RPS

# REMOVAL OF SEA LETTUCE, WEST CORK

# HABITATS DIRECTIVE ASSESSMENT REPORT

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# Removal of Sea Lettuce, West Cork Habitats Directive Assessment Report

# DOCUMENT CONTROL SHEET

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|---|---|---|---|---|---|---|
| Client | Cork County Council | | | | | |
| Project Title | Sea Lettuce Removal at Inchydoney, Harbour View, Coolmain and Garretstown Beaches, West Cork | | | | | |
| Document Title | Habitats Directive Assessment Report (Stage 1 Screening and Stage 2 Assessment) | | | | | |
| Document No. | RPS/MCW0619RP0001F01 | | | | | |
| This Document Comprises | DCS | TOC | Text | List of Tables | List of Figures | No. of Appendices |
| | 1 | 1 | 30 | 0 | 0 | 1 |

| Rev. | Status | Author(s) | Reviewed By | Approved By | Office of Origin | Issue Date |
|---|---|---|---|---|---|---|
| A01 | Draft | R. Mundy & A. McSwiney | | | Cork | 28/04/2010 |
| F01 | Final | R. Mundy | | | Cork | 17/05/2010 |
| | | | | | | |
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# SEA LETTUCE REMOVAL, WEST CORK

# HABITATS DIRECTIVE ASSESSMENT REPORT

## 1. INTRODUCTION

The deposition of seaweed (sea lettuce and other species) is an increasing problem on beaches along the coast of County Cork. As the sea lettuce rots it causes odour problems, is unsightly and attracts flies, thereby reducing the amenity value of the beaches. The Health Service Executive has confirmed media reports of serious health effects of accumulations of rotting sea lettuce in north western France through contact with the public health protection counterparts at national and local level in France.

The accumulations of rotting seaweed can also interfere with public access to the beaches. The problem has been particularly severe in recent seasons at Inchydoney, Harbour View, Coolmain and Garretstown beaches all of which have a high amenity value.

Cork County Council proposes to remove quantities of the accumulated seaweed from the beaches during the summer seasons of 2010, 2011 and 2012 in order to alleviate the problem (see Section 3.2 for details).

The purpose of this assessment is to establish whether or not the removal of seaweed from these beached is likely to have any significant negative effect on any Natura 2000 site and to propose ways in which any negative effect that is identified can be avoided or mitigated.

If necessary, the Habitats Directive Assessment (HDA) process progresses through four stages. If at any stage in the process it is determined that there will be no significant effect on any Natura 2000 site, the process is effectively completed. For the purposes of the current assessment, Stage 1 Screening (Section 3 of this Report) and Stage 2 Appropriate Assessment (Sections 4 and 5) have been completed. It has not proved necessary to progress the HDA process to Stages 3 and 4 in respect of this project.

Potential impacts on Natura 2000 sites as a result of the sea lettuce removal programme have been identified for two of the beaches but not for the other two. The beaches at Harbour View and Inchydoney lie within the boundaries of Natura 2000 sites and it is considered that the sea lettuce removal programme at these beaches has the potential to result in negative impacts on those sites (see Section 3 and 4). No such potential impacts have been identified as a result of removal of sea lettuce from beaches at Coolmain or at Garrettstown as none of the likely effects discussed in Sections 3 and 4 apply at those beaches which do not lie within the boundary of any Natura 2000 designation.

Three possible negative impacts of the sea lettuce removal programme on Natura 2000 sites have been identified, these are:-

- Incidental removal of substrate (sand) affecting the development of the Annex I habitat types, 'Embryonic shifting dunes' and 'Annual vegetation of drift lines' within *Clonakilty Bay* cSAC and *Courtmacsherry Estuary* cSAC;

- Incident removal of seeds affecting the development of the Annex I habitat type, 'Annual vegetation of drift lines' within *Clonakilty Bay* cSAC and *Courtmacsherry Estuary* cSAC; and

- Direct loss and damage to the Annex I habitats 'Fixed dunes', 'Shifting dunes', 'Decalcified dunes' 'Embryonic shifting dunes' and 'Annual vegetation of drift lines' as a result of vehicular access to the beaches within *Clonakilty Bay* cSAC and *Courtmacsherry Estuary* cSAC.

All of these potential impacts are considered to be mitigable and mitigation measures are proposed (see Section 5) that will facilitate the avoidance of any significant negative impact on any Natura 2000 sites as a result of the sea lettuce removal programme at Harbour View and at Inchydoney.

# 2. METHODOLOGY

## 2.1 Requirements of the Habitats Directive

The requirement for Habitats Directive Assessment (HDA) (also known as 'Appropriate Assessment') of plans or projects originates from Article 6 (3) and (4) of *European Union (EU) Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora*, commonly known as the 'Habitats Directive', which is implemented in Ireland through the European Communities (Natural Habitats) Regulations of 1997. The wording of Article 6 (3) of the Directive is as follows:-

> *'Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.'*

The wording of Article 6 (4) of the Directive is as follows:-

> *'If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.'*

Appropriate Assessment Guidelines for Planning Authorities were published by the Department of the Environment Heritage and Local Government in December 2009 (DoEHGL, 2009). The HDA process in the Republic of Ireland should be conducted in full consolation with the National Parks and Wildlife Service, and this Report has been produced following extensive correspondence and liaison with NPWS in relation to the sea lettuce removal programme. In addition to the advice available from NPWS, the EU has published a number of documents which provide guidance on the requirements of Appropriate Assessment, including, *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites - Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*, (EC, 2002), which sets out the principles of how to approach decision making during the process and this have been followed as closely as possible.

## 2.2 Methodology

If necessary, the Appropriate Assessment process progresses through four stages. If at any stage in the process it is determined that there will be no significant effect on any Natura 2000 site, the process is effectively completed. The four stages are as follows:-

- Stage 1 – Screening of the proposed Sea Lettuce Removal Programme
- Stage 2 – Appropriate Assessment of the proposed Sea Lettuce Removal Programme;
- Stage 3 – Assessment of alternative solutions; and
- Stage 4 – Assessment of compensatory measures.

Stages 1 and 2 relate to Article 6(3) of the Habitats Directive; and Stages 3 and 4 to Article 6(4). For the purposes of the current assessment, Stage 1 (Section 3 of this Report) and Stage 2 (Sections 4 and 5) have been completed. It has not proved necessary to progress the HDA process to Stages 3 and 4 in respect of this project.

**Stage 1 – Screening**

The aim of Stage 1, 'Screening' is to determine whether or not Stage 2, the Appropriate Assessment is required, i.e. to determine whether or not the proposed project is likely to negatively affect the conservation objectives on any Natura 2000 site. This is done by examining the design of the proposed project and the conservation objectives of any Natura 2000 sites that might potentially be affected.

**Stage 2 – Appropriate Assessment**

The aim of Stage 2, the 'Appropriate Assessment' proper, is to identify any significant negative impacts that the project might have upon Natura 2000 sites and to propose changes to the project design that will avoid any such negative impacts. The project design should then be amended accordingly, thereby avoiding the need to progress to Stage 3, which would require the County Council to implement measures to mitigate or compensate for the identified negative impacts on Natura 2000 sites.

A key consideration of Appropriate Assessment is that the Plan or Project under consideration must take account of potential impacts on Natura 2000 sites 'in combination' with other plans or projects. The potential for such impacts are discussed in Section 3.6.

**Stage 3: Assessment of Alternative Solutions**

It is an objective of the HDA process to avoid the need to progress to Stage 3, which can be achieved by implementing the avoidance and mitigation measures determined during Stage 2. If however it is not possible to reduce impacts to acceptable, non-significant levels by avoidance and mitigation, Stage 3 of the HDA process must be undertaken, which is to objectively assess whether alternative solutions exist by which the objectives of the plan or project can be achieved. Explicitly, this means alternative solutions that do not have negative impacts on the conservation objectives of the Natura 2000 site.

This stage of the HDA process involves identifying the key objectives of the plan or project, identifying alternative solutions to achieving those objectives and then assessing each alternative against the criteria used in Stage 2 of the HDA. Clearly this involves a great deal of work on the part of both the HDA practitioner and the proponent of the plan or project.

Fundamentally, there are two pre-conditions that must be met before the Competent Authority (DoEHLG) can allow a development that negatively impacts upon the conservation objectives of a Natura 2000 site, and it is at this stage of the HDA process that the first of these is determined: that 'no alternatives exist' (the second precondition relates to 'over-riding public interest' and 'human health and safety considerations' and is determined in Stage 4). It should also be noted that EU guidance on this stage of the process states that, 'other assessment criteria, such as economic criteria, cannot be seen as overruling ecological criteria'. In other words, if alternative solutions exist that do not have negative impacts on Natura 2000 sites, they should be adopted regardless of economic considerations.

### Stage 4: Assessment Where no Alternative Exists and Where Adverse Impacts Remain

As stated above, this Stage of the HDA process is undertaken when it has been determined that negative impacts on the conservation objectives of a site will result from a plan or project, but that no alternatives exist. At this Stage of the HDA process, it is the characteristics of the plan or project itself that will determine whether or not the Competent Authority can allow it to progress. This is the determination of 'Imperative Reasons of Overriding Public Interest'.

It is important to note that in the case of Natura 2000 sites that include in their Qualifying Features 'Priority' habitats or species, as defined in Appendices 1 and 2 of the Directive, the demonstration of 'over-riding public interest' is not sufficient, and it must be demonstrated that the plan or project is necessary for 'human health or safety considerations'.

Where plans or project meet these criteria, they can be allowed, provided adequate compensatory measures are proposed. Stage 4 of the process defines and describes these compensation measures.

# 3. STAGE 1 – SCREENING

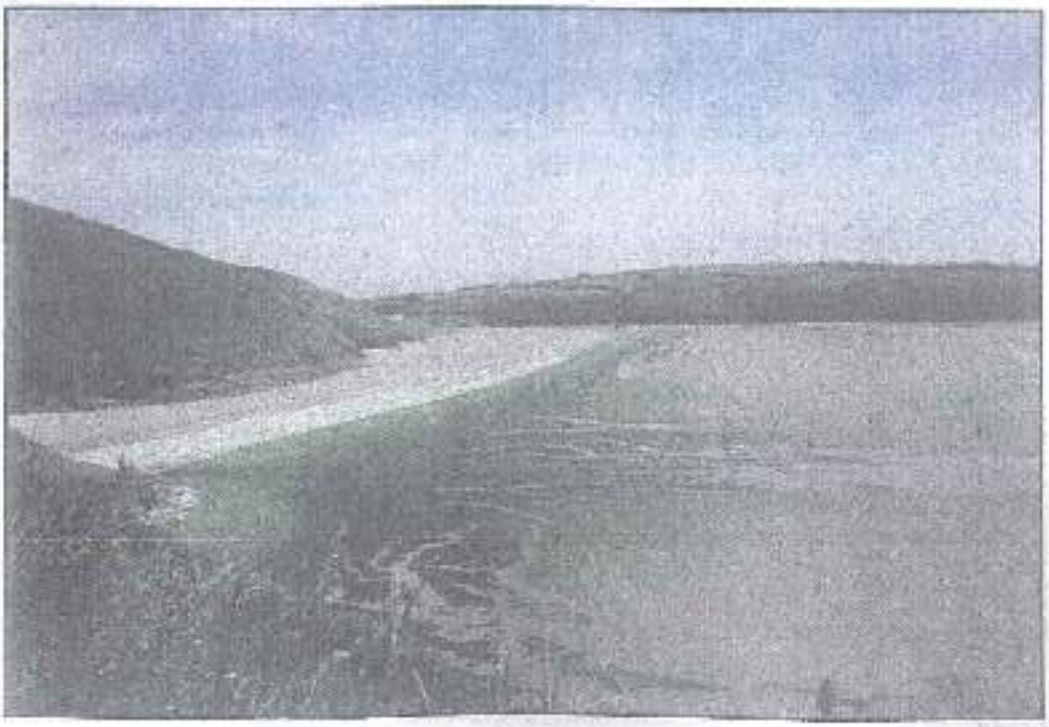
## 3.1 Introduction to the Screening Process

This stage of the HDA process involves establishing whether or not the plan is likely to have a significant effect on the conservation objectives of any Natura 2000 site. The screening process requires an initial review of the project to identify any elements of either construction, operation or decommissioning that might potentially have impacts upon Natura 2000 sites; and a review of the 'Qualifying Features' and 'Conservation Objectives' of all Natura 2000 sites that could potentially be subject to the impacts that have been identified. Whether or not impacts are likely to be of significance is then determined.

## 3.2 Project Description

It is estimated that approximately 10,000 tonnes wet weight of green seaweed (*Ulva* spp., *Enteromorpha* sp., etc., referred to henceforth in this report as 'sea lettuce') is washed ashore annually on Coolmain, Harbour View, Inchydoney and Garrettstown beaches. Removal of the sea lettuce from these beaches is the subject of this assessment. Figure 3.1 shows the location of these beaches. Figure 3.2 below shows the Natura 2000 sites within 5km of the four beaches Plate 3.1 below illustrates the extent of sea lettuce at Inchydoney during the summer of 2009.

**Plate 3.1: Sea Lettuce at Inchydoney, Summer 2009**



The build up of sea lettuce on the beaches poses a nuisance to beach users, bathers and tourism. Consequently Cork County Council is proposing to remove the sea lettuce throughout June, July, August and September for the next three years: 2010, 2011 and 2012.

The project comprises the removal of approximately 10,000 tonnes wet weight of sea lettuce per annum. The amount of sand that will be removed as part of the process is expected to be minimal as the sea lettuce will be collected by pushing it along the sand with a blade into heaps with the least disturbance to the sand as possible, Plate 3.2 below shows the typical machinery that will be used to remove the sea lettuce. The proposed access routes of the machinery are shown on Figures 3.3, 3.4 and 3.5.

It is anticipated that the following quantities will be removed between June to September each year, this may vary significantly year on year but based on previous exp the following has been estimated:-

- Harbour View- 30 x 5 tonne loads, 15 times;
- Inchydoney -50 x 5 tonne loads, 20 times;
- Coolmain – 23 x 5 tonne loads, 15 times; and
- Garretstown –22 x 5 tonne loads, 9 times.

Figures 3.3, 3.4 and 3.5 depict (in green) the areas where it is expected that the sea lettuce removal will occur. This is based upon the location where accumulations have occurred in previous summers.

The vehicle trips will be as per the above estimate, 23 x 15 times for Coolmain, 30 x 15 times for Harbour View, 50 x 20 for Inchydoney and 22 x 9 times for Garretstown. Access routes for each of the sites are shown on Figures 3.3, 3.4 and 3.5 respectively.

The material will not be stockpiled on site; a separate study is currently underway exploring options for storage of material offsite.

**Plate 3.2: Typical Machinery Used for Removal of Sea Lettuce**

## 3.3 Natura 2000 Sites Included in the Screening Assessment

Clearly a key variable that will determine whether or not a particular Natura 2000 site is likely to be negatively effected is its physical distance from the project site, and it will generally, but not necessarily, be the case that the greater the distance the lower the possibility of impacts. The *Guidelines for Planning Authorities* (DoEHLG, 2009) state that the (Stage 2) Assessment process should include the following Natura 2000 sites:-

1. *Any Natura 2000 sites within or adjacent to the plan or project area.*

   The Inchydoney beaches are within the boundaries of both *Clonakilty Bay* cSAC (Site code 0091) and *Clonakilty Bay* SPA (Site code 4081).

   **On this basis *Clonakilty Bay* cSAC (site code: 000091) and *Clonakilty Bay* SPA (site code: 004081) are included in the assessment and the potential for impacts on these sites will be screened.**

   Harbour View is within the boundary of *Courtmacsherry Estuary* cSAC (Site code 1230) and is within the boundary of the proposed *Courtmacsherry Estuary* SPA (which will be similar to that of the cSAC), which is currently being prepared for formal designation.

   **On this basis, *Courtmacsherry Estuary* cSAC (site code: 001230) and Courtmacsherry Estuary proposed SPA are included in the assessment and the potential for impacts on these sites will be screened.**

2. *Any Natura 2000 sites within the likely zone of impact of the plan or project. A distance of 15km is currently recommended in the case of plans, and derives from UK guidance (Scott Wilson et. al., 2006). For projects, the distance could be much less than 15km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects.*

   Other than those discussed above, the Natura 2000 sites closest to the beaches proposed for sea lettuce removal are *Galley Head to Duneen Point* SPA, *Seven Heads* SPA, *Kilkeran Lake and Castlefreake Dunes* cSAC, *Old Head of Kinsale* SPA and *Sovereign Islands* SPA (see Table 3.1). The qualifying features and conservation objectives of these four sites vary, however none is dependent upon any parameter that might be affected by the proposed works. Hence, no 'pathway' by which sea lettuce removal works on the subject beaches could impact upon these sites has been identified, and no such 'pathway' is considered likely to exist. Hence, none of these sites, nor any other sites more distant from the subject beaches, are included for assessment on this basis.

**Table 3.1: Details of the Natura 2000 Sites located within 15km of The Subject Lands**

| Site Name | Designation | Site Code | Approximate Location Relative to The Subject Lands |
|---|---|---|---|
| Seven Heads | SPA | 004191 | 4km south of Coolmain and Harbour View |
| Old Head of Kinsale | SPA | 004021 | 3km southeast of Garrettstown; 8km southeast of Coolmain |
| Sovereign Islands | SPA | 004124 | 9km east of Garrettstown; 15km east of Coolmain |
| Galley Head to Duneen Point SPA | SPA | 004190 | 2km southwest of Inchydoney |
| Kilkeran Lake and Castlefreake Dunes | cSAC | 001061 | 7km southwest of Inchydoney |

3. *Natura 2000 sites that are more than 15km from the plan or project area depending on the likely impacts of the plan or project, and the sensitivities of the ecological receptors, bearing in mind the precautionary principle. In the case of sites with water dependent habitats or species, and a plan or project that could affect water quality or quantity, for example, it may be necessary to consider the full extent of the upstream and/or downstream catchment.*

   As discussed above with reference to Natura 2000 sites within 15km of the proposed works, no 'pathway' by which works on the removal of sea lettuce from the various beaches could impact upon sites more than a 5km from the proposed works has been identified, and no such 'pathway' is considered likely to exist. Hence, no Natura 2000 sites more than 15km distant from the proposed works is included for Stage 2 assessment.

## 3.4 Summary of the Key Features of the Sites and of the Environmental Conditions which Support Them

### 3.4.1 Clonakilty Bay cSAC

*Clonakilty Bay cSAC* is a large expanse of intertidal habitat, sand dunes and inland marshes, extending south from Clonakilty town to the open sea, and including Muckross Strand and White's Marsh, which lie to the southwest of Inchydoney Island. The site supports important sandflats and mudflats and a small area of fixed sand dunes that are in relatively good condition.

The cSAC is designated on the basis of the presence of six habitat types that are listed under Annex I of the EU Habitats Directive, including the two priority habitats 'fixed (grey) dunes' and 'decalcified fixed dunes' (see below). The most widespread of these, 'mudflats and sandflats' covers 85% of the intertidal sub-littoral sections of the cSAC, but does not extend up to the littoral zone where the sea lettuce removal works will occur. Hence no direct impacts on this habitat type are anticipated. Three of the habitats, 'Fixed coastal dunes with herbaceous vegetation (grey dunes)' (habitat code 2130), 'Atlantic decalcified fixed dunes (Calluno-Ulicetea)' (habitat code 2150) and 'Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)' (habitat code 2120), occur well above the high tide mark within the dune system on Inchydoney Island, particularly at the eastern end of the island. These habitats do not lie within the area where sea lettuce removal will occur, however, small areas of these habitat types may be present in areas where vehicles will access the beach to conduct the works.

The remaining two habitat types 'Annual vegetation of drift lines' (habitat code 1210), and 'Embryonic shifting dunes' (habitat code 2110), occur close to the high tide mark of Inchydoney Strand and may therefore be subject to direct impacts from the sea lettuce removal works.

The threats to the site listed in the Natura 2000 Form are increased recreational pressure, direct land claims and pollution from Clonakilty town and surrounding agricultural land.

No Annex II species are mentioned in the Natura 2000 Form, however the Site Synopsis for the site mentions the occurrence of mammal species otter at Clogheen Marsh in the southwest of the site, and otter is know to occur in the Fealge River within Clonakilty town (RM *pers. obs.*). It is likely that this species occurs commonly throughout the cSAC.

### 3.4.2 Clonakilty Bay SPA

The SPA lies to the south of Clonakilty covering the estuarine areas either side of Inchydoney Island. The site supports an important wintering bird population, including small but significant populations of Golden Plover and Bar-tailed Godwit, both of which are listed on Annex I of the EU Birds Directive. The Annex I species Short-eared Owl and Little Egret also occur. Internationally important numbers of Black-tailed Godwit are present in autumn and winter, and nationally important numbers of Shelduck, Ringed Plover and Greenshank occur.

Under Article 4(2) of the Birds Directive EU member states are required to designate SPAs for, "...regularly occurring migratory species not listed in Annex I, bearing in mind their need for protection in the geographical sea and land area where this Directive applies, as regards their breeding, moulting and wintering areas and staging posts along their migration routes. To this end, Member States shall pay particular attention to the protection of wetlands and particularly to wetlands of international importance." Clonakilty Bay SPA is designated on this basis.

The threats to the site listed in the Natura 2000 Form include the possibility of landfill and increased recreational pressure on the beaches causing disturbance to birds. The Natura 2000 Form also mentions pollution from Clonakilty town and surrounding agricultural land but states that this is unlikely to affect wintering bird populations.

The proposed sea lettuce removal works will not directly affect the SPAs mudflats, which are the most important habitat for the birds that use the SPA. Neither will it affect wet grassland or saltmarsh habitats that are also of importance to the birds. The sea lettuce itself as it decomposes, provides a rich food source for some invertebrates, which can provide a food source for some bird species such as gulls, Turnstone, Ringed Plover and others, and there is therefore a possible negative impact resulting from sea lettuce removal in the form of a decrease in the food resource available to the SPA's birds.

### 3.4.3 Courtmacsherry Estuary cSAC

Courtmacsherry estuary consists of the drowned valley of the Argideen River, which is now filled with sediments, resulting in extensive mudflats. The site is designated on the basis of the presence of ten habitats that are listed on Annex I, including the priority habitat 'fixed (grey) dunes' (see below).

The majority of the site is composed of 'Mudflats and sandflats not covered by seawater at low tide' (habitat code 1140) (50%) and 'estuaries' (habitat code 1130) (20%). These occur in the intertidal sub-littoral sections of the cSAC, but do not extend up to the littoral zone where the sea lettuce removal works will occur. Hence no direct impacts on these habitat types are anticipated.

Two of the habitats, 'Fixed coastal dunes with herbaceous vegetation (grey dunes)' (habitat code 2130) and 'Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)' (habitat code 2120), occur well above the high tide mark within the dune system at Harbour View. These habitats do not lie within the area where sea lettuce removal will occur, however, these habitat types may be present in areas where vehicles will access Harbour View beach to conduct the works.

Three salt marsh habitats 'Atlantic salt meadows (Glauco-Puccinellietalia maritimae)' (habitat code 1330), 'Mediterranean salt meadows (Juncetalia maritimi)' (habitat code 1410) and '*Salicornia* and other annuals colonizing mud and sand' (habitat code 1310) occur 'behind' the dune system at Harbour View and not in the vicinity of either Harbour View or Coolmain strands. No direct impact on these habitats is anticipated either as a result of the sea lettuce removal works themselves or as a result of vehicular access to the beaches.

'Perennial vegetation of stony banks' (habitat code 1220) occurs on shingle substrates high on beaches. No shingle is present at either Harbour View or Coolmain and hence this habitat type is not present in the locations where sea lettuce removal is proposed and no impacts on this habitat type are therefore anticipated.

The remaining two habitat types 'Annual vegetation of drift lines' (habitat code 1210), and 'Embryonic shifting dunes' (habitat code 2110), occur close to the high tide mark of Inchydoney Strand and may therefore be subject to direct impacts from the sea lettuce removal works.

The Natura 2000 Form for the site states that there are no serious threats to the site and cites eutrophication from surrounding farmland, the spread of *Spartina* (cord grasses) and increases in amenity use as the only problems.

There are no Annex II species recorded from within the site. The site is however of ornithological importance for the non-breeding waders and wildfowl that feed on the mud and sandflats, including the Birds Directive Annex I species Golden Plover and Bar-tailed Godwit. Winter flocks of Golden Plover and Black-Tailed Godwit occur in nationally important numbers (see Section 3.4.4).

### 3.4.4 Courtmacsherry Bay Proposed SPA

Courtmacsherry Bay proposed SPA is located approximately 12 km south of Bandon and immediately east of the village of Timoleague in west Co. Cork. The site, which is largely estuarine in nature, consists of the drowned valley of the Argideen River which is now filled with sediments, resulting in extensive mudflats and areas of saltmarsh. The estuary of the Kilbrittain River in the north-east of the site holds an area of well-developed saltmarsh. The seaward boundary for the site stretches from Coolmain Point to Barry Point, and includes Coolmain Bay and Broadstrand Bay.

The site is of ornithological importance for the wintering waders and wildfowl that feed on the mudflats. It supports internationally important numbers of Black-tailed Godwit (506 - figures given here and below are mean peaks for the five winters in the period 1995/96 to 1999/00), as well as nationally important numbers of a further thirteen species, i.e. Great Northern Diver (27), Shelduck (175), Wigeon (934), Red-breasted Merganser (63), Oystercatcher (610), Golden Plover (5,759), Grey Plover (60), Lapwing (2,713), Dunlin (1,353), Bar-tailed Godwit (182), Curlew (1,357), Black-headed Gull (2,727) and Common Gull (2,226).

The site is proposed as an SPA under the E.U. Birds Directive, being of special conservation interest for the following species: Great Northern Diver, Shelduck, Wigeon, Red-breasted Merganser, Oystercatcher, Golden Plover, Grey Plover, Lapwing, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Black-headed Gull and Common Gull.

The E.U. Birds Directive pays particular attention to wetlands, and as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland and Waterbirds. Courtmacsherry Bay is an important site for wintering birds. It holds internationally important numbers of Black-tailed Godwit and nationally important numbers of a further thirteen species, including three that are listed on Annex I of the E.U. Birds Directive, i.e. Great Northern Diver, Golden Plover and Bar-tailed Godwit.

Under Article 4(2) of the Birds Directive EU member states are required to designate SPAs for, "...regularly occurring migratory species not listed in Annex I, bearing in mind their need for protection in the geographical sea and land area where this Directive applies, as regards their breeding, moulting and wintering areas and staging posts along their migration routes. To this end, Member States shall pay particular attention to the protection of wetlands and particularly to wetlands of international importance." Clonakilty Bay SPA is designated on this basis.

The proposed sea lettuce removal works will not directly affect the SPAs mudflats, which are the most important habitat for the birds that use the SPA. The sea lettuce itself as it decomposes, provides a rich food source for some invertebrates, notably sand-hoppers (ref) which can provide a food source for some bird species such as gulls, Turnstone, Ringed Plover and others, and there is therefore a possible negative impact resulting from sea lettuce removal in the form of a decrease in the food resource available to the SPA's birds.

## 3.5 Assessment of Likely Effects

### 3.5.1 Likely Effects on Clonakilty Bay cSAC and Courtmacsherry Estuary cSAC

The potential impacts on these Natura 2000 sites are broadly similar in nature. Where the potential for impacts differs between the two sites this is specified in the text, otherwise, the issues discussed apply to both sites. No impacts are anticipated as a result of removal of sea lettuce from beaches at Coolmain or at Garrettstown as none of the likely effects discussed in this Section apply at those beaches which do not lie within the boundary of any Natura 2000 designation.

#### *3.5.1.1 Incidental Removal of Substrate (Sand)*

Sections 3.3.1 and 3.3.3 identify two Annex I habitat types, 'Annual vegetation of drift lines', and 'Embryonic shifting dunes' which occur close to the high tide mark and may therefore be subject to direct impacts from the sea lettuce removal works. The EU's *Interpretation Manual of European Union Habitats* states that, "Sites proposed for this habitat may include *Cakiletea marimae* developed on gravel or mixed gravel and sandy substrates (these mixtures are often very dynamic and variable) but such vegetation on purely sandy beaches should be regarded as habitat 2110 Embryonic shifting dunes if appropriate." (EC, 2007). Whilst the beaches that are the subject of this study are composed almost entirely of sand, this habitat type is known to be present at Inchydoney (Declan O'Donnell *pers. comm.*) and is likely to be present in the similar conditions that are present at Harbour View.

Most of the sea lettuce removal will occur in area that are lower on the shore than strand lines above the spring tide high water mark where these habitat types occur, however it is considered possible that disturbance to the substrate, or any removal of significant quantities of substrate, in areas immediately below these habitats on the shore could affect their development by destabilizing the substrate on which they occur.

#### 3.5.1.2 *Incidental Removal of Seed*

With regard to 'Annual vegetation of drift lines', there is an additional potential effect in the form of incidental removal of seeds along with the sea lettuce. It is considered possible that quantities of floating seed (otherwise destined to be deposited along the drift line where it germinates and develops into this habitat type), may be caught within the accumulation of sea lettuce and thence removed from the beach.

No NPWS 'backing document' is available for 'Annual vegetation of drift lines', however reference to British Plant Communities (Rodwell, 2000); to the EU's *Interpretation Manual of European Union Habitats* (EC, 2007) and Preston *et. al.* (2000) indicates that the dominant species of this habitat type in Co Cork are likely to be Sea Sandwort (*Honkenya peploides*), Sea Rocket (*Cakile maritima*), Spear-leaved Orache (*Atriplex prostrata*) Frosted Orache (*Atriplex laciniata*) and *Babington's Orache* (*Atriplex glabriuscula*).

The habitat type is dependent on the presence of seed and whilst some seed will be present in situ from the previous years growth of these annuals, it is likely that the arrival of floating seed is also of importance. Gandour *et. al.* (2008) showed that the seeds of Sea Rocket can survive up to 4 months immersion in sea water and up to 1 year of floating in sea water; Sea Sandwort seeds can also be dispersed over relatively large distances in the sea (see for example, Fridriksson, 1987) and *Atriplex* seeds are also adapted to dispersal in water. The extent to which any loss of seed is likely to affect the annual development of this habitat type is however very difficult to assess (see Section 3.7.2).

It is also important to state that the presence of the accumulations of sea lettuce may already be having a detrimental effect on this habitat type by depriving the drift line of seeds that are caught-up in the accumulations. If this is the case, and it is not known whether or not it is, then the removal of the sea lettuce should not be viewed as the cause of the depletion of seed to the drift line, but rather it is the presence of the sea lettuce that will be having this negative effect of the Annex I habitat 'Annual vegetation of drift lines', and its removal may allow more seed to reach the strand line.

The most likely situation is probably that both processes will occur. Some seed will be removed by the operation, but it will also allow other seed which would otherwise be caught-up in the sea lettuce accumulations to reach the stand line.

#### 3.5.1.3 *Habitat Damage During Vehicular Access to the Beaches*

Sections 3.3.1 and 3.3.3 identify two Annex I habitat types, 'Fixed dunes' and 'Shifting dunes' which occur well above the high tide mark and do not therefore lie within the area where sea lettuce removal will occur, however, these habitat types may be present in areas where vehicles will access Harbour View beach to conduct the works. At Clonakilty Bay cSAC, a further habitat type 'Decalcified dunes' occurs in a similar location and may also be subject to similar impacts (see Section 3.3.1). The habitat types 'Embryonic shifting dunes' and 'Annual vegetation of drift lines' which occurs lower down the shore at both sites may also be subject to similar impacts.

### 3.5.2 Likely Effects on Clonakilty Bay SPA and on the Proposed Courtmacsherry Bay SPA

The potential impacts on these sites are broadly similar in nature. Where the potential for impacts differs between the two sites this is specified in the text, otherwise, the issues discussed apply to both sites.

#### 3.5.2.1 *Reduced Food Supply for Birds*

The removal of sea lettuce along with the likely incidental removal of invertebrates, substrate and seed, which will result from the process, could reduce the availability of food on the strands and in intertidal areas close-by.

#### 3.5.2.2 *Disturbance*

The works are proposed during the period June to September inclusive, which overlaps somewhat, primarily during August and September, with the start of the autumn migration period for arctic-breeding waders and with the 'post-breeding dispersal' period for ducks and some local breeding waders, and could therefore potentially result in some displacement of birds from the beaches through disturbance.

## 3.6 Documented Threats to Annex I Habitats

Documented threats to EU Annex I habitats and Annex II species in Ireland are presented in the 'Backing documents' and 'Forms' for each habitat and species, these are available at: http://www.npws.ie/en/PublicationsLiterature/HabitatsDirectivereport07/. A number of the documented 'Main pressures' and 'Threats' that are listed are relevant to the proposed works and to the likely effects on Annex I habitats discussed in Section 3.5.1.

'Motorised vehicles' is included as both a 'Main Pressure' and a 'Threat' to several of the sand dune Annex I habitats that are present at both of the cSAC sites, namely the priority habitat 'Fixed dunes', 'Embryonic dunes', 'Shifting dunes with *Ammophila*'; and to 'Annual vegetation of drift lines' which is also present at both sites. 'Paths, tracks, cycling routes' are also included as 'Main pressures' and as 'Threats' for 'Fixed dunes' and 'Shifting dunes with *Ammophila*'. The works will involve motorized vehicles accessing the beaches along tracks close to these habitat types (see Section 3.5.1.3). The likely significance of this issue is discussed in Section 4.2.4.

'Removal of beach materials' is cited as a 'Main pressure' to 'Embryonic dunes', 'Shifting dunes with *Ammophila*'; and to 'Annual vegetation of drift lines'; and as a 'Threat' to 'Shifting dunes with *Ammophila*'; and to 'Annual vegetation of drift lines'. In addition, 'Other leisure and tourism impacts (beach cleaning)' is cited as both a 'Main pressure' and a 'Threat' to 'Annual vegetation of drift lines'. The proposed works can be classed as a form of beach cleaning and the possibility of the removal of material from the beaches has been highlighted in Sections 3.5.1.1 and 3.5.1.2. The potential for significant effects on these habitats as a result of the sea lettuce removal process is discussed in Sections 4.2.2 and 4.2.3.

## 3.7 Other Plans and Projects

As part of the screening stage of Habitats Directive Assessment, the potential for cumulative impacts on the conservation objectives of the site resulting from 'in combination effects' of other relevant projects and plans in the region must also be considered.

This step aims to identify at this early stage any possible significant in-combination or cumulative effects/impacts of the proposed development with other such plans and projects on the two Natura 2000 sites.

Relevant plans have been examined as follows:

- Cork County Development Plan 2009 – 2015; and
- Clonakilty County Development Plan 2009 – 2015.

No policies or objectives have been found in either plan that might, in combination with the proposed sea lettuce removal programme, have negative impacts on either *Courtmacsherry Estuary* cSAC or on *Clonakilty Bay* cSAC.

No projects are known of which could, in combination with the proposed sea lettuce removal programme, have negative impacts on either *Courtmacsherry Estuary* cSAC or on *Clonakilty Bay* cSAC, and it is not considered likely that such projects exist due the planning restrictions that apply in the intertidal and coastal areas of Harbour view and at Inchydoney.

## 3.8 Determination of Significance of Likely Effects

### 3.8.1 Incidental Removal of Sediment (Sand)

Section 3.5.1.1 discusses the possibility that disturbance to the substrate, or any removal of significant quantities of substrate, could potentially affect the development of the Annex I habitat types 'Embryonic shifting dunes' and 'Annual vegetation of drift lines' which are either known to occur or are likely occur on the shore at both Inchydoney (*Clonakilty Bay* cSAC) and Harbour view (*Courtmacsherry Estuary* cSAC). 'Removal of beach materials' is cited by NPWS as a threat to 'Embryonic shifting dunes'.

Clearly the extent to which this may be of significance to the conservation objectives of either cSAC will be dependent on the quantity of substrate that is involved. It is considered that due to the limited extent of these habitat types, removal of even a relatively small quantity of substrate could have significant effects and Stage 2 Appropriate Assessment of this potential impact is therefore required for both cSACs (see Section 4).

### 3.8.2 Incidental Removal of Seed

Section 3.5.1.2 discusses the possibility that quantities of floating seed that is destined to be deposited along the drift line where it germinates and develops into the Annex I habitat type 'Annual vegetation of drift lines', may be caught within the accumulation sea lettuce and thence removed from the beach. The extent to which any loss of seed is likely to affect the annual development of this habitat type is very difficult to assess and by the precautionary principle, it must therefore be assumed that it may potentially be of significance and Stage 2 Appropriate Assessment of this potential impact is therefore required for both cSACs.

### 3.8.3 Habitat Damage during Vehicular Access to the Beaches

The possibility that vehicles accessing the beaches to carry-out the sea lettuce removal programme may damage Annex I habitats has been discussed in Section 3.5.1.3. A number of Annex I habitats are potentially affected, namely, 'Fixed dunes', 'Shifting dunes', 'Embryonic shifting dunes' and 'Annual vegetation of drift lines' at both Inchydoney (*Clonakilty Bay* cSAC) and Harbour View (*Courtmacsherry Estuary* cSAC), and also 'Decalcified dunes' at Inchydoney.

Whilst any such impact is likely to be restricted to a small area, damage to even a small area of sand dune vegetation can result in more extensive damage to the system as a whole as a result of wind erosion. Stage 2 Appropriate Assessment of this potential impact is therefore required for both cSACs (see Section 4).

### 3.8.4 Reduced Food Supply for Birds

Section 3.5.2.1 discusses the possibility that the removal of sea lettuce will result in the likely incidental removal of invertebrates, substrate and seed which could reduce the availability of food on the strands and in intertidal areas close-by, and thereby have a negative effect on *Clonakilty Bay* SPA and the proposed Courtmacsherry Estuary SPA.

The works are proposed to take place during the period June to September inclusive which overlaps somewhat with the autumn migration period of arctic-breeding waders and with the 'post-breeding dispersal' period of some local breeding gulls, ducks, waders and passerines. The number of such species which feed along beaches is limited, but some species do use strand-line habitats for feeding at this time of year. Of the species mentioned as being of special interest for the two SPAs only Ringed Plover and Turnstone at Clonakilty Bay SPA (see Section 3.4.3) and Dunlin, Black-headed Gull and Common Gull at Courtmacsherry Estuary (see Section and 3.4.4) are likely to be affected, however, all of these species will also feed in other habitats and cannot be said to be dependent upon this resource.

Given the large size of both of the SPAs in question relative to the small area over which the proposed sea lettuce removal will occur, the availability of other beaches and strand-lines close-by where sea lettuce removal is not proposed, and the intermittent and infrequent occurrence of the proposed works, it is considered highly unlikely that significant quantities of food for these species will be removed during the operation or that there will be any significant affect on any other bird species. Stage 2 Appropriate Assessment of this possible impact is not therefore considered necessary.

### 3.8.5 Disturbance to Birds

The possibility that the sea lettuce removal operation may result in disturbance to birds has been discussed in Section 3.5.2.2.

The works are proposed for the period June to September inclusive which overlaps somewhat with the autumn migration period of arctic-breeding waders and with the 'post-breeding dispersal' period of some local breeding gulls, ducks, waders and passerines. The number of such species which feed along beaches is limited, but some species do use strand-line habitats for feeding at this time of year. Of the species mentioned as being of special interest for the two SPAs only Ringed Plover and Turnstone at Clonakilty Bay SPA (see Section 3.4.3) and Dunlin, Black-headed Gull and Common Gull at Courtmacsherry Estuary (see Section and 3.4.4) are likely to be affected, however, all of these species will also feed in other habitats and cannot be said to be dependent upon this resource.

Given the timing of the works (June to September); the large size of both of the SPAs in question relative to the small area over which the proposed sea lettuce removal will occur; the availability of other beaches and strand-lines close-by where sea lettuce removal is not proposed; the intermittent and infrequent occurrence of the proposed works; and the fact that high levels of disturbance occur on these beaches already as a result of recreational activity, it is considered highly unlikely that and significant disturbance to birds will occur as a result of the proposed sea lettuce removal operation. Stage 2 Appropriate Assessment of this possible impact is not therefore considered necessary.

## 3.9 Summary of the Findings of the Screening Assessment

**Table 3.2: Identified Likely (or Possible) Significant Effects on Natura 2000 Sites**

| Natura 2000 Designations | Qualifying Feature Potentially Affected | Likely (or Possible) Significant Effect that has Been Identified |
|---|---|---|
| *Clonakilty Bay* cSAC and *Courtmacsherry Estuary* cSAC | Annex I habitat types: *'Embryonic shifting dunes' and 'Annual vegetation of drift lines'.* | Removal of substrate (sand) affecting the development of these habitats |
| *Clonakilty Bay* cSAC and *Courtmacsherry Estuary* cSAC | Annex I habitat types: *'Annual vegetation of drift lines'.* | Removal of seeds affecting the development of this habitat |
| *Clonakilty Bay* cSAC | Annex I habitat types: *'Fixed dunes', 'Shifting dunes', 'Decalcified dunes' 'Embryonic shifting dunes' and 'Annual vegetation of drift lines'.* | Direct loss and damage to these habitats as a result of vehicular access to the beaches |
| *Courtmacsherry Estuary* cSAC | Annex I habitat types: *'Fixed dunes', 'Shifting dunes', 'Embryonic shifting dunes' and 'Annual vegetation of drift lines'.* | Direct loss and damage to these habitats as a result of vehicular access to the beaches |

The likely significant impacts listed in Table 3.2 are considered in the Stage 2 Appropriate Assessment (see Section 4). No likely significant impacts are anticipated to either of the SPA sites; *Clonakilty Bay* SPA and the proposed Courtmacsherry Estuary SPA. 'Findings of No Significant Effect Reports' for these two Natura 2000 sites are presented in Tables 3.3 and 3.4.

**Table 3.3: Finding of No Significant Effects Report for *Clonakilty Bay* SPA**

| Details of Project | |
|---|---|
| **Name and Location of the Natura 2000 Site** | Clonakilty Bay SPA, proposed works at Inchydoney are located within the boundary of the SPA |
| **Description of the Project** | The project involves removal of accumulations of dead sea lettuce and other marine algae from the beaches, including both the western and eastern portions of Inchydoney Strand during the months of June, July, August and September. |
| **Is the Project directly connected with the management of the Natura 2000 site?** | No |
| **Details of any other projects or plans that together with this project could affect the Natura 2000 site** | None |
| **The Assessment of Significant Effects** | |
| **Describe how the project is likely to affect the Natura 2000 site** | Accumulations of sea lettuce will be removed from the beach which may reduce the invertebrate food supply to birds.<br>Movement of vehicles and noise from vehicles may disturb and displace birds from feeding and roosting areas. |
| **Explain why the effects are not considered significant** | The works will not be conducted during the main period when birds are present at the site.<br>The scale of the works and their short duration are such that these effects are considered highly unlikely to be of significance. |
| **Response to consultation** | NPWS are in agreement with these conclusions. |
| **Data Collected to Carry Out the Assessment** | |
| **Who carried out the assessment** | Rick Mundy and Ailean McSwiney of RPS |
| **Sources of data** | NPWS website; NPWS site Synopses and Natura 200 forms; field survey; IWeBS data. |
| **Level of assessment completed** | Screening |
| **Where can full results be accessed and reviewed** | Report Issued to Cork County Council |
| **Overall Conclusions** | |
| Given the season at which works are proposed (June to September); the large size of the SPA relative to the small area over which the proposed sea lettuce removal will occur; the availability of other beaches and strand-lines close-by where sea lettuce removal is not proposed; and the intermittent and infrequent occurrence of the proposed works, it is considered highly unlikely that significant quantities of food for birds will be removed during the operation or that there will be any significant affect on any other bird species. | |

**Table 3.4: Finding of No Significant Effects Report for Courtmacsherry Estuary Proposed SPA**

| Details of Project | |
|---|---|
| **Name and Location of the Natura 2000 site** | Courtmacsherry Estuary Proposed SPA, proposed works at Inchydoney are located within the boundary of the SPA |
| **Description of the Project** | The project involves removal of accumulations of dead sea lettuce and other marine algae from the beaches, including both the western and eastern portions of Inchydoney Strand during the months of June, July, August and September. |
| **Is the Project directly connected with the management of the Natura 2000 site?** | No |
| **Details of any other projects or plans that together with this project could affect the Natura 2000 site** | None |
| **The Assessment of Significant Effects** | |
| **Describe how the project is likely to affect the Natura 2000 site** | Accumulations of sea lettuce will be removed from the beach which may reduce the invertebrate food supply to birds. Movement of vehicles and noise from vehicles may disturb and displace birds from feeding and roosting areas. |
| **Explain why the effects are not considered significant** | The works will not be conducted during the main period when birds are present at the site. The scale of the works and their short duration are such that these effects are considered highly unlikely to be of significance. |
| **Response to consultation** | NPWS are in agreement with these conclusions. |
| **Data Collected to Carry Out the Assessment** | |
| **Who carried out the assessment** | Rick Mundy and Aileen McSwiney of RPS |
| **Sources of data** | NPWS website; NPWS site Synopsis and Natura 200 forms; field survey; IWeBS data. |
| **Level of assessment completed** | Screening |
| **Where can full results be accessed and reviewed** | Report Issued to Cork County Council |
| **Overall Conclusions** | |
| Given the season at which works are proposed (June to September); the large size of the SPA relative to the small area over which the proposed sea lettuce removal will occur; the availability of other beaches and strand-lines close-by where sea lettuce removal is not proposed; and the intermittent and infrequent occurrence of the proposed works, it is considered highly unlikely that significant quantities of food for birds will be removed during the operation or that there will be any significant affect on any other bird species. | |

# 4. STAGE 2 APPROPIATE ASSESSMENT

## 4.1 Introduction

The likely significant effects on *Clonakilty Bay* cSAC and on *Courtmacsherry Estuary* cSAC summarised in Table 3.2 and discussed in Section 3.7 have been identified at Stage 1 of the HDA process and are therefore 'screened in' for Stage 2 Appropriate Assessment. This Section of this report comprises the Stage 2, assessment.

The aim of this stage of the assessment is to identify any significant negative impacts that the project might have upon Natura 2000 sites and to propose changes to the project design that will avoid any such negative impacts, thereby avoiding the need to progress to Stages 3 and 4 of the assessment process which would require the County Council to consider alternative solutions and if necessary to demonstrate 'Imperative Reasons of Overriding Public Interest' in pursuing the sea lettuce removal programmes (and in the case of any impacts on the priority habitats 'Fixed coastal dunes with herbaceous vegetation (grey dunes)' (habitat code 2130) or 'Atlantic decalcified fixed dunes (*Calluno-Ulicetea)*', human health and safety considerations) and if necessary to implement compensation measures for the identified nagative impacts on Natura 2000 sites.

## 4.2 Anticipated Adverse Effects on the Integrity of the Sites

The anticipated adverse effects on the two cSACs are broadly similar in nature. Where the potential for impacts differs between the two sites this is specified in the text, otherwise, the issues discussed apply to both sites.

### 4.2.1 Conservation Objectives of the cSACs

The National Parks and Wildlife Service have established generalised conservation objectives for Natura 2000 sites as follows (Cork County Council, 2008):-

- To maintain, and where possible, enhance the Annex I habitats for which the cSAC has been selected at favourable conservation status;
- To maintain the Annex II species for which the cSAC has been selected at favourable conservation status;
- To maintain the extent, species richness and biodiversity of the entire site; and
- To establish effective liaison and co-operation with landowners, legal users and relevant authorities.

Favourable conservation status of a habitat is achieved when its natural range, and area it covers within that range, is stable or increasing, and the ecological factors that are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and the conservation status of its typical species is favourable as defined below.

The favourable conservation status of a species is achieved when: population data on the species concerned indicate that it is maintaining itself, and · the natural range of the species is neither being reduced or likely to be reduced for the foreseeable future, and · there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Clearly, these broad objectives must be refined to reflect the environmental requirements of the particular Qualifying Features (Annex 1 Habitats and Annex II species) of any particular Natura 2000 site.

#### *4.2.1.1 SAC Management Plans*

A draft management plan for *Clonakilty Bay* cSAC was drawn-up in 1990. No management plan is available for *Courtmacsherry Estuary* cSAC. The principal objectives for the conservation of *Clonakilty Bay* cSAC listed in the management plan are:-

1. To maintain and, where possible, enhance the priority habitats; fixed dunes and decalcified dune heath (4% of the site area).

2. To maintain and, where possible, enhance other habitats in the site, particularly shifting dunes (2%), beaches (4%), mud flats and sand flats (65%), estuarine channels (5%), brackish lake (1%), saltmarsh and freshwater marsh (14%), wet broadleaved semi-natural woodland (2%).

3. To maintain and where possible improve the populations of notable bird species using the site, particularly species listing in Annex I of the Birds Directive: Short-eared Owl, Kingfisher, Bar-tailed Godwit, and Golden Plover and wintering waterfowl.

4. To maintain the populations of otter, a species listed in Annex II of the Habitats Directive.

5. To amend the site boundaries in order to improve the ecological integrity of the cSAC and SPA.

6. To liaise with all interested parties including landowners, Dept of the Marine and Natural Resources, Cork Co. Council, Clonakilty Urban District Council and all other interested parties on the effective conservation management of the site.

The main strategies to achieve these objectives are to:-

- Remove invasive Sycamore from the dunes;
- Monitor the spread of bracken and introduce pony grazing if necessary;
- Continue to graze Cloheen Marsh with horses;
- Carry out water level survey of the Marsh;
- Maintain drainage ditches at Cloheen Marsh;
- Ensure no aquaculture occurs in sensitive areas for birds and monitor bird usage; and
- Consult with all interested parties including landowners, the local authority and the Dept of the Marine and Natural Resources.

#### *4.2.1.2 Documented Threats to the Conservation Objectives of the cSACs*

The NPWS 'Conservation Status Assessment Report Form' and 'Backing Document' (see: www.npws.ie/en/PublicationsLiterature/HabitatsDirectivereport07/Habitats/) provide information on 'structure and function' and 'impacts and threats' of each Annex I habitat. Details of the documented threats to the Annex I habitats relevant to this assessment (those for which likely significant effects have been identified) are listed below.

**Annual Vegetation of Drift Lines:** grazing; sand and gravel extraction - removal of beach materials; walking; horse riding and non-motorised vehicles; outdoor sports and leisure activities - motorised vehicles; other leisure and tourism impacts (beach cleaning); trampling; overuse and sea defence or coastal protection works.

**Embryonic Shifting Dunes:** walking, horseriding and non-motorised vehicles; motorised vehicles; Trampling; overuse; sea defence or coastal protection works; erosion and other natural processes (depletion of sediment source).

**Shifting Dunes Along the Shoreline with Ammophila Arenaria (White Dunes):** grazing; sand and gravel extraction; removal of beach materials; paths, tracks, cycling routes; walking; horseriding and non-motorised vehicles; motorised vehicles; trampling; overuse; sea defence or coastal protection works; erosion and other natural processes (depletion of sediment source).

**Fixed Coastal Dunes with Herbaceous Vegetation (Grey Dunes):** mowing/cutting; agricultural improvement; fertilisation; grazing; abandonment of pastoral systems; overgrazing by sheep; overgrazing by cattle; overgrazing by hares, rabbits, small mammals; Undergrazing; Restructuring agricultural holding; stock feeding; burning; sand and gravel extraction, urbanised areas; human habitation; discontinuous urbanization; dispersed habitation; disposal of household waste; other urbanization; industrial or similar activities; paths, tracks, cycling routes; autoroutes, golf course, sports pitch; Camping and caravans; walking; horseriding and non-motorised vehicles; motorised vehicles; pollution; trampling; overuse; other pollution or human activities; sea defence or coastal protection works; erosion,; invasion by a species and competition.

**Atlantic Decalcified Fixed Dunes (*Calluno-Ulicetea*):** agricultural improvement; grazing; overgrazing by cattle; undergrazing; restructuring agricultural land holding; stock feeding; quarries and competition.

### 4.2.2 Likely Effects of Incidental Removal of Sediment (Sand)

Section 3.5.1.1 discusses the possibility that disturbance to the substrate, or any removal of significant quantities of substrate, could potentially affect the development of the Annex I habitat types 'Embryonic shifting dunes' and 'Annual vegetation of drift lines' which are either known to occur or are likely occur on the shore at both Inchydoney (*Clonakilty Bay* cSAC) and Harbour view (*Courtmacsherry Estuary* cSAC). 'Removal of beach materials' is cited by NPWS as a threat to 'Embryonic shifting dunes'.

Clearly the extent to which loss of sand substrate may be of significance to the conservation objectives of either cSAC will be dependent on the quantity of sand that is involved. 'Sand and gravel extraction - removal of beach materials'; is cited by NPWS as a threat to the Annex I habitat type 'Annual vegetation of drift lines' (see Section 4.2.1.2); and whilst the method by which sea lettuce will be removed has been designed to minimise the amount of sand that is taken incidentally (see Section 3.2), some sand will inevitably be removed as part of the operation. The extent to which the removal of even small amounts of sand might damage the habitat type 'Annual vegetation of drift lines' is not known, and it is therefore considered that under the 'precautionary principle' it must be assumed that it may potentially be of significance. A reduction in the quantity of sand available could also have an effect on the development of sand dune habitats and it is considered that the Annex I habitat type 'Embryonic shifting dunes' will be the most susceptible habitat type in this regard.

Whilst it is not considered practicable to reduce the incidental loss of sand to zero, thereby avoiding this possible impact, a monitoring programme of the two Annex I habitat types 'Annual vegetation of drift lines' and 'Embryonic shifting dunes', is proposed in order to ensure that no measurable decrease in their extent occurs during period of the sea lettuce removal programme (see Section 5.2).

### 4.2.3 Likely Effects of Incidental Removal of Seed

Section 3.5.1.2 discusses the possibility that quantities of floating seed that is destined to be deposited along the drift line where it germinates and develops into the Annex I habitat type 'Annual vegetation of drift lines', may be caught within the accumulation sea lettuce and thence removed from the beach.

It is likely that the significance of this impact on this Annex I habitat type at either cSAC will be dependent on the quantity of seed that is involved. The extent to which the removal of even small amounts of seed might affect the development of the habitat type is not known, and it is therefore considered that under the 'precautionary principle' it must be assumed that it may potentially be of significance.

Whilst it is not considered practicable to reduce the incidental loss of seed to zero, thereby avoiding this possible impact, a monitoring programme of the Annex I habitat type 'Annual vegetation of drift lines', is proposed in order to ensure that no measurable decrease in its extent occurs during period of the sea lettuce removal programme (see Section 5.2).

### 4.2.4 Habitat Damage During Vehicular Access to the Beaches

The possibility that vehicles accessing the beaches to carry-out the sea lettuce removal programme may damage Annex I habitats has been discussed in Section 3.5.1.3. A number of Annex I habitats are potentially affected, namely, 'Fixed dunes', 'Shifting dunes', 'Embryonic shifting dunes' and 'Annual vegetation of drift lines' at both Inchydoney (*Clonakilty Bay* cSAC) and Harbour View (*Courtmacsherry Estuary* cSAC), and also 'Decalcified dunes' at Inchydoney.

Whilst any such impact is likely to be restricted to a small area, damage to even a small area of sand dune vegetation can result in more extensive damage to the system as a whole as a result of wind erosion. Stage 2 Appropriate Assessment of this potential impact is therefore required for both cSACs.

It is clear from the stated definition that "Favourable conservation status of a habitat is achieved when its natural range, and area it covers within that range, is stable or increasing", that any decrease in the extent of Annex I habitat types should be viewed as a negative impact on the site's conservation objectives. Furthermore, principle objectives 1. and 2. of the 1990 draft management plan for Clonakilty Bay cSAC indicate that the maintenance of the extent of the sand dune Annex I habitats is a priority for the site, and it is assumed that the same applies to Courtmacsherry Estuary cSAC.

It is considered that in the absence of mitigation, there is a likelihood that Annex I habitats may be damaged or lost as a result of vehicles accessing the beaches in order to conduct the sea lettuce removal programme. 'Motorised vehicles' are cited by NPWS as a threat to all of the Annex I habitat types where possible impacts in this regard have been identified (other than 'decalcified fixed dunes, see Section 4.2.1.2). Such damage and loss needs to be avoided during the sea lettuce removal operation and mitigation measures to ensure this are proposed.

# 5. PROPOSED MITIGATION MEASURES

## 5.1 Ensure No Direct Damage to Annex I Habitats

Previous accumulations of sea lettuce appear to have been largely within the intertidal area, and the area from which sea lettuce was removed in 2009 was below the high tide mark and hence lower on the shore than the location of the Annex I habitat types 'Annual vegetation of drift lines' or 'Embryonic shifting dunes'. It is however possible that sea and weather conditions, for example a sever summer storm, could cause accumulations to occur higher on the shore, in locations where their removal may result in damage to these (or other) Annex I habitats:-

- Requires either clear instruction to the contractor / operatives on the locations where they must and must not work and/or checking of the location of the accumulations of sea lettuce relative to Annex I habitats prior to each removal episode. Both of these options should be implemented by staff from the NPWS or a suitably qualified ecologist.

## 5.2 Incidental Removal of Sand and Seed

### 5.2.1 Disincentivise the Removal of Sand and Works Supervision

It is important that the contract for the works does not incentivise the removal of sand. This could occur for example if the contractor is paid simply by weight or by the truck-load, with no stipulation as to the minimum area of beach that should be cleared or the composition of the loads. This could also occur if there were insufficient weed present on the beach to fulfil the contractor's minimum quantity obligations. In order to avoid these situations from occurring the following measures are proposed:-

- The contract should specify a minimum area of beach that is to be cleared during each sea lettuce removal episode rather than, or in addition to, a minimum quantity of sea lettuce that is to be removed.

- If a minimum weight or volume requirement is retained in the contract (see above) then a situation may arise where there isn't sufficient sea lettuce present on the beach to fulfil the contractor's obligations during a particular sea lettuce removal episode. Should this occur, the contractor should not be penalised financially. A system should be set-up whereby the contractor can contact the County Council and a site visit can be made by the County Council to confirm that no further sea lettuce removal is necessary.

- A 'best practice' figure for the sand content of the removed sea lettuce should be established. This can be done by supervising a collection episode and measuring the sand content of the resultant load. Spot checks should then be made during future removal episodes to ensure that acceptable minimum sand content has not been exceeded.

### 5.2.2 Monitoring of Extent of Potential Affected Habitat Types

The possibility that incidental removal of seed and sand along with the sea lettuce could affect the development of the Annex I habitat 'Annual vegetation of drift lines' is discussed in Section 4.2.3. With regard to removal of sand it is considered that there is also a possibility that the development of the Annex I habitat 'Embryonic shifting dunes' could also be affected. This is discussed in Sections 4.2.2

It is not considered practicable to reduce the incidental loss of seed to zero, thereby avoiding this possible impact, and a monitoring programme of the Annex I habitat type 'Annual vegetation of drift lines', is proposed in order to ensure that no measurable decrease in its extent occurs during period of the sea lettuce removal programme:-

- **It is proposed that the extent of the habitat types 'Annual vegetation of drift lines' and 'Embryonic shifting dunes' is measured annually in August (at which time both habitats are considered likely to developed to their greatest extent) at both Inchydoney and Harbour View.**

Section 3.5.1.2 discusses the possibility that the presence of the accumulations of sea lettuce may already be having a detrimental effect on the Annex I habitat 'Annual vegetation of drift lines' by depriving the drift line of seeds that are caught-up in the accumulations. If this is the case, then the removal of the sea lettuce may allow more seed to reach the strand line. It is considered likely that both processes will occur: some seed will be removed by the operation, but removal of the accumulations will also allow other seeds to reach the stand line (see Section 3.5.1.2).

Because of this potentially complex relationship between the sea lettuce accumulations, their removal, and the supply of seeds to the strand line, the cause of any reduction in the extent of this habitat type that is detected during the monitoring will not be readily attributable:-

- **It is recommended that if appropriate locations can be found, monitoring of the extent of this habitat type should also take place at beaches where sea lettuce accumulations occur but are not removed. This will act as a control and will help to determine whether any reduction in the extent of this habitat type is a result of the accumulation of sea lettuce or of its removal.**

## 5.3 Habitat Damage During Vehicular Access to the Beaches

The possibility that vehicles accessing the beaches to carry-out the sea lettuce removal programme may damage Annex I habitats has been discussed in Section 4.2.4. Field surveys were conducted in April, 2010 to assess the availability of access to the beaches and likely extent of any impacts in this regard.

At Inchydoney, it is not considered that there is high potential for impacts, however it is important that vehicle drivers are made aware that areas of Annex I habitat must not be entered. At Harbour View, two access routes are available, the eastern route is considered unsuitable as there is high potential for vehicles using this route to damage Annex sand dune habitats. An alternative access route is however available to the west and this should be used. Details are presented in the following Sections.

### 5.3.1 Vehicular Access to Inchydoney Strand

Vehicular access to the eastern beach is straightforward (although limited to the low tide period) using a concrete slipway. No potential for impact on any Annex I habitat is associated with access at this point.

The western beach is accessed by a track that is, according to signage in the area, used for emergency vehicles and the track is presumably kept open for this purpose. This track of bare sand passes through an area of 'Fixed dunes' and does not appear to be having any broader impact in terms or erosion, with the dune vegetation being intact right up to the edges of the track on its southern side and scrubby vegetation (mainly Bramble and Common Gorse) at the base of a steep sloe on its northern side. At the seaward end of the track there is an area of the Annex I habitat 'Annual vegetation of drift lines' (see Figure 5.1). The track is narrow, measuring only 2.1m in width along most of its length where it passes through the dunes.

Tractor and trailer access to the western beach at Inchydoney is therefore considered to be possible without having any negative impact upon the conservation objectives of the cSAC, however there is a risk of damage to the Annex I habitats 'Fixed dunes' and 'Annual vegetation of drift lines' if vehicle wheels leave this track. If the track proves to be too narrow for the vehicles required it can be broadened to the north into the area of Bramble and gorse scrub (see Figure 5.1). The following procedure is proposed prior to the commencement of works:-

- **Prior to the commencement of sea lettuce removal operations, the contractor will meet with staff from NPWS and/or a suitably qualified ecologist on site and will be briefed on the situation described above. Vehicle drivers will also be briefed by the ecologist and instructed on the locations where Annex I habitats must be avoided. Spot-checks will be made during the sea lettuce removal programme to ensure compliance, and the contractor will be informed that these spot-checks will be carried-out.**

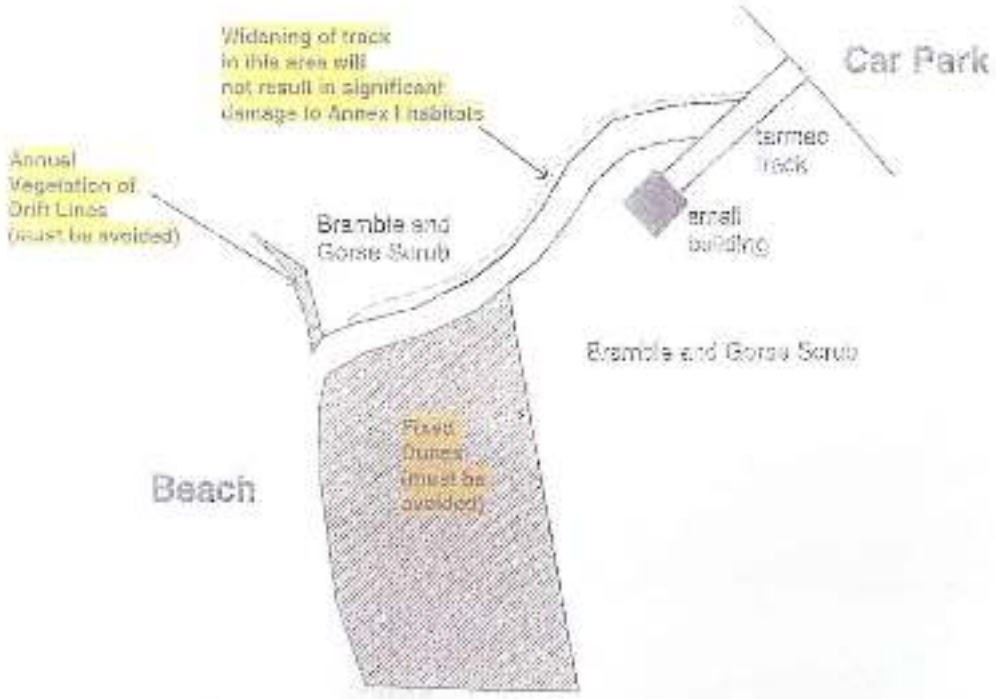



Figure 5.1 Vehicular Access Restrictions to the Western Beach at Inchydoney

### 5.3.2 Vehicular Access to Harbour View Strand

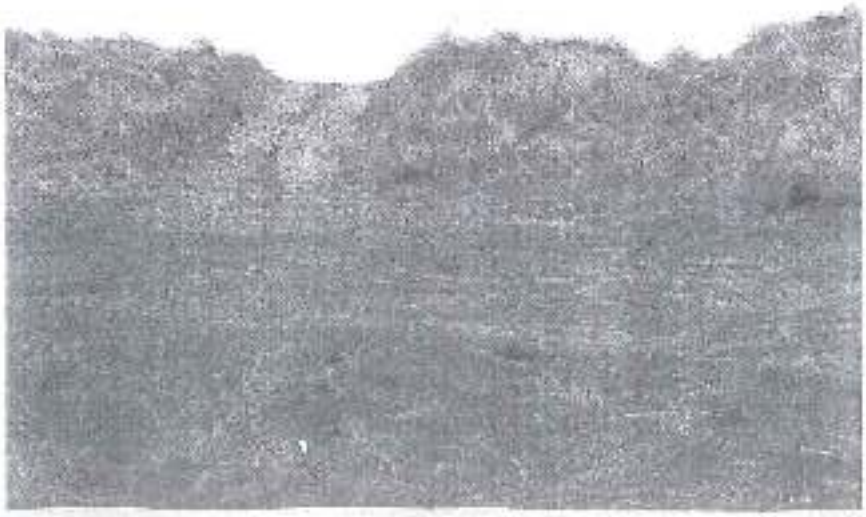
A well used track of bare sand of minimum width 2.8m is present behind the dunes and parallel to the strand line at Harbour view. Vehicular access along this track will have no negative impact on any Annex I habitat. Harbour View beach can be accessed via either of two tracks connecting to this across the dunes (see Figure 5.2). The western track is narrow, measuring only 2.2m in width but is well used and of bare sand, supporting no Annex I habitats, and does not appear to have resulted in any wind erosion damage in the vicinity with dune vegetation intact right up to the track edges. The eastern track is steep, crosses the highest point of the dunes and is partially vegetated with a degraded area of the Annex I habitat 'Shifting dunes' (see Plates 5.1 and 5.2). The presence of this track appears to have resulted in wind erosion damage to the dunes over a broader area around it, at the peak of the dune ridge and on both the landward and seaward slopes. Where this eastern track descends from the dune ridge to the beach there is extensive development of the Annex I habitat 'Embryonic shifting dunes' across its path to the beach (see Plate 5.2). It is considered that access to the beach by a tractor and trailer at this eastern access point would be likely to cause significant damage to the Annex I habitat types 'Shifting dunes' and 'Embryonic shifting dunes' and it should therefore not be used:-

- **The track across the dunes indicated 'track not to be used' on Figure 5.2 will not be used during the sea lettuce removal operation. Instead, the track marked 'track to be used' will be used for all vehicular access.**

The following procedure is proposed prior to the commencement of works:-

- **Prior to the commencement of sea lettuce removal operations, the contractor will meet with staff from NPWS and/or a suitably qualified ecologist on site and will be briefed on the situation described above. Vehicle drivers will also be briefed by the ecologist and instructed on the locations where Annex I habitats must be avoided. Spot-checks will be made during the sea lettuce removal programme to ensure compliance, and the contractor will be informed that these spot-checks will be carried-out.**

**Plate 5.1: The Landward Slope of the Western Access Point at Harbour View Which Should Not be Used**



Eastern

**Plate 5.2: The Seaward Slope of the Western Access Point at Harbour View Which Should Not be Used**

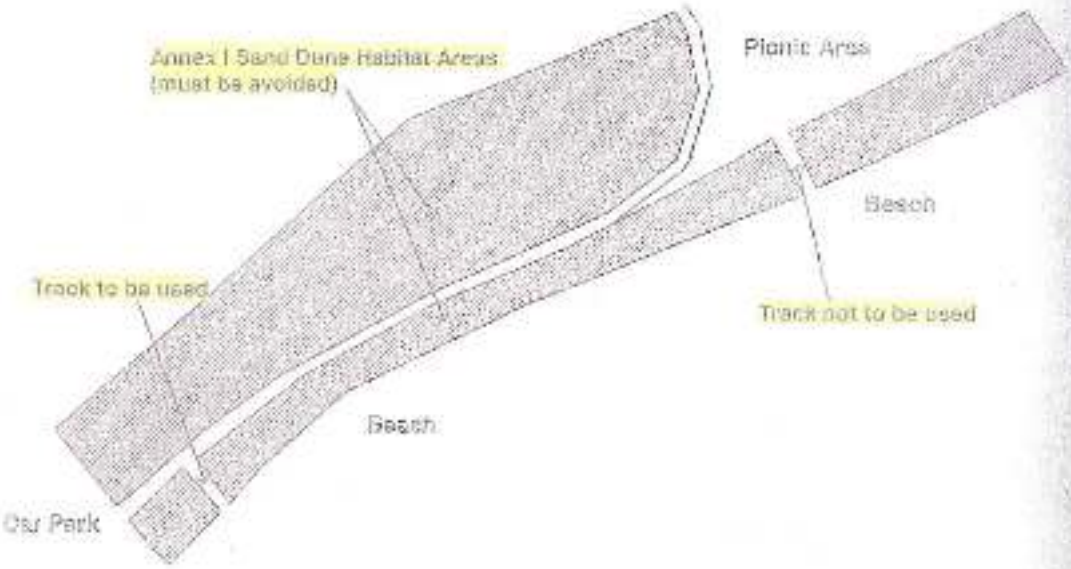



Figure 5.2 Vehicular Access Restrictions to Harbour View Beach

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# APPENDIX 1

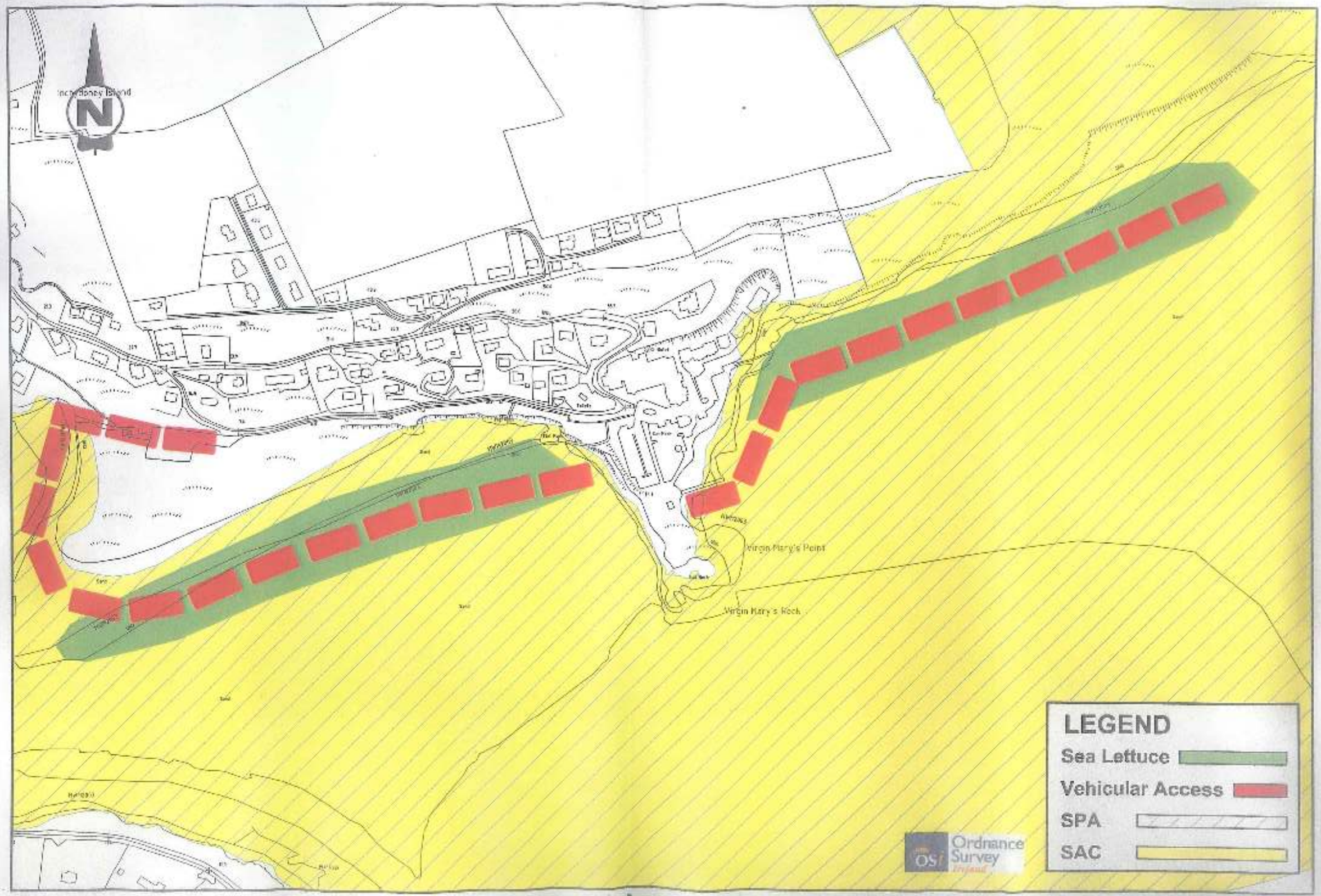
# FIGURES

Location Plan Showing Sea Lettuce Areas (red)

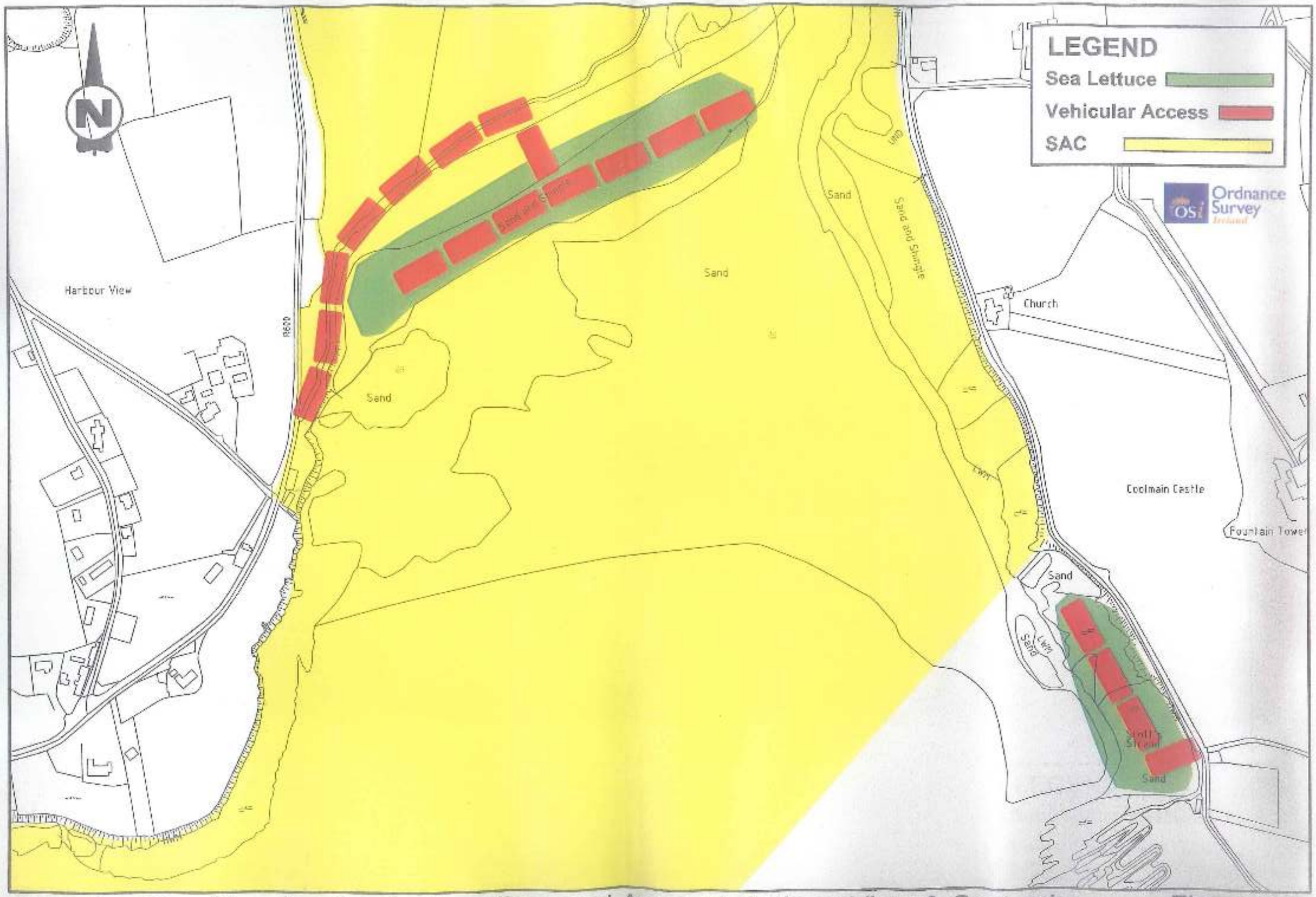
Figure 3.1

Location Plan Showing SPAs & SACs

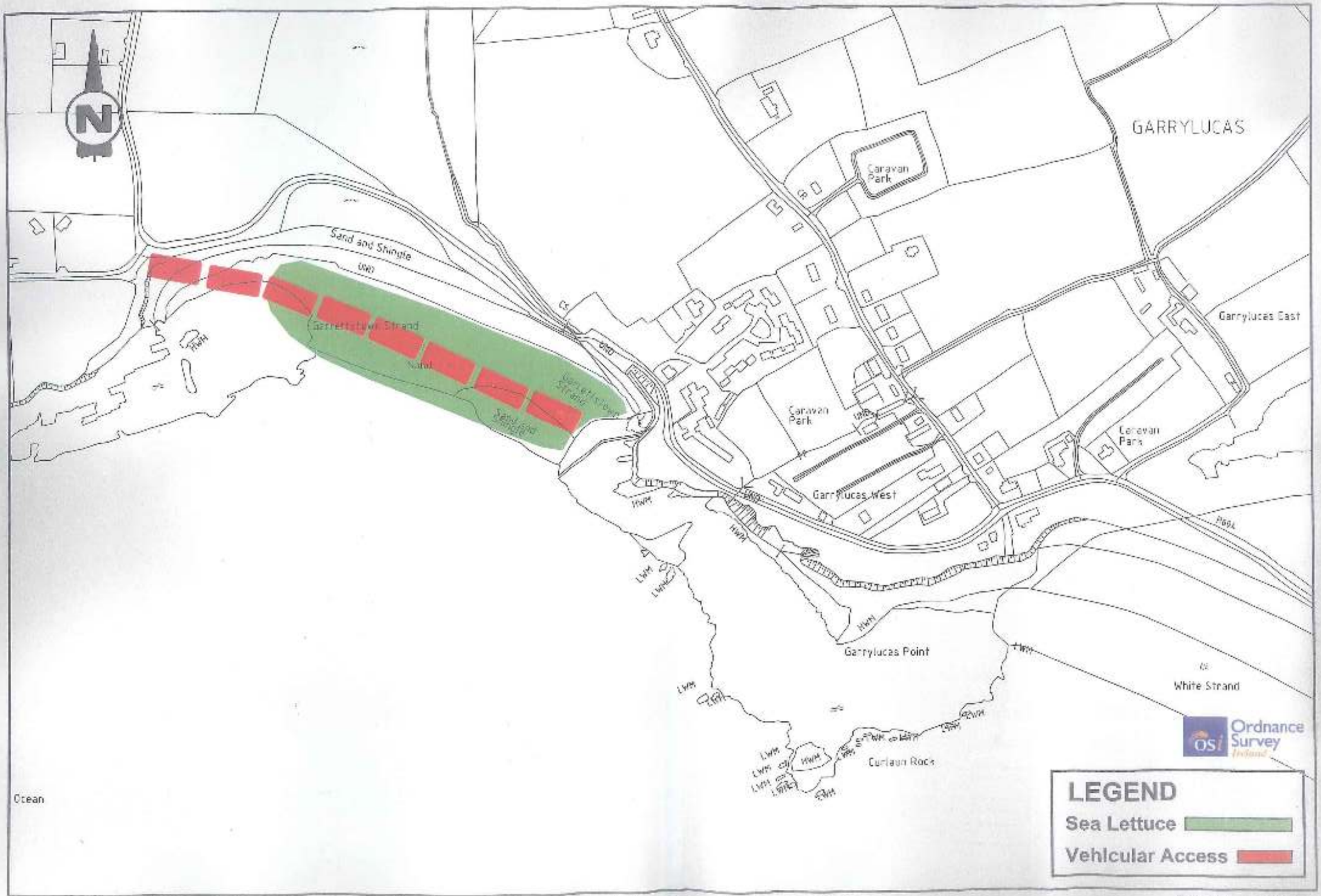
Figure 3.2




Location Plan Showing Sea Lettuce Removal Areas at Inchydoney. Figure 3.3




Location Plan Showing Sea Lettuce Removal Areas at Harbour View & Coolmain. Figure 3.4




Location Plan Showing Sea Lettuce Removal Areas at Garrettstown.

Figure 3.5