expense of other habitats. Another impact for which a limited impact might be suggested is in the construction of individual houses (403) that is adding to the number of houses that are already scattered around the peripheral areas of the saltmarsh.

Table 4.1. Intensity of various activities on saltmarsh habitats at Sheskinmore-Beagh.

EU Habitat Code	Activity code	Intensity	Impact	Area affected (ha)	Location of activity
H1310	910	C	+1	0.0001	Inside
H1330	140	B	0	12.0	Inside
H1330	143	B	-1	1.2	Inside
H1330	501	C	0	0.1	Inside
H1330	607	C	0	0.25	Inside
H1330	622	C	-1	0.25	Inside
H1330	900	C	-1	0.05	Inside
H1330	910	B	+1	0.5	Inside
H1410	102	C	-1	0.75	Inside
H1410	140	C	0	18.0	Inside
H1410	143	B	-1	7.0	Inside
H1410	501	C	0	0.05	Inside
H1410	900	C	0	1.5	Inside
H1410	954	C	-1	0.2	Inside

[1] EU codes as per Interpretation Manual.
[2] Description of activity codes are found in Appendix III, Summary Report 2007-2008.
[3] Intensity of the influence of an activity is rated as A = high, B = medium, C = low influence and D unknown.
[4] Impact is rated as –2 = irreparable negative influence, -1 = reparable negative influence, 0 = neutral, +1= natural positive influence and +2 = strongly managed positive influence.
[5] Location of activity: Inside = activities recorded within and directly impacting the saltmarsh habitat, outside = activities recorded outside but adjacent to saltmarsh habitat that are impacting the saltmarsh habitat.

5 CONSERVATION STATUS

5.1 Overall Conservation Status

The conservation status of a site is assessed on the condition of the site and on baseline information. The main source of baseline information for this site is the NHA survey, the 1995, 2000 and 2005 OSI aerial photo series. The baseline information from the NHA survey is generally limited to some descriptions of saltmarsh habitat and does not record the specific condition of the saltmarsh during the survey at this site. There is little other detailed information for this site.

The presence of saltmarsh vegetation is well known from Sheskinmore. Early OSI maps, such as the 6inch map indicates that the tidal influence extended a considerable distance inland along both of the river channels at Sheskinmore. Its presence has more recently been noted in previous NPWS documents such as the pNHA and NATURA 2000 files.

Sheskinmore-Beagh saltmarsh is a large site that has several features of notable conservation interest. The saltmarsh is part of a diverse coastal ecosystem and there are natural transitions to other habitats such as machair grassland and blanket bog. While the site is classified as a Sandflats type site much of the saltmarsh in the southern section could be classified as 'Fringe' as it has developed on blanket peat. The presence of these two types increases the overall structural and habitat diversity of the saltmarsh. There is also some significant development of transitional habitats along the landward boundary of the MSM, mainly with wet grassland and with blanket bog. As the site is relatively large and there are gentle gradients present, these transitional habitats are well represented and add to the diversity of the site. The saltmarsh contains good examples of most typical saltmarsh zones and there is some active accretion in one section, with some pioneer vegetation.

The conservation assessment of the individual saltmarsh habitats that were recorded at Sheskinmore-Beagh is shown in Table 5.1. Overall, the conservation status of the site is assessed as *unfavourable-inadequate*. This assessment suggests that the condition and future prospects of the saltmarsh vegetation are not ideal and without some remedy in the current land use regime, will not improve. However, most of the saltmarsh habitat is good condition. The main damaging impact is overgrazing that is causing some localised damage including poaching. There are some other negative impacts but these are having a limited impact.

This site is located within the West of Ardara/Maas Road cSAC. A old format management plan is available for this cSAC but it is now out of date.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Sheskinmore-Beagh.

Habitat	EU Conservation Status Assessment			
	Favourable	**Unfavourable - Inadequate**	**Unfavourable - Bad**	**Overall EU conservation status assessment**
Salicornia flats (H1310)	Extent Structure and functions Future prospects			Favourable
Atlantic salt meadows (H1330)	Extent	Structure and functions Future prospects		Unfavourable - Inadequate
Mediterranean salt meadows (H1410)	Extent	Structure and functions Future prospects		Unfavourable - Inadequate

5.2 *Salicornia* and other annuals colonizing mud and sand (H1310)

5.2.1 Extent

Despite the presence of an extensive intertidal zone, a limited area of *Salicornia*-dominated vegetation was recorded at Sheskinmore. There is no previous information as to its extent at this site, unlike the ASM or MSM vegetation. It is difficult to state with any certainty whether the limited extent of annual vegetation is persistent or ephemeral in nature. Thus its extent in this first monitoring period is tentatively assessed as *favourable* (Table 5.1).

5.2.2 Habitat structure and functions

The determination of structure and functions is based solely on a visual assessment of the habitat, as monitoring stops were not deemed necessary given the limited extent of the annual vegetation that was recorded at Sheskinmore. The assessment is *favourable*, as the vegetation, where recorded had a typical species assemblage for the habitat and was functioning as expected.

5.2.3 Future prospects

The future prospects of the *Salicornia* flats are rated as *favourable*. Notwithstanding the limited extent of this habitat, and apart from natural shifts in sediment along the front of the site, which can limit the development of the annual vegetation, there are few impacts and activities that threaten its persistence.

5.3 Atlantic salt meadows (H1330)

5.3.1 Extent

The extent of the ASM is rated as *favourable*. There are no indications of any significant loss of habitat due to land-use changes or erosion within the current monitoring period. An

analysis of the aerial photographs year 2000 and 2005 series, however, does reveal a measurable increase of approximately 3.0ha of vegetation along the southern shore of Derryness Point headland.

5.3.2 Habitat structure and functions

The structure and functions attribute is assessed as *unfavourable-inadequate*. A total of sixteen monitoring stops were carried out across the site. Three of the stops failed, primarily due to the levels of grazing that were recorded and the damage to the ASM from poaching. Most of the ASM habitat is in good condition.

There was clear evidence of zonation throughout the site, ranging from low to mid and upper ASM marsh. There are typical examples of all these zones present. The presence of an accretional ramp along one section where saltmarsh is expanding over sand flats increases the diversity of the habitat. Some sections of ASM display excellent examples of salt pan and natural creek drainage. The ASM is just one part of a larger coastal ecosystem and there are natural transitions to other habitats including MSM and machair grassland.

5.3.3 Future prospects

The future prospects for the site are *unfavourable-inadequate*. The assessment assumes that there will be no significant change in the current land use or management regime at the site. There is some localised damage to the ASM, mainly from grazing and poaching. This is likely to continue in the near future. However, it is positive that the site is widely recognised by local farmers as a nature reserve and that grazing levels are not excessive overall or creating damage within the much of the commonage ASM. Accretion at the site is also a positive feature and there are indications of saltmarsh expansion in one section. However, this site is quite dynamic so there may be other changes in extent and possibly losses of habitat in the longer term.

5.4 Mediterranean salt meadows (H1410)

5.4.1 Extent

The MSM is well represented at Sheskinmore. It is widespread in its distribution and forms extensive swards in places. While there is little reliable information with which to compare its previous extent, there was little sign of erosion or land-use changes within the MSM-dominated vegetation. Therefore the extent is assessed as *favourable* (Table 5.1).

5.4.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *unfavourable-inadequate* (Table 5.1). In general, the MSM was in relatively good condition and exhibited many of the characteristic features that might be expected from this habitat. Historical attempts at modifying the site to improve the drainage conditions have largely been abandoned or are not well maintained. Presently, much of the MSM is freely grazed and although not excessively so, is showing some localised signs of damage. This was reflected in two of the fifteen

monitoring stops that were carried out in this habitat failing. They failed, primarily due to level of damage caused by livestock on the saturated substrates. All of the other attributes required for favourable conservation status reached their targets. There are some notable transitions to transitional wet grassland and blanket bog.

5.4.3 Future prospects

The future prospects of this habitat are assessed as *unfavourable-inadequate*. The assessment assumes that the activities and the levels of current impacts do not change in the foreseeable future. There is some localised grazing damage to this habitat that is likely to continue into the near future, particularly without strict grazing management. There are few other activities that are negatively affecting this habitat.

6 MANAGEMENT RECOMMENDATIONS

Sheskinmore-Beagh is an important site in terms of its ecological interest and a number of overlapping conservation designation applies to parts, if not all of the site. Currently the draft management plan for the site is outdated. Although the importance of the site is widely known about in the locale, an updated management agreement should be formalised to ensure the continued success of this ecologically sensitive and important site. The main recommendation is to more strictly control grazing levels. Small reductions in grazing pressure are required.

7 REFERENCES

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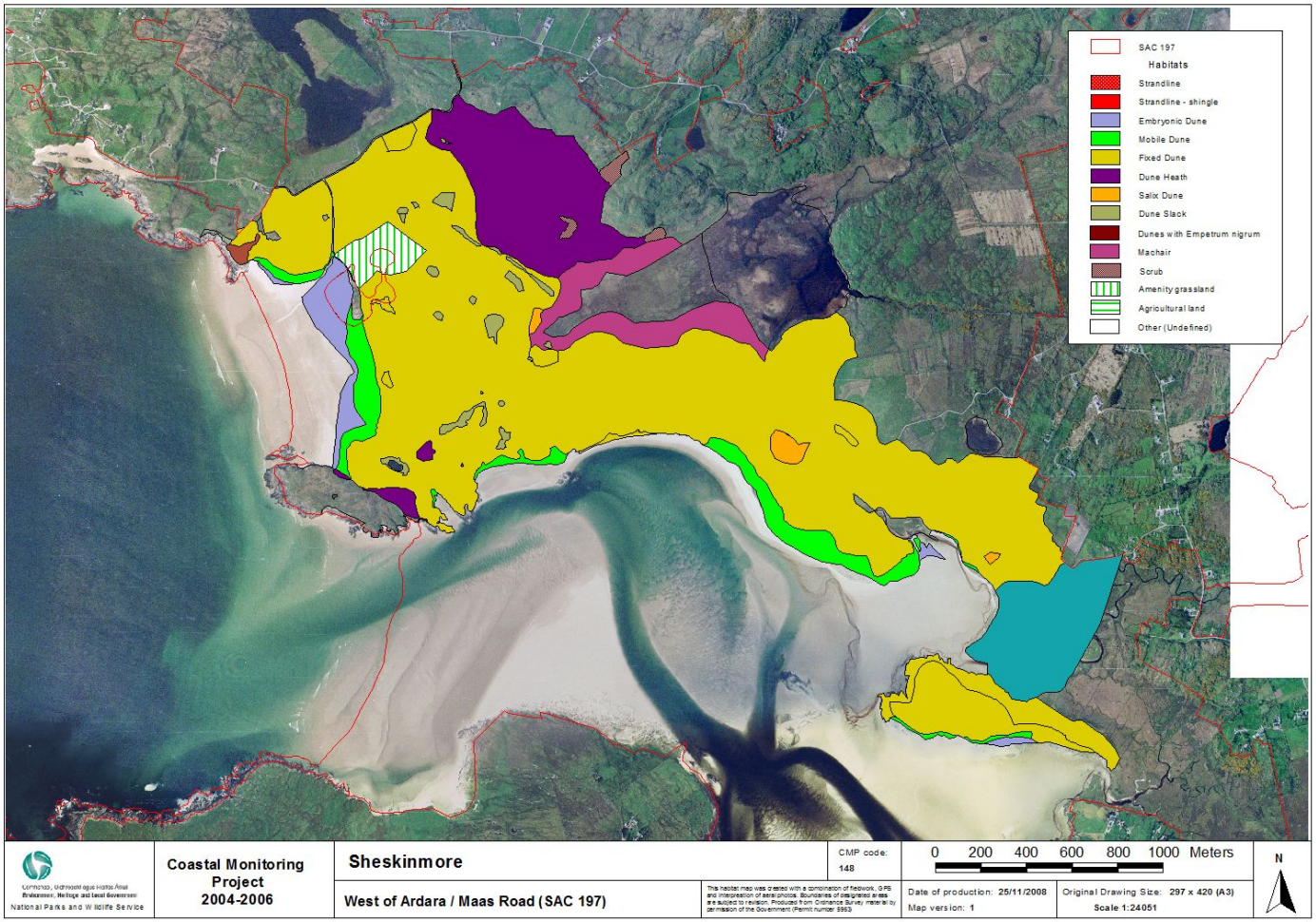
8 APPENDIX I

Table 8.1. Areas of SMP habitats mapped using GIS.

SM Habitat code	SM habitat description	Mapped Area (ha)	Area (ha)				
			H1310	H1330	H1410	H1420	*Spartina* swards
1	1310 *Salicornia* flats						
2	*Spartina* swards						
3	1330 Atlantic salt meadow	15.852		15.852			
4	1410 Mediterranean salt meadow	28.700			28.700		
5	ASM/MSM mosaic (50/50)	0.098		0.0454	0.0454		
6	ASM/*Spartina* mosaic						
7	1330/other SM (CM2) mosaic						
8	1330/coastal grassland mosaic						
9	Other (non saltmarsh)	18.520					
10	*Spartina* clump/mudflat mosaic (50/50)						
11	Isolated *Spartina* clumps on mud (5%)						
12	pioneer 1330/1310/*Spartina* mosaic						
13	1410/other SM (CM2) mosaic	0.456			0.228		
14	*Spartina* sward dominated, with some ASM						
15	1310/*Spartina* mosaic						
16	ASM dominated with some *Spartina*						
17	1330/sand dune mosaic						
18	Other SM (CM2)	0.219					
19	1330/rocky shore mosaic						
20	1420 Mediterranean scrub						
21	1310/1330 mosaic						
	Total	**63.845**		**15.897**	**28.973**		


SAC 197
Habitats
Strandline
Strandline - shingle
Embryonic Dune
Mobile Dune
Fixed Dune
Dune Heath
Salix Dune
Dune Slack
Dunes with Empetrum nigrum
Machair
Scrub
Amenity grassland
Agricultural land
Other (Undefined)
Coastal Monitoring Project 2004-2006
Sheskinmore
West of Ardara / Maas Road (SAC 197)
CMP code: 148
This habitat map was created with a combination of fieldwork, GPS and interpretation of aerial photos. Boundaries of designated areas are subject to revision. Produced from Ordnance Survey material by permission of the Government (Permit number 5953)
0 200 400 600 800 1000 Meters
Date of production: 25/11/2008
Map version: 1
Original Drawing Size: 297 x 420 (A3)
Scale 1:24051
N

Appendix IV – Roshin Point site report and habitat map from the SMP (McCorry & Ryle, 2009)

1 SITE DETAILS

SMP site name: **Roshin Point**		SMP site code: **0128**	
Dates of site visit: **18 September 2008**		CMP site code: **150**	
SM inventory site name: **Roshin Point**		SM inventory site code: **22**	
NPWS Site Name: **West of Ardara/ Maas Road**			
NPWS designation	cSAC: **197**	MPSU Plan: **Old Format – Draft 2: Consultation**	
	pNHA: **197**	SPA: **N/A**	
County: **Donegal**		Discovery Map: **10**	Grid Ref: **176090, 398870**
Aerial photos (2000 series): **O 0366-B,D; O 0367-A,C**		6 inch Map No: **Dg 065**	
Annex I habitats currently listed as qualifying interests for West of Ardara/Maas Road cSAC:			
H1330	**Atlantic salt meadows (Glauco-Puccinellietalia maritimae)**		
H1410	**Mediterranean salt meadows (Juncetalia maritimi)**		
Other SMP sites within this SAC/NHA: **Sheskinmore-Beagh**			
Saltmarsh type: **Bay**		Substrate type: **Sand:peat**	

2 SITE DESCRIPTION

Roshin Point is a rocky headland that is connected to the mainland by a sandy isthmus. The site is located along the southern side of Gweebarra Bay, a short distance north of Maas Road Bridge. The saltmarsh is mainly situated along the eastern side of the isthmus. Although located in a rural setting, the small street-village of Clooney lies approximately 2 kilometres to the west of the site and the popular holiday destination of Portnoo is a further 4 kilometres west of that.

The saltmarsh is largely confined to the eastern side of Roshin Point and extends southwards towards the townland of Clashagh. Most of the saltmarsh is located within the Bay, although a small area is located on the southern side of a local road (R261) that crosses along part of the southern shoreline of the bay. The substrate is largely sandy, although the ground gets wetter in the upper limits and the soils are replaced by a mixture of peats or gleys.

A large expanse of intertidal sand flats called Black Strand is located in the sheltered area east of Roshin Point and is situated adjacent to the saltmarsh. Roshin Point also contains one of the smaller dune systems in the area, all of which have previously been described as part of the Coastal Monitoring Project 2004-2006 (Ryle *et al*. 2009). That survey mapped fixed dune and some machair grassland along the sheltered side of the isthmus and the rocky headland of Roshin Point.

Roshin Point forms a small part of a much greater West of Ardara/Maas Road candidate Special Area of Conservation (cSAC). This large composite site supports a number of habitats and species of note. In terms of saltmarsh ecology, both Atlantic salt meadows - 1330 (ASM) and Mediterranean salt meadows 1410 (MSM) occur. Both of these habitats are listed as qualifying interests for this cSAC. Saltmarsh Flat Sedge (*Blysmus rufus*) was recorded as an occasional component of the vegetation, particularly towards its upper limit. This is one species of local distinctiveness that is found on the site. Turf fucoids are a second feature of local distinctiveness that was recorded.

It is one of two saltmarsh systems, the other being Sheskinmore-Beagh which occur within the West of Ardara Road/Maas Road cSAC. Both of these saltmarshes have been surveyed for this project. The majority of the saltmarsh recorded at Roshin Point is located within the cSAC. Small patches have been mapped outside of the designated area, which is merely a reflection that the boundary is based on the OSI 6inch map which has not been updated in many years.

Access to a large part of the site involved crossing agricultural land that is in the ownership of Roshin House. The owners do not reside at the site and locals indicated that it was permissible to cross a field to access the land around the point. Another public right of way onto the foreshore was identified at the eastern extent of the site.

3 SALTMARSH HABITATS

3.1 General description

Roshin Point is not a large site relative to Sheskinmore-Beagh, which is also found in this cSAC. It is a small bay type saltmarsh that occurs on a headland (Curtis and Sheehy-Skeffington 1998). It is largely confined to the inner fringe of the intertidal area around the townlands of Clashagh and the Back strand. The saltmarsh has developed on mixed sediment - mostly sand, along with some shingle or rock. Large deposits of peat occur in the inner parts of the saltmarsh, at Clashagh.

Two Annex I saltmarsh habitats were recorded at Roshin Point, namely ASM and MSM vegetation. The total area mapped for each of the habitats is shown in Table 3.1. By far the greatest proportion of saltmarsh is occupied by MSM vegetation. At Ballyriston House, the saltmarsh extends along a narrow corridor up a river beyond the upper limit of the cSAC. The remaining small patches of saltmarsh vegetation that were recorded outside the boundary are due in part to the boundary following the old 6inch field boundaries rather than intentionally mapping exclusions. For this survey the entire area of saltmarsh was mapped and assessed.

The most extensive MSM area is located around the sheltered inlet of Clashagh towards the road. There is also some saline influence on a small area south of the main road with MSM present. There was little MSM vegetation recorded in the open, intertidal zone of the Black Strand, towards the northern side of the site, except on the rockier substrates towards the tip of Roshin Point.

Unlike the MSM, the ASM is more fragmented and widespread in its distribution and extended from the northern-most tip of Roshin Point to the most sheltered inlet at Ballyriston Bridge. The vegetation was typically narrow and with little topographical definition other than the sub-surface landscape. The largest section has developed adjacent to the narrow sand dune system that links the mainland to the rocky headland. There is also a small amount of ASM habitat located south of the main road and connected to the outer bay by a drain under the road.

It should be noted that not all of the saltmarsh vegetation was pure ASM or MSM and that some of this total comprises mosaics with other communities such as brackish marsh (CM2) with Reeds (*Phragmites australis*) or Sea Club-Rush (*Bolboschoenus maritimus*). These stands have been classified and mapped as CM2 or other Non-Annex saltmarsh vegetation in accordance with the SMP project classification. Much of the MSM close to Ballyriston House has developed adjacent to modified blanket bog vegetation and some scrub along the upper boundary. This section has been cut for peat in the past. This area was difficult to map as the upper boundary was quite undulating with saltmarsh habitat extending into many of the cutover sections of former blanket bog. Table 8.1 lists the full breakdown of the various mosaics and other habitats that were mapped occurring alongside the saltmarsh in this survey.

Table 3.1. Area of saltmarsh habitats mapped at Roshin Point.

EU Code	Habitat	Area (ha)
H1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	2.18
H1410	Mediterranean salt meadows (Juncetalia maritimi)	4.76
	Total	**6.94**

*note that saltmarsh habitat may continue outside the mapped area.

3.2 Atlantic salt meadows (H1330)

2.18ha of ASM were mapped at Roshin Point, which accounts for a little under 30% of the total saltmarsh habitat that was mapped at this site. Unlike the MSM, it is patchily distributed throughout the site. While *Salicornia* flats or pioneer ASM vegetation were not recorded from at the site, a full range of zones from low to upper marsh was recorded. The zonation,

however, was rarely found in a complete sequence, rather as individual units with some overlap in places, particularly along the eastern side of the headland at Roshin Point.

The lower marsh vegetation largely consisted of Thrift (*Armeria maritima*), Sea Milkwort (*Glaux maritima*), Sea Plantain (*Plantago maritima*) and Common Saltmarsh Grass (*Puccinellia maritima*), which sometimes formed dense tangled swards. In general, the habitat was confined to a narrow band, rarely more than a few metres wide.

The mid marsh often supported the same species as the lower marsh, but was recognised due to the presence of additional species such as Sea Aster (*Aster tripolium*), Sea Lavender (*Limonium humile*), Sea Arrow Grass (*Triglochin maritima*), and minor amounts of Greater Sea-Spurrey (*Spergularia media*). Other species such as Red Fescue (*Festuca rubra*) and Saltmarsh Rush (*Juncus gerardii*) make an occasional appearance in this mid marsh zone, but are more abundant in the upper marsh.

Most of the ASM vegetation that was recorded at Roshin Point is ascribed to the upper marsh zone. The vegetation is dominated by grasses, namely Red Fescue and Creeping Bent (*Agrostis stolonifera*), the latter of which was common throughout the wetter parts of the site. Some species such as Thrift and Sea Lavender were replaced by White Clover (*Trifolium repens*), Distant Sedge (*Carex distans*), Common Scurvy Grass (*Cochlearia officinalis*) and Autumn Hawksbill (*Leontodon autumnalis*). Of note was the presence of Saltmarsh Flat Sedge in a number of locations around the site.

The occasional freshwater influence was recognised within the ASM by the small patches of Common Reed (*Phragmites australis*) or Sea Club-Rush (*Bolboschoenus maritimus*). Typically, these were confined to sloping ground at the back of the saltmarsh, or flushes, where surface-water flowed across the marsh.

Another notable feature of this site was the presence of turf fucoids. They were occasionally observed in the southern part of the site, which was underlain by considerable peat deposits. The occurrence of the distinctive fucoids however, was not abundant.

3.3 Mediterranean salt meadows (H1410)

The MSM occupies the bulk of the saltmarsh vegetation recorded from Roshin Point. Much of the surrounding land is given over to agricultural use and except for a number of trails, cattle tend to avoid the rush-dominated vegetation where possible, as it is not as palatable as other vegetation. For this reason, the MSM is largely rank in nature and has a dense sward.

The MSM occurs as small and narrow bands along the mixed sediment shoreline around Roshin Point. Occasionally, the MSM was bounded on its seaward side by fringing patches of ASM or had discrete patches of ASM within. But more often than not, it generally occured as an extensive sward, particularly in the sheltered south western part of the site.

The vegetation was characterised by the presence of Sea Rush (*Juncus maritimus*) which forms large tussocks. It varies in the cover of other species, but is mainly dominated by graminoid species. Other frequent, although less obvious, contributors to ground cover include Red Fescue, Creeping Bent and Sea Milkwort. In addition, Saltmarsh Rush, Sea Aster, Common Scurvy Grass, Sea Plantain and Autumn Hawksbill were recorded but were not abundant.

There is some zonation along the small number of creeks/drainage channels, in which patches of ASM occur. The upper reaches of the MSM are characterised by wet ground that is typically characterised by acid grassland/blanket bog mosaic. In wetter situations, such as towards Ballyriston House, or the south-eastern corner of the site, stands of Reeds or Sea Club-Rush can be far-reaching and may in places be expanding their territory at the expense of the MSM. Species such as Purple Moor-grass (*Molinia caerulea*) and Black Bog-rush (*Schoenus nigricans*) are found in the transitional zone between the MSM and the modified blanket bog. Some higher haggs out of reach of the tide contain Gorse (*Ulex europaeus*) and Heather (*Calluna vulgaris*).

4 IMPACTS AND ACTIVITIES

The majority of land at Roshin Point is in the private ownership of a single landowner. The remaining fringing marsh around the eastern and south-eastern corner of the site is either in commonage or in state ownership. The area is not readily accessible to members of the public or recreational users, so only a few damaging impacts and activities were noted, a list of which is shown in Table 4.1.

Much of the land is of poor quality, being located on wet and impoverished soils. Historically, peat was harvested from some areas, although the only remnants of this former operation are the relic mounds and old face banks that are patchily distributed in the MSM and in the adjacent cut-over blanket bog. While the historical land use has had a significant residual impact on the structure of the saltmarsh habitat, the impacts are not assessed, as they occurred outside of the current monitoring period.

The main impact affecting the site is grazing (140). Most of the land currently classified as saltmarsh is given over to agricultural management, consisting solely of livestock grazing – mostly cattle but also some sheep. The grazing intensity varies from area to area. Most of the

ASM that was recorded from Roshin Point and some of the MSM, particularly that recorded on the southern side of the road is grazed moderately (140). Some sections are fenced off and are not grazed at present. Some sections are heavily poached and overgrazed (143). Elsewhere livestock are occasionally brought across the intertidal sands to the fields on the eastern side of the site. The gates aren't always closed, allowing the livestock to roam freely during low tide and there was some damage to the fringing ASM, mostly poaching along access points to fields.

Notwithstanding this damage, the absence of grazing (149) elsewhere in large parts of the saltmarsh has resulted in a rank sward that may be somewhat lower in diversity. Much of the land running along the northern side of the road lies derelict and is there is some evidence of the spread of Common Reeds, which will over time result in a gradual diminution of MSM habitat. Reeds may be spreading due to the lack of grazing.

Although the majority of the saltmarsh is found in relative shelter, along the leeward side of Roshin Point, the intertidal zone is prone to considerable tidal fluctuations. Incoming tides, particularly during stormy conditions can result in considerable amounts of water moving along ever changing channels in the sand, which can result in localised erosion (900). Signs of the natural erosion included isolated tufts of saltmarsh vegetation or undercutting of the larger terraces. Notwithstanding this fact, the level of erosion did not appear to be more pronounced than might be expected. In addition there are some signs of accretion (910) which likely negates most of the small-scale erosion. An accretion ramp was noted along the seaward side of the saltmarsh in the central section, along the isthmus. A comparison of the 2nd edition 6 inch map with the 2005 series aerial photograph shows that the saltmarsh has grown in size at several locations during this period (about 0.25ha). However, there has been no measurable accretion during the current monitoring period. Erosion is assessed as having a neutral impact on a small portion of the saltmarsh and is being compensated by accretion elsewhere at the site.

Table 4.1. Intensity of various activities on saltmarsh habitats at Roshin Point.

EU Habitat Code	Activity code	Intensity	Impact	Area affected (ha)	Location of activity
H1330	140	B	0	1.0	Inside
H1330	143	B	-1	0.3	Inside
H1330	900	C	0	0.2	Inside
H1330	910	C	+1	0.4	Inside
H1330	140	C	0	2.5	Inside
H1410	143	C	-1	0.1	Inside
H1410	149	C	-1	0.2	Inside
H1410	900	C	0	0.5	Inside

[1] EU codes as per Interpretation Manual.
[2] Description of activity codes are found in Appendix III, Summary Report 2007-2008.
[3] Intensity of the influence of an activity is rated as A = high, B = medium, C = low influence and D unknown.
[4] Impact is rated as –2 = irreparable negative influence, -1 = reparable negative influence, 0 = neutral, +1= natural positive influence and +2 = strongly managed positive influence.
[5] Location of activity: Inside = activities recorded within and directly impacting the saltmarsh habitat, outside = activities recorded outside but adjacent to saltmarsh habitat that are impacting the saltmarsh habitat.

Outside of the saltmarsh, there is some dispersed habitation (403) with a number of small farm holdings. Most of these households are not considered to have any great impact on the saltmarsh. There was some small-scale dumping (421) of household rubbish and garden waste along the access point at the south-eastern end of the site. A regional road is located along the southern side of the bay (502). These impacts have no measurable impact on the saltmarsh habitat.

5 CONSERVATION STATUS

5.1 Overall Conservation Status

The conservation status of a site is assessed on the condition of the site and on baseline information. The main source of baseline information for this site is the NHA survey, the 1995, 2000 and 2005 OSI aerial photo series. The baseline information from the NHA survey is generally limited to some descriptions of saltmarsh habitat and did not record the specific condition of the saltmarsh during the survey at this site. There is little other detailed information for this site.

The overall conservation status of this site is *unfavourable-inadequate*. The assessment is made on the understanding that there is a paucity of suitable baseline information with which to compare the current extent and condition of the saltmarsh vegetation. Apart from indicating the limit of land covered by high spring tides, the OSI 6 inch map from over a century ago

does not show the presence of saltmarsh at this site. Rather it shows a shoreline composed of mixed sediment that is very similar with that which was mapped in this survey.

In excess of 60% of the site is dominated by MSM, while the remainder is ASM vegetation or brackish marsh. Most of the site is not impacted to any great degree by serious or damaging activities. Historically the site has been modified through the removal of peat, mostly from the southern end of Roshin Point itself. Currently, most of the land is under agricultural management with grazing cattle allowed to roam freely. The grazing intensity and associated damage is low in some parts, which is reflected in the rank MSM vegetation owing to the unpalatable nature of the Sea Rush. In the ASM however, the grazing intensity and damage from poaching is negatively impacting some of this habitat.

This site is located within the West of Ardara, Maas Road cSAC. An old format management plan is available for this cSAC, but it is now out of date.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Roshin Point.

Habitat	**EU Conservation Status Assessment**			
	Favourable	**Unfavourable - Inadequate**	**Unfavourable - Bad**	**Overall EU conservation status assessment**
Atlantic salt meadows (H1330)	Extent	Structure and functions Future prospects		Unfavourable - Inadequate
Mediterranean salt meadows (H1410)	Extent Structure and functions Future prospects			Favourable

5.2 Atlantic salt meadows (H1330)

5.2.1 Extent

Although the ASM is not extensive at this site, and is in places highly disturbed, it is a tentatively given a *favourable* conservation assessment (Table 5.1). There is little comparable data with which to ascertain its previous extent. There is no indication on early OSI maps that saltmarsh occurred at this site along the sheltered side of Roshin Point, although some is likely to have been present. The ASM saltmarsh is likely to have grown somewhat since these maps were drawn. Current trends indicate some ongoing accretion in places, but at low rates. There was no measurable loss or gain of ASM during the current monitoring period.

5.2.2 Habitat structure and functions

The structure and functions of the habitat are assessed as *unfavourable-inadequate* (Table 5.1). One of the seven monitoring stops that were carried out in this habitat failed due in part to the level of grazing. Most of the habitat is in adequate condition and only isolated areas of the habitat is damaged. Several ASM communities were recorded at the site. The ASM forms part of a larger coastal ecosystem and there are natural transitions to other habitats along the isthmus and rocky headland including fixed dune, machair, wet grassland and MSM. Whilst there is greater differentiation in zonation - from lower to upper ASM communities than the MSM, they were rarely extensive and were confined to narrow bands. All of this made them prone to damaging impacts such as erosion, or more particularly grazing. Much of the ASM vegetation around the site was freely accessible to livestock and showed some signs of damage and poaching was common, particularly in the saltmarsh on the south western side of the road.

5.2.3 Future prospects

The future prospects are assessed as *unfavourable-inadequate*. This assessment assumes that there will be no significant change in the management regime at Roshin Point. It is doubtful if there will be any significant overall increase in the amount of ASM at this site from accretion. The damage to the current habitat from overgrazing is likely to continue and grazing and poaching levels are unlikely to change.

5.3 Mediterranean salt meadows (H1410)

5.3.1 Extent

The extent of the MSM habitat is assessed as *favourable* (Table 5.1). There are no indications of any significant loss of habitat during the current monitoring period. Whilst there is some signs of erosion, such as minor slumping or undercutting of high terraces, but in general this does not appear to be significant. Accretion has not affected this habitat to the same extent compared to the ASM.

5.3.2 Habitat structure and functions

The habitat structure and functions are assessed as *favourable*. Six monitoring stops were carried out, all of which passed. All of the attributes required for the structure and functions of this habitat reached their targets. The structure of one section of this habitat has been significantly modified in the past from peat cutting. Some of the saltmarsh has also been isolated on the south side of the road. There is some structural difference in the quality or composition of the vegetation. Lower or mid marsh zones are virtually absent except in the

northern part of the site and most of it the MSM is classified as upper zone. There is also some transitional vegetation present where MSM is intermixed with modified blanket bog vegetation on the deeper peat. There are few activities acting on this habitat apart from grazing. Indeed unlike the ASM, this habitat might benefit from an increase in the numbers of cattle that trample the vegetation thus opening it up and reducing the overly rank and species poor nature of much of the habitat.

5.3.3 Future prospects

Given that there is unlikely to be any great change in the land use or management regime that is carried out at saltmarsh at Roshin Point, the future prospects are rated as *favourable*. The assessment assumes that the current management strategy does not change and that the levels of grazing continue at the current levels.

6 MANAGEMENT RECOMMENDATIONS

There are no specific management recommendations for the saltmarsh habitats at Roshin Point.

7 REFERENCES

Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. (1998). The salt marshes of Ireland: An inventory and account of their geographical variation. *Biology and Environment: Proceedings of the Royal Irish Academy* **98B**, 87-104.

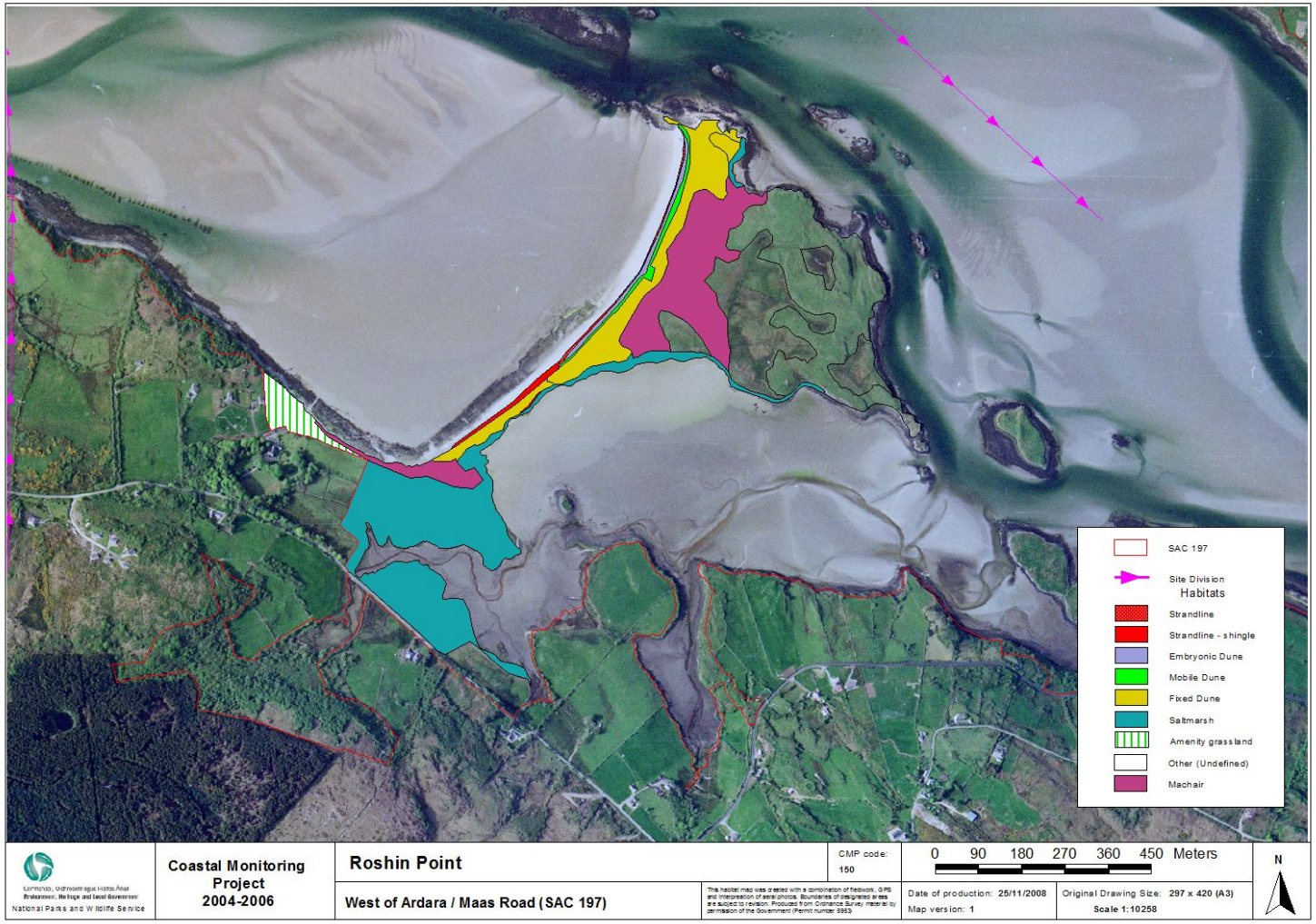
MPSU, Dublin.

Ryle, T., Connolly, K., Murray, A. and Swann, M. (2009). *Coastal Monitoring Project 2004-2006.* Report to National Parks and Wildlife Service, Dublin.

8 APPENDIX I

Table 8.1. Areas of SMP habitats mapped using GIS.

SM Habitat code	SM habitat description	Mapped Area (ha)	Area (ha)				
			H1310	H1330	H1410	H1420	*Spartina* swards
1	1310 *Salicornia* flats						
2	*Spartina* swards						
3	1330 Atlantic salt meadow	2.171		2.171			
4	1410 Mediterranean salt meadow	4.741			4.741		
5	ASM/MSM mosaic (50/50)						
6	ASM/*Spartina* mosaic						
7	1330/other SM (CM2) mosaic	0.002		0.001			
8	1330/coastal grassland mosaic						
9	Other (non saltmarsh)	1.959					
10	*Spartina* clump/mudflat mosaic (50/50)						
11	Isolated *Spartina* clumps on mud (5%)						
12	pioneer 1330/1310/*Spartina* mosaic						
13	1410/other SM (CM2) mosaic	0.046			0.023		
14	*Spartina* sward dominated, with some ASM						
15	1310/*Spartina* mosaic						
16	ASM dominated with some *Spartina*						
17	1330/sand dune mosaic						
18	Other SM (CM2)	1.083					
19	1330/rocky shore mosaic	0.015		0.0075			
20	1420 Mediterranean scrub						
21	1310/1330 mosaic						
	Total	**10.02**		**2.18**	**4.76**		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Site Division
Habitats
Strandline
Strandline - shingle
Embryonic Dune
Mobile Dune
Fixed Dune
Saltmarsh
Amenity grassland
Other (Undefined)
Machair
Coastal Monitoring Project 2004-2006
Roshin Point
West of Ardara / Maas Road (SAC 197)
CMP code: 150
This habitat map was created with a combination of fieldwork, GPS and interpretation of aerial photos. Boundaries of designated areas are subject to revision. Produced from Ordnance Survey material by permission of the Government.(Permit number 5953)
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Date of production: 25/11/2008
Map version: 1
Original Drawing Size: 297 x 420 (A3)
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Appendix V – Clooney site report and habitat map from the CMP (Ryle *et al*., 2009)

SITE DETAILS
CMP06 site name: **Clooney** CMP06 site code: **149** CMP Map No.: **146**

County:**Donegal** Discovery map: **10** Grid Reference: **B/G 735 005**

6 inch Map No.: **Dg 064 & 065**

Aerial photographs (2000 series): **O 0341-C, D; O 0365-B; O 0366-A.**

NPWS Site Name: **West of Ardara/Maas Road**

NPWS designation: pNHA: **197** cSAC: **197** **SPA 4116**

Other designation: Blue Flag **– Tramore Bay**

Ranger Area: **West**

MPSU Plan: **Yes**

Report Author**: Melinda Swann**

SITE DESCRIPTION

Clooney is part of cSAC 197 - West of Ardara/Maas Road, which covers a large area of coast immediately north of Ardara in southwest County Donegal. The cSAC continues northwards around the coast, and then up the Gweebarra River to Doocharry. The coastal areas of the cSAC are generally underlain by metamorphic rocks, which have been covered by blown sand over time.

The overall cSAC is designated as a result of the presence of a number of habitats including estuaries, sandflats, saltmarsh, lowland blanket bogs, a variety of heaths, lowland hay meadows, orchid-rich calcareous grassland, *Molinia* meadows, juniper scrub, deciduous woodland, sand dunes and machair plains. There are twenty-three habitats listed under Annex I of the EU Habitats Directive present, six of which have priority status. This cSAC is of considerable conservation value on account of the presence of important populations of rare and threatened habitats, plants, animals and breeding and wintering birds.

Important Red Data Book plant species, which have been recorded in the cSAC include *Najas flexilis* (Slender naiad), also an Annex II species, *Draba incana* (Hoary

whitlowgrass), *Neotinea maculata* (Dense-flowered orchid), *Drepanocladus vernicosus* (Slender green-feather moss) and *Omalotheca sylvatica* (Heath cudweed). The Annex II butterfly *Euphydryas aurinia* (Marsh fritillary) also occurs in the cSAC.

Many bird species frequent the estuaries, especially during the winter months. Annex I species that occur in the cSAC include *Branta leucopsis* (Barnacle Geese) (internationally important numbers occur), *Anser albifrons flavirostris* (Greenland White-fronted Goose), (nationally important numbers occur), *Somateria mollissima* (Eider) (nationally important flock winters within the cSAC), *Cygnus columbianus* (Bewick's Swan), *Cygnus cygnus* (Whooper Swan), *Circus cyaneus* (Hen Harrier), *Falco peregrinus* (Peregrine), *Pyrrhocorax pyrrhocorax* (Chough), *Crex crex* (Corncrake) and *Falco columbarius* (Merlin). Other Annex I species such as *Gavia stellata* (Red-throated Diver), *Sterna sandvicensis* (Sandwich Tern), *Sterna hirundo* (Common Tern) and *Sterna paradisaea* (Arctic Tern) also use the area for breeding during the summer.

The cSAC also supports populations of *Phoca vitulina* (Common seal), *Margaritifera margaritifera* (Freshwater Pearl-mussel), *Salmo salar* (Salmon), *Lutra lutra* (Otter), *Euphydryas aurinia* (Marsh Fritillary), *Meles meles* (Badger) and the rare mollusc *Vertigo geyerii*, all species listed on Annex II of the EU Habitats Directive.

The rare liverwort *Petalophyllum ralfsii* (Petalwort) has also been found at a number of sites within the cSAC, although not at Clooney.

Clooney encompasses three large sandy beaches and a number of important habitats occur beside them including the priority habitats machair and fixed dunes. Some of the habitats have been affected by the presence of an 18-hole golf course (Naran and Portnoo Golf Course) and a caravan park. The golf course was established in 1930 and is intensively managed. There are no significant rough areas between holes although there are still relatively large areas of semi-fixed dunes at the seaward side that have not yet been fully developed (Gaynor & Brown 1999). However their ecological value has diminished as it was noted during the current survey that tees and greens have now been placed on some of the higher dunes. Both the caravan park and the golf course have been removed from the cSAC. The site is a popular holiday destination and with the towns of Naran and Portnoo nearby considerable recreational pressure occurs here. The Beach at Tramore Bay is especially popular and has blue Flag status, while the other two beaches north of Castlegoland House and Cashelgolan Hill (See Discovery Map) are inaccessible to tourists and are therefore relatively undisturbed. Agricultural pressure has also had an affect on the site, especially north of Cashelgolan Hill, where stock feeding and improvement have led to a decline in some areas of the habitats. Other activities such as sand extraction have also had an affect on the fixed dune habitat. The site is noteworthy as the Red Data Book species *Draba incana* (Hoary whitlowgrass) was found during the current survey.

Currently the site at Clooney is part of the LIFE – funded Project - Integrated Coastal Zone management of Beach and Dune systems in Donegal, which is being carried out by Donegal County Council and the University of Ulster (Coleraine). The project aims to produce management plans for beaches and dunes in Donegal. It is a 3-year project co-funded by the European Community under the LIFE programme and is

designed to demonstrate the practice of integrated coastal zone management by developing and implementing sustainable uses of dunes systems.

The current survey concentrates on Annex I sand dune habitats found at Clooney and include machair, fixed dunes, mobile dunes, embryonic dunes, perennial vegetation of stony banks and annual strandline. The areas of Annex I sand dune habitats recorded at Clooney are shown in Table 149A.

Table 149A **Areas of EU Annex I habitats mapped at Clooney**

EU Code	***EU Habitat***	Area (ha)
H21AO	Machair	8.8
H2130	Fixed Dunes	43.6*
H2120	Shifting dunes along the shoreline with *Ammophila arenaria*	3.5
H2110	*Embryonic Dunes*	3
H1220	*Perennial vegetation of stony banks*	0.07
H1210	*Annual Strandline*	1.5
	Total Sand dune area excluding developments/modifications*	**60.5**
	Sandy substrate area including developments/modifications	**121.7**

*Includes sand extraction area (0.461ha) and blowout (0.072ha).
**Developments/modifications in this case include golf course (49.7ha) and caravan park (11.5ha). Note: the golf course total includes 0.584ha of fixed dunes that was in cSAC at northern end of Tramore beach i.e. golf course has expanded.

Machair (H21AO)

The machair habitat comprises 8.8ha (approximately 14.5%) of the total sand dune habitat at Clooney (Table 149A). The machair at this site has been fragmented as result of the presence of the golf course, which has been constructed on a previous, extensive machair plain. There is a small area of the habitat east of the golf course but is declining in quality, as it is affected by the agricultural activities in the nearby fixed dune habitat. The machair has been affected by the spread of agricultural weeds and furthermore is undergrazed. The machair therefore does not have the characteristic species-rich, well-grazed short sward usually found in an intact habitat. Therefore it is more characteristic of a transitional vegetation that grades into a marsh area to the south. The machair is fenced in some areas and cattle, sheep and horses lightly graze the habitat. A bull was noted on the day of survey and made it difficult to carry out extensive monitoring of the habitat. It is possible that a more species-rich sward

would be associated with the areas of livestock grazing. Further study of the area is therefore recommended.

The typical species found in the machair include Galium verum *(Lady's bedstraw),* Agrostis stolonifera *(Creeping bent),* Bellis perennis *(Daisy),* Trifolium repens *(White clover),* Plantago lanceolata *(Ribwort plantain),* Cerastium fontanum *(Common mouse-ear),* Potentilla anserina *(Silverweed),* Rhinanthus minor *(Yellow-rattle),* Dactylorhiza *spp. (Marsh-orchid spp.) and* Prunella vulgaris *(Selfheal).*

Other species found in the machair include *Veronica chamaedrys* (Germander speedwell), *Festuca rubra* (Red fescue), *Taraxacum agg.* (Dandelion), *Ranunculus repens* (Creeping buttercup), *Plantago major* (Greater plantain), *Rumex acetosella* (Sheep's sorrel), *Trifolium pratense* (Red clover), and *Cynosurus cristatus* (Crested dog's-tail).

The moss cover was extremely low and the only species of note found in the machair habitat on the survey day was *Rhytidiadelphus squarrosus.*

The negative indicator species recorded include a high abundance of *Lolium perenne* (Perennial rye-grass), (30% cover of one monitoring stop), *Senecio jacobaea* (Common ragwort), *Cirsium arvense* (Creeping thistle) and *Dactylis glomerata* (Cock's-foot), which accounted for 20% cover of some of the monitored areas within the machair habitat.

Fixed Dunes (H2130)

The fixed dune habitat comprises 43.6ha (approximately 72%) of the total sand dune habitat at Clooney (Table 149A). Clooney is interesting as it has two sandy spits that have formed within 2 kilometres of each other. The first spit has formed at the end of Tramore Bay and connects a small rocky outcrop to the mainland. The second spit is located further east and also connects a rocky outcrop to the mainland. Both spits have a fixed dune sward connecting beaches, which are back to back on either side.

The spit to the east has a more developed example of this. Both of these formations can be referred to as tombolos and are a notable feature of the site.

The fixed dunes in the western part of the site have been affected by the presence of a golf course and a caravan park. Here the dunes have mostly been taken over by these two activities and are now outside the boundary of the cSAC. There is little chance that they will be recovered, however there is still a species-rich sward within the caravan park and in some areas of the golf course. The caravans have been placed amongst the hollows of the fixed dunes and there has been very little development of gardens and tarmacadamed roadways. There was one road through the caravan park but the full array of fixed dune species was noted, along with an abundance of orchid species and one specimen of *Juniperus communis* (Common juniper) was also found.

Towards the front of the fixed dunes near the car park is a stand of the invasive species - *Hippophae rhamnoides* (Sea buckthorn) as well as some sycamore trees (*Acer pseudoplatanus*). The *H. rhamnoides* may have been planted here to prevent erosion in this part of the beach. There are also many tracks through the fixed dunes on the seaward side, which have been caused by walkers accessing the beach from the caravan park. There was previously a small, intact area of fixed dunes at the northern end of Tramore Bay, which is still within the boundary of the cSAC, however the golf course seems to have expanded into this area also. There was sand trapping, green netting to the front of this area within the mobile dunes to prevent erosion.

This beach is also a feature of local distinctiveness as it is made up of foraminiferal sands and is one of only two examples of this type of sandy beach found in the whole of Ireland. The other beach is found at Dog's Bay in County Galway and both examples are very important, as this type of sandy beach is very rare on a global scale.

The fixed dunes that are still within the boundary of the cSAC at Clooney, lie to the east of the golf course and are located on the sandy spit and behind the two sandy beaches north of Castlegoland House and Cashelgolan Hill (See Discovery Map). The sandy spit is composed of short sward dune grassland interspersed with undulating taller dunes, which are dominated by *Ammophila arenaria* (Marram grass). Cattle and a few sheep graze the dunes and there was also evidence of grazing by horses. The

front slope of the fixed dunes is quite tall in this part of the site and reaches heights of 20m or more in places. A fence runs along the front of the dunes and other parts of the dunes are also fenced. There were some areas that were dominated by species such as *Rosa pimpinellifolia* (Burnet rose) and *Pteridium aquilinum* (Bracken), indicating that the dunes are quite old in this area of the site and may be indicative of a more de-calcified system. There was an abundance of orchids throughout the higher fixed dunes and a specimen of the Red Data Book species *Draba incana* (Hoary whitlowgrass) was found in one area of the fixed dunes. A colony of *Riparia riparia* (Sand martin) were noted nesting in the exposed sand to the front of the fixed dunes and a badger's sett was also located and one badger was seen on the day of survey. The common frog (*Rana temporaria*) was also noted at the site.

The high dunes grade into a flat plain landward and beyond this are improved fields. The flatter fixed dune grassland has been affected by agricultural activities and is somewhat damaged as a result. Some areas were quite improved with a lack of fixed dune species and there were a number of ring feeders, with weeds and poached areas nearby. There were also signs of storage of silage bales as there was plastic scattered in places. There was some dumping noted and a small animal shelter is located on the habitat. An area of Blackthorn scrub (*Prunus spinosa*) covers a small area in the south of the habitat. A sand extraction site was also noted and the fixed dunes around the edge of this bare area were slumped, thus increasing the size of the damaged area. It was not clear whether sand extraction was still occurring. The flat fixed dune grassland grades into a small area of machair, to the west and into rushy wet marshland beyond this to the south.

The typical species found in the fixed dune include *Cerastium fontanum* (Common mouse-ear), *Centaurium erythraea* (Common centaury), *Trifolium repens* (White clover), *Rhinanthus minor* (Yellow-rattle), *Galium verum* (Lady's bedstraw), *Euphrasia officinalis* agg. (Eyebright), *Plantago lanceolata* (Ribwort plantain), *Festuca rubra* (Red fescue), *Veronica chamaedrys* (Germander speedwell), *Luzula campestris* (Field wood-rush), *Linum catharticum* (Fairy flax), *Thymus polytrichus* (Wild thyme), *Crepis capillaris* (Smooth hawk's beard), *Odontites verna* (Red bartsia), *Poa pratensis* (Smooth meadow-grass), *Polygala vulgaris* (Common milkwort), *Prunella vulgaris* (Selfheal), *Lotus corniculatus* (Common bird's-foot

trefoil), *Peltigera* spp. (*Peltigera* lichen), *Pilosella officinarum* (Mouse-ear-hawkweed), *Campanula rotundifolia* (Harebell), *Carex arenaria* (Sand sedge), *Carex flacca* (Glaucous sedge), *Arrhenatherum elatius* (False oat-grass), *Anthyllis vulneraria* (Kidney vetch), *Viola* spp. (Violet spp.) and *Sedum acre* (Biting stonecrop).

Other species found in the fixed dunes include *Arabis hirsuta (*Hairy rock-cress), *Primula vulgaris* (Primrose), *Silene dioica* (Red campion), *Angelica sylvestris* (Wild angelica), *Potentilla anserina* (Silverweed), *Juniperus communis* (Common juniper), *Anacamptis pyramidalis* (Pyramidal orchid), *Dactylis glomerata* (Cock's-foot), *Holcus lanatus* (Yorkshire-fog), *Trifolium pratense* (Red clover), *Rumex acetosella* (Sheep's sorrel), *Rosa pimpinellifolia* (Burnet rose), *Heracleum sphondylium* (Hogweed), *Carex nigra* (Common sedge), *Ranunculus repens* (Creeping buttercup), *Ranunculus bulbosus* (Bulbous buttercup), *Ranunculus acris* (Meadow buttercup), *Taraxacum agg.* (Dandelion), *Anthoxanthum odoratum* (Sweet vernal-grass), *Ammophila arenaria* (Marram grass), *Rumex crispus* (Curled dock), *Daucus carota* (Wild carrot), *Dactylorhiza* spp. (Marsh-orchid spp.), *Vicia sepium* (Bush vetch), *Stellaria media* (Common chickweed), *Achillea millefolium* (Yarrow), *Prunus spinosa* (Blackthorn) and *Acer pseudoplatanus* (Sycamore).

The mosses found in the fixed dunes include *Rhytidiadelphus squarrosus, Homalothecium lutescens, Hypnum jutlandicum, Calliergonella cuspidata, Scleropodium purum, Rhytidiadelphus triquetrus* and *Hypnum cupressiforme.*

The negative indicator species found include *Lolium perenne* (Perennial rye-grass), *Cirsium arvense* (Creeping thistle), *Senecio jacobaea* (Common ragwort), *Urtica dioica* (Common nettle), *Pteridium aquilinum* (Bracken) and *Chamomilla suaveolens* (Pineappleweed).

Mobile Dunes (H2120)

The mobile dune habitat comprises 3.5ha (approximately 5.7%) of the total sand dune habitat at Clooney (Table 149A). The mobile dunes are somewhat discontinuous along Tramore Beach as this beach has been subject to recent erosion. There is a steep mobile dune ridge most of the way along the beach which is recovering in places. In areas where sand is accreting *Ammophila arenaria* (Marram grass) dominated dunes are re-building. There is some slumped vegetation and there is a blowout, which extends into the fixed dunes. This blowout however is re-vegetating and there are small embryonic dunes building in front of the areas of slumped mobile face. There are sand trapping nets located towards the north end of the beach, which have been erected to prevent further erosion in this area.

The mobile dunes on the beach in the northeast of the site are more intact as the bay is more sheltered and are best developed where sand accretion is occurring at the tip of the sandy spit. However, on the beach in the far east of the site, the habitat is quite discontinuous. Here there is a mixture of intact areas and slumped vegetation. This beach is more affected by animal trampling, especially by horses, which has added to natural erosion.

The mobile dunes are composed of the typical species Ammophila arenaria *(Marram grass), with other species such as* Elytrigia juncea *(Sand couch),* Festuca rubra *(Red fescue),* Ranunculus acris *(Meadow buttercup),* Cakile maritima *(Sea rocket),* Rumex crispus *(Curled dock),* Crepis capillaris *(Smooth hawk's beard),* Daucus carota *(Wild carrot),* Cerastium fontanum *(Common mouse-ear),* Trifolium repens *(White clover),* Taraxacum agg. *(Dandelion),* Equisetum *spp. (Horsetail),* Calystegia soldanella *(Sea bindweed),* Holcus lanatus *(Yorkshire-fog),* Potentilla anserina *(Silverweed),* *D*actylorhiza *spp. (Marsh-orchid spp.) and* Tussilago farfara *(Colt's-foot) also noted in the habitat.*

The negative indicator species *Senecio jacobaea* (Common ragwort) and *Cirsium arvense* (Creeping thistle) were recorded in the habitat and the invasive species *Hippophae rhamnoides* (Sea buckthorn) is located near the car park at Tramore Bay.

Embryonic Dunes (H2110)

The embryonic dune habitat comprises 3ha (approximately 5%) of the total sand dune habitat at Clooney (Table 149A). Embryonic dunes are found along the three beaches at Clooney. At Tramore Bay the habitat is discontinuous as a result of past natural erosion. However, the habitat is re-building in places where sand accretion is occurring and seems to be recovering overall. There is high recreational pressure on this beach as a result of the caravan park and golf course. There is a car park located at the main access point, which further attracts tourists to the area. However the trampling of this habitat (and the mobile dunes) is mainly confined to the area in front of the car park and in the foredunes to the front of the caravan park. Further along the beach is relatively undisturbed except by natural erosion. The beach in the northeast of the site has good development of embryonic dunes, especially at the accreting tip although it is also discontinuous in places, further west. This beach is inaccessible to walkers and is not disturbed by recreation. The beach further to the east is more affected by natural erosion compounded by trampling by horses. Therefore the habitat is more damaged and there are many places where it is absent and there is a slumped fixed dune face instead.

The typical species of the embryonic dunes include *Elytrigia juncea* (Sand couch) and *Leymus arenarius* (Lyme grass).

Other species found in the embryonic dunes include Atriplex prostrata *(Spear-leaved orache),* Tussilago farfara *(Colt's-foot),* Ammophila arenaria *(Marram grass) and* Taraxacum agg. *(Dandelion).*

There were no negative indicators recorded in the habitat.

Perennial Vegetation of Stony Banks (H1220)

The perennial vegetation habitat comprises 0.07ha (approximately 0.11%) of the total sand dune habitat at Clooney (Table 149A). There is a small area of perennial vegetation on shingle located at the western end of the beach north of Tramore Bay. The habitat is quite small but is intact and is undisturbed. The typical species found in the habitat include *Rumex crispus* (Curled dock) with other species such as *Atriplex prostrata* (Spear-leaved orache), *Cakile maritima* (Sea rocket) and *Daucus carota* (Wild carrot). There were no negative indicators recorded in the habitat.

Annual Strandline (H1210)

The annual strandline habitat comprises 1.5ha (approximately 2.5%) of the total sand dune habitat at Clooney (Table 149A). Annual Strandline is mostly absent along the beach at Tramore Bay, but it is well developed along the beach in the northern part of the site. The absence of the habitat at Tramore Bay may be due to recent erosion, but may also be due to the fact that the beach has Blue Flag status and the beach may be regularly cleaned. There were a number of *Charadrius hiaticula* (Ringed plover) nesting in the strandline on this undisturbed beach. There are also patches of the habitat located along the beach in the eastern part of the site, where it is intermingled with embryonic dunes.

The strandline habitat is composed of the typical species *Atriplex prostrata* (Spear-leaved orache), *Honckenya peploides* (Sea sandwort) and *Cakile maritima* (Sea rocket).

Other species recorded in the habitat are *Elymus pycnanthus* (Sea couch), *Elytrigia juncea* (Sand couch), *Matricaria maritima* (Sea mayweed) and *Rumex crispus* (Curled dock).

Impacts

The machair habitat is lightly grazed (Code 140) but in places it is undergrazed (Code149). There is a high cover of agricultural weeds (Code 971) in the habitat and it has been improved (Code 103) in the eastern part of the site. There are a number of ring feeders (Code 171) in the habitat and there is a lack of dune species in these areas. The habitat is fragmented as a result of the presence of a golf course. The habitat is also fenced in places (Code 150).

The fixed dunes are affected by the presence of the golf course (Code 601) (outside cSAC). It has altered the structure of the habitat in places and constructed greens and tees on some of the more intact areas that had been previously less managed. There is a caravan site (Code 608) situated in the southwestern part of the fixed dunes. Although it is also outside the boundary of the cSAC it has impacted on the extent of the fixed dunes. Although there are a high number of caravans present they have not altered the overall structure of the habitat and the area still has good species diversity. There is a large patch of *Hippophae rhamnoides* (Sea buckthorn) (Code 954) near to the main access point to Tramore Bay and there are also trees and bindweed in the vicinity. Trampling (Code 720) and walking (Code 622) at the front of the habitat is also very obvious. Some burning (Code 690), probably due to barbeques was noted in the fixed dunes to the front.

The fixed dunes in the eastern part of the site have been affected by some improvement (Code 103). They are grazed by cattle, sheep, horses and rabbits (Code 140), but are not heavily grazed. They are fenced and some areas contain ring feeders (Code 171) and a high percentage cover of agricultural weeds (Code 971). There is

some sand extraction (Code 300) being carried out in this area also, but the extraction site is not currently being heavily used. There is also some natural erosion of the habitat (Code 900) and some dumping was noted in places (Code 421).

The mobile dunes have been severely naturally eroded (Code 900) in the past, which was probably exacerbated by overuse and trampling (Code 720) and walking (Code 622) on the tops of the dunes, as there are sandy tracks evident in front of the caravan site in particular. There are some sand trapping nets (Code 871) in the habitat at the northern end of the beach, which may help to restore the habitat but they need to be maintained. There is trampling by horses in the eastern part of the site and this area seems to have been grazed by rabbits and horses (Code 140).

The embryonic dunes and strandline are affected by walking (Code 622), trampling (Code 720) and natural erosion (Code 900).

The perennial vegetation of stony banks is undisturbed.

Table 149B Intensity and impact of various activities on sand dune habitats at Clooney

EU Habitat Code[1]	**Activity Code**[2]	**Intensity**[3]	**Impact**[4]	***Area affected/ha***	**Location of Activity**[5]
H21A0	103	B	-1	4	Inside
H21A0	140	B	+2	8.8	Inside
H21A0	149	B	-1	2	Inside
H21A0	150	B	-1	8.8	Inside
H21A0	971	B	-1	4	Inside
H2130	103	B	-1	Unknown	Inside
H2130	140	B	+2	35	Inside
H2130	171	B	-1	1	Inside
H2130	300	A	-2	0.461	Inside
H2130	601	A	-2	49.7	*Outside
H2130	608	A	-2	11.5	*Outside
H2130	622	A	-1	0.5	*Outside
H2130	690	B	-1	0.1	*Outside
H2130	720	A	-1	1	Inside
H2130	900	B	0	Unknown	Inside
H2130	954	A	-1	Unknown	Outside
H2120	140	C	-1	0.1	Inside
H2120	622	A	-1	0.1	Inside
H2120	720	A	-1	2	Inside

H2120	871	A	-1	Unknown	Inside
H2120	900	A	0	Unknown	Inside
H2110	622	B	-1	Unknown	Inside
H2110	720	B	-1	Unknown	Inside
H2110	900	C	0	Unknown	Inside
H1210	622	B	-1	Unknown	Inside
H1210	720	B	-1	Unknown	Inside
H1210	900	C	0	Unknown	Inside

[1]EU Codes as per Interpretation Manual. Code 21BB is an additional code used to signify the entire dune habitat.

[2] Description of activity codes are found in Appendix 3

[3] Intensity of the influence of an activity is rated as: A= high, B = medium, C = low influence and D = unknown.

[4] Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence and +2 = strongly managed positive influence

[5] Location of activity: Inside = activities recorded within the cSAC and directly impacting the sand dune habitat. *Outside = activities recorded outside the cSAC but adjacent to sand dune habitat that may be impacting the sand dune habitat

Conservation Status

The conservation status of a site is assessed on the condition of the site with regards to extent, structure & functions and future prospects (Table 149C). This is based on the condition of the site at the time of survey but where possible, baseline information is also consulted, although it must be noted that in certain cases this information may be superceded. The baseline information for this site came from the National ASI Survey (1994), the Natura 2000 survey (1995), the Biomar Survey (1996) and the MPSU management plan (2000).

Table 149C Conservation status of Annex I sand dune habitats at Clooney

HABITAT[1]	EU CONSERVATION STATUS ASSESSMENT			Overall EU conservation status assessment	Proposed Irish conservation status system[2]
	Favourable	**Unfavourable - Inadequate**	**Unfavourable – Bad**		
MACHAIR (H21AO)	Extent	Future Prospects	Structure & functions	**Unfavourable - Bad**	Unfavourable - Declining
FIXED DUNE (H2130)		Extent Structure & functions Future Prospects		**Unfavourable - Inadequate**	Unfavourable - Declining
MOBILE DUNES (H2120)		Extent Future Prospects	Structure & functions	**Unfavourable - Bad**	Unfavourable - Recovering
EMBRYONIC DUNES (H2110)	Extent Structure & functions	Future Prospects		**Unfavourable - Inadequate**	Unfavourable - Unchanged
PERENNIAL VEGETATION OF STONY BANKS (H1220)	Extent Structure & functions Future Prospects			**Favourable**	Favourable-Maintained
ANNUAL STRANDLINE (H1210)	Structure & functions	Extent Future Prospects		**Unfavourable - Inadequate**	Unfavourable - Unchanged

[1]EU Codes as per Interpretation Manual
[2]Ratings are Favourable (Enhanced, Maintained, Recovered, Declining), Unfavourable (Recovering, Unchanged, Declining) and Destroyed (Partially destroyed, Completely destroyed and Unknown)

Details of the numbers and pass/failure rates of monitoring stops used to assess habitat structure & functions at Clooney are shown in Table 149D.

Machair (H21AO)

The machair habitat is now relatively small in area at this site, as it has been fragmented as a result of the presence of the golf course, which has been constructed on previous machair habitat. However as this is a baseline study and the golf course has been in existence since 1930 and has not expanded into the remaining machair the extent of the habitat is rated as *favourable*. The NATURA 2000 assessment is *good representativity*.

The structure and functions parameter is rated as *unfavourable-bad.* A total of two monitoring stops were placed in the machair habitat, both failed their targets (Table 149D). There was a high cover of agricultural weeds due to past improvement and bryophyte cover was low in one stop while the other stop failed also on sward height. Quadrats taken from the Biomar machair survey have also been used to compare past and present condition of the site. The closest quadrats to the 2006 monitoring stops are used for comparison and this provides a good indicator of any change in species composition as well as sward height. The criteria used during the current survey (2006) are applied to quadrats in the machair survey (1996). Two monitoring stops were compared to two quadrats taken in 1996. One of the 1996 quadrats passed the current criteria, although it failed the negative indicator target of <5%. The other quadrat failed outright on sward height and negative indicators. As mentioned both monitoring stops in the current survey failed overall as a result of a combination of sward height, bryophyte cover and negative indicator species. There has therefore been some decline in condition of the machair since 1996, although 2 stops is a relatively small sample size. The NATURA 2000 assessment is *average or partially degraded structure*.

Table 149D Pass/fail results of Annex I sand dune habitats at Clooney

	Monitoring stops		
Habitat	**Pass**	**Fail**	**Conservation status**
Machair (H21A0)	0	2	**Unfavourable- Bad**
Fixed Dunes (H2130)	6	2	**Unfavourable- Inadequate**
Mobile dunes (H2120)	5	5	**Unfavourable- Bad**
Embryonic Dunes (H2110)	9	0	**Favourable**
Perennial vegetation of stony banks	1	0	**Favourable**

Annual Strandline (H1210)	4	0	**Favourable**

The future prospects of the machair at Clooney are rated as *unfavourable-inadequate*. The habitat is declining in condition as it has been improved in the past and is now fragmented. The objective of the MPSU management plan for the site is to enhance the ecological value of the priority habitats within the site. The strategies set out in order to fulfil this objective are to implement grazing management strategies and encourage sustainable agricultural practices on the sand dune habitats. This plan should therefore be adhered to where possible. The NATURA 2000 assessment is *average to unfavourable prospects.*

An overall EU conservation status of *unfavourable-bad* is assigned to the machair (Table 149C).

The overall Irish conservation status is *unfavourable-declining.*

Fixed Dunes (H2130)

The extent of the fixed dunes is rated as *unfavourable-inadequate.* The golf course seems to have expanded into the last remaining area of habitat that was outside the cSAC, in the far north of Tramore Bay (Note the fixed dunes in the golf course are not part of this assessment as they are outside the cSAC). The rest of the fixed dunes to the east are mainly intact although there has also been some loss of extent as a result of sand extraction and some natural erosion. The NATURA 2000 assessment is *excellent representativity*.

The structure and functions parameter is rated as *unfavourable-inadequate.* A total of eight monitoring stops were placed in the fixed dunes. Six passed their targets and

two failed (Table 155D). The monitoring stops failed as a result of high percentage cover of agricultural weeds and a tall sward. The NATURA 2000 assessment for fixed dune is *excellent structure.*

The future prospects of the fixed dune at Clooney are rated as *unfavourable-inadequate* as there seems to be a high degree of disturbance in the eastern part of the site with agricultural practices threatening the condition of the habitat. There is also an area where sand extraction may continue to be carried out, which will affect the structure of the habitat in this area and deplete the sand. The objectives set out in the MPSU management plan are to improve the ecological value of the priority habitats at this site by implementing strategies such as grazing management and sustainable agricultural management practices. The plan should therefore be implemented in order to conserve the fixed dune habitat, especially as there is the rare species *Draba incana* (Hoary whitlowgrass) present in the habitat. This is a feature of local distinctiveness for the site. The NATURA 2000 assessment is *excellent future prospects*.

An overall EU conservation status of *unfavourable-inadequate* is assigned to the fixed dune (Table 149C). This is attributable to the *unfavourable-inadequate* extent, structure and functions and future prospects of the habitat as a whole at this site.

The overall Irish conservation status is *unfavourable-declining*.

Mobile Dunes (H2120)

The extent of the mobile dunes at the site is considered to be *unfavourable-inadequate*. Severe erosion has occurred at the western side of the site that is compounded by recreational pressure. There is also some natural erosion at the eastern beach, compounded by trampling by horses. The NATURA 2000 assessment is *excellent representativity*.

The conservation assessment for structure and functions is rated as *unfavourable-bad*. A total of twelve monitoring stops were placed in the habitat and six passed and six failed. This accounts for 50% of the habitat that is in decline. The stops failed because

there was a high cover of dead or dying *A. arenaria* and some areas were heavily trampled with no flowering or fruiting. The NATURA 2000 assessment for the mobile dunes is *good structure.*

The habitat seems to be recovering at Tramore Bay as there is accretion and a band of embryonic dunes has formed to the front. The County Council have also placed sand-trapping nets along much of the habitat, which may help the habitat to recover further. However on the beach in the eastern part of the site there seems to be a problem with trampling by horses and therefore, the habitat will not be able to recover well here. The high recreational pressure on Tramore Bay may also have an affect on the recovery of the mobile dunes here. Therefore the future prospects of the habitat are rated as *unfavourable-inadequate.* The NATURA 2000 assessment is *good future prospects.*

The overall EU assessment is rated as *unfavourable-bad* as a result of *unfavourable-bad* structure and functions of the habitat. The overall Irish assessment is *unfavourable-declining.*

Embryonic dunes (H2110)

There is good development of the embryonic dunes habitat at this site. There is a mainly intact band of embryonic dunes on Tramore Bay and wide bands are also present on the two other beaches at the site. Therefore the extent of the habitat is rated as *favourable* for the habitat as a whole. There is no mention of embryonic dunes in the NATURA 2000 report.

A total of nine monitoring stops were placed in the habitat. All nine stops passed and therefore the structure and functions is rated as *favourable.* Healthy *Elytrigia juncea* (Sand couch) was present with plenty of flowering and fruiting and no negative indicators were recorded.

The future prospects for the embryonic dunes at this site are mainly good, as there seems to be windblown sand entering the system. There may be some decline on the western side of the site near the car park as there is high recreational pressure and the

horse trampling on the eastern side of the site may also pose a threat. Therefore the future prospects for the habitat are rated as *unfavourable-inadequate* at present.

The overall EU conservation assessment is rated as *unfavourable-inadequate,* while the Irish conservation assessment is *unfavourable-unchanged*.

Perennial vegetation of stony banks (H1220)

The extent of the shingle habitat is quite small but as it is present and there is nothing to indicate that there has been any decline, the extent is rated as *favourable*. There is no mention of perennial vegetation of stony banks in the NATURA 2000 report.

Only one monitoring stop was placed in the habitat as the area was minimal in size and it passed the monitoring criteria. The structure and functions of the habitat are therefore rated as *favourable*.

The future prospects for the habitat are rated as *favourable* as there is very little disturbance in this part of the site.

The overall EU conservation assessment is rated as favourable, while the Irish conservation assessment is *favourable-maintained*.

Annual Strandline (H1210)

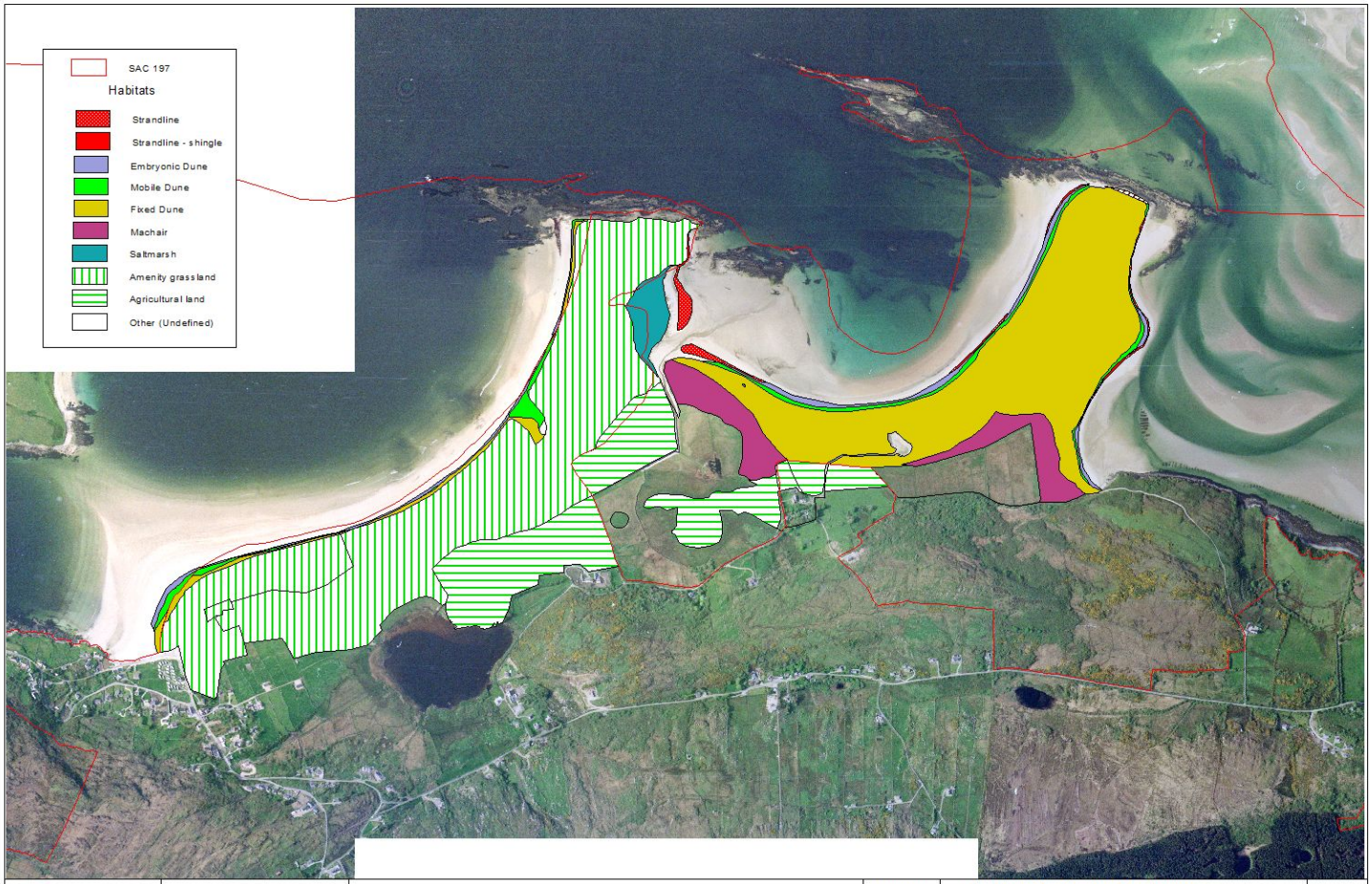
Annual strandline is quite extensive at this site in the more sheltered bays, which are inaccessible for most visitors. However the habitat is absent from Tramore bay altogether, probably as a result of the high recreational pressure at the site and possible beach cleaning. The overall assessment for extent is given as *unfavourable-inadequate*. There is no mention of annual strandline in the NATURA 2000 report.

Four monitoring stops were carried out in the habitat. The monitoring stops passed all criteria, indicating structure and functions of the habitat are *favourable*. No negative indicators were recorded in the habitat.

The future prospects for the strandline are rated as *unfavourable-inadequate* for the site as a whole. Although there are a number of large patches, which are intact at the

eastern and northern beaches, there is no development of the habitat on Tramore Bay. This beach is prone to high levels of trampling as it has blue flag status and some areas may be cleaned, removing the seed base for the habitat.

The overall EU conservation assessment is rated as *unfavourable-inadequate*, while the Irish conservation status is *unfavourable-unchanged*.


SAC 197
Habitats
Strandline
Strandline - shingle
Embryonic Dune
Mobile Dune
Fixed Dune
Machair
Saltmarsh
Amenity grassland
Agricultural land
Other (Undefined)
Coastal Monitoring Project 2004-2006
Clooney
West of Ardara / Maas Road (SAC 197)
CMP code: 149
This habitat map was created with a combination of fieldwork, GPS and interpretation of aerial photos. Boundaries of designated areas are subject to revision. Produced from Ordnance Survey material by permission of the Government (Permit number 5953)
0 100 200 300 400 500 Meters
Date of production: 25/11/2008
Map version: 1
Original Drawing Size: 297 x 420 (A3)
Scale 1:13486
N

Appendix VI – Roshin Point site report and habitat map from the CMP (Ryle *et al*., 2009)

SITE DETAILS

CMP06 site name: **Roshin Point** CMP06 site code: **150** CMP Map No.: **147**

County: **Donegal** Discovery map: **10** Grid Reference: **B 760 995**

6 inch Map No.: **Dg 064 & 065**

Aerial photographs (2000 series): **O 0366-B; O 0367-A**

NPWS Site Name: **West of Ardara / Maas Road**

NPWS designation: pNHA: **197** cSAC: **197**

Ranger Area: **Donegal**

MPSU Plan: **Draft 2 Consultation 2000**

Report Author: **Melinda Swann**

Site Description

Roshin Point sand dunes are situated in Gweebarra Bay, close to the towns of Maas and Clooney. They are part of cSAC 197 West of Ardara / Maas Road, which covers a large area of coast immediately north of Ardara in southwest Donegal. The site is adjacent to Clooney sand dunes and Lettermacaward sand dunes, which are discussed elsewhere in this report.

The overall cSAC is designated for a number of habitats including estuaries, sandflats, saltmarsh, lowland blanket bogs, a variety of heaths, lowland hay meadows, orchid-rich calcareous grassland, *Molinia* meadows, juniper scrub, deciduous woodland (Maas-Lettermacaward area) sand dunes and machair plains, all of which support a diverse range of plant and animal species. In total there are twenty-three habitats listed under Annex I of the EU Habitats Directive present, six of which have priority status.

Furthermore, the surrounding estuaries support high numbers of wintering waterfowl as well as a number of other Annex I bird species. The sandbanks, west of Roshin Point, support a population of *Phoca vitulina* (Common seal) and *Lutra lutra* (Otter) are also present at the site (both noted during the current survey). The two species are listed as Annex II in the EU Habitats Directive and therefore the cSAC offers an important habitat for both species. The

presence of both Otter and Common Seal was part of the reason for selection of this site as a cSAC and the seal colony accounts for 4.8% of the national total population (NATURA 2000 Report, 2004).

The Annex I sand dune habitats for which Roshin Point is designated are, machair, fixed dunes and mobile dunes. Roshin Point is a peninsula composed of a shingle bar, connecting an island to the mainland. The shingle developed in front of a rocky outcrop and has, over time been overlain by sand. This has allowed a wide variety of vegetation types to develop. The whole formation is referred to as a tombolo. The site has an interesting and varied geological structure (Sheppard, undated), which accounts for much of this ecological variation.

Access to the site involves crossing agricultural land, although there are rights of way further down the coast towards Clooney. Cattle graze the island and there was a bull present in the herd on the day of the site visit. There is also some fencing across the machair, which divides the wet areas from the drier machair. As access is difficult recreational pressure is very low and the site is reasonably undisturbed.

The current survey concentrates on the Annex I sand dune habitats and includes annual strandline, perennial vegetation of stony banks, embryonic dunes, mobile dunes, fixed dunes and machair. The areas of Annex I sand dune habitats recorded at Roshin Point are shown in Table 147A.

Table 147A **Areas of EU Annex I habitats mapped at Roshin Point**

EU Code	***EU Habitat***	Area (ha)
H21A0	Machair	5.305
H2130	Fixed coastal dunes with herbaceous vegetation	3.613
H2120	Shifting dunes along the shoreline with *Ammophila arenaria*	0.389
H2110	Embryonic shifting dunes	0.374
H1220	Perennial vegetation of stony banks	0.259
H1210	Annual vegetation of driftlines	0.181
	8.1.1 Total Sand dune	**10.121**

Machair (H21A0)

The machair habitat comprises 5.305ha (approximately 52.4%) of the total sand dune habitat at Roshin Point (Table 147A). There is an area of dry machair grading into wetter type machair vegetation, which has developed behind the fixed dune habitat. The machair then grades into freshwater marsh vegetation to the south and east. Beyond this, in the most easterly part of the site there is a mosaic of rocky outcrops, dry-humid acid grassland, marsh, and fen areas. There is a high proportion of *Pteridium aquilinum* (Bracken) covering this eastern part of the site and dry heath species, such as *Calluna vulgaris* (Ling heather) are found on the rocks. The machair in the north of the site has a characteristic short sward appearance and is relatively species-rich. The rest of the machair has a generally tall sward and has been somewhat improved in places. There are areas, which are *Festuca* (Fescue) dominated with a high proportion of agricultural grasses present. These areas are ungrazed, as there is a fence running through the site, which prevents the cattle entering.

Another area of dry machair is located on the mainland southwest of the shingle bar. It grades into freshwater marsh vegetation, which is fronted by saltmarsh. There is bracken on the higher areas with a mix of *Cirsium* spp. (Thistle) and *Heracleum sphondylium* (Hogweed). This area is more species-rich, but again has a high proportion of agricultural grasses present, indicating improvement.

The typical species of machair found at Roshin Point are: *Lotus corniculatus* (Common bird's-foot-trefoil), *Bellis perennis* (Daisy), *Carex arenaria* (Sand sedge), *Galium verum* (Lady's bedstraw), *Plantago lanceolata* (Ribwort plantain), *Carex flacca* (Glaucous sedge), *Carex nigra* (Common sedge), *Prunella vulgaris* (Selfheal), *Trifolium repens* (White clover), *Thymus polytrichus* (Wild thyme), *Linum catharticum* (Fairy flax), *Cerastium fontanum* (Common mouse-ear), *Rhinanthus minor* (Yellow-rattle), *Odontites verna* (Red bartsia) and *Euphrasia officinalis* agg. (Eyebright).

Other species include *Trifolium pratense* (Red clover), *Ranunculus repens* (Creeping buttercup), *Pilosella officinarum* (Mouse-ear-hawkweed), *Luzula campestris* (Field wood-

rush), *Poa pratensis* (Smooth meadow grass), *Poa* spp. (Meadow grass), *Succisa pratensis* (Devil's-bit Scabious), *Rumex acetosella* (Sheep's sorrel), *Parnassia palustris* (Grass-of-parnassus), *Centaurea nigra* (Common knapweed), *Cochlearia* spp. (Scurvygrass), *Ranunculus bulbosus* (Bulbous buttercup) *Ranunculus* spp. (Buttercup), *Leontodon autumnalis* (Autumn hawkbit), *Campanula rotundifolia* (Harebell) and *Equisetum* spp. (Horsestail), as well as the grasses *Festuca rubra* (Red fescue), *Anthoxanthum odoratum* (Sweet vernal-grass) and *Briza media* (Quaking-grass).

Bryophytes noted are *Rhytidiadelphus squarrosus, Homalothecium lutescens, Scleropodium purum* and *Calliergonella cuspidata.*

The negative indicators include *Holcus lanatus* (Yorkshire fog), *Cynosurus cristatus* (Crested dog's-tail), *Senecio jacobaea* (Common ragwort), *Lolium perenne* (Perennial rye-grass), *Cirsium arvense* (Creeping thistle), *Dactylis glomerata* (Cock's-foot) *and Poa trivialis* (Rough meadow-grass) were all noted during the survey.

Fixed Dunes (H2130)

The priority habitat fixed dune comprises 3.613ha (approximately 35.7%) of the total sand dune habitat at Roshin Point (Table147A). The fixed dune is a relatively small area at this site. The predominant vegetation of the stabilised dunes is that of calcareous dune grassland which grades into machair at the landward side. The fixed dunes are mainly species-rich and in places there is an abundance of *Anacamptis pyramidalis* (Pyramidal orchid), as well as high numbers of primrose plants (*Primula vulgaris*) present. The majority of the fixed dunes have a good, typical short turf appearance, intermingled with some *Ammophila arenaria* (Marram grass). However, in the north of the site the fixed dune is, in places, covered with bracken. Some agricultural improvement also seems to have occurred, as there is a high proportion of agricultural species present in parts of the habitat. There is a water trough towards the back of the fixed dune and there are localised clumps of agricultural grasses and weeds nearby. The herd of cattle is free to roam over the northern half of the fixed dune. There is a fence running through the fixed dune and the machair in an east west direction, which stops cattle entering some areas. There is also a fence running in front of the fixed dune, which prevents the cattle accessing the mobile dunes and the beach. There are a number of *Crataegus monogyna* (Hawthorn) bushes scattered throughout the fixed dune, which is quite unusual.

Typical species recorded in the fixed dune are *Poa pratensis* (Smooth meadow grass), *Lotus corniculatus* (Common bird's-foot trefoil), *Galium verum* (Lady's bedstraw), *Plantago lanceolata* (Ribwort plantain), *Carex arenaria* (Sand sedge), *Thymus polytrichus* (Wild thyme), *Euphrasia officinalis* agg. (Eyebright), *Trifolium repens* (White clover), *Festuca rubra* (Red fescue), *Luzula* campestris (Field wood-rush), *Hypochaeris radicata* (Cat's-ear), *Pilosella officinarum* (Mouse-ear-hawkweed), *Crepis capillaris* (Smooth hawk's-beard), *Prunella vulgaris* (Selfheal), *Rhinanthus minor* (Yellow-rattle), *Taraxacum* agg. (Dandelion) and *Cerastium fontanum* (Common mouse-ear).

Mosses found are *Rhytidiadelphus squarrosus* and *Homalothecium lutescens.*

Other fixed dune species found are *Primula vulgaris* (Primrose), *Anacamptis pyramidalis* (Pyramidal orchid), *Ammophila arenaria* (Marram grass), *Bellis perennis* (Daisy), *Ranunculus bulbosus* (Bulbous buttercup), *Rumex acetosella* (Sheep's sorrel), *Centaurea nigra* (Common knapweed), *Trifolium pratense* (Red clover), *Dactylis glomerata* (Cock's-foot), *Holcus lanatus* (Yorkshire-fog) and *Crataegus monogyna* (Hawthorn).

Some clumps of *Iris pseudacorus* (Yellow iris), although not a typical fixed dune species but an indicator of damp conditions, were scattered towards the back of the habitat in the north of the site.

The negative indicator species *Senecio jacobaea* (Common ragwort) and *Lolium perenne* (Perennial rye-grass) are found throughout the habitat and *Pteridium aquilinum* (Bracken) is present in a large clump at the northern end of the fixed dune.

Mobile Dunes (H2120)

The mobile dune habitat comprises 0.389 ha (approximately 3.8%) of the total sand dune habitat at Roshin Point (Table147A). The mobile dunes form a relatively high, narrow ridge, which is fronted by embryonic dunes. The mobile dunes are composed of the typical species *Ammophila arenaria* (Marram grass) and are relatively well developed. They are quite steep

and this may indicate erosion in the past. There is one gap in the habitat towards the southern end of the beach, which seems to have been breached in the past by the sea or by some anthropogenic activities. This area is now recovering and there is a smaller ridge of *Ammophila arenaria* (Marram grass), which has built up towards the back of the breach. In general there is good development of this habitat as this part of the site is undisturbed by both grazers and recreational activities. However, there seem to be some areas of the habitat that are in poor condition as the monitoring process showed some unhealthy *Ammophila arenaria* (Marram grass) present. However the dunes may simply be recovering from natural erosion, as there are now embryonic dunes to the front.

Typical species found are *Ammophila arenaria* (Marram grass) along with, some *Elytrigia juncea* (Sand Couch). Also found in some of the monitoring stops are *Agrostis capillaris* (Common bent), *Taraxacum* agg. (Dandelion), *Tussilago farfara* (Colt's foot), *Cerastium fontanum* (Common mouse-ear), *Festuca rubra* (Red fescue), *Lotus corniculatus* (Common bird's-foot Trefoil), *Anacamptis pyramidalis* (Pyramidal orchid), *Trifolium repens* (White clover), *Rumex acetosella* (Sheep's sorrel) and *Carex arenaria* (Sand sedge).

The negative indicators, *Senecio jacobea* (Common ragwort) and *Cirsium arvense* (Creeping thistle) appear through the habitat.

Embryonic Dunes (H2110)

Embryonic dunes account for 0.374ha (approximately 3.7%) of the total sand dune habitat at Roshin Point (Table147A). The embryonic dune is quite well developed and there is a relatively wide band with a well-defined gradation pattern from mobile to embryonic. The habitat is fronted by strandline vegetation. The dominant species found in the embryonic dunes is *Elytrigia juncea* (Sand couch), while some *Ammophila arenaria* (Marram grass) is interspersed, in places. Other species found include *Festuca rubra* (Red fescue) and *Potentilla anserina* (Silverweed). Strandline species were also found in some places and include *Honckenya peploides* (Sea sandwort) and *Atriplex* spp. (Orache spp.). The monitoring of this habitat indicates that there is healthy growth of *Elytrigia juncea* (Sand couch). The only negative indicator species present is *Cirsium arvense* (Creeping thistle), but is relatively rare.

Perennial Vegetation of Stony Banks (H1220)

Perennial vegetation of stony banks accounts for 0.259ha (approximately 2.6%) of the total sand dune habitat at Roshin Point. The habitat is situated in the south of the site on the western side of the shingle bar. The shingle bar itself has a more stable fixed dune type vegetation, with some more perennial vegetation on the exposed shingle, on the eastern side. This side is fronted by a salt marsh, which extends northwards towards the freshwater marsh area.

The typical species present include *Honckenya peploides* (Sea sandwort), *Atriplex* spp. (Orache spp.), *Tripleurospermum maritimum* (Sea mayweed), *Galium aparine* (Cleavers), and *Rumex crispus* (Curled dock).

Other species present are *Carex arenaria* (Sand sedge) and *Elytrigia juncea* (Sand couch). No negative indicators were recorded during the monitoring process.

STRANDLINE (H1210)

The strandline habitat constitutes 0.181ha (approximately 1.8%) of the total sand dune habitat at Roshin Point. Strandline habitat is well developed at the site with a relatively wide band occurring at the back of the beach. It is mainly composed of the typical species *Honckenya peploides* (Sea sandwort) and *Atriplex* spp. (Orache spp.) with some other species such as *Elytrigia juncea* (Sand couch) scattered in places throughout the habitat. The habitat grades into perennial vegetation of stony banks towards the south as it approaches the shingle bar.

No negative indicator species were found during the monitoring process. There is a high amount of seaweed present on the beach, which is very important for the early stages of development of a strandline habitat.

IMPACTS

The main impacts on the sand dune habitat at Roshin Point are given in Table 147B. The machair habitat is grazed (Code 140) by cattle, but this is a positive influence. However there are areas that are also under-grazed (Code 149). Fencing (Code 150) has been placed in an east to west direction and divides the northern section of machair from the more wet, southern

section, as well as from the fresh water marsh. This means that the sward is much taller in the southern part of the site. The fencing is therefore, negatively impacting the machair by not allowing grazing to occur. Some agricultural improvement (Code 103) such as re-seeding and fertiliser (Code 120) application seems to have occurred.

The fixed dune is also grazed (Code 140). This is a positive impact as it keeps the species diversity high. Some of the fixed dune is under-grazed (Code 149) and is covered in *Pteridium aquilinum* (Bracken) (Code 954), especially in the north of the site. There is also a water trough (Code 171) present, with poached areas surrounding it.

The mobile dune is affected by natural erosion (Code 900) and was previously eroded in one section in particular. This area is now regenerating and a ridge of *Ammophila arenaria* (Marram grass) has built up. There are also some embryonic dunes re-developing in front of this area.

The embryonic dune, perennial vegetation and strandline are prone to natural erosion (Code 900) but this is not very apparent at present. It is difficult to assess the area affected by natural erosion, as there is no previous data available and therefore appears as unknown in table 147B. Access to the site is via the shingle bar therefore some walking (Code 622) and movement of cattle may affect the vegetation in this area, but at a low level.

Table 147B Intensity and impact of various activities on sand dune habitats at Roshin Point

EU Habitat Code[1]	Activity Code[2]	Intensity[3]	Impact[4]	*Area affected/ha*	Location of Activity[5]
H21A0	103	C	-1	0.5	Inside
H21A0	120	C	-1	Unknown	Inside
H21A0	140	B	+2	2.6	Inside
H21A0	149	A	-1	2.6	Inside
H21A0	150	A	-1	2.6	Inside
H2130	140	B	+2	2.8	Inside
H2130	149	B	-1	0.7	Inside
H2130	171	C	-1	0.01	Inside
H2130	954	B	-1	0.2	Inside
H2120	900	B	0	Unknown	Inside
H2110	900	B	0	Unknown	Inside
H1220	622	C	-1	Unknown	Inside
H1220	900	B	0	Unknown	Inside
H1210	900	B	0	Unknown	Inside

[1]EU Codes as per Interpretation Manual. Code 21BB is an additional code used to signify the entire dune habitat.

[2] Description of activity codes are found in Appendix 3

[3] Intensity of the influence of an activity is rated as: A= high, B = medium, C = low influence and D = unknown.

[4] Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence and +2 = strongly managed positive influence

[5] Location of activity: Inside = activities recorded within and directly impacting the sand dune habitat. Outside = activities recorded outside but adjacent to sand dune habitat that are impacting the sand dune habitat

CONSERVATION STATUS

The conservation status of a site is assessed on the condition of the site and on baseline information. The main source of baseline information for this site was from the ASI survey, the NATURA 2000 report and the MPSU management plan. There is no mention of annual strandline or perennial vegetation of stony banks either in the NATURA 2000 form or in the MPSU management plan. Therefore the assessment of these habitats is based on best scientific judgement and the site condition during the current survey.

Table 147C Conservation status of Annex I sand dune habitats at Roshin Point

HABITAT[1]	EU CONSERVATION STATUS ASSESSMENT			Overall EU conservation status assessment	Proposed Irish conservation status system[2]
	FAVOURABLE	**Unfavourable - Inadequate**	**Unfavourable – Bad**		
MACHAIR (H21AO)	Extent	Future Prospects	Structure & functions	**Unfavourable -bad**	Unfavourable - Declining
FIXED DUNES (H2130)	Extent	Future Prospects	Structure & functions	**Unfavourable -bad**	Unfavourable - Declining
MOBILE DUNES (H2120)	Extent Future Prospects	Structure & functions		**Unfavourable - Inadequate**	Unfavourable - Recovering
EMBRYONIC DUNES (H2110)	Extent Structure & functions Future Prospects			**Favourable**	Favourable-Maintained
PERENNIAL VEGETATION OF STONY BANKS (H1220)	Extent Structure & functions Future Prospects			**Favourable**	Favourable-Maintained
ANNUAL STRANDLINE (H1210)	Extent Structure & functions Future Prospects			**Favourable**	Favourable-Maintained

[1]EU Codes as per Interpretation Manual
[2]Ratings are Favourable (Enhanced, Maintained, Recovered, Declining), Unfavourable (Recovering, Unchanged, Declining) and Destroyed (Partially destroyed, Completely destroyed and Unknown)

Details of the numbers and pass/failure rates of monitoring stops used to assess habitat structure & functions at Roshin Point are shown in Table 147D.

Machair (H21A0)

The habitat is relatively small in area at this site as it is situated on an island. The extent of the machair is considered *favourable* as there is nothing to indicate that there has been any decline in the overall area of the habitat.

The structure and functions parameter is rated as *unfavourable-bad.* Two monitoring stops passed their targets and two failed (Table 147D). The two monitoring stops that failed were due to sward height being greater than the target height. One of the stops also failed on species diversity while the other stop also had a high cover of agricultural weeds present. This indicates changes in grazing management as well as some agricultural improvement at the site. Quadrats taken from the Biomar machair survey have also been used to compare past and present condition of the site. The closest quadrats to the 2006 monitoring stops are used for comparison and this provides a good indicator of any change in species composition as well as sward height. The criteria used during the current survey (2006) are applied to quadrats in the machair survey (1996). Two monitoring stops were compared to two quadrats taken in 1996 although they were not directly comparable. Both of the 1996 quadrats failed the current criteria, for sward height and negative indicators. This would indicate that the machair habitat has not changed too much between surveys and therefore has been undergrazed for the last ten years. The NATURA 2000 assessment is *average or partially degraded structure*.

Table 147D Monitoring stop totals and pass/failure rates of Annex I sand dune habitats at Roshin Point

	Monitoring stops		
Habitat	**Pass**	**Fail**	**Conservation status**
Machair (H21A0)	2	2	**UNFAVOURABLE- BAD**
Fixed dunes (H2130)	2	2	**UNFAVOURABLE- BAD**
Mobile dunes (H2120)	2	2	**UNFAVOURABLE- BAD**
Embryonic dunes (H2110)	4	0	**FAVOURABLE**
Perennial vegetation of stony banks (H1220)	1	0	**FAVOURABLE**
Strandline (H1210)	3	0	**FAVOURABLE**

The future prospects of the machair at Roshin Point are rated as *unfavourable-inadequate*. A fence down the middle has altered the grazing regime on the machair and so there are areas that are undergrazed. This means that the typical appearance of short sward grassland has changed to a taller sward. There has also been some improvement as, in places there is a high cover of agricultural grasses. The natural functioning of the machair system is therefore no longer occurring. There is currently no development and current recreational activities are very low, and do not appear to be impacting the habitat. This assessment corresponds to the assessment made in the NATURA 2000 form of *average to reduced conservation value*.

The MPSU management plan states that one of the main objectives of management is to maintain and where possible enhance the ecological value of the priority habitats on the site. This should therefore be implemented, as without an introduction of appropriate management the machair will continue to degrade and alter in species diversity within the ungrazed area. A removal of fencing and a return to an open grazing regime would be beneficial to the future of the machair habitat at this site.

An overall EU conservation status of *unfavourable-bad* is assigned to the machair (Table 147C). This is attributable to the unfavourable-bad structure and functions of this habitat and therefore the poor future prospects at the site.

The overall Irish conservation status is *unfavourable-declining*.

Fixed dunes (H2130)

The extent of the fixed dune is rated as *favourable* as there is no development on the site and there is no obvious decline in area.

The structure and functions of the fixed dune are rated as *unfavourable-bad*. This is as a result of two of the four monitoring stops failing. In both cases the monitoring stops failed as a result of sward height, which was well above the target. As a result of this, one of the stops also failed on species diversity, while the other had a high cover of agricultural weeds present.

The future prospects for the fixed dune are rated as *unfavourable-inadequate*. The fence, which has been placed in the middle of the site, through both the machair and fixed dune, has

altered the grazing pattern of the site. The lack of large grazers in some areas of the fixed dunes means that there is undergrazing occurring. In the north of the site there is also an area covered in *Pteridium aquilinum* (Bracken). This accounts for less than 1% of the site but without management may spread, further affecting the structure and functions of the habitat. There is also a high proportion of the higher ground, in the eastern part of the site, which is covered in bracken and this may also encroach on the habitat in the future.

According to the NATURA 2000 form the fixed dune in the overall cSAC is of excellent conservation status. Based on the three criteria discussed above, the current survey carried out at Roshin Point assesses the fixed dune as in unfavourable conservation status. The MPSU management plan aims to enhance the ecological value of the priority habitats by carrying out strategies such as grazing management schemes and sustainable agricultural management practices. Where it is feasible this plan should be implemented in order to conserve the fixed dune habitat.

The overall EU conservation assessment is rated as *unfavourable-bad* as a result of the unfavourable-bad structure and functions and inadequate future prospects of the habitat at the site. The overall Irish rating is *unfavourable-declining*.

Mobile Dunes (H2120)

The extent of the mobile dunes at Roshin Point is considered to be *favourable*. There is good development of the habitat at the site and it is undisturbed by animal activity as well as being adequately isolated from anthropogenic activities.

The structure and functions of the habitat are rated as *unfavourable-inadequate*. This is based on best scientific judgement. Although two out of the four monitoring stops failed, the cover of unhealthy *Ammophila arenaria* (Marram grass) was patchy and the overall habitat is intact. The steep mobile dune ridge indicates that there may have been natural erosion in the past with a removal of the front of the mobile dunes. Recent accretion however, has allowed re-development of fore-dunes and strandline habitats.

The future prospects of the habitat are rated as *favourable* as the site is undisturbed. This corresponds to the NATURA 2000 assessment, which rates the mobile dunes as of good conservation value for the cSAC as a whole.

The overall EU assessment is rated as *unfavourable-inadequate* as a result of the structure and functions parameter. The overall Irish assessment is *unfavourable -recovering.*

Embryonic dunes (H2110)

There is a well-defined band of embryonic dunes present at Roshin Point. The extent is therefore rated as *favourable.*

The monitoring stops placed along the habitat passed all the criteria, with little or no unhealthy *Elytrigia juncea* (Sand couch) present. Therefore the structure and functions parameter is rated as *favourable.*

The future prospects for the embryonic dunes are considered to be *favourable* for the site.

The overall EU conservation assessment is rated as *favourable,* while the Irish conservation assessment is *favourable- maintained*.

Perennial Vegetation of Stony Banks (H1220)

There is no baseline information on this habitat at Roshin Point. The habitat is found at the front of the cobble bank, as well as on the other side of the cobble ridge. The extent of the perennial vegetation is therefore rated as *favourable* (Table 147C).

The structure and functions parameter is rated as *favourable* as the monitoring stop taken in the vegetated shingle passed (Table 147D). Crossing this shingle ridge accesses the site and some trampling by cattle may affect the habitat. However, at present this seems to be minimal as there were no signs of degradation recorded and no negative indicators were present.

The future prospects of this habitat are considered *favourable*.

The overall EU conservation status is rated as *favourable* for the shingle habitat (Table 147C).

The overall Irish conservation status is *favourable-maintained*.

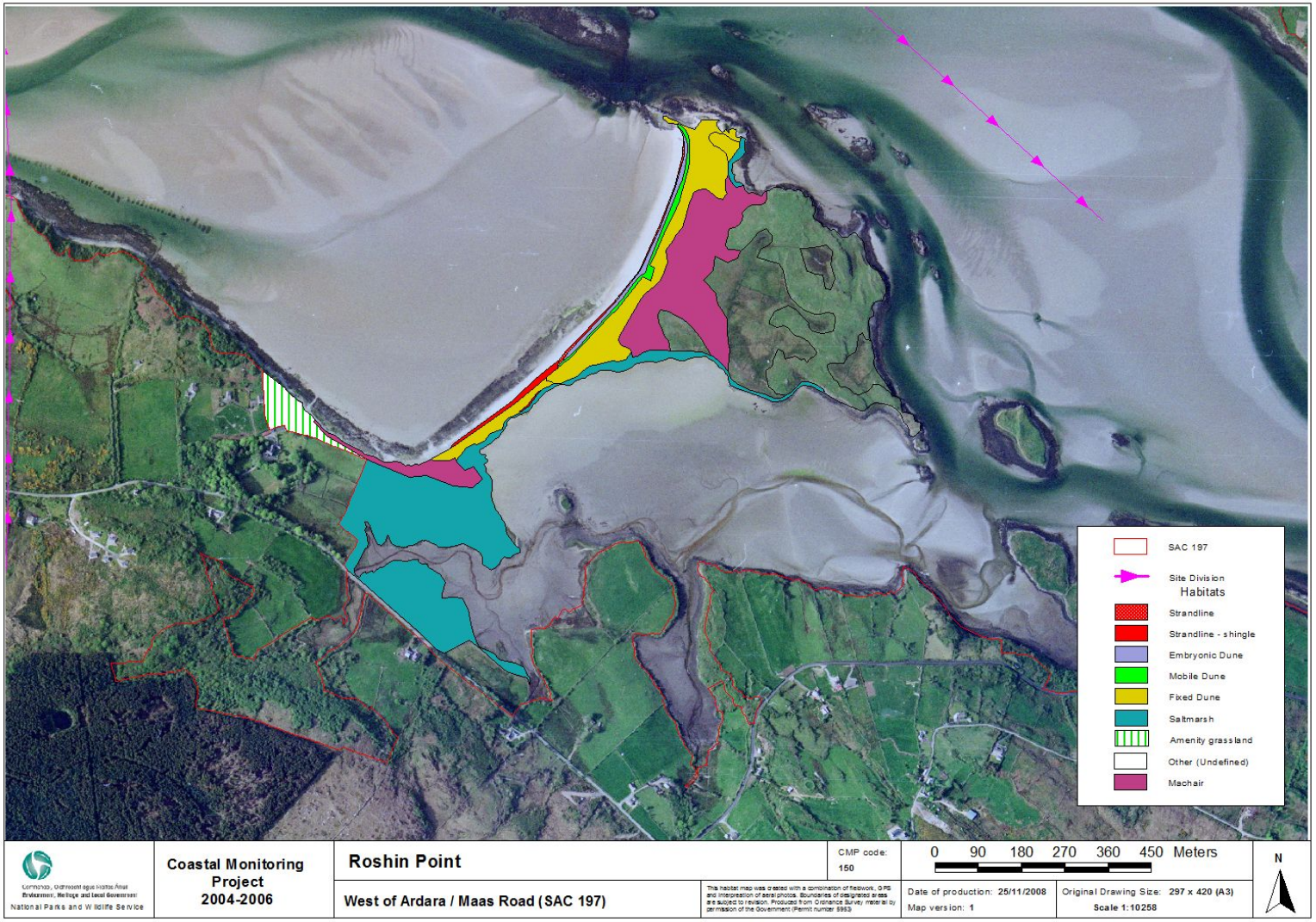
Strandline (H1210)

As the site has very little disturbance and is within a sheltered estuary, strandline vegetation has been able to develop. There is no mention of this habitat in the ASI report or in the NATURA 2000 survey therefore the assessment is based on best scientific judgement. The extent of the strandline habitat is rated as *favourable*.

The structure and functions of the habitat is also rated as *favourable* based on three monitoring stops. Typical species were present and there were no negative indicators recorded.

The above three habitats are affected by natural erosion from time to time. At present the strandline is intact at Roshin Point and so the future prospects for the habitat is rated as *favourable*.

The overall EU conservation assessment is rated as *favourable*, while the Irish conservation status is *favourable-maintained*.



Coimisiún, Oidhreacht agus Rialtas Áitiúil
Environment, Heritage and Local Government
National Parks and Wildlife Service

Coastal Monitoring Project 2004-2006

Roshin Point

West of Ardara / Maas Road (SAC 197)

CMP code: 150

This habitat map was created with a combination of fieldwork, GPS and interpretation of aerial photos. Boundaries of designated areas are subject to revision. Produced from Ordnance Survey material by permission of the Government (Permit number 8993)

0 90 180 270 360 450 Meters

Date of production: 25/11/2008
Map version: 1

Original Drawing Size: 297 x 420 (A3)
Scale 1:10258

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Appendix VII – Lettermacaward/Dooey site report and habitat map from the CMP (Ryle *et al*., 2009)

SITE DETAILS
CMP06 site name: **Lettermacaward/Dooey Point** CMP06 site code: **151**

CMP Map No.: **148**

County: **Donegal** Discovery map: **10** Grid Reference: **B750 020**

6 inch Map No.: **Dg 065 (& 057)**

Aerial photographs (2000 series): **O 0317-D; O 0341-B, C, D; O 0342-A, C, D**

NPWS Site Name: **West of Ardara / Maas Road**

NPWS designation: pNHA**: 197** pSAC: **197**

Ranger Area**: Donegal**

MPSU Plan**: Draft 2 Consultation 2000**

Report Author**: Melinda Swann**

SITE DESCRIPTION

Lettermacaward/Dooey Point is part of cSAC 197 West of Ardara/Maas Road, which covers a large area of coast immediately north of Ardara in southwest County Donegal. The cSAC continues northwards around the coast, and then up the Gweebarra River to Doocharry. Most of the coastal parts of the cSAC are underlain by metamorphic rocks, which have been covered by blown sand over time.

The overall cSAC is designated for a number of habitats including estuaries, sandflats, saltmarsh, lowland blanket bogs, a variety of heaths, lowland hay meadows, orchid-rich calcareous grassland, *Molinia* meadows, juniper scrub, deciduous woodland (Maas-Lettermacaward area), sand dunes and machair plains, all of which support a diverse range of plant and animal species. In total there are twenty-three habitats listed under Annex I of the EU Habitats Directive present, six of which have priority status. The priority sand dune habitats include 'Machair' and 'Fixed dunes with herbaceous vegetation (Grey dunes)'. This cSAC is of considerable conservation value on account of the presence of important populations of rare and threatened habitats, plants and animals, including breeding and wintering birds.

Waterfowl frequent the estuaries, especially during the winter months. Barnacle Geese (*Branta leucopsis*) feed on Inishkeel and at Sheskinmore, reaching numbers of 800-1,000 birds (1993). This renders this cSAC of international importance for the species. A nationally important flock of *Anser albifrons flavirostris* (Greenland White-fronted Goose) feeds at Sheskinmore and on the bogs in the designated area. These birds are listed on Annex I of the EU Birds Directive and the Irish Red Data Book. Other Annex I bird species winter here, including *Cygnus columbianus* (Bewick's Swan), *Cygnus cygnus* (Whooper Swan), *Circus cyaneus* (Hen Harrier) and *Falco columbarius* (Merlin). Other Annex I species also use the area for breeding during the summer, namely *Gavia stellata* (Red-throated Diver), *Falco peregrinus* (Peregrine), *Crex crex* (Corncrake), *Sterna sandvicensis* (Sandwich Tern), *Sterna hirundo* (Common Tern), *Sterna paradisaea* (Arctic Tern) and *Pyrrhocorax pyrrhocorax* (Chough). A nationally important flock of *Somateria mollissima* (Eider) winters around Inishkeel.

The cSAC also supports populations of *Phoca vitulina* (Common seal), *Margaritifera margaritifera* (Freshwater Pearl-mussel), *Salmo salar* (Salmon), *Lutra lutra* (Otter), *Euphydryas aurinia* (Marsh Fritillary), and the rare mollusc *Vertigo geyerii*, all species listed on Annex II of the EU Habitats Directive.

The rare liverwort *Petalophyllum ralfsii* (Petalwort) has also been found at a number of sites within the cSAC. It was last recorded at Lettermacaward in 2002, where it was seen on the machair, north of the football pitch (Holyoak, 2002).

During the current survey, a seal population was noted on the sand bar in the south of the site and an otter was seen in the inlet between Lettermacaward and the north of Roshin Point.

The current survey concentrates on Annex I sand dune habitats found at Lettermacaward/Dooey point and include machair, fixed dunes, mobile dunes, embryonic dunes and strandline. The areas of Annex I sand dune habitats recorded at Lettermacaward/Dooey point are shown in Table 151A.

Table 151A **Areas of EU Annex I habitats mapped at Lettermacaward/Dooey Point**

EU Code	***EU Habitat***	Area (ha)
H21A0	Machair	59.395*
H2130	Fixed coastal dunes with herbaceous vegetation	139.895**
H2120	Shifting dunes along the shoreline with *Ammophila arenaria*	7.349
H2110	Embryonic dunes	1.962
H1210	Strandline	2.518
	8.1.2 Total Sand dune	211.119

* Including a fenced sports pitch
** Including bare sand which accounts for 11.4ha

Machair (H21A0)

The machair habitat comprises 59.395 ha (approximately 28.1%) of the total sand dune habitat at Lettermacaward (Table 151A). The overall machair habitat, at this site is fragmented in appearance. However, two patches of relatively intact machair are present. The first area is wet machair and is located in the north of the site, above the football pitch. The second area is drier machair and is located in the southwest of the site, above the salt marsh. The wet machair is species-rich, with *Platanthera bifolia* (Butterfly orchid) and *Coeloglossum viride* (Frog orchid) recorded. In places, *Salix repens* (Creeping willow) dominates. It was mentioned in the MPSU management plan (2000) that the site contains dune slack. The wet machair in the north of the site may be the area which, has been previously classed as dune slack, but this would need further investigation in order to map the area. There are drainage ditches present on the wet machair.

The area of machair located in the southeast is edging a salt marsh and there is a rushy area nearby. Here a transition from dry machair into salt marsh species is evident. A patch of *Ulex europaeus* (Gorse) is present at the back of the machair beside the road and is quite extensive.

The rest of the machair, to the northeast, has been altered into agricultural holdings and each holding is managed individually. The fields are used for either hay, silage, crops or grazing on a rotational basis and are very improved. It was mentioned in the MPSU plant that this area was previously a Corncrake breeding site. These fields are presently in the cSAC while the rest of the low-lying land to the south and east is outside the boundary. It stretches to the base of the rocky hill and is most probably reclaimed machair as it has a sandy substrate. This land may have been open machair in the past and is 72.45ha in size.

The typical species found in the machair at Lettermacaward are *Lotus corniculatus* (Common bird's-foot-trefoil), *Bellis perennis* (Daisy), *Carex arenaria* (Sand sedge), *Galium verum* (Lady's bedstraw), *Plantago lanceolata* (Ribwort plantain), *Carex flacca* (Glaucous sedge), *Carex nigra* (Common sedge), *Viola* spp. (Violet), *Prunella vulgaris* (Selfheal), *Trifolium repens* (White clover), *Thymus polytrichus* (Wild Thyme), *Hydrocotyle vulgaris* (Marsh pennywort), *Linum catharticum* (Fairy flax), *Cerastium fontanum* (Common mouse-ear), *Potentilla anserina* (Silverweed), *Euphrasia officinalis* agg. (Eyebright), *Anacamptis pyramidalis* (Pyramidal orchid), *Platanthera bifolia* (Butterfly orchid), *Coeloglossum viride* (Frog orchid), *Mentha aquatica* (Water mint) and *Achillea millefolium* (Yarrow).

Other species include *Trifolium pratense* (Red clover), *Leontodon saxatilis* (Lesser hawkbit), *Taraxacum* agg. (Dandelion), *Ranunculus repens* (Creeping buttercup), *Pilosella officinarum* (Mouse-ear-hawkweed), *Luzula campestris* (Field wood-rush), *Salix repens* (Creeping willow), *Vicia cracca* (Tufted vetch), *Plantago maritima* (Sea plantain), *Succisa pratensis* (Devil's-bit scabious), *Polygala vulgaris* (Common Milkwort), *Campanula rotundifolia* (Harebell), *Rumex acetosella* (Sheep's sorrel), *Parnassia palustris* (Grass-of-parnassus), *Ammophila arenaria* (Marram grass), *Veronica chamaedrys* (Germander speedwell), *Daucus carota* (Wild carrot), *Centaurium erythraea* (Common centaury), and *Vicia sepium* (Bush Vetch). Grasses found include *Festuca rubra* (Red fescue), *Poa pratensis* (Smooth meadow grass), *Cynosurus cristatus* (Crested Dog's-tail), and *Poa* spp. (Meadow grass). Furthermore, *Epipactus palustris* (Marsh helleborine), *Iris pseudacorus* (Yellow Iris), *Lythrum salicaria* (Purple loosestrife), *Filipendula ulmaria* (Meadow sweet), *Odontites verna* (Red bartsia) and *Danthonia decumbens* (Heath-grass) can be found in some of the drainage ditches running through the wet machair.

Bryophytes noted include *Rhytidiadelphus squarrosus, Rhytidiadelphus triquetrus, Homalothecium* spp., *Climacium dendroides.* The typical moss *Calliergonella cuspidata* was noted in the wet machair.

Negative indicators include *Holcus lanatus* (Yorkshire Fog), *Senecio jacobaea* (Common ragwort), *Lolium perenne* (Perennial rye-grass), *Cirsium arvense* (Creeping Thistle), *Bromus spp*. (Brome spp.), *Urtica dioica* (Common nettle), *Rumex crispus* (Curled dock) and *Cirsium vulgare*

(Spear thistle). All of these negative indicators were noted on the machair habitat in both the northern and southern parts of the site, but occur occasionally.

Fixed Dunes (H2130)

The priority habitat fixed dune comprises 139.895 ha (approximately 66.3%) of the total sand dune habitat at Lettermacaward (Table151A). The fixed dunes are quite extensive at this site, undulating in formation and particularly high in the south of the site. There are numerous blowouts scattered in the fixed dunes and in particular, there is a large one situated in the south, which is beside a very tall mound of building sand. This is popular with walkers as it is gives good views of the surrounding areas. Although blowouts are a natural part of a fixed dune system, overuse as a result of high recreational pressures, rabbit and cattle grazing has led, in the past, to an increase in erosion at this site. However during the current survey it has been noted that a number of the blowouts are re-colonising and decreasing in size. Therefore the overall area of blowouts at the site is 11.4ha or approximately 8.8% of the overall fixed dune habitat. The predominant vegetation of the stabilised dunes is that of calcareous dune grassland which grades into machair at the landward side. The dunes are species-rich and in places there is an abundance of orchids, such as *Anacamptis pyramidalis* (Pyramidal Orchid) and *Gymnadenia conopsea* (Fragrant orchid). Carline thistles (*Carlina vulgaris*) are found as well as lichens (*Peltigera* spp.) indicating that the fixed dunes are quite old at this site. The majority of the fixed dunes have a good, typical short turf appearance intermingled with *Ammophila arenaria* (Marram grass) clumps. However, there is some agricultural improvement and overgrazing towards the back of the dunes, where cattle and sheep are present in individual fields. These areas of fixed dune are now excluded along with the machair from the cSAC as a result of this overgrazing and damage by stock.

A fox was seen feeding in the fixed dune and hares and rabbits are present throughout the system. Towards the south of the site there is a much greater abundance of *Ammophila arenaria* (Marram grass) hummocks interspersed with a shorter sward.

The typical species recorded include *Poa pratensis* (Smooth Meadow grass) *Lotus corniculatus* (Common bird's-foot trefoil), *Galium Verum* (Lady's bedstraw), *Veronica chamaedrys* (Germander speedwell), *Plantago lanceolata* (Ribwort plantain), *Carex arenaria* (Sand sedge), *Thymus polytrichus* (Wild thyme), *Euphrasia officinalis* agg. (Eyebright), *Trifolium repens* (White clover), *Festuca rubra* (Red fescue), *Luzula* campestris (Field wood-rush), *Hypochaeris radicata* (Cat's-ear), *Polygala vulgaris* (Common milkwort), *Prunella vulgaris* (Selfheal), *Campanula*

rotundifolia (Harebell), *Linum catharticum* (Fairy flax), *Sedum acre* (Biting stonecrop), *Cerastium fontanum* (Common mouse-ear), *Peltigera* spp. (Peltigera spp.) and *Viola* spp. (Violet spp.).

Typical mosses found include *Rhytidiadelphus squarrosus, Rhytidiadelphus triquestrus* and *Tortula ruraliformis*.

Other fixed dune species found are *Primula vulgaris* (Primrose), *Ammophila arenaria* (Marram grass), *Bellis perennis* (Daisy), *Taraxacum* agg. (Dandelion), *Ranunculus repens* (Creeping buttercup), *Ranunculus acris* (Meadow buttercup), *Poa* spp. (Meadow grass spp.), *Rumex acetosella* (Sheep's sorrel), *Dactyloriza* spp. (Orchid spp.), *Rosa pimpinellifolia* (Burnet rose), *Achillea millefolium* (Yarrow), *Cynosurus cristatus* (Crested Dog's Tail), *Phleum arenaria* (Sand cat's-tail), *Holcus lanatus* (Yorkshire-fog), and *Trifolium pratense* (Red clover). The moss *Rhytidiadelphus loreus* is also present.

Negative indicators include *Cirsium arvense* (Creeping thistle), *Senecio jacobaea* (Common ragwort) and *Lolium perenne* (Perennial rye-grass).

Mobile Dunes (H2120)

The mobile dune habitat comprises 7.349 ha (approximately 3.5%) of the total sand dune habitat at Lettermacaward (Table151A). The strand at Lettermacaward is about three kilometres long before it reaches a tip and continues around into the estuary, north of Roshin point. Shifting dunes along the shoreline with *Ammophila arenaria* are referred to as white dunes. This habitat is quite apparent at Lettermacaward, especially towards the southern end of the site where there is a wide band situated around the growing tip. In the northern part of the beach the mobile dune is absent in places, for example at the main access point to the beach. This is most probably due to the high volumes of people trampling the area. There is however, accretion of sand at the most northerly part of the beach, above the car park, and here there is good development of mobile dunes fronting a previously eroded fixed dune face. The width of the habitat increases as it moves towards the south of the beach. There is no mobile dune on the leeward side of the growing tip but begins again towards the inner part of the estuary.

Ammophila arenaria (Marram grass) dominates the mobile dune habitat along with *Elytrigia juncea* (Sand couch) in places. Also found in the habitat are *Tussilago farfara* (Colt's foot), *Cerastium fontanum* (Common mouse-ear), *Festuca rubra* (Red fescue) and *Lotus corniculatus* (Common bird's-foot Trefoil). The monitoring process indicates the habitat is healthy overall, however in the southern part of the site the *Ammophila arenaria* (Marram grass) is older in appearance.

The only negative indicator found in the habitat is *Senecio jacobaea* (Common ragwort).

Embryonic Dunes (H2110)

Embryonic dunes are very ephemeral in nature and patchy in distribution along the coastline at Lettermacaward, where they account for 1.962ha (approximately 0.92%). The embryonic dune is often ill defined as *Elytrigia juncea* (Sand couch) is in places intermingled with mobile or strandline species. This makes it difficult to discern boundaries between habitats and therefore difficult to map accurately. There are high numbers of blowouts along the beach which extend into the fixed dune and so embryonic dunes and mobile dunes are mainly absent in these areas. However, where reworking of sand has occurred over previously eroded tracks, embryonic and mobile dunes have formed. The main areas of embryonic dunes are found in the southern parts of the beach and around the tip. Here sand accretion has occurred allowing the development of a relatively wide band of embryonic dunes. In time the tip may develop into a sandy spit. The dominant species found in the embryonic dunes is *Elytrigia juncea* (Sand couch), while some *Ammophila arenaria* (Marram grass) is present. The monitoring of this habitat indicates that there is healthy growth of *Elytrigia juncea* (Sand couch) and there were no negative indicators found.

STRANDLINE H1210

Strandline habitat covers much of the seaward side of Lettermacaward. In addition there are small patches located at the southern tip. A small section is also located in front of the machair in the southeastern part of the site. The habitat accounts for 2.518ha (approximately 1.2%) of the total sand dune habitat at Lettermacaward.

The typical species found in the strandline at Lettermacaward include *Cakile maritima* (Sea rocket), *Atriplex laciniata* (Frosted orache) and *Honckenya peploides* (Sea sandwort). The dominant species in most cases is *Cakile maritima* (Sea rocket).
Elytrigia juncea (Sand couch) was also recorded in the habitat. No negative indicator species were found during the monitoring process.

IMPACTS

The main activities impacting the sand dunes at Lettermacaward are given in Table 151B. The machair is affected by grazing by cattle (Code 140) as well as fencing (Code 150) and agricultural improvement (Code 103). The majority of the machair, within the cSAC boundary has been detrimentally altered into individual fields. They are all strip fenced in a north south direction and are each approximately 1ha in size. There are approximately 27 separate units (estimated from aerial photograph), with 80% used for silage and 20% used for haymaking (approximate estimate). The majority of the fields are re-seeded and fertilised (Code 120). The remaining area of intact, open machair, in the north is under threat from the spread of agricultural grasses and weeds. Drainage ditches (Code 810) are also present on this part of the machair and there is a football pitch (Code 607), which has a fence surrounding it. There is also a small changing facility (Code 600) built beside the pitch. The southeastern section of the machair which, is above the salt marsh is affected by the spread of agricultural weeds and some grasses as a result of the presence of cattle. There is also a sizeable patch of *Ulex europaeus* (Gorse) near the road, which is encroaching on the habitat (Code 954). Overall the machair is extremely fragmented and not functioning as an intact system.

Recreational impacts are quite high on the fixed dune, especially in the northern part and on the high sand ridge in the south. Large numbers of walkers (Code 622) climb the sand ridge to enjoy the view. The beach is a popular surfing spot and there are many visitors frequenting the beach. High numbers of cars can be found in the public car park, as was the case on the day of survey. It was noted that parking also occurs on the fixed dune itself at the back of the car park. There are temporary toilet facilities located nearby and some camping (Code 608) occurs near to the car park.

One of the main problems in the fixed dune, near to this main access point is overuse and trampling (Code 720) by visitors. There are many tracks entering the beach from the car park. Visitors jump from the high, eroded face, down into the sand below to enter the beach, causing further erosion at this point. There are numerous blowouts present throughout the seaward side of the fixed dune, which are naturally eroding features and in some cases are regenerating. However, the high numbers of walkers, who trample across the dunes, helps to contribute to the loss of vegetation at a faster rate.

Sheep and rabbit grazing (Code 140) occur in the fixed dunes and there is overgrazing (Code 142) in places. The fixed dunes are mostly fenced (Code 150) but are more open in appearance towards the southern end. There is some agricultural improvement (Code 103) towards the back of the fixed dune. This area is also affected by poaching by stock and there are silage bales stored nearby. Agricultural weeds such as *Senecio jacobaea* (Common ragwort) are scattered throughout the habitat. There is also a field in the eastern part of the fixed dune that has been levelled and sown with *Brassica* spp. (Code 100).

Some areas show an abundance of agricultural grasses as a result of supplementary feeding sites. In the southeastern part of the fixed dune there are a number of ring feeders (Code 171) and water troughs, with weeds such as *Chamomilla suaveolens* (Pineapple weed) and *Rumex crispus* (Curled Dock) occurring nearby. There is also erosion of some of the dune ridges here, which may be due to sand extraction (Code 300). The erosion may also be helped by the presence of the cattle trampling the ridges. Near to here, there is a small amount of dumping (Code 700). Rusty, old cars are scattered on a relatively flat area of fixed dune, but seem to have been there for a long time, as they have nearly disintegrated.

The mobile dune is under threat from natural erosion (Code 900) especially where tracks have developed as a result of pedestrian traffic (Code 622). However, this habitat seems to be relatively intact overall and the development of embryonic dunes and a strandline indicates the system is, at present accreting rather than eroding.

The embryonic dune is prone to natural erosion (Code 900), but at present at a relatively low level. Overuse and trampling (Code 720) when walkers access the fixed dune also poses a threat.

Walkers (Code 622) and natural erosion (Code 900) may impact the strandline. However, as strandline is present this indicates little disturbance in the area.

Cattle grazing (Code 140) may impact the mobile and embryonic dunes as well as the strandline but this is difficult to quantify.

According to the management plan for the site, pony trekking occurred in the past and dune buggies have also been previously seen on the strand. Neither pursuit was recorded during the current survey.

Table 151B Intensity and impact of various activities on sand dune habitats at Lettermacaward/Dooey Point

***EU Habitat Code*[1]**	**Activity Code[2]**	**Intensity[3]**	**Impact[4]**	***Area affected/ha 8.1.3***	**Location of Activity[5]**
H21A0	103	A	-1	31.2	Inside
H21A0	120	A	-1	31.2	Inside
H21A0	140	B	+2	25.2	Inside
H21A0	150	A	-1	31.2	Inside
H21A0	600	A	-1	Unknown	Inside
H21A0	607	B	-1	1	Inside
H21A0	810	A	-1	37.6	Inside
H21A0	954	B	-1	0.4	Inside
H2130	100	A	-1	0.5	Inside
H2130	103	B	-1	2	Inside
H2130	140	B	+2	10	Inside
H2130	142	B	-1	2	Inside
H2130	150	B	-1	Unknown	Inside
H2130	171	B	-1	Unknown	Inside
H2130	300	B	-1	Unknown	Inside
H2130	608	C	-1	Unknown	Inside
H2130	622	B	-1	15	Inside
H2130	700	C	-1	Unknown	Inside
H2130	720	A	-1	10	Inside
H2120	622	B	-1	0.1	Inside
H2120	720	A	-1	0.1	Inside
H2120	900	B	0	0.3	Inside
H2110	720	C	-1	0.1	Inside
H2110	900	B	0	0.1	Inside
H1210	622	C	-1	Unknown	Inside
H1210	900	C	-1	Unknown	Inside
H2120 & H2110 & H1210	140	C	0	Unknown	Inside

[1]EU Codes as per Interpretation Manual. Code 21BB is an additional code used to signify the entire dune habitat.

[2] Description of activity codes are found in Appendix 3

[3] Intensity of the influence of an activity is rated as: A= high, B = medium, C = low influence and D = unknown.

[4] Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence and +2 = strongly managed positive influence

[5] Location of activity: Inside = activities recorded within and directly impacting the sand dune habitat. Outside = activities recorded outside but adjacent to sand dune habitat that are impacting the sand dune habitat

CONSERVATION STATUS

The conservation status of a site is based on extent, structure & functions and future prospects. This is based on the condition of the site at the time of survey but where possible, baseline information is also consulted, although it must be noted that in certain cases this information may be superceded. The baseline information for this site came from the National ASI Survey (1994), the Natura 2000 survey (1995), the Biomar Survey (1996) and the MPSU management plan (2000).

TABLE 151C CONSERVATION STATUS OF ANNEX I SAND DUNE HABITATS AT LETTERMACAWARD/DOOEY POINT

HABITAT[1]	**EU Conservation Status Assessment**				
	Favourable	**Unfavourable - Inadequate**	**Unfavourable – Bad**	**Overall EU conservation status assessment**	**Proposed Irish conservation status system**[2]
MACHAIR (H21A0)		Extent Structure & Functions	Future Prospects	**Unfavourable - Bad**	Partially Destroyed
FIXED DUNES (H2130)	Extent	Structure & Functions Future Prospects		**Unfavourable - Inadequate**	Unfavourable-declining
MOBILE DUNES (H2120)	*Extent* *Structure & Functions* Future Prospects			**Favourable**	Favourable-maintained
EMBRYONIC DUNES (H2110)	*Structure & Functions*	Extent Future Prospects		**Unfavourable - Inadequate**	Unfavourable-unchanged
STRANDLINE (H1210)	*Extent Structure & Functions* *Future Prospects*			**Favourable**	Favourable-maintained

[1]EU Codes as per Interpretation Manual

[2] Ratings are Favourable (Enhanced, Maintained, Recovered, Declining), Unfavourable (Recovering, Unchanged, Declining) and Destroyed (Partially destroyed, Completely destroyed and Unknown)

TABLE 151D PASS/FAIL RESULTS OF MONITORING STOPS FOR ANNEX I SAND DUNE HABITATS AT LETTERMACAWARD/ DOOEY POINT

	Monitoring stops		
HABITAT	**Pass**	**Fail**	**Conservation status**
Machair (H21A0)	7	1	**Unfavourable-inadequate**
FIXED DUNES (H2130)	11	1	Unfavourable-inadequate
MOBILE DUNES (H2120)	8	0	**Favourable**
EMBRYONIC DUNES (H21A0)	4	0	Favourable
ANNUAL STRANDLINE (H1210)	5	0	Favourable

Machair (H21A0)

The extent of the machair habitat is rated as *unfavourable-inadequate.* There are some sheds present on the machair in the north of the site as well as scrub encroachment in the southeastern part of the intact machair. There is also a small amount of bare sand, also in the northern section, which may be as a result of sand extraction. Poaching by grazers may also have led to this erosion. The NATURA 2000 assessment is *good representativity*.

Eight monitoring stops were carried out in the more intact, open machair. Seven passed and one failed. This therefore rates the structure and functions parameter as *unfavourable-inadequate.* There is good species diversity in both areas with an abundance of *Coeloglossum viride* (Frog Orchid) especially in the northern part. However, there is a high degree of agricultural grasses and weeds, which seem to be spreading.

Of the four Monitoring stops taken in the patch of machair in the north of the site, two are wet and are dominated by *Salix repens* (Creeping willow). One of the monitoring stops fails, as it is quite grassy in appearance with an abundance of *Trifolium pratense* as well as agricultural weeds. This stop is quite close to the agriculturally improved machair fields and would explain the dominance of these grasses.

The machair in the most southwesterly part of the site grades into a transitional zone of reeds and then upper and lower saltmarsh. There was a high number of species noted on the machair here with good flowering and fruiting occurring.

Four monitoring stops were placed in the machair in the south of the site and all passed.

Quadrats taken from the Biomar machair survey have also been used to compare past and present condition of the site. The closest quadrats to the 2006 monitoring stops are used for comparison and this provides a good indicator of any change in species composition as well as sward height. The criteria used during the current survey (2006) are applied to quadrats in the machair survey (1996). Four monitoring stops were compared to three quadrats taken in 1996. All the 1996 quadrats passed the current criteria, although the sward height was taller than the target height. One of the monitoring stops in the current survey has failed both on sward height and negative indicator species showing a decline in condition in some areas of the machair since 1996.

According to the MPSU management plan the restoration possibilities for the machair at Lettermacaward/Dooey Point as a whole are very low. Much of the damage to the machair is considered to be irreversible or only recoverable with a large amount of effort. However the objectives set out in the plan aim to enhance the ecological value of the priority habitats, by decreasing stocking rates and liasing with landowners with regards to agricultural improvement and where possible implement REPS or DAHGI schemes. The NATURA 2000 assessment is *average or partially degraded structure*.

Unless some action is taken quickly at Lettermacaward much of the remaining habitat may be lost in the near future. The strategies set out in the MPSU management plan should therefore be implemented where possible. As a result of the above, the future prospects for the machair habitat are rated as *unfavourable-bad.* The loss of the habitat would be detrimental to the local features of distinctiveness for the site, such as *P. ralfsii* (Petalwort) as well as the aforementioned orchid species. The NATURA 2000 assessment is *average to unfavourable prospects.*

The overall EU rating is *unfavourable-bad*. The Irish rating is *partially destroyed.*

Fixed Dunes (H2130)

The extent of fixed dunes is rated as *favourable* (Table 151C). Although there are some large blowouts present they account for <10% of the overall area of the fixed dune habitat. The Natura 2000 assessment is *excellent representativity*.

Structure & Functions of the monitoring stops taken at Lettermacaward are rated as *unfavourable-inadequate* as one of the monitoring stops failed on the basis of sward height (~30cm in places) and negative indicators (>30% cover). The majority of the fixed dune showed good species diversity. However, there was some improvement to the eastern side of the habitat. There was a high degree of agricultural grasses present in the monitoring stop taken in this area. Grazers are also having an affect on the height of the sward. In the eastern part, where high numbers of sheep are present there is an overgrazed area. Furthermore, one of the monitoring stops situated on the southern tip failed on sward height. The *Festuca rubra* (Red fescue) was at a height of greater than 20cm indicating more rank vegetation. There was also a high abundance of *Senecio jacobaea* (Common ragwort) in this stop with a cover of approximately 30%. Some of the fixed dune has been damaged from agricultural practices, such as sand extraction, stock feeding and improvement. Furthermore the fixed dune, which is outside the cSAC boundary, has been detrimentally altered in some parts for cultivation purposes. The NATURA 2000 assessment for fixed dune is *excellent structure*.

The future prospects for the fixed dune at Lettermacaward are rated as *unfavourable-inadequate* as a result of the adverse effects of the agricultural practices towards the back of the habitat. Furthermore the high recreational pressures at the site pose a threat to the integrity of the habitat, encouraging accelerated natural erosion. In order to maintain species diversity and the abundance of orchids (a feature of local distinctiveness), it is important to manage and protect the fixed dune habitat. The objectives set out in the MPSU management plan are to improve the ecological value of the priority habitats at this site by implementing strategies such as grazing management and sustainable agricultural management practices. The plan should therefore be implemented in order to conserve the fixed dune habitat. The NATURA 2000 assessment is *excellent future prospects*.

An overall EU assessment of *unfavourable-inadequate* is given for the fixed dune habitat. This is based on the future threat posed by agriculture at the back of the habitat as well as high recreational pressures on the habitat. The overall Irish rating is *unfavourable-declining*.

Mobile Dunes (H2120)

The extent of the mobile dunes is rated as *favourable* at the site (Table 151C). The habitat although patchy, in some areas of the site is well distributed along the coastline. The NATURA 2000 assessment is *excellent representativity*.

A total of eight monitoring stops were carried out along the mobile dune habitat at Lettermacaward, all of which passed (Table 151D). There were no negative indicators recorded and the *Ammophila arenaria* (Marram grass) is mostly healthy and fresh growing. The structure and functions parameter is therefore, rated as *favourable*. The NATURA 2000 assessment for the mobile dunes is *good structure.*

The mobile dunes are quite intact at Lettermacaward. Some areas may be susceptible to increasing natural erosion exacerbated by overuse by walkers, but at present are moderately undamaged. The future prospects for the mobile dune habitat at this site are therefore considered *favourable.* The NATURA 2000 assessment is *good future prospects.*

The overall EU conservation status of mobile dunes is *favourable* (Table 151C), while the Irish conservation status is rated as *favourable-maintained*.

Embryonic Dunes (H2110)

Embryonic dunes are patchy in distribution at this site. Therefore the extent of the habitat is rated as *unfavourable-inadequate*. There is no mention of embryonic dunes in the NATURA 2000 report.

The Structure and functions are rated *as favourable* as all four monitoring stops passed.

The future prospects for the habitat are rated as *unfavourable-inadequate.* The area of the habitat only covers a relatively small proportion of the site and is affected by natural erosion compounded by high recreational activities.

The overall EU conservation status of embryonic dunes is *unfavourable-inadequate* (Table 151C), while the Irish conservation status is rated as *unfavourable-unchanged*.

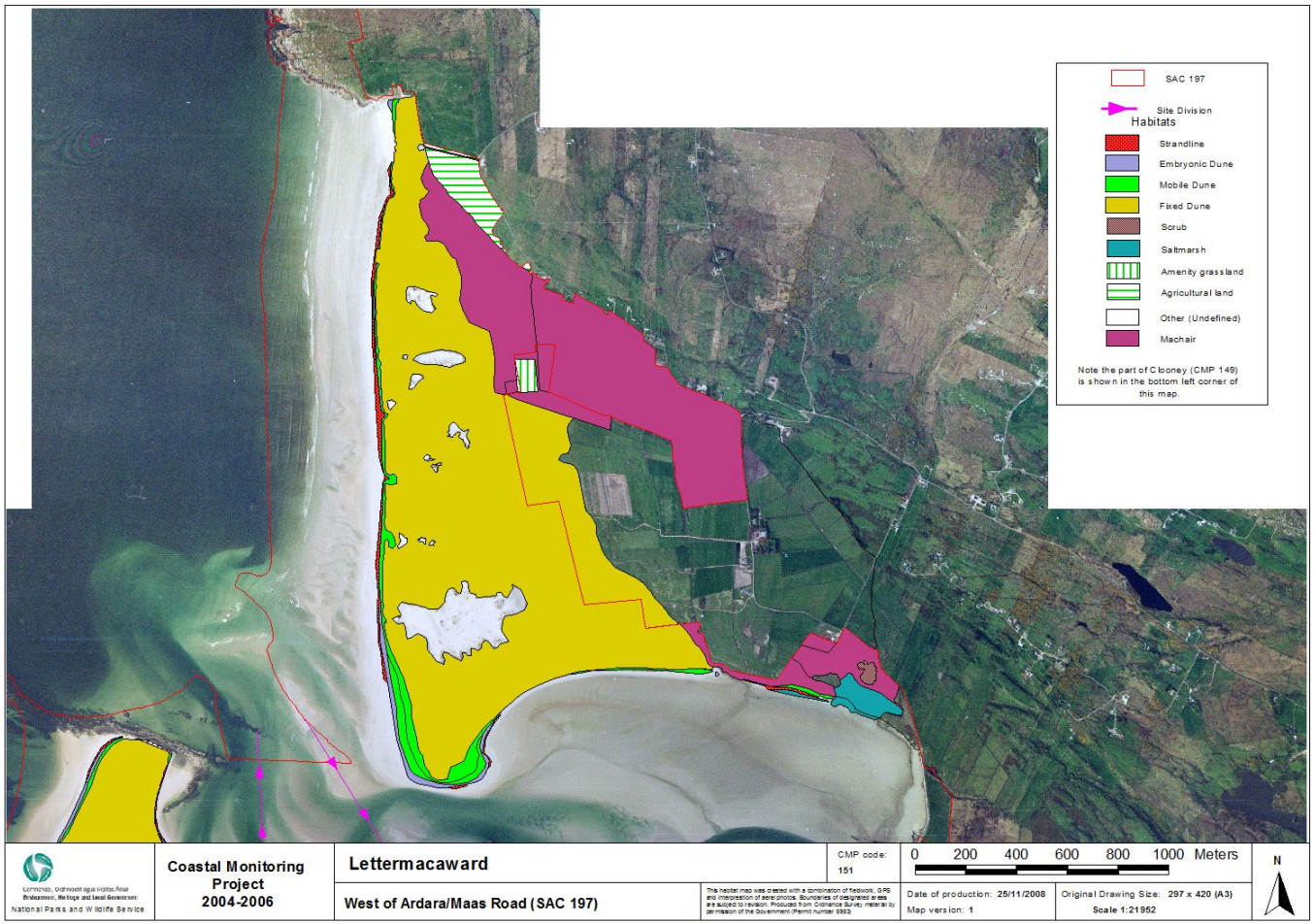
STRANDLINE H1210

The extent of the strandline habitat is rated as *favourable*. There is no baseline information for this site so the assessment is based on current condition of the habitat. The habitat covers a good proportion of the strand at Lettermacaward. This indicates that the system is accreting and little disturbance is occurring on this habitat. There is no mention of annual strandline in the NATURA 2000 report.

The structure and functions of the habitat are rated as *favourable*. Five monitoring stops were placed along the strandline at Lettermacaward, all of which passed. *Elytrigia juncea* (Sand couch) was found in two of the monitoring stops, but covered less than 1% of the stops.

The future prospects for the habitat are rated as *favourable*.

The overall EU conservation status for strandline at the site is *favourable* (Table 151C), while the Irish conservation status is rated as *favourable-maintained*.


SAC 197
Site Division
Habitats
Strandline
Embryonic Dune
Mobile Dune
Fixed Dune
Scrub
Saltmarsh
Amenity grassland
Agricultural land
Other (Undefined)
Machair
Note the part of Clooney (CMP 149) is shown in the bottom left corner of this map.
Coastal Monitoring Project 2004-2006
Lettermacaward
West of Ardara/Maas Road (SAC 197)
CMP code: 151
0 200 400 600 800 1000 Meters
N
Date of production: 25/11/2008
Map version: 1
Original Drawing Size: 297 x 420 (A3)
Scale 1:21952
National Parks and Wildlife Service

Appendix VIII – Sheskinmore site report and habitat maps from the Sand Dunes Monitoring Project (Delaney *et al*., 2013)

SITE 148 SHESKINMORE

The following individual site report should be read in conjunction with the main report (Delaney *et al*., 2013). Please note that CMP refers to the Coastal Monitoring Project (Ryle *et al*., 2009) and SDM refers to the Sand Dunes Monitoring Project (Delaney *et al*., 2013). Unless otherwise stated, the baseline maps refer to the habitat maps produced during the CMP. These baseline maps were revised, to account for discrepancies in the original survey, before comparisons were made with the habitat maps produced during the SDM (see section 2.3 in SDM main report). These revised maps are referred to as the revised baseline maps in the following text.

1 SITE DESCRIPTION

Sheskinmore is a large site located close to the town of Ardara in Co. Donegal and is included in the West of Ardara/Maas Road SAC 000197. During the CMP, eight Annex I sand dune habitats (* indicates a priority habitat) were recorded from the site: **2110 Embryonic shifting dunes**, **2120 Marram dunes (white dunes)**, ***2130 Fixed dunes (grey dunes)**, **2170 Dunes with creeping willow**, **2190 Humid dune slacks**, ***2140 Decalcified *Empetrum* dunes**, ***2150 Decalcified dune heath** and ***21A0 Machairs**. A further annex I habitat, **5130 *Juniperus communis* formations on heaths or calcareous grasslands,** was recorded during the SDM. The importance of the site is increased as it exists within a network of habitats of high nature value including the Annex I habitats **4030 European dry heaths**, **7230 Alkaline fens**, **4010 Northern Atlantic wet heaths with *Erica tetralix***, **3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)**, **1130 Estuaries**, **1140 Mudflats and sandflats not covered by seawater at low tide**, **1160 Large shallow inlets and bays** and **Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)** among others. Species of interest associated with the site include petalwort (*Petalophyllum ralfsii*), Whorl snail (*Vertigo geyeri*), Marsh fritillary butterfly (*Euphydryas aurinia*) and Otter (*Lutra lutra*). *Dactylorhiza fuchsii var. okelli* was found during the survey in 2012. An unusual aspect of the site is that the water table is very high, and there are permanent ponds in the bottom of several of the dune slacks.

Much of the site is owned by the state and managed for conservation purposes by NPWS. Parts of the site are privately owned and are used as pasture for cattle. There is a campsite near Trawmore which results in the dunes being subjected to some amenity use.

During the CMP, site 212 Derryness was surveyed as a subsite of Sheskinmore. When the site was surveyed in 2012, a large herd of cattle and a bull were roaming freely in that area and it was not included in the survey.

2 CONSERVATION ASSESSMENTS

2.1 Overview

The survey of Sheskinmore took place on the 19th, 20th and 21st of June 2012. Of the eight habitats recorded on the site during the baseline survey, six were assessed during the SDM. Assessment of two habitats, ***2140 Decalcified *Empetrum* dunes** and ***2150 Decalcified dune heath** was not within the remit of this project. The results of the conservation assessments are presented in Table 1. ***2130 Fixed dunes (grey dunes)** and **2190 Humid dune slacks** were assessed as Unfavourable-Inadequate, while **2110 Embryonic shifting dunes, 2120 Marram dunes (white dunes), 2170 Dunes with creeping willow** and ***21A0 Machairs** were assessed as Favourable.

Table 1. Conservation assessment results for all Annex I dune habitats surveyed at Sheskinmore, Co. Donegal.

Habitat	Area	Structure & Functions	Future Prospects	Overall result
2110 Embryonic shifting dunes	Favourable (stable)	Favourable (stable)	Favourable (stable)	Favourable (stable)
2120 Marram dunes (white dunes)	Favourable (improving)	Favourable (improving)	Favourable (improving)	Favourable (improving)
*2130 Fixed dunes (grey dunes)	Favourable (stable)	Unfavourable-Inadequate (stable)	Unfavourable-Inadequate (stable)	Unfavourable-Inadequate (stable)
2170 Dunes with creeping willow	Favourable (stable)	Favourable (stable)	Favourable (stable)	Favourable (stable)
2190 Humid dune slacks	Favourable (stable)	Unfavourable-Inadequate (stable)	Favourable (improving)	Unfavourable-Inadequate (improving)
*21A0 Machairs	Favourable (stable)	Favourable (improving)	Favourable (stable)	Favourable (improving)

2.1.1 Area

The area of each habitat according to the baseline maps, the revised baseline maps and the Sand Dunes Monitoring Project are presented in Table 2. The baseline areas of seven Annex I habitats present at Sheskinmore were altered after the site was visited in 2012. The CMP maps indicated that there was a large polygon of ***2150 Decalcified dune heath** in the northwest of Sheskinmore, at Mullyvea. When the site was visited, it was found that the large ***2150 Decalcified dune heath** polygon was formed of a complex mosaic of **5130 Juniper scrub**, ***2130 Fixed dunes (grey dunes)**, **2170 dunes with creeping willow,** flush, dense bracken, scrub, heath and exposed rock**.** The main acidic influence appeared to be the underlying rock, so it was not clear how much, if any, of the ***2150 Decalcified dune heath** conformed to the Annex I interpretation manual description of the habitat. Because of the

large area which had to be remapped and the unanticipated degree of complexity in the habitat, much of the area was mapped as polygons formed of a mosaic of several different habitats. The CMP individual site report for Sheskinmore refers to the presence of dunes dominated by Juniper scrub at Mullyvea. Part of this polygon could not be accessed because of the presence of a bull, and this has been left unchanged and marked as unsurveyed in the SDM mapping GIS project. This unsurveyed area is not shown in Table 2 for the SDM area or revised baseline area.

Elsewhere, the area of ***2130 Fixed dunes (grey dunes)** at the site was reduced as additional ***2190 Humid dune slacks** were found and the area classified as ***21A0 Machairs** was increased. Greater areas of **2170 Dunes with creeping willow** were mapped than previously, and they were sufficiently mature to suggest that they had been present during the baseline survey. Part of the **2120 Marram dunes (white dunes)** mapped during the CMP at Trawmore were reclassified as **2190 Humid dune slacks**. The vegetation classification in this part of the site is complex, as upwelling and seepage occurs at the edge of the larger dune ridges and forms a wetland habitat. It was described during the Biomar project as SDX1 (Crawford *et al*., 1996); a wetland community with both freshwater and saline influences. By 2005, dune ridges had grown up seaward of the wetland, cutting off the main saline influence according to the CMP map. Aerial photographs show a wet area to the rear of the building dune ridge which was not differentiated from the 2120 Marram dunes (white dunes) at that time. In 2007, a Masters project at Sheskinmore described the habitat as "duneslack/wetland" (Barrett-Mold, 2007). Although the development of the wetland has not been typical of dune slack development, it constitutes a part of the beach with a strong groundwater influence which has been cut off by a dune ridge, and it was decided to classify it as **2190 Humid dune slacks** under the SDM methodology. ***2140 Decalcified *Empetrum* dunes** were recorded as a point feature in 2012 as they occupied an area of less than 400m^2. Because it was not possible to visit some parts of the site, only those areas which were surveyed directly or could be viewed easily from adjacent land are given in Table 2.

Table 2. Areas of Annex I dune habitats originally mapped at Sheskinmore during the baseline survey (Coastal Monitoring Project), the revised baseline areas and areas mapped during the Sand Dune Monitoring Project in 2012.

Habitat	Baseline survey (ha)	Revised baseline (ha)	Sand Dunes Monitoring Project (ha)
2110 Embryonic shifting dunes	8.48	8.48	10.17
2120 Marram dunes (white dunes)	17.25	14.77	8.30
*2130 Fixed dunes (grey dunes)	224.37	224.69	228.47
*2140 Decalcified *Empetrum* dunes	0.76	0.63	<0.04
*2150 Decalcified dune heath	40.35	2.06	2.70
2170 Dunes with creeping willow	2.26	2.50	2.50
2190 Humid dune slacks	4.36	7.57	12.85
*21A0 Machairs	16.54	24.25	21.28
Total	314.37	284.95	286.27

2.1.2 *Structure and Functions*

Structure and Functions were assessed for six Annex I sand dune habitats mapped at Sheskinmore. Table 3 shows the number of monitoring stops carried out in each habitat, number of criteria assessed and how many criteria failed the assessment. The Structure and Functions of **2110 Embryonic shifting dunes**, **2120 Marram dunes**, **2170 Dunes with creeping willow** and ***21A0 Machairs** were assessed as Favourable. Structure and Functions of ***2130 Fixed dunes (grey dunes)** and **2190 Humid dune slacks** were assessed as Unfavourable-Inadequate, failing on one and two criteria respectively.

Table 3. Annex I sand dune habitats at Sheskinmore for which Structure and Functions were assessed, with the number of monitoring stops, assessment criteria and the number of criteria that failed.

Habitat	No. monitoring stops	Total no. assessment criteria	No. failed criteria
2110 Embryonic shifting dunes	8	7	0
2120 Marram dunes (white dunes)	8	7	0
*2130 Fixed dunes (grey dunes)	16	11	1
2170 Dunes with creeping willow	8	10	0
2190 Humid dune slacks	8	11	2
*21A0 Machairs	8	10	0

2.1.3 *Future Prospects*

The impacts and activities recorded in sand dune habitats at Sheskinmore are shown in Table 4. Impact codes are assigned according to Ssymank (2010). Much of the site is maintained by non-intensive grazing of horses and cattle, which has a positive effect. Negative impacts affect small areas in the site, and are associated with agriculture and recreation. One negative impact, crop planting, may be associated with bird conservation.

Table 4. Impacts recorded in Annex I sand dune habitats at Sheskinmore in 2012. Source refers to whether the impact being scored originates inside or outside the Annex I habitat being assessed.

Habitat code	Impact code	Impact description	Intensity	Effect	Percent of habitat	Source
2110	G01.02	Walking, horse riding	Low	Neutral	75	Inside
2110	G02.08	Caravan park	Low	Negative	1	Outside
2110	G05	Campfires	Low	Neutral	1	Inside
2120	G01.02	Walking	Low	Neutral	1	Inside
*2130	A02.03	Crop planting	Medium	Negative	1	Inside
*2130	A04.01.01	Intensive cattle grazing	Medium	Negative	1	Inside
*2130	A04.02.01	Non-intensive cattle grazing	Low	Positive	90	Inside
*2130	A04.02.03	Non-intensive horse grazing	Low	Positive	90	Inside
*2130	A04.03	Undergrazing	Medium	Negative	10	Inside
*2130	D01.01	Paths and tracks	Medium	Negative	1	Inside
*2130	G01.02	Walking	Low	Neutral	10	Inside
*2130	G01.03.02	Off-road driving	Medium	Negative	1	Inside
*2130	G02.08	Caravan park	Low	Negative	5	Outside
*2130	G02.09	Bird hide	Low	Neutral	1	Inside
*2130	G05	Campfires	High	Negative	1	Inside

*2130	G05.09	Fencing	Medium	Positive	1	Inside
*2130	H05.01	Dumping	Medium	Negative	1	Inside
*2130	I02	*Pteridium aquilinum* encroachment	Medium	Negative	5	Inside
2140	X	No impacts	-	-	100	-
2150	A04.02.01	Non-intensive cattle grazing	Low	Neutral	100	Inside
2150	G01.02	Walking	Low	Neutral	5	Inside
2170	A04.02.01	Non-intensive cattle grazing	Medium	Positive	75	Inside
2170	G01.02	Walking	Low	Neutral	5	Inside
2190	A04.02.01	Non-intensive cattle grazing	Low	Positive	100	Inside
2190	A04.02.03	Non-intensive horse grazing	Low	Positive	100	Inside
2190	D01.01	Paths and tracks	High	Negative	1	Inside
2190	G01.02	Walking	Low	Neutral	1	Inside
2190	H05.01	Dumping	Medium	Negative	1	Inside
*21A0	A04.02.01	Non-intensive cattle grazing	Medium	Positive	85	Inside
*21A0	A04.02.03	Non-intensive horse grazing	Medium	Positive	10	Inside
*21A0	A04.03	Undergrazing	Medium	Neutral	5	Inside
*21A0	G01.02	Walking	Low	Neutral	1	Inside
*21A0	G01.03.02	Off-road driving	Medium	Negative	1	Inside
*21A0	G05.09	Fencing	Medium	Neutral	1	Inside
*21A0	I02	*Pteridium aquilinum* encroachment	Medium	Negative	1	Inside

2.2 Annex I habitat assessments

The conservation status of the Annex I habitats at Sheskinmore is discussed below. The present conservation status in 2012 is compared with the baseline status and if a habitat is not in Favourable status, the main reasons for the Unfavourable assessment are given. Areas recorded in 2012 are compared with the revised baseline areas. It should be borne in mind that natural processes such as erosion, deposition and succession are primary drivers of change on coastal habitats.

2.2.1 2110 Embryonic shifting dunes

This habitat is found at Ballireavy Strand and Trawmore Strand. The **2110 Embryonic shifting dunes** at Ballinreavy Strand are in a very dynamic zone and are likely to be part of a cycle of erosion and deposition, while dune building appears to be in progress at Trawmore, where succession and accretion appear to have occurred since the CMP survey was carried out.

Area

The area of **2110 Embryonic shifting dunes** at Sheskinmore has increased from 8.48 ha during the CMP to 10.17 ha in 2012. There was no evidence of loss due to anthropogenic activities. Area was assessed as Favourable during the CMP. During the SDM, Area was assessed as Favourable (stable).

Structure and Functions

All of the citeria passed in the Structure and Functions assessment. During the CMP, Structure and Functions were assessed as Favourable. Structure and Functions were assessed as Favourable (stable) during the SDM.

Future Prospects

The presence of the caravan park increased visitor pressure at Sheskinmore, but this was not considered to have a significant negative impact on the **2110 Embryonic shifting dunes**. No other negative impacts were recorded for the habitat. Future Prospects were assessed as Favourable during the CMP. During the SDM, Future Prospects were assessed as Favourable (stable).

Conservation assessment

All three parameters were assessed as Favourable both during the CMP and the SDM. The Conservation Status of **2110 Embryonic shifting dunes** was assessed as Favourable (stable).

2.2.2 2120 Marram dunes (white dunes)

The main area of **2120 Marram dunes (white dunes)** is located at the eastern end of Ballinreavy Strand, where large mobile ridges have formed almost perpendicular to the shore, following the path of the prevailing wind. Smaller patches also occur to the north and south of Trawmore Strand.

Area

The area of **2120 Marram dunes (white dunes)** decreased from 14.77 ha during the CMP to 8.30 ha during the SDM. This was the result of succession and erosion, and there was no sign of anthropogenic loss. Area was assessed as Unfavourable-Inadequate during the CMP because of erosion caused by visitors staying at the caravan park. In 2012, there was no indication of damage or erosion related to recreational use, and Area was assessed as Favourable (improving).

Structure and Functions

All of the criteria passed in the Structure and Functions assessment. During the CMP, *Ammophila arenaria* at Trawmore was unhealthy as a result of trampling, and Structure and Functions were assessed as Unfavourable-Inadequate. Structure and Functions were assessed as Favourable (improving) during the SDM.

Future Prospects

Walking was recorded as a neutral impact at Sheskinmore in 2012, and no negative impacts were noted. During the CMP, Future Prospects were assessed as Unfavourable-Inadequate because of the threat of recreational pressures. The habitat appeared to benefit from appropriate management in 2012, and Future Prospects were assessed as Favourable (improving).

Conservation assessment

All of the parameters were assessed as Favourable during the SDM. During the CMP, all of the parameters were assessed as Unfavourable-Inadequate because of pressures associated with recreation. The conservation status of **2120 Marram dunes (white dunes)** was assessed as Favourable (improving) during the SDM.

*2.2.3 *2130 Fixed dunes (grey dunes)*

This is the habitat with the greatest area at Sheskinmore. The dunes are well-developed, with large dune ridges over 20 m high in places. The dunes continue up-slope to Mullyvea where they become transitional with flush, dense bracken, scrub and heath. *Juniperus communis* is common in this part of the site, and **5130 Juniper scrub** is present in a mosaic with ***2130 Fixed dunes (grey dunes).**

Area

***2130 Fixed dunes (grey dunes)** has increased from 224.69 ha during the CMP to 228.47 ha during the SDM as a result of succession. No anthropogenic loss was recorded. Area was assessed as Unfavourable-Inadequate due to loss related to natural erosion and disturbance during the CMP. The type of erosion described in the CMP site report would not have resulted in an Unfavourable assessment under the current methodology. Area was assessed as Favourable (stable) during the SDM.

Structure and Functions

One of the criteria failed in the Structure and Functions assessment, and this assessed the presence of negative indicator species. *Senecio jacobaea* was present in ten of the sixteen monitoring stops, but with low cover values in each case. The presence of *Senecio jacobaea* can be related inappropriate winter grazing, but as overgrazing was not a problem for most of the site, it may indicate that the habitat is in a process of recovery after past overgrazing. Part of the habitat is undergrazed, and there was a very high scrub content in one stop. During the CMP, the habitat was assessed as Favourable despite one monitoring stop having failed due to disturbance and the presence of agricultural weeds. The disturbance which caused the habitat to fail the area assessment during the CMP would have been assessed under the Structure and Functions according to the current methodology. Structure and Functions were assessed as Unfavourable-Inadequate (stable) during the SDM.

Future Prospects

Undergrazing, intensive cattle grazing, paths and tracks, dumping, off road driving, a caravan park, campfires, crop planting and *Pteridium aquilinum* were recorded as negative impacts. Several of these impacts affected a very limited area and Future Prospects were assessed as Unfavourable-Inadequate. During the CMP, Future Prospects were assessed as Unfavourable-Inadequate. Future Prospects were assessed as Unfavourable-Inadequate (stable) during the SDM.

Conservation assessment

The results of the conservation assessment in 2012 were the same as they were during the CMP. The conservation status of ***2130 Fixed dunes (grey dunes)** was assessed as Unfavourable-Inadequate (stable) in 2012.

*2.2.4 *2140 Decalcified* Empetrum *dunes*

No assessment was carried out for this habitat, as the assessment of this habitat was not part of the remit of the SDM, and additionally, the area of ***2140 Decalcified *Empetrum* dunes** was below the minimum monitoring area. No impacts were recorded for this habitat in 2012.

*2.2.5 *2150 Decalcified dune heath*

This habitat was not assessed as part of this project, and no monitoring stops were carried out. There was no indication that any habitat loss had occurred due to human activities and no negative impacts were recorded.

2.2.6 2170 Dunes with creeping willow

2170 Dunes with creeping willow occur in four separate locations at Sheskinmore. They are found at the base of former dune slacks which have now dried out and no longer contain plant communities of humid conditions.

Area

The area of **2170 Dunes with creeping willow** was assessed as Favourable during the CMP. Area has remained stable since the baseline survey at 2.5 ha, and there is no indication of anthropogenic loss. Area was assessed as Favourable (stable) during the SDM.

Structure and Functions

All of the criteria passed in the Structure and Functions assessment. During the CMP, Structure and Functions were assessed as Favourable. Structure and Functions were assessed as Favourable (stable) during the SDM.

Future Prospects

No negative impacts were recorded from this habitat in 2012. Future Prospects were assessed as Favourable during the baseline survey. During the SDM, Future Prospects were assessed as Favourable (stable).

Conservation assessment

All three parameters were assessed as Favourable during the SDM, as they were during the CMP. The conservation status of **2170 Dunes with creeping willow** was assessed as Favourable (stable) during the SDM.

2.2.7 2190 Humid dune slacks

2190 Humid dune slacks were under-recorded during the CMP, and several additional slacks were mapped during the SDM. These were mainly located in the eastern portion of the site

near Sandfield and Beagh. The slacks here are very typical in their vegetation community and morphology, consisting of wet grassland which is seasonally flooded in winter. In the west, the slacks are quite unusual in an Irish context. The water table is high here, and many of the slacks contain pools all year round. Some of the slacks support communities typical of acidic conditions. Because of the height of the dunes, it is possible that further slacks have gone unrecorded between Magheramore and Mullyvea. The number, variety and unspoilt nature of the **2190 Humid dune slacks** makes Sheskinmore an important site for this habitat.

Area

Area has increased from 7.57 ha during the CMP to 12.85 ha during the SDM. This is due to the development of a fore-dune ridge which has cut off part of the beach at Trawmore Strand, leaving a large early-stage dune slack between the low fore dunes and the ***2130 Fixed dunes (grey dunes).** This area already contained a marshy community associated with the seepage zone at the top of the beach, and the brackish influence has now decreased because of the new dune ridges. The community is well developed for such an early stage in dune slack formation, but still contains areas of bare sand as well as vegetation. The water level at Sheskinmore is high, and standing water was present at the time of survey in June 2012. There was no evidence of anthropogenic loss. Area was assessed as Favourable during the CMP. During the SDM, Area was assessed as Favourable (stable).

Structure and Functions

Two of the criteria failed in the Structure and Functions assessment, and these assessed the proportion of broadleaved herbs and the amount of bare sand in the habitat. Most of the dune slacks at Sheskinmore are in good condition, but one of the stops in the Sandhills area was in poor condition, and this caused the habitat to be assessed as Unfavourable-Inadequate. **2190 Humid dune slacks** were assessed as Favourable during the CMP, but the dune slacks at Sandhills were not mapped or assessed at that time. Aerial photographs suggest that the habitat is recovering from past disturbance in this part of the site, and there are signs of disturbance dating to 2005. Structure and Functions were assessed as Unfavourable-Inadequate (stable) during the SDM.

Future Prospects

Two negative impacts were recorded in **2190 Humid dune slacks**. Paths and tracks negatively impacted on approximately 1% of the habitat. Dumping was occurring in one slack, and had caused a limited amount of disturbance. However, this affected less than 1% of the habitat, and about 99% of the habitat is managed appropriately. Under the current management, the recovery of previously disturbed slacks is likely to continue, and the habitat is expected to be assessed as Favourable in the next 6 to 12 years. Assuming no increase in dumping or paths and tracks, Future Prospects are assessed as Favourable (improving).

Conservation assessment

Area and Future Prospects were assessed Favourable and Structure and Functions were assessed as Unfavourable-Inadequate during the SDM. This habitat was assessed as Favourable during the CMP; however, the part of the site that was damaged was not

identified as part of the **2190 Humid dune slacks** at that time. In 2012, the habitat was assessed as Unfavourable-Inadequate (improving).

*2.2.8 *21A0 Machairs*

***21A0 Machair** is found in the vicinity of Sheskinmore Lough, grading into wet grassland and fen in parts. In the past, the land around the lake was drained and a sluice has been put in place in the outflow stream to regulate the surface level of the lake (NPWS, n.d.).

Area

Area of ***21A0 Machairs** has decreased from 24.25 ha during the CMP to 21.28 during the SDM, and this appears to be related to a rise in the surface level of Sheskinmore Lough. The loss is not considered to be anthropogenic. During the CMP, Area was assessed as Unfavourable-Inadequate because of changes in hydrology. Under the current methodology Area would have been assessed as Favourable. Area was assessed as Favourable (stable) during the SDM.

Structure and Functions

All of the criteria passed in the Structure and Functions assessment. During the CMP, three of the stops failed because they were lacking in diversity. The bryophyte cover was a little low in some stops, but none of the stops was so lacking in diversity that the habitat failed the assessment. Structure and Functions were assessed as Favourable (improving) during the SDM.

Future Prospects

Off-road driving and *Pteridium aquilinum* were recorded as negative impacts at Sheskinmore, but neither affected more than 1% of the habitat. The habitat is generally appropriately managed. During the CMP, Future Prospects were assessed as Favourable. Future Prospects were assessed as Favourable (stable) during the SDM.

Conservation assessment

All three of the parameters were assessed as Favourable in 2012. During the CMP, Area and Structure and Functions were assessed as Unfavourable-Inadequate because part of the site was species poor and the water level seemed to be rising at that time. Lack of species diversity was not noted in 2012 and the change in the water level was not considered to be the result of anthropogenic interference, but a return to a more natural hydrological regime. The conservation status of ***21A0 Machairs** was assessed as Favourable (improving) during the SDM.

3 DISCUSSION

3.1 Hydrology

The **2190 Humid dune slacks** at Sheskinmore are of particular interest from the point of view of hydrology. The presence of pools in dune slacks all year round in Ireland in unusual, and as well as having an impact on the vegetation communities, they are likely to support

different invertebrate communities from dune slacks with temporary water bodies. Alterations to the drainage regime at Sheskinmore Lough may be affecting the ***21A0 Machairs,** and this should be monitored over time.

3.2 Undergrazing

Parts of the site are undergrazed, and this has allowed rank vegetation to develop. *Pteridium aquilinum* was also present, although there were indications that attempts to control its spread had been successful in parts. Undergrazing can result in a reduction in the diversity of flowering plants and can allow scrub encroachment.

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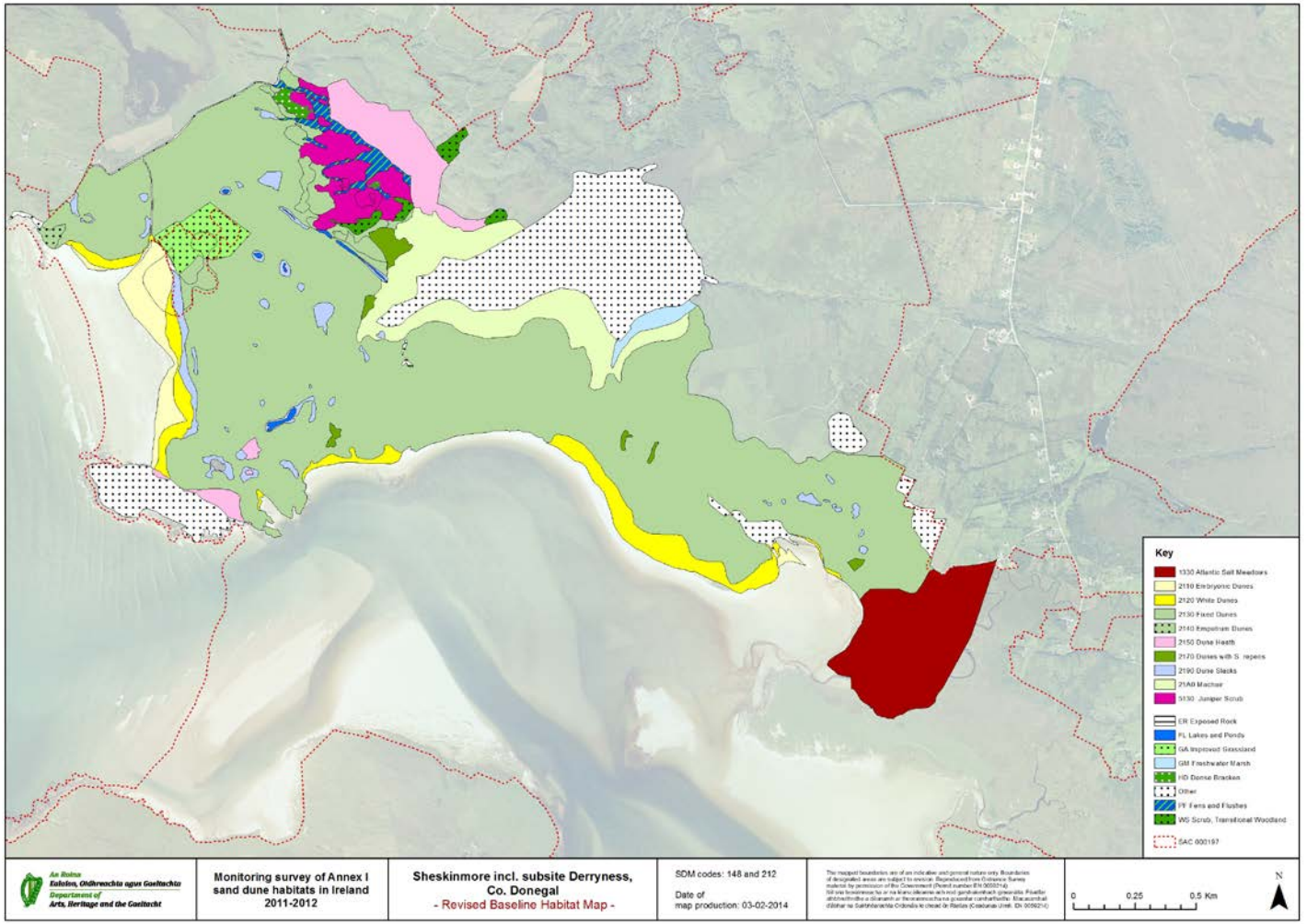
Key
1330 Atlantic Salt Meadows
2110 Embryonic Dunes
2120 White Dunes
2130 Fixed Dunes
2140 Empetrum Dunes
2150 Dune Heath
2170 Dunes with S repens
2190 Dune Slacks
21A0 Machair
5130 Juniper Scrub
ER Exposed Rock
FL Lakes and Ponds
GA Improved Grassland
GM Freshwater Marsh
HD Dense Bracken
Other
PF Ferns and Flushes
WS Scrub, Transitional Woodland
SAC 000197
An Roinn Ealaíon, Oidhreachta agus Gaeltachta
Department of Arts, Heritage and the Gaeltacht
Monitoring survey of Annex I sand dune habitats in Ireland 2011-2012
Sheskinmore incl. subsite Derryness, Co. Donegal
- Revised Baseline Habitat Map -
SDM codes: 148 and 212
Date of map production: 03-02-2014
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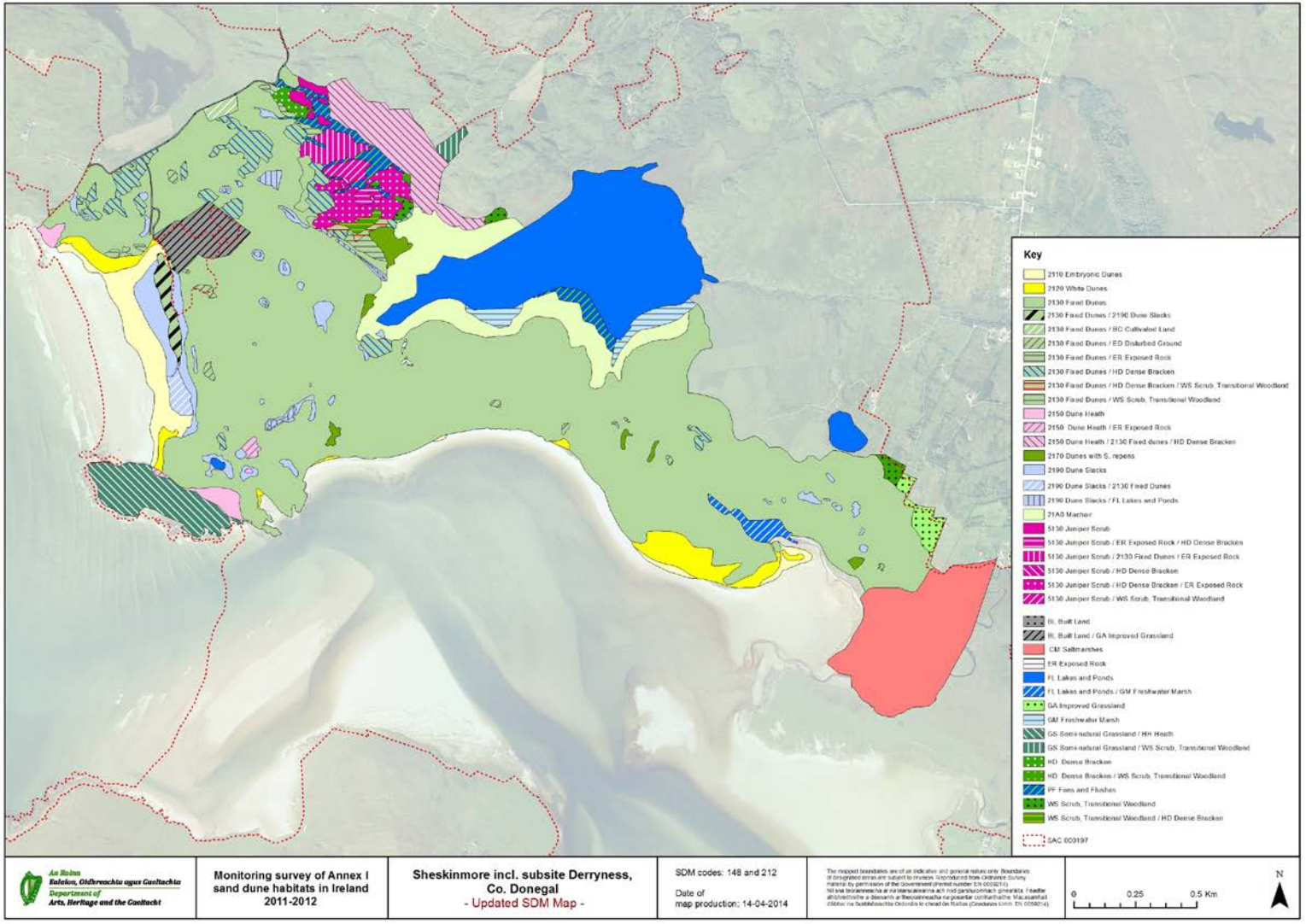
Key
2110 Embryonic Dunes
2120 White Dunes
2130 Fixed Dunes
2130 Fixed Dunes / 2190 Dune Slacks
2130 Fixed Dunes / BC Cultivated Land
2130 Fixed Dunes / ED Disturbed Ground
2130 Fixed Dunes / ER Exposed Rock
2130 Fixed Dunes / HD Dense Bracken
2130 Fixed Dunes / HD Dense Bracken / WS Scrub, Transitional Woodland
2130 Fixed Dunes / WS Scrub, Transitional Woodland
2150 Dune Heath
2150 Dune Heath / ER Exposed Rock
2150 Dune Heath / 2130 Fixed dunes / HD Dense Bracken
2170 Dunes with S. repens
2190 Dune Slacks
2190 Dune Slacks / 2130 Fixed Dunes
2190 Dune Slacks / FL Lakes and Ponds
21A0 Machair
5130 Juniper Scrub
5130 Juniper Scrub / ER Exposed Rock / HD Dense Bracken
5130 Juniper Scrub / 2130 Fixed Dunes / ER Exposed Rock
5130 Juniper Scrub / HD Dense Bracken
5130 Juniper Scrub / HD Dense Bracken / ER Exposed Rock
5130 Juniper Scrub / WS Scrub, Transitional Woodland
BL Built Land
BL Built Land / GA Improved Grassland
CM Saltmarshes
ER Exposed Rock
FL Lakes and Ponds
FL Lakes and Ponds / GM Freshwater Marsh
GA Improved Grassland
GM Freshwater Marsh
GS Semi-natural Grassland / HH Heath
GS Semi-natural Grassland / WS Scrub, Transitional Woodland
HD Dense Bracken
HD Dense Bracken / WS Scrub, Transitional Woodland
PF Fens and Flushes
WS Scrub, Transitional Woodland
WS Scrub, Transitional Woodland / HD Dense Bracken
SAC 000197
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Department of Arts, Heritage and the Gaeltacht
Monitoring survey of Annex I sand dune habitats in Ireland 2011-2012
Sheskinmore incl. subsite Derryness, Co. Donegal
- Updated SDM Map -
SDM codes: 148 and 212
Date of map production: 14-04-2014
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N