Courtmacsherry Estuary SAC (site code 1230)
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) and the Coastal Monitoring Project (CMP) 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 (2014). Conservation Objectives: Courtmacsherry Estuary SAC 001230. 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.

Courtmacsherry Estuary is located in west Cork, some 12km south of Bandon and immediately east of the village of Timoleague. The estuary consist of a drowned valley of the Argideen River, which is now filled with sediments, resulting in an extensive area of mudflat. The site is also of importance for ornithological reasons.

Courtmacsherry Estuary SAC (site code: 1230) is designated for a range of coastal habitats including vegetated shingle, saltmarsh and sand dunes. The following eight coastal habitats are included in the list of qualifying interests for the site (* denotes a priority habitat):

- Perennial vegetation of stony banks (1220)
- *Salicornia* and other annuals colonising mud and sand (1310)
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) (1330)
- Mediterranean salt meadows (*Juncetaliea maritimi*) (1410)
- Annual vegetation of driftlines (1210)
- Embryonic shifting dunes (2110)
- Shifting dunes along the shoreline with *Ammophila arenaria* (2120)
- Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130)*

The first habitat represents vegetated shingle, the next three are saltmarsh habitats, and the remainder are associated with sand dune systems. All eight of these habitats are found in close association with each other.

The distribution of vegetated shingle sites is presented in Appendix I, of saltmarsh habitats in Appendix II and sand dune habitats in Appendix III.

This backing document sets out the conservation objectives for the eight coastal habitats listed above in Courtmacsherry Estuary 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 **shingle** is based in part on the findings of the National Shingle Beach Survey (NSBS), which was carried out in 1999 on behalf of the National Parks and Wildlife

Service (NPWS) (Moore & Wilson, 1999). The distribution of known shingle sites in Courtmacsherry Estuary SAC is presented in Appendix I.

The NSBS visited the following sub-site within Courtmacsherry Estuary SAC:

1. Broadstrand Bay

Profiles and transects were recorded from each shingle beach and each site was assigned a crude High/Medium/Low interest ranking. A 'high interest' ranking denotes a site that is of high conservation value. The site may be of interest botanically or geomorphologically. A 'medium interest' ranking implies the site may be extensive but not of particular interest either botanically or geomorphologically. A 'low interest' ranking is reserved for small sites, highly damaged sites or sites that are of a very common classification. Broadstrand Bay is rated a site of 'high interest' as it has a well-developed and diverse vegetation cover, including a superb population of the rare yellow-horned poppy (*Glaucium flavum*) which is a characteristic species for this habitat type (Moore & Wilson, 1999). Internal NPWS files suggest that sea kale (*Crambe maritima*) also occurs here but it was not recorded during the NSBS.

The vegetated shingle habitat was not mapped at any of the sub-sites, but the vegetation was recorded, as were the human impacts and alterations at the site, which are useful tools for assessing the Structure and Functions of the site.

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 those reports.

The SMP surveyed, mapped and assessed a total of one sub-site within Courtmacsherry Estuary SAC (McCorry & Ryle, 2009):

1. Harbour View

The distribution of saltmarsh habitats within Courtmacsherry Estuary SAC is presented in Appendix II.

Harbour View saltmarsh is located in outer part of Courtmacsherry Estuary in west Co. Cork. This site is located at the head of Coolmain Bay and is positioned in the outer part of this estuary in the north-eastern corner of a secondary inlet that forms part of the main estuary. A small sand dune spit shelters most of the inlet at the southern end. This inlet has a mainly north-south orientation.

As part of the SMP, a detailed individual report and habitat maps were produced for the Harbour View sub-site and these are included in a set of Appendices to this document

(Appendix IV). The conservation objectives for the saltmarsh habitats in Courtmacsherry Estuary SAC are based primarily on the findings of the SMP at the Harbour View sub-site. There are additional areas of saltmarsh known to be present within the site, however, it is estimated that the one sub-site as surveyed by the SMP represents approximately 50% of the total area of saltmarsh within Courtmacsherry Estuary SAC.

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 this document should be read in conjunction with that report. As part of the Coastal Monitoring Project (CMP) a detailed individual report and habitat map were produced for one sub-site (Harbour View) and this is included in a set of Appendices to this document (Appendix V).

The conservation objectives for the sand dune habitats in Courtmacsherry Estuary are based on the findings of the individual report for this site, combined with the results of Gaynor (2008). It is thought that the sub-site as surveyed by the CMP represents the total area of sand dunes within Courtmacsherry Estuary 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 Perennial vegetation of stony banks

Perennial vegetation of stony banks is vegetation that is found at or above the mean high water spring tide mark on shingle beaches (i.e., beaches composed of cobbles and pebbles). It is dominated by perennial species (i.e. plants that continue to grow from year to year). The first species to colonise are annuals or short-lived perennials that are tolerant of periodic displacement or overtopping by high tides and storms. Level, or gently-sloping, high-level mobile beaches, with limited human disturbance, supports the best examples of this vegetation. More permanent ridges are formed by storm waves. Several of these storm beaches may be piled against each other to form extensive structures.

Broadstrand Bay consists of a cusped cobble beach. The shingle at this site is rated highly owing to the excellent vegetation and the population of yellow-horned poppy (*Glaucium*

flavum). Associated habitats include intertidal shingle. Lichens are also present (Moore & Wilson, 1999).

3.1 Overall Objective

The overall objective for 'perennial vegetation of stony banks' in Courtmacsherry Estuary SAC is to 'maintain the favourable conservation condition'. This objective is based on an assessment of the current condition of the habitat under a range of attributes and targets. The assessment is divided into three main headings (a) Range, (b) Area 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 for favourable condition is *'no decrease in extent from the established baseline'*. Bearing in mind that coastal systems are naturally dynamic and subject to change even within a season, this target is assessed subject to natural processes, including erosion and succession.

The exact current extent of this habitat in Courtmacsherry Estuary SAC is unknown. The National Shingle Beach Survey recorded the presence of vegetated shingle but did not map the extent at one sub-site: Broadstrand Bay (Moore & Wilson, 1999).

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

The location of the known shingle site is presented in Appendix I.

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

3.4 Structure and Functions

A fundamental aim of shingle conservation is to facilitate natural mobility. Shingle beaches are naturally dynamic systems, making them of geomorphological interest as well as ecological interest. They are constantly changing and shingle features are rarely stable in the long term.

The shingle beaches within Courtmacsherry Estuary SAC appear to be functioning naturally, although the presence of a car park with a sea wall may be causing some restrictions to beach dynamics (Moore & Wilson, 1999).

3.4.1 Functionality and sediment supply

The health and on-going development of this habitat relies on a continuing supply of shingle sediment. This may occur sporadically as a response to storm events rather than continuously. Interference with the natural coastal processes, through offshore extraction or coastal defence structures in particular, can interrupt the supply of sediment and lead to beach starvation.

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

3.4.2 Vegetation structure: zonation

Ecological variation in this habitat type depends on stability; the amount of fine material accumulating between the pebbles; climatic conditions; width of the foreshore and past management of the site. The ridges and lows also influence the vegetation patterns, resulting in characteristic zonations of vegetated and bare shingle. In the frontal less stable areas of shingle, the vegetation tends to be dominated by annuals and short-lived salt-tolerant perennials. Where the shingle is more stable the vegetation becomes more perennial in nature and may include grassland, heathland and scrub, depending on the exact nature of the site. The presence of lichens indicates long term stability of the shingle structure. Transitions to inter-tidal, saltmarsh and sand dune habitats occur at this site.

The Broadstrand Bay sub-site is associated with intertidal shingle. Lichens were also recorded at this site by the NSBS indicating a degree of stability (Moore & Wilson, 1999).

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

3.4.3 Vegetation composition: typical species & sub-communities

The degree of exposure, as well as the coarseness and stability of the substrate determines species diversity. The shingle at Courtmacsherry Estuary is known to support a typical flora for this habitat.

Broadstrand Bay supports a species-rich flora including the following species: spear-leaved orache (*Atriplex prostrata*), common cleavers (*Galium aparine*), sea milkwort (*Glaux maritima*), curled dock (*Rumex crispus*), sea mayweed (*Tripleurospermum maritimum*), sea samphire (*Crithmum maritimum*), wild carrot (*Daucus carota*), creeping red fescue (*Festuca rubra*), birdsfoot trefoil (*Lotus corniculatus*), sea beet (*Beta vulgaris* ssp. *maritima*) and sea campion (*Silene uniflora* (Moore & Wilson, 1999). Of particular note is the presence of a large population of yellow-horned poppy (*Glaucium flavum*), which is considered characteristic of this habitat type.

The target for this attribute is to ensure that the typical flora of vegetated shingle is maintained, as are the range of sub-communities within the different zones.

3.4.4 Vegetation composition: negative indicator species

Where the shingle becomes more stabilised negative indicator species can become an issue. Negative indicator species can include non-native species (e.g. *Centranthus ruber, Lupinus arboreus*); species indicative of changes in nutrient status (e.g. *Urtica dioica*) and species not considered to be typical of the habitat (e.g. *Pteridium aquilinum*).

The NSBS noted the presence of nettles (*Urtica dioica*) at Broadstrand Bay, but did not note the abundance.

The target for this attribute is that negative indicator species (including non-native species) should make up less than 5% of the vegetation cover.

4 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)**
- **Mediterranean salt meadows (*Juncetalia maritimi*) (1410)**
- Mediterranean and thermo-Atlantic Halophilous scrubs (Sarcocornetea fruticosi)

The first three habitats (in bold) are listed as Qualifying Interests for Courtmacsherry Estuary SAC. The last habitat is restricted in its distribution to sites in the southeast of the country.

The distribution of saltmarsh habitats within Courtmacsherry Estuary SAC is presented in Appendix II.

The SMP surveyed, mapped and assessed the following saltmarsh sub-site within the SAC (McCorry & Ryle, 2009):

1. Harbour View (Appendix IV)

4.1 Overall Objectives

The overall objective for '*Salicornia* and other annuals colonising mud and sand' in Courtmacsherry Estuary SAC is to '*maintain the favourable conservation condition*'.

The overall objective for 'Atlantic salt meadows' in Courtmacsherry Estuary SAC is to '*restore the favourable conservation condition*'.

The overall objective for 'Mediterranean salt meadows' in Courtmacsherry Estuary SAC is to '*maintain 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. 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.

A baseline habitat map of all saltmarsh in the Courtmacsherry Estuary SAC was produced based on the findings of the SMP (McCorry & Ryle, 2009) and is presented in Appendix II. A total of 26.38ha of saltmarsh habitat was mapped by the SMP within the SAC at Harbour View and an additional 24.02ha of potential saltmarsh habitat was identified using aerial photographs, to give a total estimated area of 40.40ha for the SAC.

The total areas of each saltmarsh habitat within the SAC and the total area of the habitat within the sub-site as mapped by the SMP are presented in the following tables.

There are a number of differences in the figures below. Most of the differences can be explained by the fact that the SMP mapped the total saltmarsh resource at Courtmacsherry Estuary and not all of the saltmarsh mapped is contained within the SAC boundary. In addition, the total area within the SAC can be greater than given in the SMP as the SMP did not include any mosaics when calculating their total areas. The following rules were applied when calculating the areas 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.

Sub-site	**Total area (ha) of *Salicornia* mudflats (excluding mosaics) from SMP**	**Total area (ha) of *Saliconia* mudflats within SAC boundary (including mosaics)**
Harbour View	1.18	1.18
Total	**1.18**	**1.18**

In view of the fact that this sub-site was rated as 'Favourable' for extent by the SMP (McCorry & Ryle, 2009), the target is that the area of *Salicornia* mudflats should be stable or increasing, subject to natural processes, including erosion and succession.

Sub-site	**Total area (ha) of ASM (excluding mosaics) from SMP**	**Total area (ha) of ASM within SAC boundary (including mosaics)**
Harbour View	11.04	10.79
Potential ASM	21.59	21.59
Total	**32.63**	**32.38**

In view of the fact that the sub-site was rated as 'Favourable' for extent by the SMP (McCorry & Ryle, 2009), the target is that the area of Atlantic salt meadows should be stable or increasing, subject to natural processes, including erosion and succession.

Sub-site	**Total area (ha) of MSM (excluding mosaics) from SMP**	**Total area (ha) of MSM within SAC boundary (including mosaics)**
Harbour View	3.94	3.45
Potential MSM	3.39	3.39
Total	**7.33**	**6.84**

In view of the fact that this sub-site was rated as 'Favourable' for extent by the SMP (McCorry & Ryle, 2009), the target is that the area of Mediterranean salt meadows should be stable or increasing, subject to natural processes, including erosion and succession.

4.3 Range

4.3.1 Habitat distribution

Saltmarsh has developed at several different locations at this site (see Appendix II for map). This inlet is sheltered by a sand dune spit that extends from the west side and cuts off a large intertidal area called Garreneteen Strand. A small river flows into the inlet at the northern end. The inlet is quite narrow at the northern end and becomes much wider in the southern section. The intertidal area is divided into two main sections by a regional road bridge (R600) that crosses the estuary and the southern section is called Garreneteen Strand. Garreneteen Strand is a wide area of intertidal mudflats that drains through a much narrower channel between the sand dune complex and the mainland on the eastern side of the estuary. Part of

the saltmarsh has developed in the sheltered intertidal area behind a sand dune complex on the west side of the site. Saltmarsh has also developed in the intertidal area north of the road bridge. Saltmarsh is also present in the northern part of this inlet in previously re-claimed land (McCorry & Ryle, 2009).

The distribution of each habitat at the Harbour View sub-site can be found in Appendix IV at the end of this report.

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.

4.4 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 Courtmacsherry Estuary SAC in terms of its structure and functions depends on a range of attributes for which targets have been set as outlined below.

4.4.1 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, or where necessary restore, the natural circulation of sediment and organic matter, without any physical obstructions.

4.4.2 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.

Creeks and pans are well developed throughout the saltmarsh at Harbour View (McCorry & Ryle, 2009).

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

4.4.3 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).

4.4.4 Vegetation structure: zonation

Saltmarshes are naturally dynamic coastal systems. 'Atlantic salt meadows' is the dominant saltmarsh habitat at Courtmacsherry Estuary SAC where it occurs in a mosaic with 'Mediterranean 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 inter-tidal, shingle and sand dune habitats.

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

4.4.5 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.

There is evidence to suggest that the saltmarsh at Courtmacsherry Estuary SAC was grazed by cattle and sheep in the past. However, no grazers were present on the day of the survey (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.

4.4.6 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.

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

4.4.7 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 Courtmacsherry Estuary area.

Typical species		
Lower marsh	**Low-mid marsh**	**Mid-upper marsh**
Salicornia spp.	*Puccinellia maritima*	*Festuca rubra*
Suaeda maritima	*Triglochin maritima*	*Juncus gerardii*
Puccinellia maritima	*Plantago maritima*	*Armeria maritima*
Aster tripolium	*Atriplex portulacoides*	*Agrostis stolonifera*
	Aster tripolium	*Limonium humile*
	Spergularia sp.	*Glaux maritima*
	Suaeda maritima	*Seriphidium maritimum*
	Salicornia spp.	*Plantago maritima*

	Glaux maritima Turf fucoids	*Aster tripolium* *Juncus maritimus* *Triglochin maritima* *Blysmus rufus* *Eleocharis uniglumis* *Leontodon autumnalis* *Carex flacca* *Carex extensa* Turf fucoids

Harbour View saltmarsh is notable for the presence of small patches of a rarer type of MSM dominated by Sharp Rush (*Juncus acutus*). This species can also be considered a species of local distinctiveness. This vegetation type is much rarer than the more typical MSM vegetation type dominated by Sea Rush (*Juncus maritimus*).

4.4.8 Vegetation structure: negative indicator species

The only invasive and non-native species recorded on saltmarshes during the SMP was common cordgrass (*Spartina anglica*). Isolated clumps of *Spartina* are found scattered throughout the site and the spread of the species is thought to have caused considerable losses in the past to the mudflat habitat. *Spartina* swards have been recorded covering an area of 4.9ha in the Harbour View sub-site (see site report in Appendix IV) and are considered a threat to the mudflats, although the rate of spread is slow.

The aim is that negative indicators such as *Spartina* should be absent or under control. The current target for this particular site is no significant expansion, with no new sites and an annual spread of less than 1% where it is already known to occur.

5 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 9 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 (2150) *
- Dunes with *Salix repens* (2170)
- Humid dune slacks (2190)
- Machair (21A0) *

Four dune habitats indicated in bold above were recorded by Ryle *et al*. (2009) from Courtmacsherry Estuary, all of which are listed as Qualifying Interests for the SAC. These habitats include mobile areas at the front as well as more stabilised parts of dune systems.

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 than in the embryonic dunes, 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 refer 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).

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.

Detailed descriptions from the Coastal Monitoring Project (Ryle *et al.,* 2009) of each sand dune habitat found at Harbour View are presented in Appendix V. A total of 5.50ha of sand dune habitat was mapped within the Courtmacsherry Estuary SAC, all of which represents habitats that are listed as qualifying interests for this particular site.

5.1 Overall objectives

The overall objective for 'Annual vegetation of drift lines' in Courtmacsherry Estuary SAC is to 'maintain the favourable conservation condition'.

The overall objective for 'Embryonic shifting dunes' in Courtmacsherry Estuary SAC is to 'maintain the favourable conservation condition'.

The overall objective for 'Shifting dunes along the shoreline with *Ammophila arenaria* (white dune)' in Courtmacsherry Estuary SAC is to 'maintain the favourable conservation condition'.

The overall objective for 'Fixed coastal dunes with herbaceous vegetation' in Courtmacsherry Estuary SAC is to 'maintain 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.

5.2 Area

5.2.1 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 in Courtmacsherry Estuary SAC during the Coastal Monitoring Project (CMP) (Ryle *et al*., 2009). This map is included with the individual site report in Appendix V at the end of this document. The total areas of each sand dune habitat within the SAC as estimated by Ryle *et al*. (2009) are presented in the second column of the following table. These figures were subsequently checked and adjusted to take into account some overlapping polygons and mapping errors. The adjusted figures are presented in the final column.

Habitat	**Total area (ha) of habitat from CMP**	**Total area (ha) of habitat within SAC boundary**
Annual vegetation of drift lines	0.13	0.14
Embryonic shifting dunes	0.69	0.65
Shifting dunes along the shoreline with *Ammophila arenaria*	0.41	0.41
Fixed coastal dunes with herbaceous vegetation	4.55	4.31
Total	**5.78**	**5.50**

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.

5.3 Range

5.3.1 Habitat distribution

The distribution of sand dune habitats at Courtmacsherry Estuary as mapped by Ryle *et al.* (2009) is presented in Appendix III.

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.

5.4 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 Courtmacsherry Estuary SAC in terms of structure and functions depends on a range of attributes for which targets have been set as outlined below.

5.4.1 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, thus 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.

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

5.4.2 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.

Courtmacsherry Estuary supports a range of dune habitats that are part of a larger coastal ecosystem at Harbour View. The dune habitat grades into an extensive saltmarsh system (Ryle *et al*., 2009).

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

5.4.3 Vegetation structure: bare ground

This target applies to the fixed dunes. 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 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 including invertebrates, helping to increase biodiversity.

Recreational pressure is impacting on the fixed dunes at Courtmacsherry Estuary, however it is unclear how much of the bare sand visible can be attributable to anthropogenic factors and how much is due to natural erosion.

The target is to achieve up to 10% bare sand. This target is assessed subject to natural processes.

5.4.4 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.

5.4.5 Vegetation structure: vegetation height

This attribute applies to the fixed dune habitat. 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).
There was evidence to suggest that Harbour View dunes were grazed by cattle and horses in the past, but there were no grazers present at the time of the survey (Ryle *et al*., 2009).

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

5.4.6 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 polytrichus*), kidney vetch (*Anthyllis vulneraria*), wild pansy (*Viola tricolor*) and biting stonecrop (*Sedum acre*).

The fixed dunes at Courtmacsherry Estuary are not particularly species-rich but they do support a range of typical fixed dune species, including pyramidal orchid (*Anacamptis pyramidalis*), kidney vetch (*Anthyllis vulneraria*), wild carrot (*Daucus carota*), lady's bedstraw (*Galium verum*), cat's ear (*Hypochaeris radicata*), bird's-foot trefoil (*Lotus corniculatus*), ribwort plantain (*Plantago lanceolata*), smooth meadow-grass (*Poa pratensis*) and dandelion (*Taraxacum* agg) (Ryle *et al*., 2009).

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

5.4.7 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.

There were no older fixed dune plant communities, such as those that may include bracken (*Pteridium aquilinum*) and burnet rose (*Rosa pimpinellifolia*) (Ryle *et al*., 2009).

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

5.4.8 Vegetation composition: scrub/trees

This attribute only applies to the fixed dunes. 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.

The target for this attribute therefore is that the cover of scrub and tree species should be under control or represent no more than 5% of the vegetation cover.

6 References

Commission of the European Communities (2007). *Interpretation Manual of European Union Habitats – EUR 27*. DG Environment-Nature and Biodiversity, Brussels.

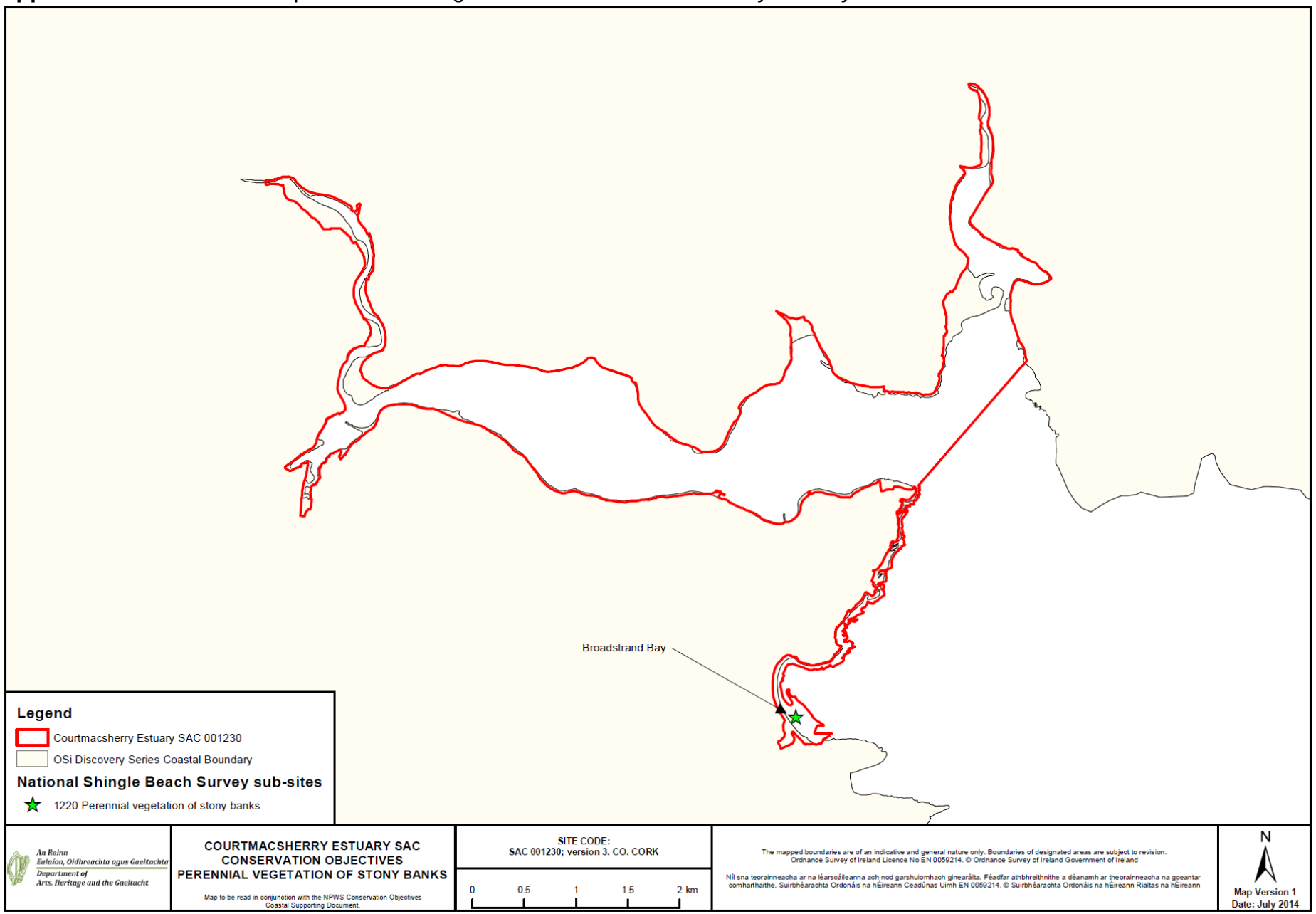
Gaynor, K. (2008). *The phytosociology and conservation value of Irish sand dunes*. Ph.D. Thesis, National University of Ireland, Dublin.

McCorry, M. and Ryle, T. (2009). *Saltmarsh Monitoring Project 2007-2008*. Unpublished report to the National Parks and Wildlife Service, Dublin.

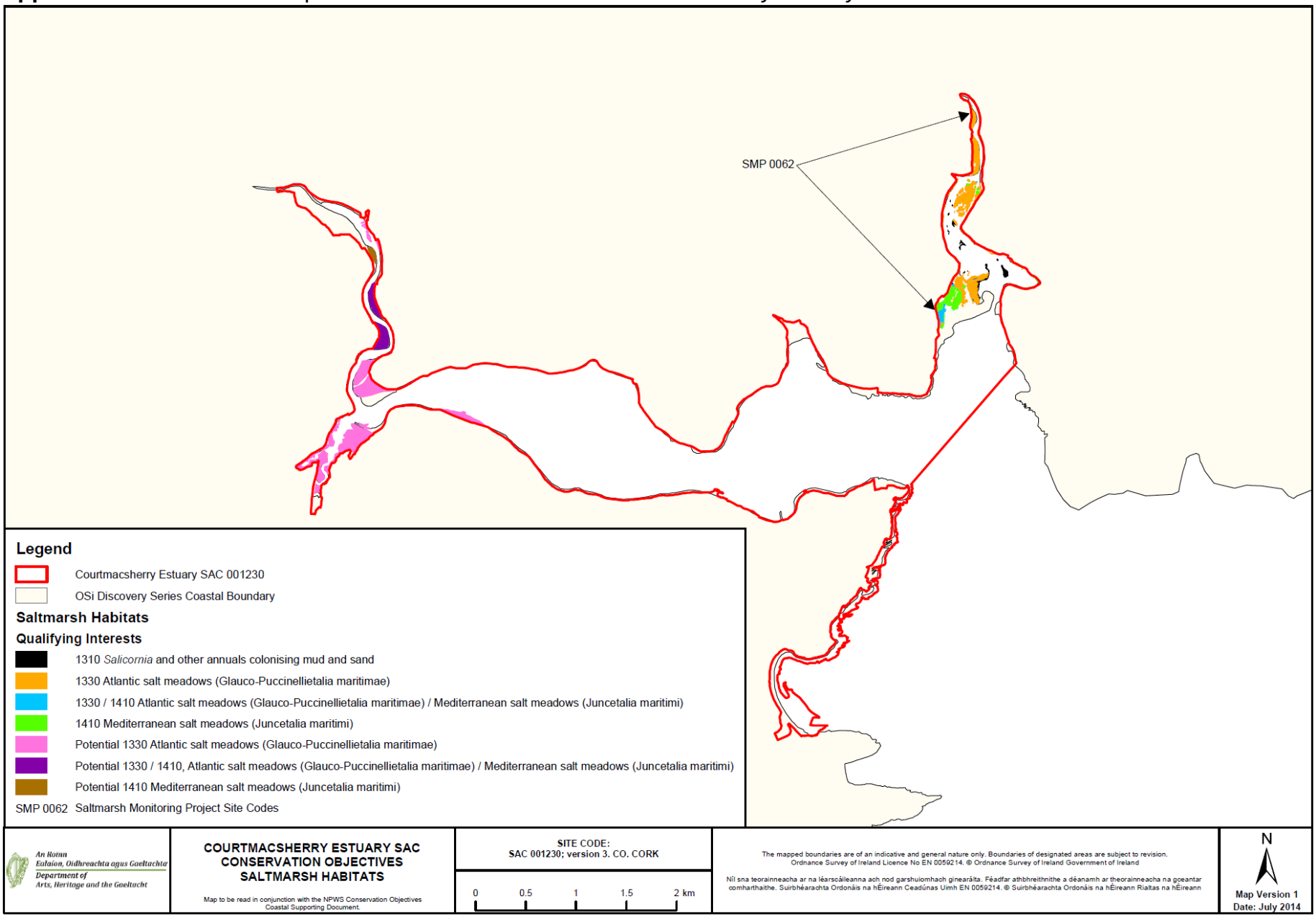
Moore D. and Wilson, F. (1999). *National Shingle Beach Survey of Ireland 1999.* Unpublished report to NPWS, Dublin.

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

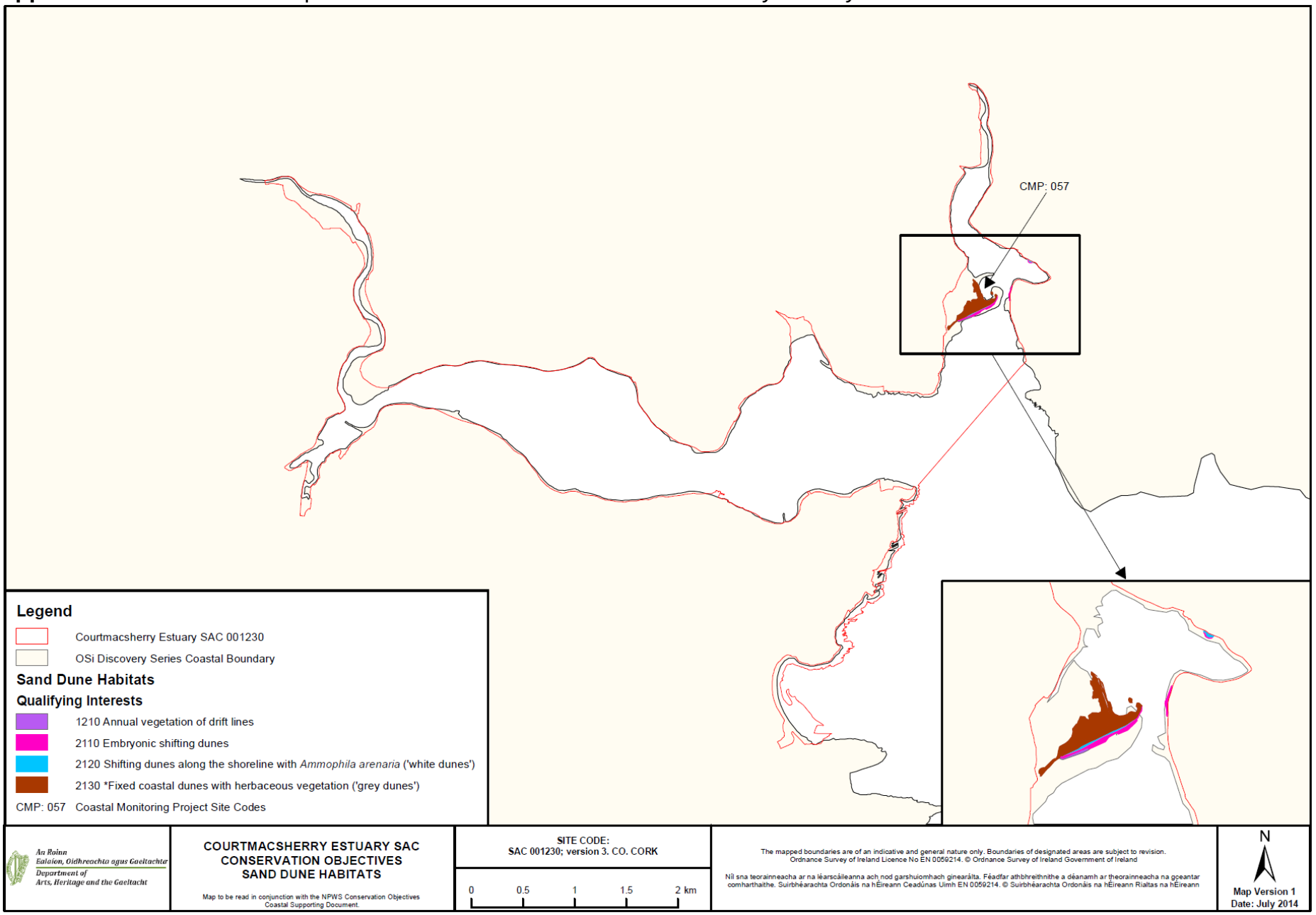
Appendix I – Distribution map of known shingle sites within Courtmacsherry Estuary SAC



Appendix II – Distribution map of saltmarsh habitats within Courtmacsherry Estuary SAC



Appendix III – Distribution map of sand dune habitats within Courtmacsherry Estuary SAC



Appendix IV – Site report and habitat map for Harbour View from Saltmarsh Monitoring Project (McCorry & Ryle, 2009)

SITE DETAILS

SMP site name: **Harbour View**	SMP site code: **SMP0062**
Dates of site visit **05-06/06/2008**	CMP site code: **57**
SM inventory site name: **Harbour View**	SM inventory site code: **189**
NPWS Site Name: **Courtmacsherry Estuary**	
NPWS designation cSAC: **1230**	MPSU Plan: **old format plan available**
pNHA: **1230**	SPA: **N/A**
County: **Cork**	Discovery Map: **87** Grid Ref: **153260, 045210**
Aerial photos (2000 series): **O 6695-A,B,C,D; O 6668-C,D**	6 inch Map No: **Co 123, 124, 136, 137**

Annex I habitats currently listed as qualifying interests for Courtmacsherry Estuary cSAC:

H1310 ***Salicornia*** **and other annuals colonizing mud and sand**

H1330 **Atlantic salt meadows (Glauco-Puccinellietalia maritimae)**

H1410 **Mediterranean salt meadows (Juncetalia maritimi)**

Other SMP sites within this SAC/NHA:

Saltmarsh type: **Sandflats** Substrate type: **Sand/Mud**

SITE DESCRIPTION

Harbour View saltmarsh is located in outer part of Courtmacsherry Estuary in west Co. Cork. This site is located at the head of Coolmain Bay and is positioned in the outer part of this estuary in the north-eastern corner in a secondary inlet that forms part of the main estuary. A small sand dune spit shelters most of the inlet at the southern end. This inlet has a mainly north-south orientation. Kilbrittain village is located 1.5 km to the north of this site and Timeoleague Town is located 6.5 km to the west of this site. The landscape of this area is dominated by low-lying farmland. A small river flows into the inlet. The sand dune complex and beach along the front of the spit is an important local amenity. There are several tracks across the sand dunes. There are minor roads along the shoreline on both sides of the inlet.

Saltmarsh has developed at several different locations at this site. This inlet is sheltered by a sand dune spit that extends from the west side and cuts off a large intertidal area called Garreneteen Strand. A small river flows into the inlet at the northern end. The inlet is quite narrow at the northern end and becomes much wider in the southern section. The intertidal area is divided into two main sections by a regional road bridge (R600) that crosses the estuary and the southern section is called Garreneteen Strand. Garreneteen Strand is a wide area of intertidal mudflats that drains through a much narrower channel between the sand dune complex and the mainland on the eastern side of the estuary. Part of the saltmarsh has developed in the sheltered intertidal area behind a sand dune complex on the west side of the site. Saltmarsh has also developed in the intertidal area north of the road bridge. Saltmarsh is also present in the northern part of this inlet in previously re-claimed land.

Harbour View saltmarsh is part of Courtmacsherry Estuary cSAC. This cSAC is designated for its range of coastal habitats including extensive intertidal mudflats in the estuary and the

sand spit located at Harbour View. Several sand dune habitats are found on this sand spit and there are notable transitions to freshwater and saltmarsh on the landward side of this spit. The intertidal flats of the estuary are also used by notable numbers of wintering waterfowl.

Three Annex I saltmarsh habitats are present at Harbour View, *Salicornia* flats, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM). All three saltmarsh habitats are listed as qualifying interests for this cSAC. There is also a significant area of *Spartina* swards on the intertidal flats at this site, although this habitat is not considered as an Annex I habitat any more. Saltmarsh has also developed at other locations in the estuary including Timeoleague and Courtmacsherry. Timeoleague saltmarsh is listed on the SM inventory (Curtis and Sheehy-Skeffington 1998). This site was not surveyed during the SMP. Harbour View sand dune complex was surveyed by the Coastal Monitoring Project in 2006.

Nearly all of saltmarsh habitat mapped at this site is located within the cSAC boundary. Only small narrow strips of habitat have been excluded by the digital cSAC boundary. The OSI 6 inch map was used to draw this boundary and there are very small differences at several locations between the 6 inch map and the current shoreline. ASM saltmarsh extends higher than the lower shoreline boundary (used to draw the cSAC boundary) at several locations and these small areas are excluded (about 0.025 ha).

This site is notable for the presence of Sharp Rush (*Juncus acutus*) at several locations on the sand dune complex and along the upper saltmarsh boundary with the saltmarsh at Harbour View. This uncommon species has a scattered distribution along the southern and south-east coast of Ireland. It is much more rarely found on saltmarshes compared to Sea Rush (*Juncus maritimus*). Stands of saltmarsh vegetation dominated by either Sea Rush or Sharp Rush can be classified as MSM. There are very few saltmarshes in Ireland with the rarer MSM sub-type dominated by Sharp Rush present.

SALTMARSH HABITATS

General description

The saltmarsh can be divided into 4 main sub-sites, Garreneteen Strand, Garreneteen Strand east, north of the road bridge and Glandduff at the northern end. There is also some minor saltmarsh development in other parts of the site around the shoreline.

Garreneteen Strand

This saltmarsh has developed at the back of the sand spit at Harbour View and a mainly sandy substrate. It is the largest and most diverse sub-site. Saltmarsh has developed adjacent to fixed dunes, freshwater marsh and scrub habitats that are present at the back of the sand spit. This sub-site is notable for the excellent zonation that has developed between the saltmarsh habitats and the other coastal habitats in this coastal complex. *Salicornia* flats have developed at the seaward (eastern) edge of the saltmarsh. A large area of *Spartina* swards has developed on the north-east corner of this site adjacent to the intertidal mudflats. Atlantic salt meadows are present at the landward side of these habitats. The ASM is sub-divided by several ridges with fixed dune grassland. The main fixed dune ridge runs along the main track in a north-south orientation and divides the saltmarsh into two main sections. This ridge may not be a natural feature. This ridge contains a transitional fixed dune community along the western side and adjacent to the saltmarsh that is characterised by large clumps of Sharp Rush and is dominated by Twitch and some Sea Couch. This zone is about 20-30 m wide. It has developed on sand and also contains species such as Red Fescue, Birdsfoot, Ladies Bedstraw, Sow-thistle, Sea Milkwort, Common Scurvy-grass, Sea

Pink, Curled Dock Parsley Water-dropwort, Sea Purslane, Long-bracted Sedge and Marram. The presence of the fixed dune indicators meant that it was not classified as MSM.

Further west on the landward side of this ridge and the main track there is significant development of MSM and ASM/MSM mosaic in the area between the western shoreline and the sand dunes. There is also a small amount of the second MSM sub-type dominated by Sharp Rush in this area. Sharp Rush is also found in adjacent fixed dune grassland and this was not considered to be part of the Annex I habitat. There is some development of non-Annex I saltmarsh stands dominated by Common Reed and Sea Club-rush along the landward side of this saltmarsh.

Some of this saltmarsh is relatively young and has only developed in the past 150 years. This saltmarsh development is related to the growth of the sand dune spit. The 1st and 2nd edition OSI six inch maps show that the sand dune spit was much smaller in the past, as was the other habitats including the saltmarsh habitats developing behind the sand dune spit.

Garreneteen Strand East

This saltmarsh is a much smaller area and is located to the east of the main saltmarsh behind the sand dune spit. This saltmarsh is dominated by a large area of dense *Spartina* sward that has vegetated an elevated bank of intertidal mudflats. *Salicornia* flats have developed on the seaward (western side) of this *Spartina* sward.

North of the road bridge

This large area of saltmarsh is dominated by ASM and is positioned towards the northern part of the inlet. This saltmarsh has developed on a muddy substrate. There are small amounts of MSM on this saltmarsh. Common Cordgrass has colonised parts of this saltmarsh along the southern side and has also infilled small patches of mudflats between small saltmarsh 'islands'. The river channel is positioned on the west side of this saltmarsh and there are smaller minor channels on the east side near the shoreline that are infilling with Common Cordgrass. A saltmarsh cliff is present along the western (channel) side of this saltmarsh and marks the lower boundary. This large area has been established for a relatively long time and is marked on the 1st edition OSI 6 inch map.

Further south there are several smaller patches of saltmarsh isolated from the main section. These smaller patches are younger and are subject to changes related to changes in the position of the channel. Therefore, they are more dynamic. One of these sections has an area of saltmarsh where there is some accretion and there is zonation between *Salicornia* flats, *Spartina* sward and pioneer ASM. There is also some saltmarsh development on the west side of the main channel.

Glanduff

This saltmarsh is located at the northern end of the inlet. The saltmarsh is found behind an old berm that is built on along the seaward edge and is now breached at several locations. A drain is positioned along the inner side of this berm. The berm is covered with coastal grassland and there are also patches of scrub along the berm. This saltmarsh was reclaimed in the past but has now reverted back to the saltmarsh. The saltmarsh is dominated by ASM and is sub-divided into several sections by drains. There is a small amount of *Spartina* sward at the southern end of the area. There are several small patches of ASM in the main river channel outside the berm. There is some transition along the landward side of this saltmarsh to a non Annex I saltmarsh community dominated by Sea Club-rush.

At the northern end of the inlet a small amount of reed marsh dominated by Sea Club-rush has developed. These stands have been classified and mapped as CM2 or other Non-Annex

saltmarsh vegetation in accordance with the SMP project. A transition between this vegetation and a small amount of wet grassland is present at the point where the highest tide flows up the river. Twitch (*Elytrigia repens*)-dominated grassland was also classified as other saltmarsh (CM2).

Table 3.1. Area of saltmarsh habitats mapped at Harbour View.

EU Code	Habitat	Area (ha)
1310	*Salicornia* and other annuals colonizing mud and sand (1310)	1.183
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	11.040
1410	Mediterranean salt meadows (Juncetalia maritimi)	3.937
non-Annex	*Spartina* swards	4.926
	Total	**21.086**

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

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

There is a significant and notable area of *Salicornia* flats developed at this site. The largest area has developed on a raised accreting muddy sandflat bank adjacent to *Spartina* sward at Garreneteen Strand East. There are few other saltmarsh species within this area apart from scattered clumps of Common Cordgrass (overall cover < 1% within the *Salicornia* flat habitat). Some of this habitat adjacent to the *Spartina* sward on the eastern side could be classified as pioneer ASM with the appearance of species Common Saltmarsh-grass, Sea Purslane, Lax-flowered Sea Lavender and Sea Pink and Greater Sea Spurrey with the *Salicornia* flats habitat and the adjacent *Spartina* sward, which is quite open and contains abundant bare substrate cover. This may be an indication of succession to ASM at this location in the future.

A narrow band of *Salicornia* flats has also developed along the east side of the ASM and *Spartina* sward at Garreneteen Strand. Small clumps of Common Cordgrass are locally frequent within this habitat. The *Salicornia* flats have developed adjacent to the edge of the ASM dominated by Sea Purslane.

There is a small amount of *Salicornia* flats to the north of the road bridge. This is also developing on an accreting mud bank in association with *Spartina* swards and pioneer ASM. Small clumps of Common Cordgrass are found within this *Salicornia* flat (overall cover < 5%).

Atlantic salt meadows (H1330)

The ASM is quite well-developed and is also quite diverse in structure due to the presence of saltmarsh of various ages, including some relatively young saltmarsh, and the development of saltmarsh on different substrates.

Several vegetation communities are present within the ASM at this site. This is best seen at Garreneteen Strand. The ASM is divided into several sections by several features such as the main track and several old embankments. ASM saltmarsh to the east of the track is dominated by a low marsh community and has indicators of being relatively young and undeveloped compared to other more established saltmarsh. .. This is dominated by Sea Purslane and Common Saltmarsh-grass. There are signs of natural succession within this ASM with the spread of Sea Purslane and some more established sections are dominated by this species. Other species present include Glasswort, Sea Pink, Sea Plantain, Annual Sea-blite, green algae and Red Fescue. A mid-marsh community dominated by a typical *Armeria-Plantago* sward along the track.

An upper marsh community has developed along the north-east sandy ridge at Garreneteen Strand. This community is dominated by Red Fescue and also contains Sea Purslane, Common Scurry-grass, Long Bracted Sedge, Sea Plantain, Sea Milkwort, Sand Couch (*Elytrigia atherica*) and Sea Beet. There are also some transitional species present such as Curled Dock, Birdsfoot, Kidney Vetch present along the landward boundary with the fixed dune.

A mid-marsh community has developed on the north-west side of the main ridge that divides the Garreneteen Strand saltmarsh. This community is dominated by Sea Plantain and contains locally frequent clumps of Common Cordgrass (10-20%). The saltmarsh topography is very well-developed in this area and there are frequent salt pans present.

The lower-mid marsh ASM at Garreneteen Strand has locally frequent clumps of Common Cordgrass spread through this habitat. The Common Cordgrass has largely colonised creeks and salt pans within this zone. Some of this saltmarsh is classified as a mosaic of ASM and *Spartina* sward due to the frequency of these clumps. This community also contains frequent Sea Purslane, Common Saltmarsh-grass and occasional Sea Aster, Lax-flowered Sea Lavender and Sea Arrowgrass. Small patches of Common Cordgrass are also scattered of the established saltmarsh to the north of the road bridge.

The ASM saltmarsh found north of the road bridge is largely dominated by a mid marsh Sea Plantain sward. Common Cordgrass is present within creeks and pans of this saltmarsh and the overall cover within this area is 5-10%. The pans also contain a low marsh community dominated by Common Saltmarsh-grass and Sea Purslane. This saltmarsh also contains scattered clumps of Sea Rush at low densities, so it was not mapped as MSM. The saltmarsh topography is well developed in this area and there are frequent salt pans and creeks. Some of the saltmarsh is quite fragmented at the southern end.

The large area of ASM found at Glanduff is protected by an old berm, which is now breached in several places. This saltmarsh was reclaimed in the past and there are signs of drainage. However, some old pans and creeks still remain within the saltmarsh. Several typical ASM communities are present within this area including a low marsh sward dominated by Common Saltmarsh-grass along some of the creeks and drainage channels, a typical mid marsh Sea Plantain sward, a mid-upper sward dominated by Saltmarsh Rush and an upper zone with Red Fescue, Saltmarsh Rush and Creeping Bent all frequent.

The ASM sward is mostly ungrazed with different heights due to different communities. The ASM saltmarsh at Glanduff is quite rank and has a tall sward in places due to the lack of grazing.

Mediterranean salt meadows (H1410)

The MSM at this site is best developed at Garrensteen Strand. This saltmarsh is an excellent example of zonation on a gradual slope from typical MSM sward into a transitional zone and then into a terrestrial zone dominated by scrub. There are also small patches of MSM in the saltmarsh north of the road bridge.

The MSM is typically dominated by Sea Rush. Some of the MSM contains patchy clumps of Sea Rush intermixed with grassy ASM vegetation. The denser MSM also contains Red Fescue, Parsley Water-dropwort and Sea Arrowgrass. ASM can extend into the MSM habitat, especially along the creeks, which are frequently dominated by Sea Purslane.

There is very little Common Cordgrass within the MSM and this is mainly confined to saltmarsh pans and creeks within the MSM habitat. There are also rare large clumps of sharp Rush within the MSM dominated by Sea Rush.

The MSM transitions to a transitional type vegetation along its landward boundary at the south-west end of Garreneteen Strand. This community develops on a slight slope. This transitional community also contains Sea Rush but also contains Bindweed, Red Fescue, Twitch, Yellow Flag, Sliverweed (*Potentilla anserina*), Scrub dominated by Bramble develops at higher level on the slope that is outside the influence of the highest tides.

The MSM transitions to more typical fixed dune or coastal grassland at the south-east end of the MSM. There is a wide brackish transitional zone that contains frequent Sea Rush but also contains elements of damp fixed dune such as Glaucous Sedge (*Carex flacca*), Silverweed, Birdsfoot and Sand Sedge (*Carex arenaria*). There are small shallow hollows within the transitional area that contain more typical saltmarsh vegetation.

A rarer community dominated by Sharp Rush is also present at this site at Garreneteen Strand. This species is found along the upper saltmarsh and fixed dune boundary. A transitional fixed dune community with Sharp Rush has already been described. A second community characterised by frequent Sharp Rush (30-40% cover) and more typical of saltmarsh is also present in small areas. This community is found along the fixed dune ridge that divides the saltmarsh into two main sections. This community also contains Red Fescue and some Twitch. This community is also found at the very upper limit of the saltmarsh located at the south-west corner of the site. This area contains dense clumps of Sharp Rush. There is some zonation within this area. Bindweed and Silverweed are present in the upper zone adjacent to the fixed dune habitat. Other species such as White Clover and Birdsfoot appear in the lower zone.

Spartina swards

A dense mature *Spartina* sward has developed at Garreneteen Strand. This is the most mature sward and contains and extensive saltmarsh creeks. This sward has developed on previously unvegetated mud and sand flats. There is some succession of the ASM along the creek edges, which are dominated by Sea Purslane. There are also patches within this sward that could be classified as a *Spartina* sward/ASM mosaic due the frequency of Sea Purslane and Common Saltmarsh-grass within the sward at various places. There is a natural transition along the landward boundary of this sward to ASM. The upper part of the sward along the ASM boundary contains frequent Sea Purslane, Common Saltmarsh-grass and occasional Sea Aster, Common Scurvy-grass and Greater Sea-spurrey. There is a natural transition to a narrow band of *Salicornia* flats along the eastern side of this sward.

There is also some Common Cordgrass within the adjacent ASM and *Salicornia* flats at Garreneteen Strand. However, most of this Common Cordgrass is at a low density and there are few large dense patches that were mapped as *Spartina* sward. Some of this saltmarsh has been mapped as a *Spartina* sward/ASM mosaic where *Spartina* is more frequent. Common Cordgrass seems to be spreading into the lower saltmarsh damaged by ploughing or drainage and forming mosaic areas.

A younger *Spartina* sward has developed on a raised muddy sandflat bank at Garreneteen Strand East. This sward is quite dense and there are some signs of succession within this sward to ASM along the western side. This side is quite open and is situated adjacent to *Salicornia* flats. There were some signs that this sward was spreading towards the southern end of this sward.

Smaller patches of *Spartina* sward are present on the saltmarsh north of the road bridge. These swards have generally colonised on bare mudflats that are found between some of the saltmarsh fragments and has infilled some of these areas, forming a mosaic with the more established ASM. Common Cordgrass has also spread into some of the open saltmarsh

habitats such as pioneer ASM and *Salicornia* flats on raised mudflats where there is accretion.

Common Cordgrass has also infilled some salt pans within the established saltmarsh north of the road bridge and in the enclosed saltmarsh at Glanduff.

IMPACTS AND ACTIVITIES

The site is affected by several different impacts and activities (Table 3.1). Most of the saltmarsh is not grazed by livestock. The only section that may be grazed is the enclosed formerly reclaimed area at Glanduff. This area was not been grazed at the time of the survey but there are signs of grazing in previous years. The NPWS conservation plan noted that the saltmarsh at Garreneteen Strand had been grazed in the past by cattle and horses.

Table 4.1. Intensity of various activities on saltmarsh habitats at Harbour View.

EU Habitat Code	Activity code	Intensity	Impact	Area affected (ha)	Location of activity
1310	910	C	+1	1.183	Inside
1310	954	C	-1	1.183	Inside
1310	990	C	0	0.05	Inside
1330	502	C	-1	0.5	Inside
1330	623	C	-1	0.5	Inside
1330	910	C	0	0.5	Inside
1330	954	B	-1	1.5	Inside
1410	954	C	0	0.05	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.

There are frequent signs of disturbance to the saltmarsh at Garreneteen Strand that is related to relatively easy access by vehicles and amenity use. This area is disturbed by an established track across the saltmarsh and dunes that is regularly used by vehicles (501). There are patches of ASM with frequent wheel ruts. The NPWS conservation plan notes that the sand dunes and salt marsh are used by ATV vehicles (623). Some of the saltmarsh to the east of the main track has been recently ploughed. This may be related to cleaning of tractor ploughs with sand or setting up the plough for ploughing competitions (like in Strangford Lough). This activity was noted by the NPWS conservation plan. There are older signs of ploughing and disturbance to this area with the appearance of vegetated channels and ridges in this saltmarsh. Ploughing of the ASM may promote the spread of Common Cordgrass into the ASM and also creates pioneer ASM saltmarsh vegetation.

Common Cordgrass is present at this site. This is an invasive species of saltmarsh and mudflats (954). It is not known when it appeared in Courtmacsherry Estuary but is likely to have been here for at least 40 years. Nairn (1986) notes that it has been present since 1960. The first ASI report (Fahy 1972) noted the presence of Common Cordgrass in the Courtmacsherry Estuary. Common Cordgrass has formed two large areas of *Spartina* sward

at Garreneteen Strand and Garreneteen Strand East on former mudflats. Both these sward areas are relatively young and have developed in areas where there was no saltmarsh in the past. The development of the *Spartina* sward is probably related to the growth of the saltmarsh in general in response to the growth of the sand spit and changes in sediment accretion at these two locations. Other saltmarsh habitats such as pioneer ASM and *Salicornia flats* may have been more extensive at these two locations in the past.

There are smaller more frequent patches of *Spartina* sward in the saltmarsh north of the road bridge and at Glanduff. Most of this sward has developed on mudflats adjacent to the established saltmarsh, which is quite fragmented at the southern end. Common Cordgrass has infilled small areas between these fragments of saltmarsh. Common Cordgrass has also developed on accreting areas further south in association with *Salicornia* flats and pioneer ASM. This is the main reason for an assessment of the presence of Common Cordgrass as having a negative impact on the *Salicornia* flats and some of the ASM. It has no major impact on the MSM at this site.

There were no significant signs of recent significant expansion of *Spartina* sward during the field survey. An examination of the OSI 1995, 2000 and 2005 aerial photo series and the field survey GPS points indicates that there has not been much expansion of *Spartina* sward during this period. The NPWS Conservation management plan also noted that the spread of Common Cordgrass had abated in recent times (2000). The largest area of *Spartina* sward at Garreneteen Strand is quite mature and there has been some succession to ASM dominated by Sea Purslane along the saltmarsh creeks within the sward. There has been a small expansion of the sward at the southern end of Garreneteen Strand East in the recent past. There are also small clumps associated with the narrow mudflat channels on the east side of the established saltmarsh north of the road bridge that indicate potential spread in the recent past and the in the future.

There are significant signs of accretion (910) and the growth of saltmarsh at this site. This has mainly occurred at Garreneteen Strand where the 2nd edition 6 inch map maps a much reduced sand dune spit and associated saltmarsh compared to its current status. The saltmarsh and sand dune spit have grown in length and width in the past 100 years. There are still signs of accretion along the east side of this saltmarsh with the presence of a narrow band a *Salicornia* flats habitats. The saltmarsh at Garreneteen Strand East is also relatively newly established and was not mapped in the 2nd edition OSI map. Signs of recent accretion and saltmarsh growth were also noted in some of the younger patches of saltmarsh north of the road bridge. However, an examination of the OSI 1995, 2000 and 2005 aerial photo series and the field survey GPS points indicates there has been no significant growth of saltmarsh within the current monitoring period. The accretional trend means that accretion is assessed as having a positive impact on the *Salicornia* flats and a portion of the ASM. There was no evidence of any erosion of saltmarsh at the site.

There are indications of the natural succession of some of the *Salicornia* flats into ASM (990), particularly at Garreneteen Strand East.

There are signs of old drainage attempts within the saltmarsh at Garreneteen Strand. This saltmarsh is relatively young compared to the rest of the saltmarsh north of the road bridge so these may be related to more recent drainage attempts. The saltmarsh at Glanduff was also reclaimed in the past but has since reverted back to saltmarsh when the berms were breached (802). The NPWS Conservation management plan noted that a small area of saltmarsh and mudflats north-east of Garreneteen Strand had been infilled and reclaimed (802). These impacts were not assessed as they occurred prior to the current monitoring period.

The NPWS Conservation management plan noted eutrophication within the estuary and this was related to agricultural practises and sewage from villages such as Kilbrittain (420). Extensive green alga mats were noted along the east side of Garreneteen Stand and covering the lower saltmarsh including the ASM and *Salicornia* flats.

Impacts and activities adjacent to the site include agriculture (102, 120, 140), scattered habitation (403) and roads (502). Related impacts such as runoff from the road may have some impact on the saltmarsh but these impacts are low or not detected.

CONSERVATION STATUS

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 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 are no specific notes in the NHA survey for the saltmarsh at this site.

Harbour View saltmarsh contains several notable conservation features, including a large area of saltmarsh being part of a larger coastal system dominated by a sand dune spit. There are also notable natural transitions between saltmarsh communities and to adjacent sand dune and brackish wet grassland communities, pioneer ASM is present, there is a notable extent of *Salicornia* flats (> 1 ha) and there is development of saltmarsh on sand and muddy substrates, increasing the diversity of the saltmarsh communities and its structure. Sharp Rush is also present at this site and is found along the upper saltmarsh boundary and on adjacent fixed dune habitat. Some of this Sharp Rush can be classified as a rarer form of MSM (dominated by Sharp Rush) and this habitat type is very rare on saltmarsh around the coast of Ireland. It was found on four sites during the SMP (out of 133 sites).

The overall conservation status of this site is *unfavourable-inadequate* (Table 5.1). Most of the habitat is in good condition. However, this assessment takes account of the fact that some of the saltmarsh has been damaged by long-term vehicle use and by ploughing. Common Cordgrass is present at the site and this poses a threat to the *Salicornia* flats. The CMP report assessed the conservation status of the adjacent fixed dunes as *unfavourable-inadequate*, partly due to the presence of well worn tracks though this habitat. The assessment for the other dune habitats were assessed as *favourable*.

Nearly the entire saltmarsh habitat is located within Courtmacsherry cSAC. There is an old format NPWS Conservation management plan available for this site.

Table 5.1. Conservation status of Annex I saltmarsh habitats at Harbour View.

Habitat	EU Conservation Status Assessment			
	Favourable	**Unfavourable - Inadequate**	**Unfavourable - Bad**	**Overall EU conservation status assessment**
Salicornia flats (1310)	Extent Structure and functions		Future prospects	Unfavourable - Inadequate
Atlantic salt meadows (1330)	Extent		Structure and functions Future prospects	Unfavourable - Inadequate
Mediterranean salt meadows (1410)	Extent Structure and functions, Future prospects			Favourable

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

1.2.1 Extent

The extent of this habitat is assessed as *favourable*. There is a notable amount of this habitat present at this site. There are no indications of any loss of habitat due to land-use changes, erosion or the spread of Common Cordgrass within the current monitoring period. This habitat is found adjacent to *Spartina* swards and it is likely that it may have occupied parts of these accreting areas prior to the development of these swards. However, the development of these swards is not assessed as they mainly developed prior to the current monitoring period.

1.2.2 Habitat structure and functions

The structure and functions of this habitat are assessed as *favourable*. Three stops were carried out in this habitat and they all passed. All the attributes required for the favourable conservation of the habitat reached their targets. This habitat is dominated by Glasswort. There is some Annual Sea-blite present. Some patches are more diverse and could be classified as pioneer ASM. The main impact affecting this habitat is the presence of Common Cordgrass, an invasive species. Small clumps of this species are found in this habitat at low densities (< 1% - 5%). There are few other impacts affecting this habitat at this site. This habitat is developing on accreting muddy banks. Accretion is still occurring and this is a positive indicator for this species

1.2.3 Future prospects

The future prospects of the habitat are assessed as *unfavourable-inadequate*. This assessment assumes that the current management activities and level of impacts continue in the near future. Common Cordgrass is present at in this habitat at low densities and this habitat is also located adjacent to *Spartina* sward. This species has the potential to continue to spread in the future at the expense of *Salicornia* flats habitat, although there are no indications that it is spreading significantly at the moment. It should also be noted that *Salicornia* flats habitat is a pioneer saltmarsh habitat so some succession to other saltmarsh

habitats could be expected. There are indications that this is already occurring at Garreneteen Strand East and in the saltmarsh north of the road bridge. Continued accretion is required to maintain the current extent of this habitat and this is also unlikely in the long-term. There are few other impacts or activities that can negatively affect this habitat.

Atlantic salt meadows (H1330)

1.2.4 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any significant loss of habitat due to land-use changes, erosion or the spread of Common Cordgrass within the current monitoring period. There is significant evidence of the growth of saltmarsh including ASM at Garreneteen Strand in the past 100 years. This is a positive indicator. Some of the ASM is relatively young and immature. However, there has been no measurable growth of the saltmarsh within the current monitoring period.

1.2.5 Habitat structure and functions

The structure and functions of this habitat are assessed as *unfavourable-inadequate*. Sixteen monitoring stops were carried out in this habitat and all the stops passed. All the attributes required for the favourable conservation of the habitat reached their targets. Most of the saltmarsh is in good condition and the monitoring stops reflect this. The site is not grazed and there is no poaching damage. However, some of the saltmarsh at Garreneteen Strand has been damaged by long-term vehicle use and ploughing. The ploughing may promote the spread of Common Cordgrass into the ASM in the damaged areas. The assessment for habitat structure and functions was therefore re-assessed as *unfavourable-inadequate*.

The ASM at this site has a typical species assemblage. There are several ASM communities present including typical communities of mud and sandy substrates. The zonation within this saltmarsh is particularly well-developed and there is zonation within the ASM as well as natural transitions to other saltmarsh habitats. Some of the ASM is relatively young and immature and there is also a significant area of pioneer ASM at Garreneteen Strand. The saltmarsh topography is well-developed at this site. The sward height is quite variable and is related to the variation in ASM plant communities.

Common Cordgrass is present in this habitat (a negative indicator), although overall it is found at low densities and is confined to creeks and pans in large sections of the ASM. There are small areas where Common Cordgrass has formed a mosaic with the ASM and has a more frequent cover value. However, there is no evidence of any expansion of Common Cordgrass within the ASM in current monitoring period, mainly due to the lack of accurate baseline data), so the impact of its spread is assessed as neutral.

1.2.6 Future prospects

The future prospects of this habitat are assessed as *unfavourable-inadequate.* This assessment assumes that the current management activities and level of impacts continue in the near future. The habitat is being damaged by vehicle use and ploughing. Most of the habitat is located within the cSAC boundary so the habitat should not be affected by any land-use changes that have to be licensed by local or national authorities.

Common Cordgrass is present at this site and is found on the ASM. There may be some potential for the spread of this species into this habitat in the future. However, not all the ASM is vulnerable to the spread of this species. The pioneer ASM has largely developed on sandy substrate at Garreneteen Strand, which is less suitable for widespread colonisation of Common Cordgrass compared to muddy sediment.

An old format NPWS Conservation management plan is available for this site and it already contains objectives to mitigate some of the damaging impacts to the saltmarsh, such as reducing vehicle use and preventing ploughing. However, these activities are still continuing.

Mediterranean salt meadows (H1410)

1.2.7 Extent

The extent of this habitat is assessed as *favourable*. There are no indications of any loss of habitat due to land-use changes, erosion or the spread of Common Cordgrass within the current monitoring period.

1.2.8 Habitat structure and functions

The structure and functions of this habitat are assessed as *favourable*. Nine stops were carried out in this habitat and they all passed. All the attributes required for the favourable conservation of the habitat reached their targets. This habitat is in good condition. It contains a typical species assemblage. The habitat is not grazed and there is variable sward height. This site contains an excellent example of zonation within the MSM and also natural unmodified transitions to other habitats such as fixed dune and damper brackish coastal grassland. Rare clumps of Sharp Rush are also present within this habitat. Common Cordgrass is also present in this habitat but is quite rare and is confined to creeks and salt pans.

Harbour View saltmarsh is notable for the presence of small patches of a rarer type of MSM dominated by Sharp Rush. This species can also be considered a species of local distinctiveness. This vegetation type is much rarer than the more typical MSM vegetation type dominated by Sea Rush.

1.2.9 Future prospects

The future prospects of this habitat are assessed as *favourable.* This assessment assumes that the current management activities and level of impacts continue in the near future. There are few impacts or activities significantly affecting this habitat. This habitat is not vulnerable to the spread of Common Cordgrass. There are indications of natural vegetation succession along the upper MSM boundary. Some of the saltmarsh may naturally develop into more brackish grassland with along the back of the sand dunes as the saltmarsh grows.

MANAGEMENT RECOMMENDATIONS

There are no specific management recommendations for this site.

REFERENCES

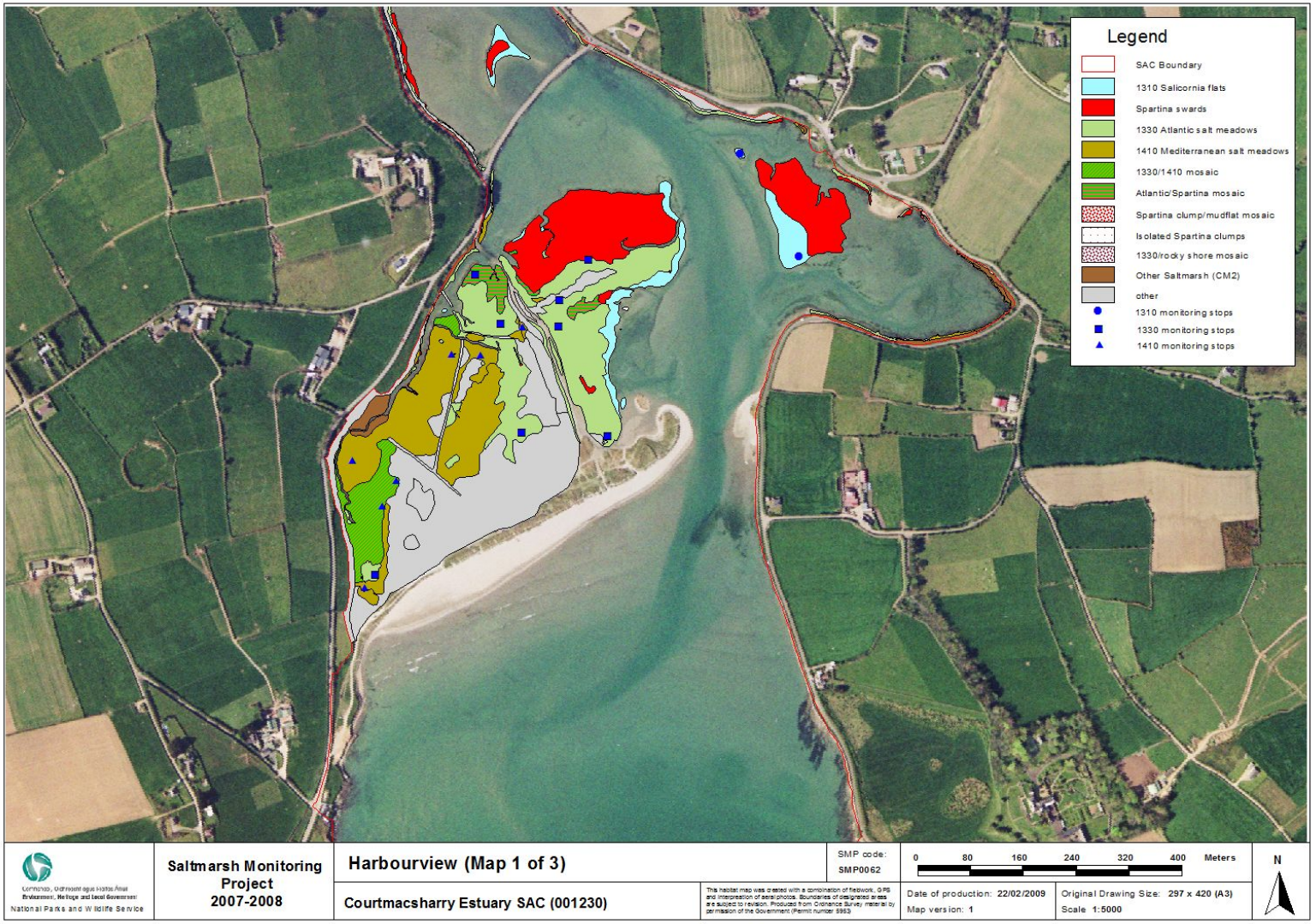
Curtis, T.G.F.C. and Sheehy-Skeffington, M.J. (1998). The salt marshes of Ireland: An inventory and account of their geographical variation. *Biology and Environment: Proceedings of the Royal Irish Academy* **98B**, 87-104.

Fahy, E. (1972). A Preliminary Report on Areas of Scientific Interest in County Cork. Dublin, An Foras Forbartha.

APPENDIX I

Table 8.1. Areas of SMP habitats mapped using GIS.

SM Habitat code	SM habitat description	Mapped Area (ha)	Area (ha)				
			1310	1330	1410	1420	Spartina swards
1	1310 *Salicornia* flats	1.183	1.183				
2	Spartina swards	4.657					4.657
3	1330 Atlantic salt meadow	10.319		10.319			
4	1410 Mediterranean salt meadow	3.455			3.455		
5	ASM/MSM mosaic (50/50)	0.879		0.482	0.482		
6	ASM/*Spartina* mosaic	0.475		0.237			0.237
7	1330/other SM (CM2) mosaic						
8	1330/coastal grsld mosaic						
9	Other (non saltmarsh)	8.129					
10	*Spartina* clump/mudflat mosaic (50/50)	0.063					0.031
11	Isolated *Spartina* clumps on mud (5%)	0.022					0.000
12	pioneer 1330/1310/*Spartina* mosaic						
13	1410/other SM (CM2) mosaic						
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)	1.393					
19	1330/rocky shore mosaic	0.002		0.001			
20	1420 Mediterranean scrub						
21	1310/1330 mosaic						
	Total	**30.662**	**1.183**	**11.04**	**3.937**		**4.926**


Legend
SAC Boundary
1310 Salicornia flats
Spartina swards
1330 Atlantic salt meadows
1410 Mediterranean salt meadows
1330/1410 mosaic
Atlantic/Spartina mosaic
Spartina clump/mudflat mosaic
Isolated Spartina clumps
1330/rocky shore mosaic
Other Saltmarsh (CM2)
other
1310 monitoring stops
1330 monitoring stops
1410 monitoring stops
Environment, Heritage and Local Government
National Parks and Wildlife Service
Saltmarsh Monitoring Project 2007-2008
Harbourview (Map 1 of 3)
Courtmacsharry Estuary SAC (001230)
SMP code: SMP0062
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 5963)
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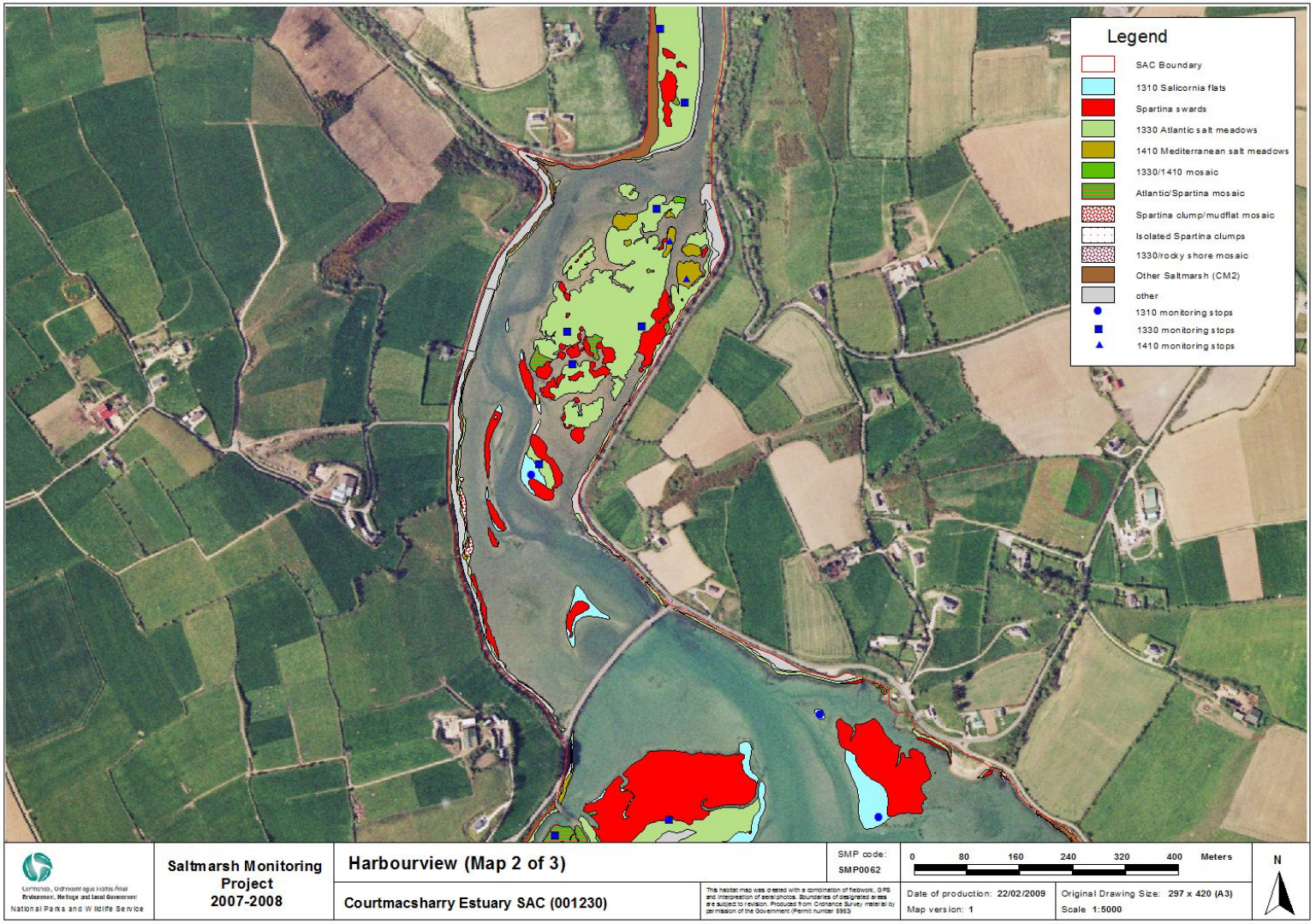
Date of production: 22/02/2009
Map version: 1
Original Drawing Size: 297 x 420 (A3)
Scale 1:5000
N


Legend
SAC Boundary
1310 Salicornia flats
Spartina swards
1330 Atlantic salt meadows
1410 Mediterranean salt meadows
1330/1410 mosaic
Atlantic/Spartina mosaic
Spartina clump/mudflat mosaic
Isolated Spartina clumps
1330/rocky shore mosaic
Other Saltmarsh (CM2)
other
1310 monitoring stops
1330 monitoring stops
1410 monitoring stops
Saltmarsh Monitoring Project 2007-2008
Harbourview (Map 2 of 3)
Courtmacsharry Estuary SAC (001230)
SMP code: SMP0062
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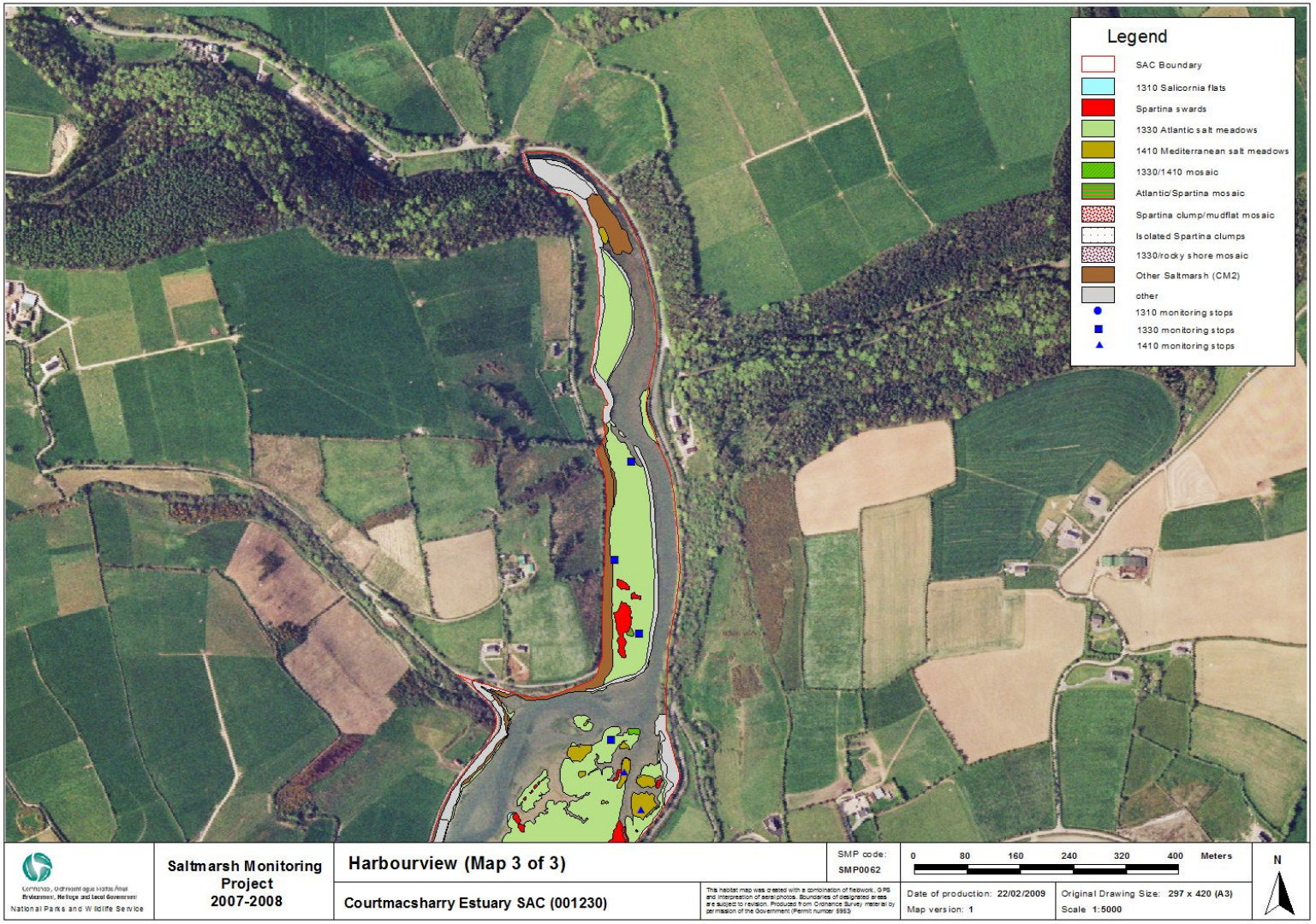
Date of production: 22/02/2009
Map version: 1
Original Drawing Size: 297 x 420 (A3)
Scale 1:5000
National Parks and Wildlife Service


Legend
SAC Boundary
1310 Salicornia flats
Spartina swards
1330 Atlantic salt meadows
1410 Mediterranean salt meadows
1330/1410 mosaic
Atlantic/Spartina mosaic
Spartina clump/mudflat mosaic
Isolated Spartina clumps
1330/rocky shore mosaic
Other Saltmarsh (CM2)
other
1310 monitoring stops
1330 monitoring stops
1410 monitoring stops
Environment, Heritage and Local Government
National Parks and Wildlife Service
Saltmarsh Monitoring Project 2007-2008
Harbourview (Map 3 of 3)
Courtmacsharry Estuary SAC (001230)
SMP code: SMP0062
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 5963)
0 80 160 240 320 400 Meters
Date of production: 22/02/2009
Map version: 1
Original Drawing Size: 297 x 420 (A3)
Scale 1:5000
N

APPENDIX V- Site Report and Habitat Map for Harbour View from Coastal Monitoring Project (Ryle *et al*., 2009)

SITE DETAILS

CMP05 site name: **Harbour View** CMP05 site code: **057** CMP Map No.: **54**

County: **Cork** Discovery map: **89** Grid Reference: **W 153 445**

6 inch Map No.: **Co 124**

Aerial photographs (2000 series): **O 6695-A; O 6695-C**

NPWS Site Name: **Courtmacsherry Estuary**

NPWS designation: pNHA: **91** cSAC: **91**

Ranger Area: **Cork-South**

MPSU Plan: **Draft 2**

Report Author: **Kieran Connolly**

SITE DESCRIPTION

Harbour View, or Garranefeen Strand, in West Cork, is approximately 12km Southwest of Bandon and 3 km Southwest of Kilbrittain, and is in the northernmost projection of Courtmacsherry estuary cSAC. The sand dune system, which contains a significant area of the priority fixed dune habitat, and a number of other Annex I sand dune habitats (Table 57A), developed on a spit formed across the mouth of the Kilbrittain River where it enters the sea at Coolmain Bay.

Table 57A Areas of EU Annex I habitats mapped at Harbour View

EU Code	EU Habitat	Area (ha)
H1210	Annual vegetation of driftlines	0.136
H2110	Embryonic shifting dunes	0.648
H2120	Shifting dunes along the shoreline with *Ammophila arenaria*	0.413
H2130	Fixed coastal dunes with herbaceous vegetation	4.552
	Total Sand dune	**5.749**

The dominant habitat types in Courtmacsherry estuary cSAC are intertidal sand and mudflats, with estuarine channels. However, the site has been selected predominantly for the presence of fixed dunes and other Annex I sand dunes habitats, including embryonic dunes, marram dunes and dune heath (which is found on Inchydoney Island).

Also of interest within the sand dune system are the transitional habitats between the sand dunes and the adjacent saltmarsh. Of further interest is the habitat that is transitional between saltmarsh and freshwater marsh located behind the spit, extending towards the coast road.

The dunes at Harbour View consist of a single main dune ridge, with several small hummocks on the landward side. The dune ridge is approximately 6m tall at its highest point. To the west of the dunes is a saltmarsh, which in turn borders freshwater marsh habitat near the coast road.

In addition to the sand dune habitats at Harbour View, an expanse of shingle is known from Broad Strand, south of Courtmacsherry town. Among the plants known from here are *Glaucium flavum* (Yellow horned-poppy) and the rare *Crambe maritima* (Sea kale). The current status of the latter is unclear, as this strand was not investigated in the present survey.

The main interest of the site as a whole is ornithological, with many waders and wildfowl feeding and roosting on the mud and sandflats. The winter flocks of Golden Plover, Black-Tailed Godwits and Shelduck occur in nationally important numbers, and several other species occur at regionally significant levels.

Comparing the 6" map of the site with the most recent aerial photograph illustrates the changes over time in the recurved area of the spit. The tip has become an island, which was inaccessible during the site visit, but was reported in the ASI survey of 1993 as being characterised by *Festuca*-grassland. Other species noted included *Anthyllis vulneraria* (Kidney vetch), *Beta vulgaris* ssp. *maritima* (Sea Beet), *Euphorbia paralias* (Sea spurge), *Lotus corniculatus* (Bird's-foot trefoil), *Rumex*

crispus (Curled dock), *Sonchus arvensis* (Perennial sow-thistle) and *Spergularia rupicola* (Rock sea-spurrey).

Aspirations of protecting the sand dune system are expressed in successive Cork County development plans, which specify measures aimed at strictly controlling any developments that may adversely affect areas of scientific or scenic importance.

Fixed Dunes (H2130)

The fixed dunes extend to over 4.5 ha in total (Table 57A) and are well vegetated, although not particularly diverse in species composition. Nevertheless, several typical species were noted, including *Anacamptis pyramidalis* (Pyramidal orchid), *Anthyllis vulneraria* (Kidney vetch), *Daucus carota* (Wild carrot), *Galium verum* (Lady's bedstraw), *Hypochaeris radicata* (Cat's ear), *Lotus corniculatus* (Bird's-foot trefoil), *Plantago lanceolata* (Ribwort plantain), *Poa pratensis* (Smooth meadow-grass) and *Taraxacum* agg (Dandelion). There were no older fixed dune plant communities, such as those that may include *Pteridium aquilinum* (Bracken) and *Rosa pimpinellifolia* (Burnet rose).

The fixed dunes, in composition, are a mixture of Marram-dominated long sward, and short turf areas on or adjacent to the numerous pedestrian and vehicular tracks (Photo 3). On the western side, the dunes form transitional habitat with the adjacent saltmarsh. Among the common saltmarsh species noted here were *Aster tripolium* (Sea aster), *Atriplex portulacoides* (Sea purslane), *Limonium humile* (Lax-flowered sea lavender), *Puccinellia maritima* (Common saltmarsh-grass) and *Triglochin maritimum* (Sea arrowgrass).

There are occasional low shrubs - mostly *Ulex europaeus* (Gorse), *Acer pseudoplatanus* (Sycamore) and *Rubus fruticosus* (Bramble), although they are not a major component of the habitat.

Sharp rush (*Juncus acutus*) is known from the area and was observed in fixed dune/saltmarsh transitional habitat in the current survey.

Annual Vegetation of Driftlines (H1210)

Annual strandline habitat was confined to a small patch at the southern end of the site. Characterised by the presence of *Atriplex laciniata* (Frosted orache) and *Cakile maritima* (Sea rocket), the strandline of approximately 100 m length, was on the seaward side of narrow bands of both mobile and embryonic dunes.

Embryonic dunes (H2110)

Embryonic dune consisted of a narrow strip along most of the length of the strand. However, much of the habitat – characterised by *Elytrigia juncea* (Sand couch) - was rather sparsely vegetated and discontinuous, although plant growth was generally robust throughout.

Mobile dunes (H2120)

Mobile dunes – like the embryonic dunes - consisted of a narrow strip along most of the length of the strand. Dominated by *Ammophila arenaria* (Marram), the habitat also contained species such as *Calystegia soldanella* (Sea bindweed), *Euphorbia paralias* (Sand spurge) and *Hypochaeris radicata* (Cat's ear). Negative indicator species mostly consisted of small quantities of *Rumex crispus* (Curled Dock) and *Senecio jacobaea* (Common ragwort). The vegetation was mostly robust and of healthy appearance, and affected by trampling and associated activities in only a very limited area.

IMPACTS

Activities observed or known to be impacting on the sand dune habitats at Harbour View are shown in Table 57B.

Table 57B Intensity and impact of various activities on sand dune habitats at Harbour View

EU Habitat Code[1]	Activity Code[2]	Intensity[3]	Impact[4]	Area affected/ha	Location of Activity[5]
H2130	421	C	-1	0.10	Inside
H2130	622	C	-1	3.0	Inside
H2130	623	A	-1	2.5	Inside
H2110	720	C	-1	0.05	Inside
H2120	720	C	-1	0.05	Inside
H2130	720	B	-1	2.5	Inside
H2130	954	C	-1	0.5	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

The site is popular in summer for sunbathing and associated beach activities (code 622), drawing considerable crowds on fine days. Pedestrian tracks are noticeable in the fixed dunes, as is a certain amount of disturbance (code 720), in the foredune habitats, albeit very limited in scale.

The fixed dunes are under considerable pressure from cars and other motorised vehicles (code 623), particularly as parking is very limited on the adjacent roadside. Well-worn vehicle tracks are present over much of the fixed dunes.

Some small scale dumping of household waste was noted in the dunes (code 421).

A number of non-native shrubs and trees including *Phormium tenax* (New Zealand Flax) and *Acer pseudoplatanus* (Sycamore) were noted (code 954), although specimens of the latter were small and wind shorn, and neither was present in significant quantities.

Large-scale sand extraction from the estuary was known to have taken place in the past. Collected and transported by boat, the sand was primarily used for agricultural purposes. This may clearly have affected the system dynamics at Garranefeen, possibly through sediment starvation, although the practice is no longer carried out.

Sewage effluent from nearby holiday homes, caravan sites and Courtmacsherry town enters the estuary, although this is unlikely to negatively affect the dune system in a direct way. Eutrophication from farming may also be an issue in the estuary, but again, this is unlikely to affect the dunes in a quantifiable way.

CONSERVATION STATUS

The conservation status assessment of each habitat at Harbour View is based on a combination of Habitat extent, Habitat structure & Functions, and Future Prospects assessments (Table 57C). Details of the numbers and pass/failure rates of monitoring stops used to assess habitat structure & functions are shown in Table 57D.

Table 57C Conservation status assessment of Annex I sand dune habitats at Harbour View

Habitat[1]	EU Conservation Status Assessment			Overall EU conservation status assessment	Proposed Irish conservation status system[2]
	Favourable	**Unfavourable - Inadequate**	**Unfavourable - Bad**		
Fixed Dune (H2130)	Extent/ Structure & functions	Future prospects		**Unfavourable - Inadequate**	Unfavourable - Unchanged
Annual Strandline (H1210)	Extent/ Structure & functions/ Future prospects			**Favourable**	Favourable - Maintained
Embryonic Dune (H2110)	Extent/ Structure & functions/ Future prospects			**Favourable**	Favourable - Maintained
Mobile Dune (H2120)	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 57D Pass/Fail results of monitoring stops for Annex I sand dune habitats at Harbour View

	Monitoring stops		
Habitat	**Pass**	**Fail**	**Conservation status**
Fixed dune (H2130)	4	0	**Favourable**
Embryonic dune (H2110)	4	0	**Favourable**
Mobile dune (H2120)	4	0	**Favourable**

Fixed Dunes (H2130)

The estimate of fixed dune area as 2% of the total cSAC in the NATURA 2000 report equates to over 14 ha, and may be regarded as unreliable. The 1% figure used in the relevant MPSU plan may be more realistic, but is clearly not based on exacting standards of measurement. For this reason, it is difficult to assess any recent changes in habitat extent. However, other sources of information, such as the National ASI survey (1972) and anecdotal reports, suggest that the system has been quite stable in extent in recent times. It is therefore assessed as *favourable* for habitat extent.

Four monitoring stops were carried out in the fixed dunes, all of which passed the prescribed criteria, indicating a *favourable* habitat structure and functions rating. Each stop passed the typical species, negative indicator species, flowering and fruiting, and bare ground requirements. However, 2 stops had average sward heights exceeding the maximum of 20 cm, while those of the other 2 stops were thought to be approximately 20 cm. This reflects the general appearance of the habitat, whereby a longish Marram-dominated sward is interspersed with worn tracks. However, these 2 stops met the overall requirements for attaining a pass result.

Although each monitoring stop passed the bare ground requirement (< 10%), it is clear from the most recent aerial photograph that there are many well-worn tracks, resulting from pedestrian and vehicular traffic throughout the fixed dune. Damage to habitats is significant and a failure to control such access and amenity pressure augurs badly for the future of the site. For this reason, the future prospects of the site are rated as *unfavourable – inadequate*.

As the conservation status assessment of fixed dunes is based on a combination of *favourable* and *unfavourable – inadequate* ratings, the overall status is *unfavourable – inadequate* (Table 57C)

The Irish conservation status assessment thought most appropriate is *unfavourable-unchanged*, as there is no evidence of a recent decline in the extent or integrity of the habitat.

Annual Vegetation of Driftlines (H1210)

As there is no record of a persistent recent loss of extent in the strandline and it currently covers a relatively sizeable area, it is rated *favourable* for the habitat extent aspect of conservation assessment.

Monitoring stops were not carried out in the strandline, due to its limited area (0.136 ha). It is given a *favourable* structure and functions rating, as there were a number of typical species observed, and no significant occurrence of negative indicator species.

Although there are a number of threats to the sand dune system in general, there are no readily identifiable reasons why the strandline should deteriorate in the near future. Future prospects for the habitat are therefore considered to be *favourable*.

As all three separate categories of conservation status assessment are *favourable*, the assessment is *favourable*.

The Irish conservation status assessment thought to correspond most appropriately with the EU rating is *favourable-maintained*.

Embryonic dunes (H2110)

Embryonic dunes stretch along the seaward edge of the dunes for almost the entire length of the site. Extending in total to 0.648 ha, they form a significant proportion of the total sand dune area, and in the absence of evidence to the contrary, are thought to have maintained their extent and integrity in recent times. For this reason, they are considered *favourable*, under the conservation status assessment for extent.

Four monitoring stops were carried out in the embryonic dunes. All stops satisfied the necessary attribute targets, indicating a *favourable* conservation status assessment for structure and functions.

There are no immediate threats likely to undermine the integrity of embryonic dunes at the site. Increased amenity pressures would compromise the condition of habitats, but at the present time, the future prospects of the embryonic dunes may be considered *favourable*.

As all three components of conservation status assessment are considered *favourable*, the overall assessment is also *favourable* (Table 57C).

The corresponding Irish conservation status assessment is *favourable – maintained* (Table 57C), as the habitat appears to have been stable in all relevant aspects of conservation in recent times.

Mobile dunes (H2120)

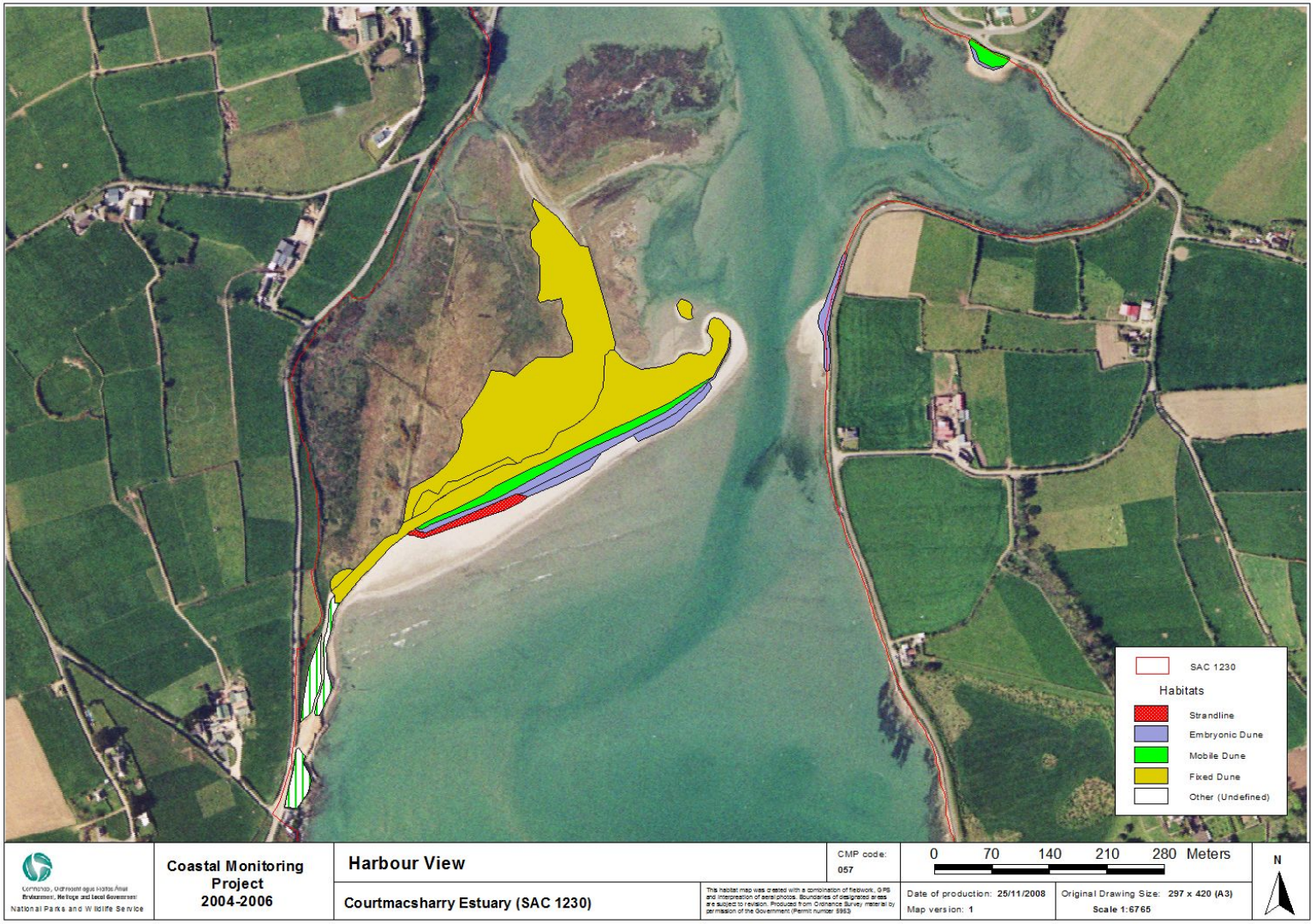
Like the embryonic dunes, the mobile dunes at Harbour View extend along almost the entire length of the site - in this case on the seaward side of the fixed dunes - indicating good zonation of habitats. At over 0.4 ha, the total extent of mobile dunes forms a considerable proportion of the total sand dune area, and is thought to have remained stable in recent times. The conservation status assessment for habitat extent is therefore thought to be *favourable*.

Four monitoring stops were carried out in the mobile dunes, and all satisfied the required attribute targets. This reflects the largely undisturbed nature of the habitat and implies a conservation status assessment of *favourable* for structure and functions.

In the absence of any serious threat to their integrity, the future prospects of mobile dunes may be considered *favourable*. As is the case with other habitats, a future increase in amenity pressures may cause deterioration in habitat condition, but at the present time, such pressures appear to be at sustainable levels.

As the three components of conservation status assessment are *favourable*, that is the rating that applies to the habitat as a whole.

The corresponding Irish conservation status assessment is *favourable – maintained* (Table 57C), as the habitat appears to have been stable in all relevant aspects of conservation in recent times.


SAC 1230
Habitats
Strandline
Embryonic Dune
Mobile Dune
Fixed Dune
Other (Undefined)
Coastal Monitoring Project 2004-2006
Harbour View
Courtmacsharry Estuary (SAC 1230)
CMP code: 057
0 70 140 210 280 Meters
N
Date of production: 25/11/2008
Map version: 1
Original Drawing Size: 297 x 420 (A3)
Scale 1:6765
National Parks and Wildlife Service