# Baldoyle Bay SAC (site code 199)
# Conservation objectives supporting document -coastal habitats

**NPWS**

**Version 1**

**November 2012**

**Table of Contents**



*Please note that the opinions expressed in the site reports from the Saltmarsh Monitoring Project 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 (2012). Conservation Objectives: Baldoyle Bay SAC 000199. 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.

Baldoyle Bay SAC extends from just below Portmarnock village to the west pier at Howth, Co. Dublin. It is a tidal estuarine bay protected from the open sea by a large sand dune system. Two small rivers, the Mayne and the Sluice, flow into the bay. Baldoyle Bay is a fine estuarine system and is also an important bird area. Part of it is a Special Protection Area under the EU Birds Directive, as well as being a Statutory Nature Reserve.

Baldoyle estuary is a small estuary of the River Sluice and is oriented north to south and dominated by intertidal mud and sandflats. It is enclosed by a large sand dune system on the east side. Saltmarshes mainly occur in the northern part of the estuary, on both sides of the estuarine-river channel. Other small areas of saltmarsh occur along the western side, at the end of Portmarnock Point and along the southern side of the estuary adjacent to Sutton Dart Station. Another small saltmarsh/brackish marsh area occurs along the Mayne River, which flows into the western side of the estuary. This area contains the rare grass species Borrer's saltmarsh grass (*Puccinellia fasciculata*) and meadow barley (*Hordeum secalinum*), two species listed on the Flora Protection Order (McCorry, 2007).

Portmarnock spit formerly had a well developed sand dune system but this has been largely replaced by golf courses and is mostly excluded from the SAC. A few dune hills are still intact at Portmarnock Point and there are small dune hills east of Cush Point and at Claremont, towards the eastern end of the site.

Baldoyle Bay SAC (site code: 199) is designated for a range of coastal habitats, including saltmarsh. The following three coastal habitats are included in the qualifying interests for the site (* denotes a priority habitat):

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

These saltmarsh habitats are found in close association with each other.

The following habitats were recorded during the Coastal Monitoring Project (Ryle *et al.*, 2009,) but they are not listed in the qualifying interests for the site:

- Annual vegetation of drift lines (1210)
- Embryonic shifting dunes (2110)
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) (2120)
- Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130)*
- Humid dune slacks (2190)

This backing document sets out the conservation objectives for the three qualifying interest saltmarsh habitats found in Baldoyle Bay 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 latter of which is broken down into a number of attributes, including physical structure, vegetation structure and vegetation composition.

The targets set for the **saltmarsh habitats** are based primarily on the results of the Saltmarsh Monitoring Project (SMP) (McCorry, 2007; McCorry & Ryle, 2009) and this document should be read in conjunction with those reports.

The SMP surveyed, mapped and assessed a single sub-site within Baldoyle Bay SAC (McCorry, 2007): Baldoyle.

The distribution of saltmarsh habitats within Baldoyle Bay SAC is presented in Appendix I. As part of the SMP a detailed individual site report and habitat map was produced for the sub-site and this is included in a set of Appendices to this document (Appendix II).

The conservation objectives for the saltmarsh habitats in Baldoyle Bay are primarily based on the findings of the SMP. While there may be additional small areas of saltmarsh present within the site, it is thought that the one sub-site as surveyed by the SMP represents the total area of saltmarsh within Baldoyle Bay SAC.

## 2 Conservation Objectives

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

## 3 Saltmarsh habitats

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

- ***Salicornia* and other annuals colonising mud and sand (1310)**
- **Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) (ASM) (1330)**
- **Mediterranean salt meadows (*Juncetalia maritimi*) (MSM) (1410)**
- Mediterranean and thermo-Atlantic halophilous scrub (1420)

The first three (in bold) habitats are listed as Qualifying Interests for Baldoyle Bay SAC. The last habitat is restricted in its distribution to sites in the southeast of the country. Detailed descriptions of each habitat in the one sub-site recorded by McCorry (2007) in Baldoyle Bay can be found in Appendix II.

Baldoyle is an 'estuary' type saltmarsh on a mud substrate (Curtis & Sheehy-Skeffington, 1998).

### 3.1 Overall Objectives

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

The overall objective for 'Atlantic salt meadows' in Baldoyle Bay SAC is to '*maintain the favourable conservation condition*'.

The overall objective for 'Mediterranean salt meadows' in Baldoyle Bay SAC is to '*maintain the favourable conservation condition*'.

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

### 3.2 Area

#### 3.2.1 Habitat extent

Habitat extent is a basic attribute to be assessed when determining the condition of a particular habitat. The target is no decrease in extent from the baseline which was established

by McCorry and Ryle (2009). Bearing in mind that coastal systems are naturally dynamic and subject to change, this target is assessed subject to natural processes, including erosion and succession.

The distribution of saltmarsh habitats within Baldoyle Bay is presented in Appendix I. The baseline habitat map produced for Baldoyle saltmarsh during the SMP is included with the individual site report in Appendix II. A total of 14.995ha of saltmarsh habitat was mapped by the SMP within the SAC. The total areas of each saltmarsh habitat within the SAC and the total area of the habitat within each 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 Baldoyle Bay and not all of the saltmarsh mapped is contained within the SAC boundary. 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 (including mosaics) from SMP** | **Total area (ha) of *Salicornia* mudflats within SAC boundary (including mosaics)** |
|---|---|---|
| Baldoyle | 0.39 | 0.383 |
| **Total** | **0.39** | **0.383** |

The target for *Salicornia* mudflats habitats is that the area should be stable or increasing, subject to natural processes, including erosion and succession.

| **Sub-site** | **Total area (ha) of ASM (including mosaics) from SMP** | **Total area (ha) of ASM within SAC boundary (including mosaics)** |
|---|---|---|
| Baldoyle | 12.68 | 11.976 |
| **Total** | **12.68** | **11.976** |

The target for ASM is that the area should be stable or increasing, subject to natural processes, including erosion and succession.

| **Sub-site** | **Total area (ha) of MSM (including mosaics) from SMP** | **Total area (ha) of MSM within SAC boundary (including mosaics)** |
|---|---|---|
| Baldoyle | 2.64 | 2.636 |
| **Total** | **2.64** | **2.636** |

The target for MSM 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

Within Baldoyle Bay SAC, there are five main areas of saltmarsh and Atlantic salt meadow is the dominant saltmarsh habitat type. The main area occurs in the north-west corner of the estuary and to the south of the estuarine river channel. This area contains the largest area of ASM and contains a band of MSM on its landward side. There is extensive *Spartina* sward formation on the seaward side, along the river channel and into the estuary.

There are several patches of *Salicornia* habitat located on both sides, towards the lower end of the estuary. ASM habitat dominates the older area and is covered by spring tides in Baldoyle Estuary. The MSM habitat is characterised by clumps of sea rush (*Juncus maritimus*) and is found in small scattered cluimps along the landward side of most of the saltmarsh (McCorry, 2007).

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

## 3.4 Structure and Functions

The location, character and dynamic behaviour of saltmarshes are governed by sediment supply, tidal regime, wind-wave climate and sea level change. The slope of the saltmarsh allows the development of several ecological gradients such as tidal submergence and salinity, and this influences the development of distinctive zones of halophytic and salt tolerant plant communities. Maintaining the favourable conservation condition of the saltmarsh habitats in Baldoyle Bay in terms of its structure and functions depends on a range of attributes for which targets have been set as outlined below.

### 3.4.1 Physical structure: sediment supply

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

Comparison of the current extent of *Salicornia* flats to an earlier survey of the saltmarsh communities of the Baldoyle Estuary (O'Reilly & Pantin, 1957) indicates that this habitat was much more extensive in the past (McCorry, 2007).

There are no indications of any significant loss in extent of ASM or MSM at this site. There are some small areas of erosion in places and these may have been exacerbated by infilling or sea defence measures (sea wall) (McCorry, 2007).

There are some indications that the area of brackish marsh at Mayne including the MSM community containing Borrer's saltmarsh-grass has decreased. Older maps showed that the brackish vegetation was more extensive in the recent past (McCorry, 2007).

There are some signs of erosion along the seaward edge of the saltmarsh in the mid part of the estuary. Saltmarsh has developed over a thin band of mud overlying shingle and pebbles, and the mud is eroding away back to the stony deposits. There are also signs of erosion on the saltmarsh at the south-eastern corner of the estuary. Accretion has also occurred at the lower end of Portmarnock spit. The sand spit has grown significantly ( by 250m) since the 2nd ed. 6 inch O.S. map was drawn, allowing the development of saltmarsh and sand dunes within the lower lying areas between the dune ridges (McCorry, 2007).

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

### 3.4.2 Physical structure: creeks and pans

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

The largest area of ASM at Baldoyle has a well developed creek and salt pan structure. The other parts of the saltmarsh have a poorly developed structure and are more typical of a fringe type saltmarsh as they occur as a narrow band of saltmarsh around the landward boundary of the estuary, with *Spartina* swards extensive at the seaward side of the ASM (McCorry, 2007).

The MSM habitat at Baldoyle does not form extensive uniform areas, but is generally present as a narrow band of vegetation in mosaic with the ASM vegetation. The saltmarsh topography is poorly developed within this community as its distribution is so narrow and disjunct in places (McCorry, 2007).

The target is to allow creek and pan networks to develop and maintain creek and pan networks where they exist, subject to natural processes, including erosion and accretion.

### 3.4.3 Physical structure: flooding regime

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

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

### 3.4.4 Vegetation structure: zonation

Saltmarshes are naturally dynamic coastal systems. As is the case on the majority of Irish saltmarshes, ASM is the dominant saltmarsh habitat at Baldoyle Bay where it occurs in a mosaic with other saltmarsh habitats, including '*Salicornia* and other annuals colonising mud and sand' and '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 intertidal, shingle and sand dune habitats.

At the Baldoyle sub-site, there are transitions to sand dune habitats as well as transitional mosaics within the saltmarsh habitats (McCorry, 2007).

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

### 3.4.5 Vegetation structure: vegetation height

A varied vegetation structure is important for maintaining species diversity and is particularly important for invertebrates and birds. Grazing is often used as a tool for maintaining structural diversity in the sward but stocking levels need to be appropriate. Overgrazing can lead to loss

of species and destruction of the vegetation cover, while undergrazing can lead to a loss of plant diversity due to competitive exclusion.

Although the saltmarshes around Baldoyle estuary are not grazed by livestock, a diverse sward structure has developed (McCorry, 2007).

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

### 3.4.6 Vegetation structure: vegetation cover

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

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

### 3.4.7 Vegetation composition: typical species & sub-communities

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

There have been some historical records of two other forms of cordgrass in Ireland recorded on saltmarsh or mudflats, namely (*Spartina maritima*) and Townsend's cordgrass (*S. x townsendii*). Boyle (1976) noted a dwarf form of cordgrass at North Bull Island, Baldoyle and in the Broadmeadow estuary and named it *Spartina maritima* forma *dublinensis*. The origin and taxonomic status of this species is uncertain although Boyle stated that it was indigenous and had originated in some of these Irish sites. Boyle (1977) identified Townsend's cordgrass (*S. x townsendii*) on the saltmarsh at North Bull Island. This species is now thought to be extinct at this site as all the original clumps were dug up during the 1970s. Townsend's cordgrass was also recorded at a number of sites around Ireland in the past, but these early records are thought to be dubious as *Spartina anglica* was only formally recognised as a

separate species in 1963. Prior to this, all *Spartina* records were referred to as *S. x townsendii*.

Preston *et al*. (2002) consider both *S. maritima* and *S. x townsendii* to be alien to Ireland. In addition, neither one of these rare cordgrasses has been recorded in the recent past (Doogue *et al*., 1998; Reynolds, 2002). All stands of cordgrass in the Republic of Ireland are now thought to be common cordgrass (*S. anglica*) (McCorry *et al*., 2003, McCorry & Ryle, 2009).

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 Baldoyle Bay area.

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

The saltmarsh at Baldoyle is notable for the presence of several species of local distinctiveness such as Borrer's saltmarsh-grass (*Puccinellia fasciculata*) and meadow barley (*Hordeum secalinum*), both Red Data Book Species (Curtis & McGough, 1988). Rock sea-lavender (*Limonium binervosum*), which is also locally rare around the coast of Ireland (Preston *et al*., 2002) was recorded at this site (McCorry 2007).

### 3.4.8 Vegetation structure: negative indicator species

The only invasive and non-native species recorded on saltmarshes during the SMP was common cordgrass (*Spartina anglica*). This species was recorded extensively throughout Baldoyle BAy SAC by the SMP (McCorry, 2007).

The development of *Spartina* swards has had a significant impact on the Baldoyle estuary in the past 100 years. Common cordgrass has colonised intertidal mudflats seaward of the saltmarsh and has formed extensive swards. These swards developed in the 1950's (O'Reilly & Pantin, 1957). There has also been some transition to ASM along the edges of the Sluice River channel. There is no evidence, however, that the *Spartina* swards are spreading within the Baldoyle Estuary. There are signs of recent dieback along the seaward side of the sward lower down in the estuary. Some clumps have died back and are being eroded. The development of these *Spartina* swards has more than doubled the vegetated area of saltmarsh in the estuary. Common cordgrass has spread on to the former saltmarsh but has not replaced significant areas of ASM with *Spartina* sward. Clumps of common cordgrass are also present within *Salicornia* flats habitat although at low cover values (McCorry, 2007).

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 and an annual spread of less than 1%.

## 4 References


Boyle, P.J. (1976). *Spartina* M9, a variant *Spartina* in three regions north of Dublin. *Scientific Proceedings of the Royal Society of Dublin*, Series A, 5: 415-427.

Boyle, P.J. (1977). *Spartina* on Bull Island. In: *North Bull Island Dublin Bay – a modern coastal history* (eds. D.W. Jeffrey, R.N. Goodwillie, B. Healy, C.H. Holland, J.S. Jackson & J.J. Moore): pp 88-92. Royal Dublin Society, Dublin.

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

Curtis, T.G.H. and McGough, H.N. (1988). *The Irish Red Data Book*. The Stationery Office, Dublin.

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

Doogue, D., Nash, D., Parnell, J., Reynolds, S. & Wyse Jackson, P. (1998). *Flora of County Dublin*. Dublin Naturalist's Field Club, Dublin.

McCorry, M. (2007). *Saltmarsh Monitoring Project 2006.* Unpublished report to the National Parks and Wildlife Service, Dublin.

McCorry, M.J., Curtis, T.G.F. & Otte, M. L. (2003). *Spartina* in Ireland. In : *Wetlands in Ireland* (ed. M.J. Otte). UCD Press, Dublin.

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

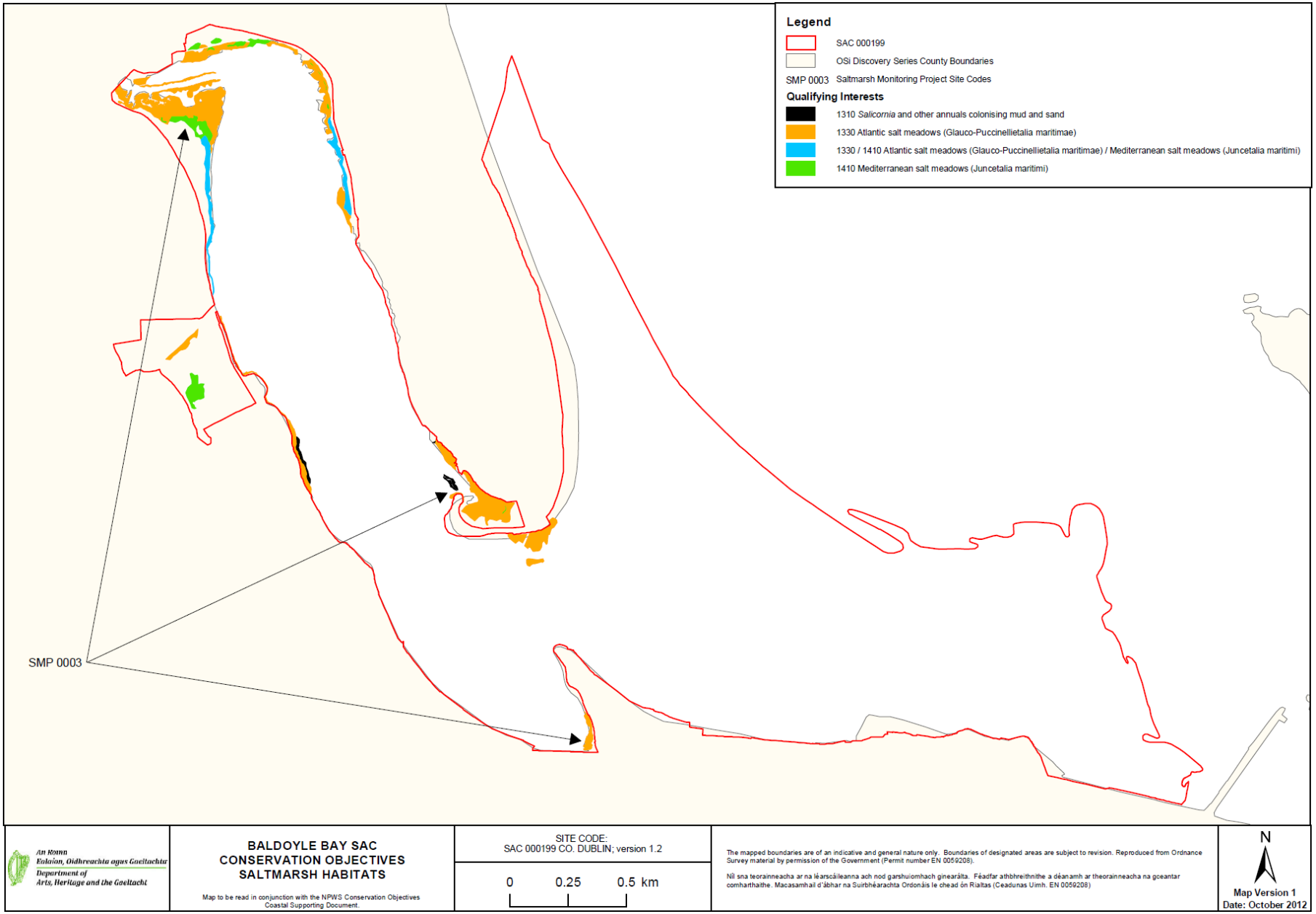
O'Reilly, H. and Pantin, G. (1957). Some observations on the saltmarsh formation in Co. Dublin. Proceedings of the Royal Irish Academy, 58B, 89-128.

Preston, C.D., Pearman, D.A. and Dines, T.D. (2002). *New Atlas of the British and Irish Flora.* Oxford University Press, Oxford.

Reynolds, S. (2002). *A catalogue of alien plants in Ireland*. National Botanic Gardens, Glasnevin.

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 saltmarsh habitats within Baldoyle Bay SAC.



# Appendix II – Baldoyle site report and habitat map from the Saltmarsh Monitoring Project (McCorry, 2007)

## 1 SITE DETAILS

| | | |
|---|---|---|
| SMP site name: **Baldoyle Estuary** | | SMP site code: **SMP0003** |
| Site name (Curtis list): **Baldoyle Estuary** | | CMP site code: **9** |
| | | Site No: (Curtis list): **231** |
| NPWS Site Name: **Baldoyle Estuary** | | Dates of site visit: **8+9/06/2006** |
| NPWS designation | cSAC: **199** | MPSU Plan: **old format plan available** |
| | pNHA: **199** | |
| | SPA: **Baldoyle SPA 4016** | |
| | Nature Reserve: **Baldoyle S.I. No. 233 of 1988** | |
| County: **Dublin** | | Discovery Map: **55** Grid Ref: **324000, 242000** |
| 1st ed 6 inch Map No: **Du15** | | Aerial photos (1995 series): **03133-b, 03134-a, 03065-b, 03065-d, 03066-a, 03066-c** |
| 2nd ed 6 inch Map No: **Du15** | | Aerial photos (2000 series): **03133-b, 03134-a, 03065-b, 03065-d, 03066-a, 03066-c** |
| | | Aerial photos (2005 series): **not available** |
| Annex I habitats currently designated for Baldoyle Estuary cSAC: ***Salicornia* and other annuals colonizing mud and sand (1310)** **Atlantic salt meadows (Glauco-Puccinellietalia maritimae) (1330)** **Mediterranean salt meadows (Juncetalia maritimi) (1410)** | | |
| Saltmarsh type: **Estuary** | | Substrate type: **Mud** |

## 2 SITE DESCRIPTION

Baldoyle Estuary is located in County Dublin to the north of Baldoyle Village and to the south of Portmarnock. This is a small estuary of the River Sluice and is orientated north-south and dominated by intertidal mud and sand flats. It is enclosed by a large sand dune system on the east side. Saltmarshes mainly occur in the northern part of the estuary, on both sides of the estuarine-river channel. Other small areas of saltmarsh occur along the western side, at the end of Portmanock Point and along the southern side of the estuary adjacent to Sutton Dart Station. Another small saltmarsh/brackish marsh area occurs along the Mayne River, which flows into the western side of the estuary. This area contains the rare grass species Borrer's Saltmarsh-grass (*Puccinellia fasciculata*), a species listed on the Flora Protection Order. Baldoyle Estuary also includes a dune system at Portmarnock Point. The

conservation status of the sand dune habitats were assessed by the Coastal Monitoring Project in 2004.

Three Annex I habitats, *Salicornia* flats, Atlantic salt meadows (ASM) and Mediterranean salt meadows (MSM), are found at this site. All three habitats are listed as qualifying interests for the Baldoyle Estuary cSAC. *Spartina* swards are also present at this site. Nearly of the saltmarsh habitat is situated within the cSAC. There are some exclusions at the southern end of Portmarnock Spit. Some of the ASM is located outside the cSAC due to the exclusion of the golf course.

Most of the site is also a National Nature Reserve that is managed by NPWS. The saltmarsh located at the southern end of Portmarnock Spit is excluded from the nature reserve. The estuary is also designated as a SPA due to its importance for wintering waders and wildfowl, including internationally important numbers of Brent Geese.

# 3 HABITATS

## 3.1 General description

There are five main saltmarsh areas, as listed by O'Reilly and Pantin (1957). Atlantic salt meadows is the dominant Annex I saltmarsh habitat (Table 3.1) but *Spartina* swards form the greatest area. The main area (Area 1) occurs in the north-west corner of the estuary and to the south of the estuarine river channel. This area contains the largest area of Atlantic salt-meadow (ASM) and contains a general band of Mediterranean salt-meadow (MSM) (widening to form patches in places and disappearing in other areas) on its landward side. There is extensive *Spartina* sward formation on the seaward side, along the river channel and into the estuary. The saltmarsh habitats narrow towards the south and ASM and MSM eventually develop into a narrow band of vegetation to the landward side of *Spartina* sward. The *Spartina* sward continues to the south of the Mayne Bridge, with only a narrow band of ASM vegetation occurring to its landward side.

Further south, around some formerly reclaimed land adjacent to Baldoyle Racecourse, the *Spartina* sward narrows and eventually meets the shoreline. Some Atlantic saltmarsh occurs at this location (Area 2), having developed behind a small shingle spit, although it is poorly developed with narrow zones and no creeks or pans. A

narrow band of *Salicornia* flats occurs on the sandy mud to the seaward side of the saltmarsh.

A small patch of saltmarsh also occurs adjacent to Sutton Golf Club in the south-east corner of the estuary (Area 3). Here, there is some ASM vegetation, but it is poorly formed, showing signs of erosion and there are no creeks or pans. Some small patches of *Spartina* swards and several isolated clumps occur on the mudflats at this location in addition to several small patches of *Salicornia* flats.

Saltmarsh to the north and north-east of the river channel in the north-east corner of the estuary is dominated by *Spartina* swards (Area 4). A band of mainly ASM occurs to the landward side, widening in places. Sea Rush (*Juncus maritimus*) is present in this area and some of the larger patches are classified as Mediterranean salt meadow. Atlantic salt meadow continues around the eastern side of the estuary and eventually narrows to form a very narrow band to the landward side of the *Spartina* sward. The ASM widens out somewhat to the south of the entrance to Portmarnock Golf Club. The area of saltmarsh located at the end of Portmarnock Point is dominated by ASM (Area 5). There is some *Spartina* sward formation and *Salicornia* flat development to the seaward side and along the estuarine-creek channel.

**Table 3.1.** Area of EU Annex I habitats listed at Ballyteige Estuary.

| EU Code | Habitat | Area (ha) |
|---|---|---|
| 1310 | *Salicornia* and other annuals colonizing mud and sand | 0.39 |
| 1330 | Atlantic salt meadows (Glauco-Puccinellietalia maritimae) | 12.68 [1] |
| 1410 | Mediterranean salt meadows (Juncetalia maritimi) | 2.64 [1] |
| | *Spartina* swards | 38.42 [2] |
| | **Total (excluding *Spartina* swards and clumps)** | **15. 71** |

[1] this total includes 50% of the 1330/1410 mosaic
[2] this total includes 50% of the Spartina sward/mudflat mosaic.

### 3.2 *Salicornia* flats (H1310)

There are several small patches of this habitat located towards the lower end of the estuary on both sides. A narrow band (5-10 m wide) of sandy mudflats along the seaward edge of ASM located on the western side of the estuary (Area 2) is dominated by Glasswort (*Salicornia* sp.). Glasswort is quite sparse in this area (10-30%) and there are occasional isolated plants of Common Saltmarsh-grass (*Puccinellia martima*, Annual Sea-blite (*Suaeda maritima*) and Lax-flowered Sea Lavender (*Limonium humile*) within this zone. Towards the northern end Common

Cordgrass (*Spartina anglica*) becomes more frequent and eventually forms *Spartina* swards, replacing the band of *Salicornia* flats along the lower edge of the saltmarsh.

There are also several patches of this habitat located on the eastern side of the estuary within Area 5. *Salicornia* flats are mainly situated on both sides of a small creek, seaward of *Spartina* swards. These patches are denser (30-40%) and do not contain other pioneer saltmarsh species. These patches transition to intertidal flats on the seaward side.

Small patches of dense Glasswort may also be found in salt pans within the ASM located in the north-west of the estuary (Area 1). Some pans may be totally filled with Glasswort creating patches 5 m in diameter. These areas where not considered when measuring extent.

### 3.3 *Spartina* swards

*Spartina* swards are the most extensive habitat at this site. This habitat is not listed as a qualifying interest for this site. These swards are quite mature and developed quite quickly during and soon after the 1950's (O'Reilly & Pantin 1957). There has not been much significant change since this period. This habitat is usually characterised by a high stem density of Common Cordgrass. There are small amounts of Common Saltmarsh-grass, Lax-flowered Sea Lavender and Greater Sea-spurrey within the sward, particularly closer to the landward boundary. These swards are quite mature and a complex creek structure has developed in the swards. The development of these swards has significantly narrowed the upper part of the Sluice River channel in the north-western corner of the estuary.

There is still a distinctive boundary between the ASM and the *Spartina* sward along much of the boundary with a low saltmarsh cliff situated along the border. Sometimes the ASM/*Spartina* sward boundary follows the exact lower boundary of the saltmarsh marked on the 2nd edition 6 inch map, as indicated from the GPS. This indicates that the *Spartina* sward has predominately developed on intertidal mudflats. In other places the boundary is less distinct and there is a gradual transition from dense *Spartina* sward to a mosaic of *Spartina* sward and ASM and then to isolated clumps of Common Cordgrass situated within the ASM.

Much of the *Spartina* sward located on the southern part of the estuary contains a mosaic of isolated clumps and mudflats at the seaward edge of the denser sward.

There are actually signs of recent dieback along the seaward side of the sward lower down in the estuary (within the areas mapped as *Spartina* clump/mudflat mosaic). Some clumps have died back and are being eroded. There are no signs of Glasswort amongst the clumps of Common Cordgrass forming the clump/mudflat mosaic, seaward of the denser swards.

### 3.4 Atlantic salt meadows (H1330)

This habitat dominates the older area marked as saltmarsh and covered by spring tides in Baldoyle Estuary. The largest area is located in Area 1 in the north-west part of the estuary. O'Reilly and Pantin (1957) described the vegetation composition of the saltmarsh in Baldoyle Estuary in detail.

The largest area of ASM is located in the north-west part of the estuary. This area contains several zones of ASM saltmarsh vegetation. The lower zone is dominated by Sea Purslane with frequent Common Saltmarsh-grass and occasional Greater Sea-spurrey and Lax-flowered Sea Lavender. This zone is quite narrow in places and is most frequent along the northern side of this area. There is generally a distinct boundary with the adjacent *Spartina* swards. The lower zone has frequent clumps of Common Cordgrass spread through it. Within Area 1 there is a low-lying area that was formerly a small bay containing mudflats. This area now contains *Spartina* swards and lower zone ASM with frequent cover of Common Cordgrass. Common Cordgrass within the ASM may reach 40%. Lower marsh ASM vegetation dominated by Sea Purslane has developed along the edges of the Sluice River channel.

Higher up on the marsh there is a mid marsh zone dominated by Sea Pink and Sea Plantain. Other species present in this zone include Sea Aster, Lax-flowered Sea Lavender and Red Fescue. This area has frequent large salt pans and a complex creek network. Common Cordgrass is frequent in this zone within salt pans but it becomes less frequent towards the back of the marsh. This species has also infilled some small creeks within this area. This area contains the best developed topography present at the site. Upper saltmarsh vegetation is dominated by Saltmarsh Rush along the landward boundary and adjacent to the MSM also in this area. The ASM generally transitions to rank grassland or scrub above the high water mark.

There is a generally narrow band of ASM located in Area 4 in the north-east of the estuary. This band of saltmarsh is situated between *Spartina* swards and an

embankment along the road or further north with brackish vegetation located at the landward side. There are patches of MSM vegetation scattered along this band of saltmarsh. The ASM vegetation in the northern section is generally dominated by Red Fescue. The topography is quite uneven. Common Cordgrass is present in the pans and as clumps within the ASM vegetation.

There is a small area of ASM located in the south-east corner of the estuary, adjacent to Sutton Golf Club (Area 3). The saltmarsh is poorly developed and is dominated by Sea Purslane with frequent Common Saltmarsh-grass and occasional Lax-flowered Sea Lavender and Greater Sea-spurrey. There is a narrow band of Red Fescue dominated vegetation along the upper boundary, higher on the embankment, and this contains occasional Sea Arrowgrass and Sea Plantain. There are signs of erosion along the seaward side of the saltmarsh and some clumps of Common Cordgrass have colonised the mudflats adjacent to this area.

A small area of ASM is located at the southern end of Portmarmock Point, adjacent to the golf course (Area 5). This saltmarsh has developed in low-lying sheltered areas between dune ridges in conjunction with the growth of the sand spit in the past 150 years at this location. This area has been modified by the creation of the golf course. A small sheltered area is dominated by a typical mid zone sward dominated by Sea Pink, Sea Plantain and Red Fescue. This area also contains the Rock Sea Lavender (*Limonium binervosum*), which forms a distinctive saltmarsh community with frequent bare substrate, Sea Pink and low growing Sea Purslane This is a feature of local distinctiveness. The sward height is lower compared to the rest of the site and there are significant areas with a low sward height typical of mid zone marsh areas. Common Cordgrass is also present within this saltmarsh and is frequent or dominant in some of the lower zone areas. There is a band of upper marsh vegetation dominated by Red Fescue along an embankment that transitions to amenity grassland. This embankment also contains Sea Beet (*Beta maritima*) and occasional Orache sp. (*Atriplex* sp.) along with Twitch (*Elytrigia repens*). The rest of the saltmarsh transitions to sand dune vegetation with fixed dune along the southern boundary and a dune slack located at the eastern end of the saltmarsh. The ASM transitions to *Spartina* sward at the seaward boundary.

A small area of ASM saltmarsh is situated adjacent to the Racecourse (Area 2). Saltmarsh was more extensive at this site but there has been infilling and reclamation

in the past. This area is eroding at present. This area of saltmarsh is dominated by lower zone vegetation dominated by Sea Purslane and Common Saltmarsh-grass.

### 3.5 Mediterranean salt meadows (H1410)

This habitat is characterised by clumps of Sea Rush. It is found on small scattered clumps in a generally narrow band (1-20 m) along the landward side of most of the saltmarsh. The habitat may be represented by clumps only 1-2 m wide. Its distribution breaks up in places and clumps become isolated from each other. It also forms a mosaic with ASM in places where there are small scattered clumps of Sea Rush mixed with ASM vegetation that forms a narrow zone of saltmarsh.

Sea Rush forms large clumps in places and though it may not actually dominate the cover (cover varies from 30-75%), it is the most characteristic and obvious part of the vegetation. Many of the clumps have other saltmarsh species colonising these clumps and this reduces the actual overall cover of Sea Rush. Sea Purslane is found quite frequently amongst these clumps with Red Fescue. Other species found occasionally include Saltmarsh Rush, Sea Arrowgrass, Sea Aster, Sea Plantain, Sea Pink, Creeping Bentgrass, Common Scurvygrass and Lax-flowered Sea Lavender.

One notable aspect of the distribution of Sea Rush is that it is sometimes found to the seaward side of ASM vegetation and adjacent to the *Spartina* sward. This occurs in the narrow bands of ASM/MSM mosaic. Common Saltmarsh-grass and Lax-flowered Sea Lavender are found within this vegetation associated with the clumps of Sea Rush. This zone also contains pans infilled with common Saltmarsh-grass. The ASM and MSM were mapped as a mosaic as the saltmarsh is quite narrow and it would be difficult to map the two habitats separately. This saltmarsh on the western side of the estuary transitions to rank grassland dominated by Twitch.

This habitat is also situated behind a low embankment in the northern part of the estuary. It forms patches dominated by Sea Rush amongst brackish vegetation. Species such as Common Reed, Silverweed (*Potentilla anserina*), Curled Dock (*Rumex crispus*) Reed Canarygrass (*Phalaris arundinacea*) indicate the brackish nature of the adjacent vegetation. There are also patches dominated by Twitch, and Nettle (*Urtica dioica*), Thistle (*Cirsium arvense*) and Bramble (*Rubus fruticosus*) are spreading in to this area and forming thickets in areas elevated above the high water mark.

There is generally little development of saltmarsh topography within the MSM habitat as it forms generally narrow zones. Small salt pans are present but these occur infrequently and there are few creeks.

Part of the brackish marsh located along the Mayne River can be classified as MSM due to the presence of Borrer's Saltmarsh-grass (*Puccinellia fasciculata*). This species is very rare in Ireland and is listed on the Flora Protection Order. It has only been recorded from seven 10 $km^2$ squares in Ireland (Preston *et al.* 2002). Borrer's Saltmarsh-grass was not recorded during this survey but Saltmarsh-grass sp. (*Puccinellia* sp.) was present. Meadow Barley (*Hordeum secalinum*) has also been recorded from this site, although it is not known if it was present in the saltmarsh habitat. This species is also listed on the Flora Protection Order.

A small low-lying area is inundated occasionally by the tide accessing this area via the Mayne River and several drains. This area contains hollows with mid-upper zone marsh, ASM-like vegetation with frequent Red Fescue, Creeping Bentgrass, Sea Milkwort, Sea Plantain, Sea Arrowgrass and Saltmarsh Rush along with Saltmarsh-grass spp. (*Puccinellia* spp.). It has been disturbed in the past and some creek-like drains are connected to a larger drain to the west. This large drain/channelised stream is partially infilled with Common Reed (*Phragmites australis*) and Sea Club-rush (*Bolboschoenus maritimus*). This is a mosaic area that is dependant on the topography and there are frequent tussocks with more brackish and terrestrial vegetation within the MSM saltmarsh area. There are signs of brackish conditions with Silverweed, White Clover (*Trifolium repens*), Twitch and Curled Dock appearing around the edges of this area and on some low mounds and tussocks within the MSM area. The vegetation around the edge of this habitat is dominated by Twitch and meadow grassland (GS3). The sward height is quite high and this area is not grazed at present.

## 4 IMPACTS

There are several impacts on this site (Table 4.1). These impacts can be divided into older impacts that are still having a residual impact and current impacts and activities on the site. There are few current impacts within the site, with the main impact being the presence of Common Cordgrass. The activitiy codes used in Table 4.1 are given in brackets in the following text.

There are frequent signs of old reclamation works, infilling (800) drainage (810) and modification of the drainage channels (850) around the estuary that have affected the saltmarsh. These activities, while they may still be having a residual impact are not assessed as they occurred prior to the current period of assessment. A drain crosses the north-east part of the estuary and this drain has a low ridge alongside it created by the spoil from the embankment. This drain looks like it has been deepened or cleaned in the past 20 years. The north-west corner of the estuary and saltmarsh adjacent to the bridge has also been modified with an old wall along the Sluice River channel. This area also has a series of sea walls that may have been part of a small harbour or boat jetty in the past. This area also has a series of grassy mounds that are likely to have been spoil or soil dumped on the site in the past. Some old rubble has been dumped in this area. The saltmarsh vegetation seems to have colonised this area and developed in the hollows.

There are also signs of older reclamation works and drainage along the western side of the estuary. There are a series of old embankments and ridges along the upper saltmarsh and landward boundary of the saltmarsh along this side of the estuary. A small area of saltmarsh located adjacent to the Race Course has been reclaimed (probably infilled) and now contains several houses, gardens and some rank grassland. Further north there are signs that some of the saltmarsh has been infilled in the past with this area now containing rank grassland and scrub along the road.

The small area of ASM saltmarsh located in Area 5 has been slightly damaged by wheel ruts and vehicle use along an old track (501). These vary in age and some old ruts have been vegetated by Common Cordgrass. Portmarnock Golf Course is situated very close to this part of the saltmarsh with a fairway situated on higher land adjacent to an embankment down to the saltmarsh.

Much of the saltmarsh habitat has embankments (870), sea walls or sea defence features such as large boulders (871) along the landward boundary. The presence of these hard artificial boundaries prevents the potential landward migration of saltmarsh habitats in response to sea level rise.

The saltmarsh around this estuary is not grazed by livestock and this has allowed a diverse sward structure to develop. The upper saltmarsh is generally dominated by tall grasses (0.4 m high). The sward height is noticeably higher than at Bull Island

indicating that natural grazing levels are quite low. This is probably related to the fact that the estuary is quite enclosed and surrounded by roads and urban areas, so there are few wildlife corridors to the site. The saltmarsh in Area 5 had a lower sward height and this may indicate that it is grazed by Hares and other animals, as there are mammal tracks present. The Mediterranean salt meadows located in Area 6 north of Racecourse area also have tall sward height and this area is not grazed extensively.

There are some signs of erosion (900) along the seaward edge of the saltmarsh situated in the mid part of the estuary (Area 2). Saltmarsh has developed on a thin band of mud overlying shingle and pebbles, and the mud is eroding away back to the stony deposits. There are also signs of erosion on the saltmarsh located in the south-eastern corner of the estuary. Accretion (910) has also occurred at the lower end of Portmarnock Spit. The sand spit has grown significantly since the 2nd ed. 6 inch OS map was drawn (by 250 m), allowing the development of sand dunes and saltmarsh within the lower lying areas between the dune ridges. Most of this accretion has occurred prior to the current period of assessment.

The development of the *Spartina* swards has also had a significant impact in the estuary in the past 100 years. Common Cordgrass has mainly colonised intertidal mudflats seaward of the saltmarsh and has formed extensive swards (954). The impacts on the mudflats (also an Annex I habitat) are not assessed during this survey. These swards developed in the 1950's (O'Reilly & Pantin 1957). There has also been some transition to ASM along the edges of the Sluice River channel.

There is no evidence to indicate that *Spartina* swards are still spreading within Baldoyle Estuary. There are actually signs of recent dieback along the seaward side of the sward lower down in the estuary (within the areas mapped as *Spartina* clump/mudflat mosaic). Some clumps have died back and are being eroded. The development of these *Spartina* swards has more than doubled the vegetated area of saltmarsh in the estuary. Common Cordgrass has spread onto the former saltmarsh but has not replaced significant areas of ASM with *Spartina* sward. Clumps of Common Cordgrass are also present within the *Salicornia* flats habitat although at low cover values.

Activities occurring outside the site include roads (502) situated very close to or adjacent to the saltmarsh, extensive urban areas (401) and golf course (601).

**Table 4.1.** Intensity of various activities on saltmarsh habitats at Baldoyle Estuary.

| EU Habitat Code[1] | Activity code[2] | Intensity[3] | Impact[4] | Area affected (ha) | Location of activity[5] |
|---|---|---|---|---|---|
| 1310 | 954 | C | -1 | 0.39 | Inside |
| 1330 | 501 | C | -1 | < 0.01 | Inside |
| 1330 | 900 | C | -2 | < 0.01 | Inside |
| 1330 | 954 | C | -1 | 12.68 | Inside |
| 1410 | 954 | C | 0 | 1 | Inside |
| 13s | 401 | C | 0 | 12 | Outside |
| 13s | 502 | C | 0 | 12 | Outside |
| 13s | 601 | C | 0 | 2.2 | Outside |

[1] EU codes as per Interpretation Manual.
[2] Description of activity codes are found in Appendix III summary report.
[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 sand dune habitat that are impacting the saltmarsh habitat.

## 5 CONSERVATION STATUS

Overall, this site has a favourable conservation status (Table 5.1). This site has been subject to significant infilling, reclamation, drainage and modification of drainage channels in the past 150 years. These activities are still having a residual impact on the site in places.

**Table 5.1.** Conservation status of Annex I saltmarsh habitats at Baldoyle Estuary.

| 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 | | | Favourable |
| **Mediterranean salt meadows (1410)** | Extent, Structure and functions, Future prospects | | | Favourable |

There are few current activities or impacts within the site. The most significant impact is the presence of Common Cordgrass, an invasive species. This saltmarsh is also notable for the presence of several species of local distinctiveness, including Borrer's Saltmarsh-grass and Meadow Barley, both Red Data Book species, and Rock

Sea Lavender, a species of local distinctiveness. There are several significant activities acting on the site from outside, including roads situated close or alongside the boundaries of both sides of the estuary, the presence of urban areas and the presence of a golf course on Portmarnock Spit.

## 5.1 *Salicornia* and other annuals colonizing mud and sand (H1310)

### *5.1.1 Extent*

The extent of this habitat is assessed as favourable in the absence of accurate information on the previous extent of this species within the assessment period. O'Reilly and Pantin (1957) surveyed the saltmarsh plant communities of the Baldoyle Estuary. This survey indicated that patches of Glasswort were previously more extensive on the mudflats. A strip of Glasswort was found in the south-east corner of the estuary and no *Salicornia* flats are present at this location during the current survey. Glasswort patches may have also been more extensive on sandflats adjacent to the racecourse but this area has been disturbed by infilling. *Salicornia* flats are still present in this area but are not extensive. These losses in extent are not considered as they occurred prior to the current period of assessment.

### *5.1.2 Habitat structure and functions*

The structure and functions of this habitat are assessed as *favourable*. Two monitoring stops were recorded in this habitat and both passed. All the attributes reached their targets. This habitat is acting as a pioneer saltmarsh community along the ASM saltmarsh located adjacent to the Race Course (Area 2). However, there are signs of erosion at this site and this may aiding the development of this habitat by providing bare substrate for colonisation. Common Cordgrass is present within this habitat and is a negative indicator. However, it is currently found at low cover values < 10%). There were no other negative indicators on this habitat. On the other side of the estuary the *Salicornia* flats transitions to *Spartina* swards. Patches of *Salicornia* flats are also present in salt pans within the large area of ASM. These patches also act as pioneer saltmarsh vegetation.

### *5.1.3 Future prospects*

The future prospects of this habitat are assessed as *unfavourable-inadequate*. This is due to the presence of Common Cordgrass within and adjacent to this habitat. This

species has the potential to colonise within the *Salicornia* flats habitat and replace it. There are no other significant impacts or activities on this habitat.

## 5.2 Atlantic salt meadows (H1330)

### *5.2.1 Extent*

The extent of this habitat is assessed as *favourable*. There are no indications of any significant loss of habitat within the current assessment period. There have been losses of extent during the past 50 years but these are not assessed as they occurred prior to the current assessment period. There are signs of erosion at Areas 2 and 3. These are small ASM areas and erosion may have been exacerbated by infilling or sea defence measures (sea wall) located adjacent to these patches of ASM. There are no indications that there have been significant losses of extent due to erosion during the assessment period as these patches of saltmarsh are quite small in relation to the rest of the site.

O'Reilly and Pantin (1957) surveyed the saltmarsh plant communities of the Baldoyle Estuary. Since then Common Cordgrass has spread and colonised significant areas of mudflats and has also spread into the ASM. However, it has not transformed much ASM into *Spartina* swards. In fact the opposite has occurred and some *Spartina* swards are now developing into lower zone ASM saltmarsh. This is particularly notable along the edge of the Sluice River channel. This channel has narrowed and the *Spartina* sward banks have been raised somewhat to a higher level compared to the sward landward of the bank, probably due to siltation from the river. This has allowed the development of vegetation dominated by Sea Purslane in a narrow band along these banks. There are no indications that Common Cordgrass has spread significantly on the ASM during the current assessment period.

Some saltmarsh along the western side of the estuary has been infilled since the O'Reilly and Pantin (1957) survey and the extent of ASM was likely to have been reduced. Counter-acting some of this loss of habitat, there has been some creation of saltmarsh habitat at the southern end of Portmarnock Spit since this survey.

### *5.2.2 Habitat structure and functions*

The structure and functions of this habitat are assessed as *unfavourable- inadequate*. Twelve stops were carried out in this habitat and eleven passed. One monitoring stop failed due to damage from wheel ruts, which damaged part of the saltmarsh located at

the southern end of Pormarnock Spit. All the attributes reached their targets. The saltmarsh had a typical species diversity and several different saltmarsh communities were present, including one with Rock Sea Lavender, which is a species of local distinctiveness. The sward height was relatively tall due to the absence of livestock grazing and lower levels of grazing by wild birds and animals. However, the sward structure was still quite diverse due to the presence of several different communities including the taller grassier communities of the mid-upper marsh and the lower communities dominated by Sea Pink and Sea Plantain of the mid-lower marsh. The largest area of saltmarsh has a well developed creek and salt pan structure. The other parts of the saltmarsh have a poorly developed structure and are more typical of a fringe type saltmarsh as they occur as a narrow band of saltmarsh around the landward boundary of the estuary, with *Spartina* swards extensive at the seaward side of the ASM.

Common Cordgrass is a prominent part of parts of the ASM, particularly in the lower zone areas of Area 1. It may reach cover values of 40%. Areas with cover above 40% were classified as *Spartina* swards, but these areas still had significant amounts of ASM vegetation within them. Broader natural transitions have developed between the *Spartina* sward and the ASM in this area due to the spread of Common Cordgrass onto the ASM, compared to the more abrupt boundary between these two habitats where *Spartina* swards colonised mudflats at the edge of the ASM. Between the period 1950 and 1955, saltmarsh of almost pure stands of Sea Purslane and Common Saltmarsh-grass in the raised saltmarsh in the north-west corner of the estuary (Area 1) were replaced by Common Cordgrass (O'Reilly and Pantin, 1957). This change in vegetation structure is not assessed as it occurred prior to the current assessment period. The spread of Common Cordgrass has significantly limited the extent of lower zone saltmarsh dominated by Saltmarsh-grass although small patches of this vegetation can be seen along the edges of some of the creeks and salt pans. This species is more usually found occasionally or frequently in conjunction with Sea Purslane and common Cordgrass. There are no indications that Common Cordgrass has spread on the ASM during the current assessment period.

There are relatively few transitional areas where the saltmarsh naturally transitions to terrestrial habitats. Most of the saltmarsh is situated along man-made boundaries, such as seawalls along road sides. There are some small transitions to Twitch-

dominated grassland and rank grassland up narrow embankments that were probably affected by infilling. Natural transitional areas can be seen at the southern end of Portmarnock Spit where saltmarsh transitions to sand dune habitats and in the north-east corner where there is a small area of brackish vegetation behind a low embankment. These areas increase in importance due to the relatively limited extent of natural transitions around the rest of the estuary.

#### *5.2.3 Future prospects*

The future prospects of this habitat are assessed as *favourable*. This assessment assumes that current management activities and impacts on this habitat continue in the near future. There are few impacts or activities affecting this habitat. Most of this habitat is located within the Baldoyle Nature Reserve. The area located at the southern end of Portmarnock Spit is excluded for the nature reserve and may be vulnerable to future disturbance from the adjacent golf course.

### 5.3 Mediterranean salt meadows (H1410)

#### *5.3.1 Extent*

The extent of this habitat is assessed as *favourable*. There are no signs that the extent of the Sea Rush-dominated community has changed recently and there are no significant impacts on it such as erosion.

There are some indications that the area of brackish marsh at Mayne including the MSM community containing Borrer's Saltmarsh-grass has decreased. Older maps showed that brackish vegetation was more extensive in the recent past (Natura 2000 explanatory map etc). However, more information is required before the extent for this community is assessed as unfavourable. This perceived reduction may be related to differences in classification of plant communities, with a narrower classification being used during this survey.

#### *5.3.2 Habitat structure and functions*

The structure and functions of this habitat are assessed as *favourable*. Seven monitoring stops were carried out in this habitat and they all passed. All attributes reached their targets. The Sea Rush dominated community has a typical species diversity. The presence of this community adds to the overall habitat diversity and

sward height diversity. This community does not form extensive uniform areas at this site but is generally present as a narrow band of vegetation in mosaic with the ASM vegetation. Saltmarsh topography is poorly developed within this community as its distribution is so narrow and disjunct in places.

The presence of a salt marsh community at Mayne Marsh with Borrer's Saltmarsh-grass increases the conservation value of this habitat, as this is a species of local distinctiveness. This is a brackish saltmarsh community and contains frequent indications of transitional vegetation.

### *5.3.3 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 affecting this habitat. Most of this habitat is located within the nature reserve. The brackish marsh at Mayne Marsh is excluded from the nature reserve.

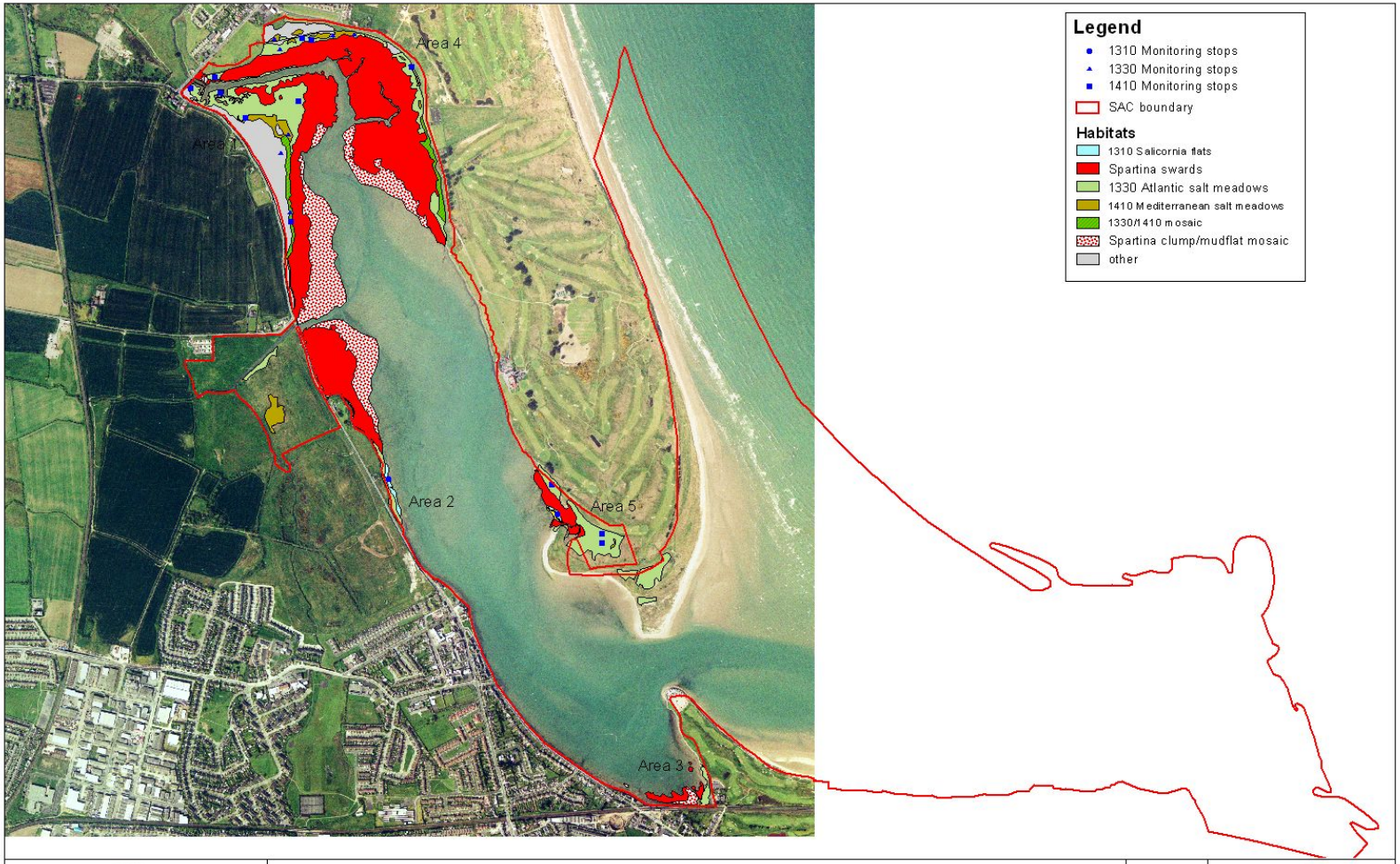
## 6 MANAGEMENT RECOMMENDATIONS

No management is required for this site.

## 7 REFERENCES

O'Reilly, H. & Pantin, G. (1957). Some observations on the salt marsh formation in Co. Dublin. *Proceedings of the Royal Irish Academy*, 58B, 89-128.

Preston, C.D. Pearman, A. & Dines, D. (2002). *New atlas of the British and Irish Flora*. Oxford University Press.




Saltmarsh Monitoring Project

**Baldoyle Estuary**

Baldoyle Estuary cSAC (0000199)

SMP Code: **SMP0003**

Map produced by: **SMP 2006**

Map Version: **1**

0 0.2 0.4 0.6 0.8 Kilometers

Scale: **1:13695**

N