

2017 Ecological Study of Visitor Movement Areas

ENVIRONMENTAL SURVEYING AND MONITORING OF THE WILD ATLANTIC WAY OPERATIONAL PROGRAMME

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Section 1 Introduction and Background

CAAS were commissioned by Fáilte Ireland to undertake detailed ecological baseline surveys at fifteen Discovery Points on the Wild Atlantic Way (see Table 1.1 & Figure 1.1).

The aim of the ecological study was to collect baseline ecological information on sites in order to inform an assessment of visitor impacts associated with the current level and pattern of use of each site. The data collected during the survey should prove useful as a baseline for any future ecological monitoring at the sites.

Prior to the ecological study, a visitor monitoring survey examined the types, spatial patterns, and intensity of existing visitor activities at and adjacent to each of the Discovery Points (CAAS 2017). This visitor monitoring survey informed the design of the ecological study so that baseline ecological conditions at each site could be investigated in areas known to receive; maximum, moderate, minimum, and no loading.

This report forms the ecological assessment of the 2017 WAW monitoring program. The focus of this ecological assessment is on flora composition, habitat condition and the use of birds as indicator species. The wider project looks at macro environmental indicators and monitoring of visitor movements. This report was informed by the findings of the visitor observations and should be read in conjunction with the Visitor Observation Report. An independent ornithological site characterisation assessment was undertaken at all sites, this data was used to inform the recommendations and can be seen in Appendix II.

All recommendations made as a result of the Visitor Monitoring data and subsequent ecological assessments are to be considered with respect to all of the Policies and Objectives of the WAW Operational Programme. All suggested remedial actions or recommendations must comply with the Policies and Objectives of the WAW Operational Programme; most notably Appendix V: Site Maintenance Guidelines. These guidelines provide robust measures to ensure any works that take place on site are designed and undertaken in an environmentally sensitive manner to ensure the protection of the ecological integrity of the site.

It should also be noted where recommendations are executed by the relevant authority at site level as a result of this monitoring programme compliance with Article 6 (3) of the Habitats Directive must be adhered to.

1.1 Study Aims

The main aims of the ecological study include the following:

- Describe the existing ecological characteristics of areas at and in proximity to Discovery Points;
- Assess the potential for key bird species by focusing on ecological resource availability;
- Provide baseline ecological data against which future monitoring of potential visitor related impacts can be undertaken;
- Undertake a condition assessment of semi-natural habitats in those areas in proximity to each individual discovery point, and where degradation is recorded, elucidate on the likely causative factors taking into consideration the known visitor behaviour at each site;
- Determine, using evidence-based data, those sites where current use or future development of discovery points are / or could potentially lead to significant ecological effects on habitats / species of conservation concern. This determination will make particular reference to habitats / species of conservation concern and designated nature conservation sites (SAC/SPA/ NHA);
- Make recommendations with regards the need for improved visitor management at particular sites based on the outcome of the study; and
- Make recommendations with regard to the benefit of undertaking future ecological monitoring at individual sites.

Table 1.1 Wild Atlantic Way Discovery Points surveyed as part of the study

Site Name	Discovery Point No.	County	Grid Coordinates (ITM)	
Galley Head	156	Cork	533972	531815
Lough Hyne	154	Cork	509503	528963
Dursey Sound	EP16	Cork	450743	541914
Teach Dhoire Fhíonáin	135a	Kerry	453003	558872
Ballyheigue Beach	117	Kerry	475106	627856
Carrigafoyle Castle	114	Kerry	498667	647540
Cappagh Pier	110a	Clare	498523	654107
Ballyvaughan Pier	94	Clare	522758	708290
Trá na gCeann	89	Galway	524841	722922
Omev Island	78	Galway	456511	755150
Oileán Chloigeann	56	Mayo	472480	826675
Strandhill	40	Sligo	560225	835787
Murvagh Beach	34	Donegal	589582	872948
Cé Mhachaire Uí Rabhartaigh	EP1	Donegal	588896	933208
Inch Island	10	Donegal	634498	923212



Figure 1.1 Discovery Points along the Wild Atlantic Way surveyed during 2017

Section 2 Methods

In previous years the ecological assessment was restricted to Floral assessments only. The expanding scope of the monitoring group has resulted in the inclusion of ornithological assessments as indicator species for potential effects to the ecological integrity of the Sites.

2.1.1 Desktop Review

A desktop review of ecological datasets was undertaken with a view to determining known sensitive ecological receptors at each discovery point. This included a review of NPWS designated site datasets. Field maps were prepared which showed the location of each of the pre-assigned quadrat locations and designated site boundaries (where relevant).

2.2 Bird Surveys

A general walkover method (akin to CBC and other transect style breeding bird survey methods) was used to determine a snapshot of the bird community present, this was augmented by general scanning and counting of offshore or intertidal species. In combination, these methods enabled numbers, distribution and usage of the area to be estimated. The surveyor would spend approx. 1 hour per km² (or 1 hour per 2km on linear sites) carrying out walkover transects on the site (and a minimum of 1 hour where sites were very small.)

Further detail on the methods and detailed ornithological assessment can be found in Appendix II. For the purposes of this report the key findings from this assessment were built into the ecological assessment and subsequent recommendations.

2.3 Flora Assessments

The methods followed during the ecological field survey were based on the standard approach to vegetation description and analysis by use of representative vegetation quadrats (or relevés). In all, 119 quadrats were recorded during the survey. The various parameters recorded at each quadrat location are described in Section **Error! Reference source not found.** below. Dursey Sound is the control site and was revisited in 2017 after a similar visitor impact surveys were undertaken in 2015 and 2016. In 2015 and 2016 Dursey Sound was referred to as Garnish Point. A comparison of the outcome of these surveys is presented in this report.

2.3.1 Quadrat Selection

A visitor behaviour survey undertaken during June and July 2017 examined the types, spatial patterns and intensity of existing visitor activities at and adjacent to each Discovery Point (CAAS 2017). This work served to direct the ecologists to areas known to receive maximum (core movement areas), moderate (secondary movement areas), and minimum and no loading (control areas).

The locations of quadrats representative of each of these three categories were chosen based on the outcome of the visitor surveys prior to the commencement of ecology surveys.

2.3.1.1 Quadrat Recording

Quadrats of the different vegetation types on the site were recorded in a specially designed digital database (Survey 123 and ESRI Collector for ArcGIS) running on a GPS enabled field computer. The location of each of the quadrats was determined with the assistance of field maps and GIS software running on the GPS enabled field computer.

Once located, a wooden frame was laid down (orientated according to cardinal points) to indicate the extent of the quadrat (1m X 1m). All plant species within the quadrat were recorded and cover abundance value applied. The Domin scale of cover abundance was used during the study as follows:

- +: 1 individual, no measurable cover
- 1: <4% cover, with few individuals
- 2: <4% cover, with several individuals

- 3: <4% cover, with many individuals
- 4: 4-10% cover
- 5: 11-25% cover
- 6: 26-33% cover
- 7: 34-50% cover
- 8: 51-75% cover
- 9: 76-90% cover
- 10: 91-100% cover

A range of physical attributes were also recorded within each quadrat (e.g. slope, aspects, grazing impacts, soil type, soil/peat depth, cover and height values for different plant groups etc.).

Photographic records of each habitat type were taken, which were geotagged to facilitate their incorporation into a GIS. Additional photographs were also taken at regular intervals during the field survey to assist with subsequent interpretation and to record features in the wider landscape.

General survey target notes were recorded on a GPS enabled field computer running GIS software application (ESRI Collector for ArcGIS). These notes referred to features of interest within the site and areas adjacent to quadrats.

During the course of the survey habitats present at each site were classified according to Fossitt (2000) and where relevant according to Annex I of the EU Habitats Directive. Guidance in determining whether or not a habitat type may correspond to an EU Annex I type was sought from a variety of sources including European Commission (2013), O'Neill *et al.* (2013), Perrin *et al.* (2013), Barron *et al.* (2011), Ryle *et al.* (2009), and Fossitt (2000).

2.3.1.2 Habitat Condition Assessment

An assessment of habitat condition was undertaken for each quadrat using a five-point scale from good to bad, as outlined in Table 2.1. The key criteria used when determining condition included; the presence (and abundance) or absence of indicator species, damage to vegetation (grazed, trampled, broken stems, etc.), erosion features, and presence and percentage cover of bare soil.

Table 2.1 Condition assessment of terrestrial habitats

Ranking	Assessment	Description
1	Good	No evidence of any negative impact on habitats or other ecological features
2	Fair	Localised degree of negative impact, but slight and capable of rapid recovery
3	Doubtful	Widespread degree of negative impact, but slight and capable of rapid recovery
4	Poor	Localised negative impact, requiring intervention to allow full recovery
5	Bad	Widespread negative impact, requiring intervention to allow full recovery

2.3.1.3 Nomenclature

During the field survey, attention was paid to the possible occurrence of plant species which are considered to be rare in both a national and local context (Scannell and Synnott 1987) with particular emphasis on plant species listed in the Irish Red Data Book for vascular plants (Curtis and McGough 1988), the Flora Protection Order (2015), and Annex II of the E.U. Habitats Directive.

Plant species nomenclature in this report follows Rose (2004) for vascular plants, Atherton (2010) for mosses and liverworts, and Whelan (2011) for lichens. Moss species were mostly only keyed out to whether they belonged to the acrocarpous or pleurocarpous groups. Some mosses, liverworts, and higher plants not readily identified in the field were collected and keyed out at a later time using appropriate keys.

2.3.1.4 Survey Limitations

The survey was constrained by trampled vegetation, and over grazing which led to difficulties in the identification of floral species in some instances. The surveys were carried out in July which is the optimum period however, some early flowering plants may not have been recorded. The GPS enabled field computer is accurate to within 5m.

Section 3 Results

This section of the report presents the outcome of the survey on a site by site basis. The results of the survey in relation to each site is presented under the following headings: site description, ecological constraints, baseline ecology, assessment of visitor impact, and recommendations.

In all, 119 quadrats were recorded during the survey. Information gathered during the survey of quadrats informed the individual site reports presented in this section. The original data pertaining to each of the 119 quadrats is presented in Appendix I. These results were analysed in conjunction with the results and recommendations found in the ornithological assessments in Appendix II.

3.1 Galley Head, County Cork

3.1.1 Site Description

Situated on the southwest coast, Galley Head is a promontory of land, jutting out into the Atlantic Ocean with Seven Heads and the Old Head of Kinsale situated to the east and Toe Head and Cape Clear Island to the west. The Discovery Point is situated by an old Norman wall which separates Galley Head from the mainland. There is no purpose-built carpark or signage for the site.



Plate 3.1: Visitor Car Park. Note lack of signage for visitors.

The site consists of coastal grasslands and heath overlooking rugged rocky shore habitats, sink holes and marine waters. Beyond the main visitor arrival area/car-park are farmhouses, farmland with some hedges and gardens.

Most of the site is underlain

by Devonian sandstone, siltstone and mudstone. Elevated over 100m above the sea the rocky headland offers a great vantage point overlooking two exceptional beaches with expansive coastal views.

The lighthouse dominates the headland with Irish Landmark Trust owning the two adjacent lighthouse keeper's cottages. The lighthouse itself is on private lands, and there is no signage on the site. There are clear desire lines marked trails which are followed by visitors along the clifftops. The site has a number of 'blow holes' from sea caves which are not fenced with evidence of recent subsidence beside the openings.

3.1.2 Ecological Constraints

Galley head has two European Sites within the receiving environment, one proposed Natural Heritage Area and no Natural Heritage Areas (Table 3.1). These sites have ecological characteristics for which they have been designated.

Galley Head from parts of the Galley Head to Duneen Point SPA and Chough (*Pyrrhocorax pyrrhocorax*) is listed as a special conservation interest for the site. Galley Head is a well-known site for sea watching and for falls of migrant birds in spring and autumn (e.g. Black Redstart, Ring Ouzel, Barred Warbler, Yellow-browed Warbler, Firecrest). No site-specific vulnerabilities have been identified by the NPWS for the site.

Kilkeran Lake and Castlefreke Dunes SAC/pNHA is 2km north of the Galley Head discovery point. In the Castlefreke system the sand dune flora is rich for this area of west Cork. Embryonic shifting dunes occur along the seaward side of the dune system where there is some movement of sand. There are two main waterbodies on the site. Kilkeran Lake is a natural sedimentary lagoon, connected to the sea by a narrow, intermittently blocked channel. No habitats listed as qualifying features of the Kilkeran Lake and Castlefreke Dunes SAC exist on site.

Table 3.1 Designated sites in proximity to Galley Head and relevant sensitive ecological receptor

NPWS Site Code	Site name	Conservation Objectives (August 2017)	Relationship with discovery point	Qualifying Interests / Sensitive Ecological Receptors
004190	Galley Head to Duneen Point SPA	Generic version 5.0 (NPWS 2016)	Within	One annex II species which may occur in proximity to the discovery point. Chough (<i>Pyrrhocorax pyrrhocorax</i>) [A346]
001061	Kilkeran Lake and Castlefreke Dunes SAC	Site Specific, version 1.0 (NPWS 2016)	2km North	Designated for Four Annex I habitats, none of which occur in proximity to the discovery point:
001061	Kilkeran Lake and Castle Dunes pNHA	N/A	2km North	Designated for Four Annex I habitats, none of which occur in proximity to the discovery point:

3.1.3 Baseline Ecology of Study Area

A total of seven quadrats were located at Galley Head as summarised in Table 3.2 and their locations have been mapped in Figure 3.1.

The site comprised of clifftop vegetation dominated by red fescue (*Festuca rubra*). Those areas most used by visitors are the desire line trails eroded into the grassy paths. The grassy plains are frequented by common species such as sweet vernal grass (*Anthoxanthum odoratum*) and ribwort plantain (*Plantago lanceolata*). The sea cliffs themselves have exposed rock with intermittent species such as wild carrot (*Daucus carota*) and sea rocket (*Cakile maritima*) scattered.

The data collected during the survey indicates that the habitat within the core movement zone has significant impact due to trampling from visitors. Beyond the core zone, there were fewer signs of impacts recorded.

Detailed quadrat data for the site is presented in Appendix I.

Breeding was confirmed for Fulmar at the site. Offshore, good numbers of Manx Shearwater were seen streaming passed. A dedicated ornithological assessment was undertaken to characterise the potential of the site with respect to bird species (see Appendix II).

Table 3.2 Summary details of each quadrat recorded at Galley Head

Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse¹	Quadrat Condition Assessment
GH-Q1	Core Movement Area	GS3 Dry-Humid Acid Grassland	N/A	Recreation/Grazing	Poor
GH-Q2	Secondary Movement Area	GS3 Dry-Humid Acid Grassland	N/A	Recreation/Grazing	Fair
GH-Q3	Secondary Movement Area	GS3 Dry-Humid Acid Grassland	N/A	Recreation/Grazing	Doubtful
GH-Q4	Core Movement Area	CS1 Rocky Sea Cliff	N/A	Recreation/Grazing	Fair
GH-Q5	Core Movement Area	CS1 Rocky Sea Cliff	N/A	Recreation/Grazing	Good
GH-Q6	Core Movement Area	CS1 Rocky Sea Cliff	N/A	Recreation/Grazing	Good
GH-Q7	Core Movement Area	ED2/ED3 Exposed Bare Ground/Recolonised Bare Ground	N/A	Recreation/Grazing	Poor

¹ Land use Definitions:

- Amenity – the inherent attraction of a sites ecological features
- Recreation – the use of a site for activities which use existing features



Figure 3.1 Galley Head discovery point. The location of quadrats and designated sites are indicated.

3.1.4 Preliminary Assessment of Visitor Impact

60% of visitors to Galley Head had no identifiable effect on the Site. Access to Galley Head Lighthouse is currently restricted. As a result of this 46% of visitors left the core zone to get to better viewing points. 10% of visitors ventured to the tertiary zone to fish.

Current parking facilities at the site only allow for a capacity for around 10 cars, an increase in visitor number would require a review of these parking facilities.

Overall (81%) Visitors did not engage in any activities that would have adverse effects on the environment.

There was evidence of trampling with a clearly worn desire line along the top of the cliff. The potential risks to local bird population at current levels of visitors using the site include a small risk of disturbance to nesting seabirds along the cliffs and rocky promontories; and a small risk of trampling of ground-nesting birds near coastal paths (e.g. Meadow Pipit; Skylark).

3.1.4.1 Galley Head to Duneen Point SPA Conservation Objectives

Conservation objectives for the Galley Head to Duneen Point SPA have been published by the NPWS (2016)². The main objective of the document is as follows:

'to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA'.

Impacts associated with visitors were restricted to the core movement area outlined in the Visitor Observation Report (CAAS, 2017). The habitat impacts on terrestrial habitats may potentially affect the

² NPWS (2016) Conservation objectives for Galley Head to Duneen Point SPA [004190]. Generic Version 5.0. Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

distribution of Chough by causing local displacement for suitable foraging habitat (semi-improved grassland) further up the coast.

3.1.4.2 Kilkeran Lake and Castlefreke Dunes SAC Conservation Objectives

Site Specific Conservation Objectives (SSCOs) for the Kilkeran Lake and Castlefreke Dunes SAC have been published by the NPWS (2016)³. This document details specific targets for the qualifying interest species/habitats which are:

- 1150 Coastal lagoons
- 2110 Embryonic shifting dunes
- 2120 Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)
- 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)

None of the habitats identified above are present at the discovery point site. The tourist interactions identified by the visitor monitoring report (CAAS 2017) identify impacts as localised and therefore there is no potential effects to the SAC identified.

3.1.5 Recommendations

Consideration should be given to visitor management of the site to ensure safety around the 'blow holes' and direct visitor movements along prescribed paths.

Any increase in visitor numbers to the site would require a review of current parking facilities, which currently are limited (< 10 cars max). Any review of facility upgrades must be undertaken in compliance with the WAW Site Maintenance Guidelines.

At present, there is no signage at this site to indicate its importance for birds. The erection of signs at the visitor parking area could highlight the key species breeding in the area and provide guidance to visitors to ensure nesting birds are not disturbed.

Access to Galley Head Lighthouse is currently restricted. This hinders the overall visitor experience as some of the best vantage points for viewing seabirds on passage are not readily available. Our recommendation is that access is negotiated with the owners of the lighthouse (Commissioner of Irish Lights) to provide some access to visitors to the grounds of the lighthouse (seasonal and daytime restrictions) to allow visitors to truly experience all that this headland has to offer. This could reduce effects to the clifftop vegetation by dispersing visitors to other areas of the headland.

In the event of increased visitor numbers, then further ecological monitoring is recommended.

³ NPWS (2016) Conservation Objectives: Kilkeran Lake and Castlefreke Dunes SAC 001061. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

3.2 Lough Hyne, County Cork

3.2.1 Site Description

Lough Hyne is a semi-enclosed marine lake situated three miles west of Skibbereen Co. Cork. It measures just 0.8 km by 0.6 km and it is believed that the Lough was a freshwater lake up to 4,000 years ago, when a rise in sea levels joined it with the sea. It is now a highly sheltered, seawater basin connected at the south of Lough Hyne to the North Atlantic Ocean via a narrow inlet called Barloge Creek.



At the northern end of Barloge Creek, there is a very narrow, shallow constriction known as the "Rapids". The "Rapids" are no deeper than 5m at high tide and this highly restrictive sill leads to an asymmetrical tide with water flooding for 4 hours

Plate 3.2: Main visitor congregation area, and carpark facility.

and ebbing for 8.5 hours.

Visitor facilities include two carparks, one at the entrance to the Knockomagh Wood overlooking the Lough (owned by Coillte), the other along by the eastern shoreline of the Lough. The facility capacity is limited due to parking availability and the remote nature of the site (>50 cars).

3.2.2 Ecological Constraints

Lough Hyne has two European Sites within the receiving environment, one proposed Natural Heritage Areas and no Natural Heritage Areas (Table 3.3). These sites have ecological characteristics for which they have been designated.

Lough Hyne Nature Reserve and Environs SAC/pNHA is designated for the marine Annex I qualifying interests of large shallow inlets and bays, reefs and submerged or partially submerged sea caves. The concentration of the intertidal zone, the warmth and shelter of the waters and the lack of disturbance by the larger predators including man all combine to produce an extremely rich fauna which combines all that can be found in rock pools with species characteristic of shallow inshore areas. The best represented groups are probably the sponges, sea slugs, sea urchins and fish and, amongst the plants, the red seaweeds. Warm water species are especially prominent and for some of them this is their only station outside Iberia or the Mediterranean. The surrounding land contains good populations of passerine birds, including stonechat and linnets and summer migrants (e.g. willow warbler). To the north of Lough Hyne is the mixed woodland of Knockomagh, whose species include Sessile Oak (*Quercus petraea*), Beech (*Fagus sylvatica*) and Sycamore (*Acer pseudoplatanus*), with some Holly (*Ilex aquifolium*) and Yew (*Taxus baccata*). However, there has been much planting of coniferous species such as Sitka Spruce (*Picea sitchensis*), Lodgepole Pine (*Pinus contorta*) and larch (*Larix spp.*) in the wood over the last 30 years.

The discovery point overlaps with the Sheep's Head to Toe Head SPA which supports an internationally important population of breeding Chough. At Sheep's Head, Chough are concentrated at the tip of the peninsula. Studies have shown that Chough forage mainly within 300 m inland of the cliff tops used for breeding and these areas have been included in the site. Flocking activity centres on the dunes at Barley Cove and around Dunlough Bay. The site supports a nationally important Peregrine population

and a range of other breeding seabirds including Fulmar, Herring Gull, Shag, Kittiwake, Black Guillemot and Great Black-backed Gull.

Table 3.3 Designated sites in proximity to Lough Hyne and relevant sensitive ecological receptor

NPWS Site Code	Site name	Conservation Objectives (August 2017)	Relationship with discovery point	Qualifying Interests / Sensitive Ecological Receptors
000097	Lough Hyne Nature Reserve and Environs SAC	Site Specific Conservation Objectives, version 1.0 (NPWS 2014)	Within	<u>Designated for 3 Annex I habitats, none of which occur in proximity to the discovery point.</u>
004156	Sheep's Head to Toe Head SPA	Generic version 5.0 (NPWS 2016)	Adjacent	<u>Two annex II species which are unlikely to occur in proximity to the discovery point.</u>
000097	Lough Hyne Nature Reserve and Environs pNHA	N/A	Within	<u>Designated for 3 Annex I habitats, none of which occur in proximity to the discovery point.</u>

3.2.3 Baseline Ecology of Study Area

A total of nine quadrats were located at Lough Hyne as summarised in Table 3.4 and their locations have been mapped in Figure 3.2.

Lough Hyne is a saline lake fed by narrow channel (Barloge Creek) and sea caves connected to the Atlantic Ocean to the south. The lake is bordered by a road which has a steep incline to the other side. This incline acts as a protective barrier to the habitats present. The only evidence of impacts to flora were observed within a few isolated lay byes which were cut into the mountainside. The habitats present are scrub, bracken and montane heath. Visitor movements were localised to the roadways and a square pontoon on the edge of the lake. This grassy pontoon has evidence of severe trampling however the species present are common grassland species of low ecological value. The activities on site are recreational uses such as swimming and fishing.

Detailed quadrat data for the site is presented in Appendix I.

Breeding is likely for a number of species recorded at the site including Goldcrest, Dunnock, Rook, Wood Pigeon, Mute Swan, Hooded Crow, House Martin and Bullfinch. A dedicated ornithological assessment was undertaken to characterise the potential of the site with respect to bird species (see Appendix II).

Table 3.4 Summary details of each quadrat recorded at Lough Hyne

Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
LH-Q1	Secondary Movement Area	WS1 Scrub	N/A	Recreation	Fair

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Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
LH-Q2	Secondary Movement Area	HH4 Montane Heath	N/A	Recreation	Good
LH-Q3	Secondary Movement Area	HD1 Dense Bracken	N/A	Recreation	Good
LH-Q4	Secondary Movement Area	BL3 Buildings and Artificial Surfaces	N/A	Recreation	N/A
LH-Q5	Core Movement Area	GA2 Amenity Grassland (Improved)	N/A	Recreation	Poor
LH-Q6	Core Movement Area	BL3 Buildings and Artificial Surfaces	N/A	Recreation	N/A
LH-Q7	Core Movement Area	BL3 Buildings and Artificial Surfaces	N/A	Recreation	N/A
LH-Q8	Tertiary Movement Area	HH4 Montane Heath	N/A	Recreation	Good

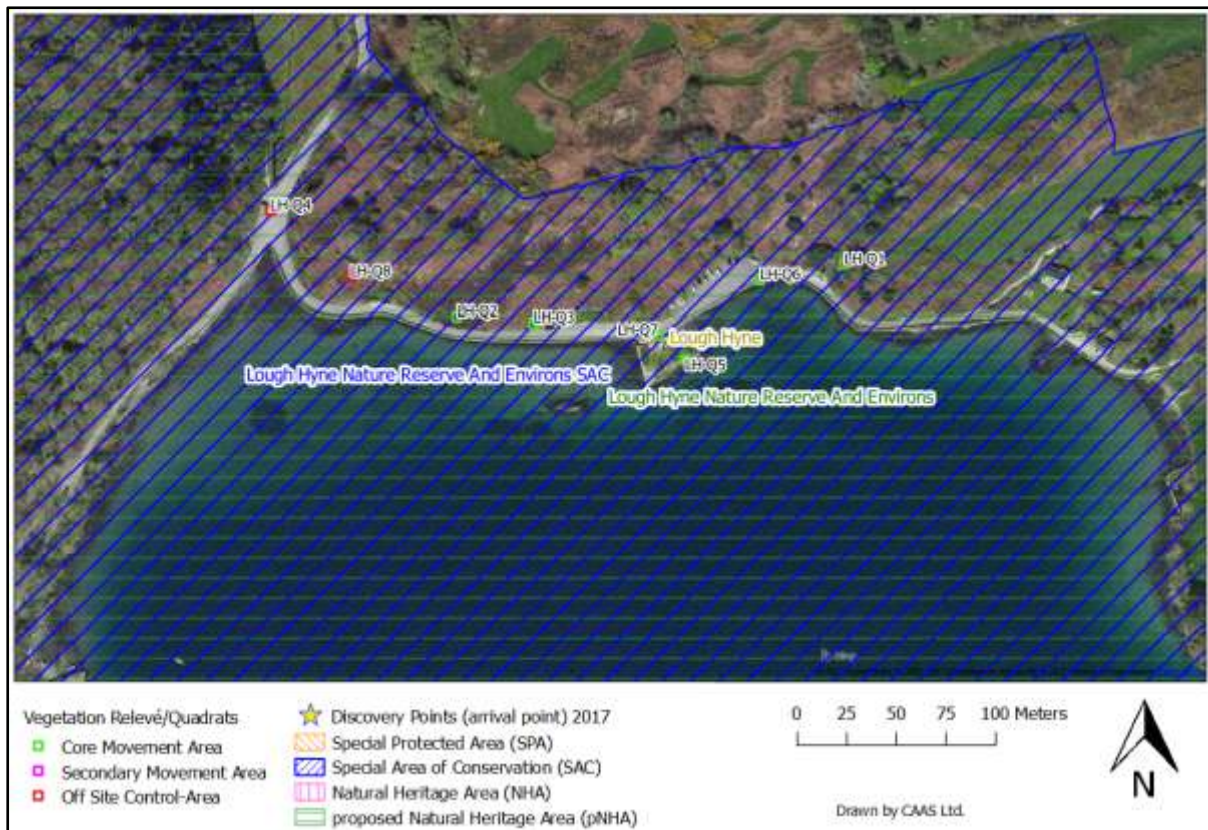


Figure 3.2 Lough Hyne discovery point. The location of quadrats and designated sites are indicated.

3.2.4 Preliminary Assessment of Visitor Impact

The majority of visitors (86%) had no identifiable effect to the site. On arrival to the site evidence of dumping (6%) was visible, this mainly composed of glass bottles and aluminium cans in black refuse sacks.

73% of visitors stayed within the core zone of the site, parking and walking along the edge of the water bank. The 27% that went into the secondary zone where using the lake to train for a triathlon. A growth in Visitor numbers would require a review of the current parking and visitor facilities.

3.2.4.1 Lough Hyne Nature Reserve and Environs SAC Conservation Objectives

Site Specific Conservation Objectives (SSCO's) for the Lough Hyne Nature Reserve and Environs SAC have been published by the NPWS (2014)⁴. This document details specific targets for the qualifying interest species/habitats which are:

- Large shallow inlets and bays [1160]
- Reefs [1170]
- Submerged or partially submerged sea caves [8330]

The Visitor Monitoring Report Identifies localised impacts to terrestrial habitats which have low ecological value and do not influence the conservation objectives of the SAC. The recreational use of the site has low levels of effects given the restricted site access.

3.2.4.2 Sheep's Head to Toe Head SPA Conservation Objectives

Conservation objectives for the Sheep's Head to Toe Head SPA have been published by the NPWS (2016)⁵. The main objective of the document is as follows:

'To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA'

Impacts associated with visitors were restricted to the core movement area outlined in the Visitor Observation Report (CAAS 2017). The topographic characteristics and remote nature of the site limit the capacity which acts as natural protection from over tourism for the ecological interest species.

3.2.5 Recommendations

The popularity of the site as a visitor attraction is evident from the data obtained during the surveys (CAAS 2017). The marine interest's species present may be sensitive to human waste from large numbers of tourists. Management strategies could be explored to provide temporary facilities during peak tourist season to minimise impacts to water quality. Any review of facility upgrades must be undertaken in compliance with the WAW Site Maintenance Guidelines.

Monitoring of the recreational activities at the reserve could be facilitated by a part-time warden during the peak summer months when visitor numbers are highest, to ensure that these activities do not adversely affect the site interests and to facilitate educational options to visitors (daily nature walks/talks for example).

Given the narrow roads leading to the site and at the site itself, future growth in visitor numbers would require a review of existing parking options and visitor facilities. Any new developments would have to ensure that there is no risk to the Lough Catchment from pollution.

At present, there is some signage at this site to indicate common birds found at Lough Hyne but the signage does not indicate the importance of the site for many species and does not highlight the unique

⁴ NPWS (2014) Conservation Objectives: Lough Hyne Nature Reserve and Environs SAC 000097. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

⁵ NPWS (2016) Conservation objectives for Sheep's Head to Toe Head SPA [004156]. Generic Version 5.0. Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs

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attraction of seeing Gannets feeding in the Lough itself. The erection of new signage at the visitor parking area could highlight key species breeding in the area and promote the site to visitors as a place to view feeding Gannets up close and from the comfort of your vehicle.

A fixed visitor telescope could allow visitors to view Gannets and other birds using the Lough.

3.3 Dursey Sound (previously named Garnish Point), County Cork

3.3.1 Site Description

Dursey Sound is located on the south-western tip of the Beara Peninsula in Co. Cork, and is the departure point for the cable car to Dursey Island. It is situated about 35 metres above sea level. Garnish point is separated from Dursey Island by a narrow sound known for its strong tides.



Plate 3.3: Trail to the North of Dursey Sound/Garnish Point carpark.

Beyond the main visitor car parking is a prominent viewing point on the hill overlooking the cable car which runs from Lamb's Head to Dursey Island for tourists. The island is separated from the mainland by a narrow stretch of water called the Dursey Sound which has a very strong tidal race, with a reef of rocks in the centre of the channel which is submerged at high tides. Most of the site is underlain by Devonian sandstone, siltstone and mudstone,

with small areas of igneous rocks occur at Cod's Head, Dursey Island.

At Dursey Sound, the majority of the visitors remained in the car park and paved areas. Some visitors were observed to leave the vicinity of the car park and step onto grazed land/bare rock to take photos and/or cross the stile onto the trail. The area was popular for hikers who were observed to follow the designated way marked trails (un-surfaced paths). There is a car park, ticket office and toilet facilities at this point, as well as interpretative signs. The study area includes areas of wet heathland, improved and semi-improved grassland and maritime grassland, as well as cliffs. The area around Garnish point is grazed by sheep, with the exception of the immediate area of the car park. Interpretive material is presented in the car park.

3.3.2 Ecological Constraints

Dursey Sound has three European Sites within the receiving environment, one proposed Natural Heritage Area and no Natural Heritage Areas (Table 3.5). These sites have ecological characteristics for which they have been designated.

The Dursey Sound discovery point occurs ca 140m from the Kenmare River SAC and within the Beara Peninsula SPA. Dry heath, a qualifying habitat of Kenmare River SAC, occurs throughout much of the lands surrounding the car parks at Dursey Sound. The heath occurs in association with semi-improved grassland. Sea cliffs also occur in proximity, some of which are likely to be of value to cliff nesting birds (including Chough), for which the Beara Peninsula SPA is designated. The discovery point also occurs within Garnish Point pNHA.

Nearby the Bull and the Cow Rocks are home to a large breeding colony of Northern Gannets. The site consists of coastal grasslands, made up of short sward (due to sheep and cattle grazing) and patches of heath overlooking rugged rocky shore habitats and marine waters.

The site forms part of the Beara Peninsula SPA and Chough (*Pyrrhocorax pyrrhocorax*) is listed as a feature of interest for the site. Dursey Island across the Dursey Sound is a well-known site for sea watching and for falls of migrant birds in spring and autumn (e.g. Black Redstart, Hoopoe, Ring Ouzel, Dusky Warbler, Grasshopper Warbler, Yellow-browed Warbler, Little Bunting, Short-eared Owl).

Table 3.5 Designated sites in proximity to Dursey Sound and relevant sensitive ecological receptors

NPWS Site Code	Site name	Conservation Objectives (August 2017)	Relationship with discovery point	Qualifying Interests / Sensitive Ecological Receptors
002158	Kenmare River SAC	Site Specific Conservation Objectives. Version 1 (NPWS 2013)	The Discovery Point occurs approximately 140m from the SAC.	Designated for 11 Annex I habitats, two of which occur in proximity to the discovery point: Dry heaths; and Sea cliffs Four annex II species which are unlikely to occur in proximity to the discovery point.
004155	Beara Peninsula SPA	Generic version 5.0 (NPWS 2016)	The Discovery Point occurs within the SPA.	Annex I Bird Species: Chough (<i>Pyrrhocorax pyrrhocorax</i>) [A346] Other Bird Species: Fulmar (<i>Fulmarus glacialis</i>) [A009]
001986	Garnish Point pNHA	N/A	The Discovery Point occurs within the pNHA	NPWS Description from 004155 Annex I Bird Species: Chough (<i>Pyrrhocorax pyrrhocorax</i>) [A346] Other Bird Species: Fulmar (<i>Fulmarus glacialis</i>) [A009]

3.3.3 Baseline Ecology of study area

A total of eight quadrats were located at Dursey Sound as summarised in Table 3.6 and their locations have been mapped in Figure 3.3.

The site has high levels of trampling in the immediate vicinity of the carpark. The surrounding habitat is a mosaic of Dry-humid acid grassland grading into Dry siliceous heath however grazing pressures limit the persistence of heath habitat. These findings are comparative to the assessments undertaken on site in 2016 and 2015.

Detailed quadrat data for the site is presented in Appendix I.

Key species recorded on the site visit included the Annex 1-listed⁶ Chough. Chough are known to breed in the area, with the site lying within the Beara Peninsula SPA. A dedicated ornithological assessment was undertaken to characterise the potential of the site with respect to bird species (see Appendix II).

Table 3.6 Summary details of each quadrat recorded at Dursey Sound

Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
DS-Q1	Core Movement Zone	BL3 Buildings and Artificial Surfaces	N/A	Amenity Management/ Transport	Good
DS-Q2	Core Movement Zone	GS3 Dry-humid acid grassland	N/A	Amenity Management/ Transport	Good
DS-Q3	Core Movement Zone	ED3 Recolonised Bare Ground	N/A	Amenity Management/ Transport	Fair

⁶ Birds Directive 2009/147/EC .

Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
DS-Q4	Core Movement Zone	ED2 Spoil and bare Ground	N/A	Amenity Management/Transport	Doubtful
DS-Q5	Core Movement Zone	GS3 Dry-humid acid grassland	N/A	Recreation/Grazing	Fair
DS-Q6	Secondary Movement Zone	HH1 Dry siliceous heath	Dry heath [4030]	Recreation/Grazing	Good
DS-Q7	Tertiary Movement Area	HH1 Dry siliceous heath	Dry heath [4030]	Recreation/Grazing	Good
DS-Q8	Tertiary Movement Area	GS3 Dry-humid acid grassland	N/A	Recreation/Grazing	Good

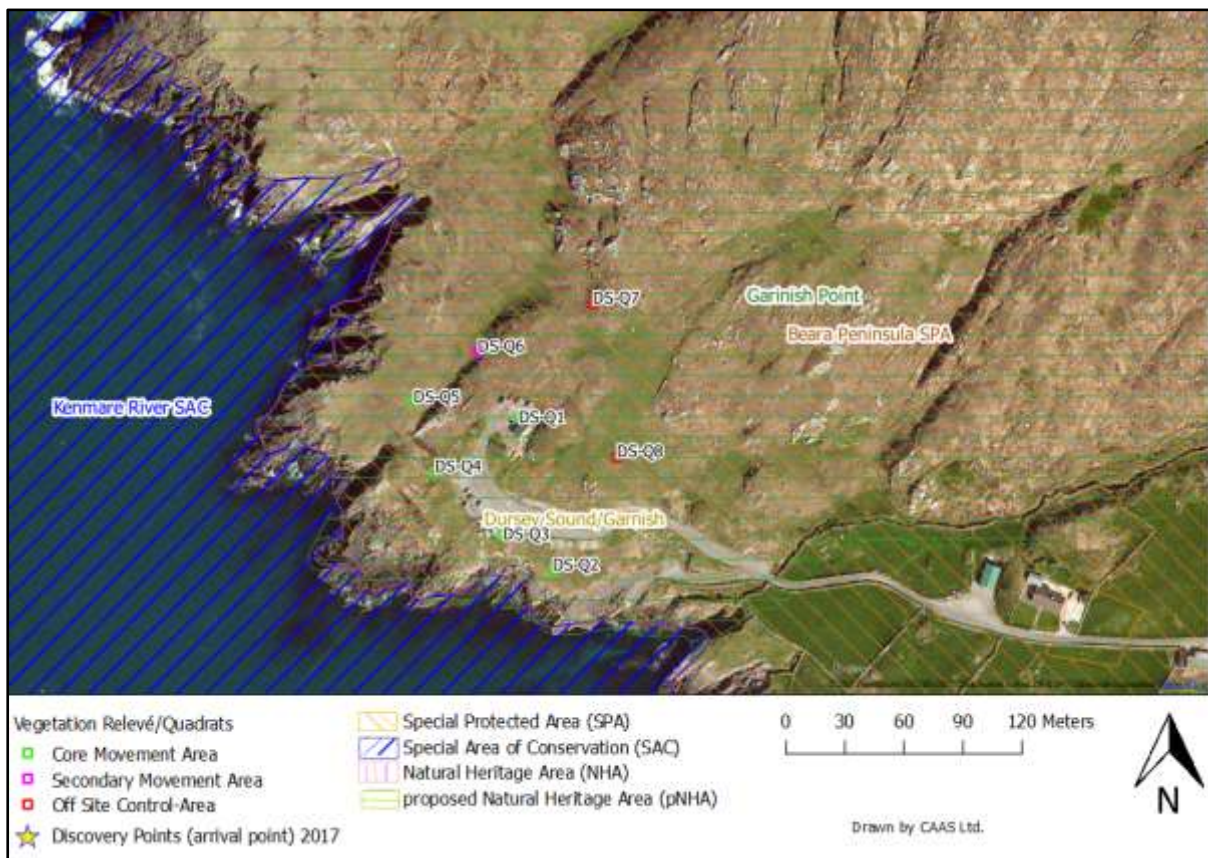


Figure 3.3 Dursey Sound discovery point. The location of quadrats and designated sites are indicated.

3.3.4 Preliminary Assessment of Visitor Impact

92% of visitors to Dursey Island/Garnish Point had no identifiable effect to the site.

59% of visitors stayed within the core area of the carpark and marked trails, 5% were observed to make their way off the marked trails across bare rock and vegetation to take photographs and site see.

A growth in visitor number would result in a review of the current access to the site. The roads from Allihies village to Castletownbere is extremely narrow and difficult for camper vans and large vehicles to pass through.

3.3.4.1 Kenmare River SAC

The SAC is designated for Dry heaths and Sea cliffs. Impacts arising from aquaculture, fishing, dumping of wastes and water pollution are the principal threats to the nature conservation interests of Kenmare River SAC. These activities were not recorded on site. On site threats identified during the visitor monitoring included visitor trampling and grazing by sheep. The trampling effects were seen to have low impacts and were localised to within the immediate vicinity of the discovery point.

3.3.4.2 Beara Peninsula SPA & Garnish Point pNHA

The potential risks to local bird population of current levels of visitors using the site are mainly centred on the risk of increased disturbance to Choughs which use the maritime grasslands along the peninsula to feed and are also known to breed along the coast of the peninsula (Beara Peninsula SPA).

3.3.5 Recommendations

Visitors are having a minor localised adverse impact at this site. Trampling of vegetation is restricted to the un-surfaced trails which are currently retaining a vegetation structure. However, any expansion in visitor numbers to the site may lead to deteriorating habitat quality of coastal heath and grassland and/or condition of the coastal path. Provisions to minimise impacts from trampling should be explored such as:

- The erection of additional signage at the visitor parking area could provide guidance to visitors walking the trails behind the cable car station to stick to the paths provided and avoid unnecessary disturbance and/or trampling of dry heath and/or ground-nesting birds.
- Erection of temporary moving trails to disperse trampling across the site sequentially or fixed marking of walkways to ensure a unified area is sacrificed to preserve all surrounding habitat.

Any review of facility upgrades must be undertaken in compliance with the WAW Site Maintenance Guidelines.

Any increase in visitor numbers to the site should require a review of current road access from the main Allihies to Castletownbere road which is extremely narrow for larger vehicles such as camper vans and should take into account road safety considerations and local residents.

These recommendations are in line with those identified as part of the monitoring program in 2016 and 2015.

3.4 Teach Dhoire Fhíonáin, County Kerry

3.4.1 Site Description

Teach Dhoire Fhíonáin (Derrynane House) is the ancestral home of one of Ireland's most famous



historical figures, Daniel O'Connell, lawyer, politician and statesman. Situated on 120 hectares of parklands on the scenic Kerry coast, the house is filled with period furnishings and a collection of his personal possessions. The main street in Dublin, O'Connell Street is called after him.

Today some 120 hectares of the lands of Derrynane, together with Derrynane House, make up Derrynane National Historic Park. Plantations

Plate 3.4: Derrynane beach to the south of Teach Dhoire Fhíonáin

and garden walks were laid out in the 18th and 19th Centuries, principally north and west of the house. Some features of the demesne are strongly associated with Daniel O'Connell, including the old summer house. The main area of the gardens, set inland and to the north of the house, can be reached through a tunnel under the road.

Situated on tip of the Iveragh Peninsula in Co. Kerry, Derrynane consist of a sandy beach, with offshore rocky islands and is backed by large grass dunes and a sheltered inner sandy bay, with areas of reeds and with the historic Derrynane House located to the rear of the beach surrounded by mature trees (mixed woodland). The Derrynane Dunes Nature Trail consists of a walk across Derrynane Beach, its sand dunes and the woodland walks to the rear.

3.4.2 Ecological Constraints

Derrynane House has three European Sites within the receiving environment, one proposed Natural Heritage Area and no Natural Heritage Areas (Table 3.7). These sites have ecological characteristics for which they have been designated.

The site is part of Kenmare River SAC including the significant vegetated sea cliffs in the Derrynane area. The site includes areas of coastal dry heath. There is a long-established population of the mollusc *Vertigo angustior* in the dunes at Derrynane and breeding Natterjack Toads (*Bufo calamita*). See Appendix 1 for site and associated signage photos.

Nearby Skellig Islands SPA is recognised as being internationally important for breeding seabirds. Skellig Michael supports several thousand pairs of Storm petrels (c. 10,000) and Puffin (c. 4,000 pairs), and smaller numbers of Guillemot, Black-legged Kittiwake, Northern Fulmar, Manx Shearwater and Razorbill, as well as some other seabird species. Little Skellig supports nearly 35,000 pairs of Northern Gannets.

Table 3.7 Designated sites in proximity to Teach Dhoire Fhionáin (Derrynane House) and relevant sensitive ecological receptor

NPWS Site Code	Site name	Conservation Objectives (August 2017)	Relationship with discovery point	Qualifying Interests / Sensitive Ecological Receptors
004154	Iveragh Peninsula SPA	Generic Version 5.0. (NPWS 2016)	Within	<u>Annex I Species:</u> [A009] Fulmar Fulmarus glacialis [A103] Peregrine Falco peregrinus [A188] Kittiwake Rissa tridactyla [A199] Guillemot Uria aalge [A346] Chough Pyrrhocorax pyrrhocorax
002158	Kenmare River SAC	Site Specific Conservation Objectives. Version 1 (NPWS 2013)	Within	<u>Designated for 11 Annex I habitats, two of which occur in proximity to the discovery point:</u> Large shallow inlets and bays [1160] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] <u>Four annex II species which are likely to occur in proximity to the discovery point.</u> Vertigo angustior (Narrow-mouthed Whorl Snail) [1014] Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303] Lutra lutra (Otter) [1355] Phoca vitulina (Harbour Seal) [1365]
000365	Killarney National Park, MacGullycuddy Reeks and Caragh River SAC	Generic Version 5.0. (NPWS 2016)	500m North	<u>Designated for 14 Annex I habitats, two of which occur in proximity to the discovery point:</u> 4030 European dry heaths; and 7130 Blanket bogs (* if active bog) <u>12 annex II species which are likely to occur in proximity to the discovery point.</u> Geomalacus maculosus (Kerry Slug) [1024] Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] Euphydrias aurinia (Marsh Fritillary) [1065] Petromyzon marinus (Sea Lamprey) [1095] Lampetra planeri (Brook Lamprey) [1096] Lampetra fluviatilis (River Lamprey) [1099] Salmo salar (Salmon) [1106] Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303] Lutra lutra (Otter) [1355] Trichomanes speciosum (Killarney Fern) [1421] Najas flexilis (Slender Naiad) [1833]

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				Alosa fallax killarnensis (Killarney Shad) [5046]
001346	Derrynane Bay Island and Marsh, Lambs Head	N/A	Within	No information available from the NPWS pNHA database

3.4.3 Baseline Ecology of Study Area

A total of 14 quadrats were located at Derrynane House as summarised in Table 3.8 and their locations have been mapped in Figure 3.4.

Habitats found on site include mixed woodland, oak woodland, regenerating scrub, alder dominated wet woodland, beach and rock pools, sea cliffs, embryonic dunes, fixed dune grasslands, wet grasslands, meadows, coastal heath with wet hollows, freshwater marshes and salt water marshes. The dune grasslands are grazed by cattle which promotes the growth of orchid species such as the Bee and Spotted orchids. There are mown patches through the machair habitat to guide visitors to walk along the patches to protect the adjacent floral communities.

The site has high ecological value and is resident to a number of rare and protected species including, but not limited to, the Kerry lily and the Kerry slug. The site is managed specifically to facilitate visitor experience while enhancing biodiversity and ecological processes.

Detailed quadrat data for the site is presented in Appendix I.

Key species recorded on the site visit included the Annex 1-listed⁷ Chough. Chough are known to breed in the area, with the site lying within the Iveragh Peninsula SPA. A dedicated ornithological assessment was undertaken to characterise the potential of the site with respect to bird species (see Appendix II).

Table 3.8 Summary details of each quadrat recorded at Teach Dhoire Fhíonáin (Derrynane House)

Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
DNH-Q1	Core Movement Zone	GS3 Dry Humid Acid Grassland	N/A	Recreation	Good
DNH-Q2	Core Movement Zone	GS3 Dry Humid Acid Grassland	N/A	Recreation	Good
DNH-Q3	Core Movement Zone	GS3 Dry Humid Acid Grassland	N/A	Recreation	Good
DNH-Q4	Core Movement Zone	CD6 Machair	Machairs [21A0]	Recreation/ Grazing	Good
DNH-Q5	Core Movement Zone	WS1 Scrub	N/A	Recreation/ Grazing	Good
DNH-Q6	Core Movement Zone	LS2 Sand Shores	N/A	Recreation	Good
DNH-Q7	Core Movement Zone	LS2 Sand Shores	N/A	Recreation	Good
DNH-Q8	Core Movement Zone	CD2 Marram Dunes	N/A	Recreation	Fair
DNH-Q9	Core Movement Zone	CD6 Machair	Machairs [21A0]	Recreation/ Grazing	Good

⁷ Birds Directive 2009/147/EC.

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Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
DNH-Q10	Core Movement Zone	GS3 Dry Humid Acid Grassland	N/A	Recreation/ Grazing	Fair
DNH-Q11	Core Movement Zone	WN6 Wet Willow Alder Ash Woodland	N/A	Recreation	Good
DNH-Q12	Core Movement Zone	WD1 Mixed Broadleaf Woodland	N/A	Recreation	Good
DNH-Q13	Core Movement Zone	WN4 Peduncular Oak Woodland	N/A	Recreation	Good
DNH-Q14	Secondary Movement Zone	LR1 Exposed Rocky Shores	N/A	Recreation	Good

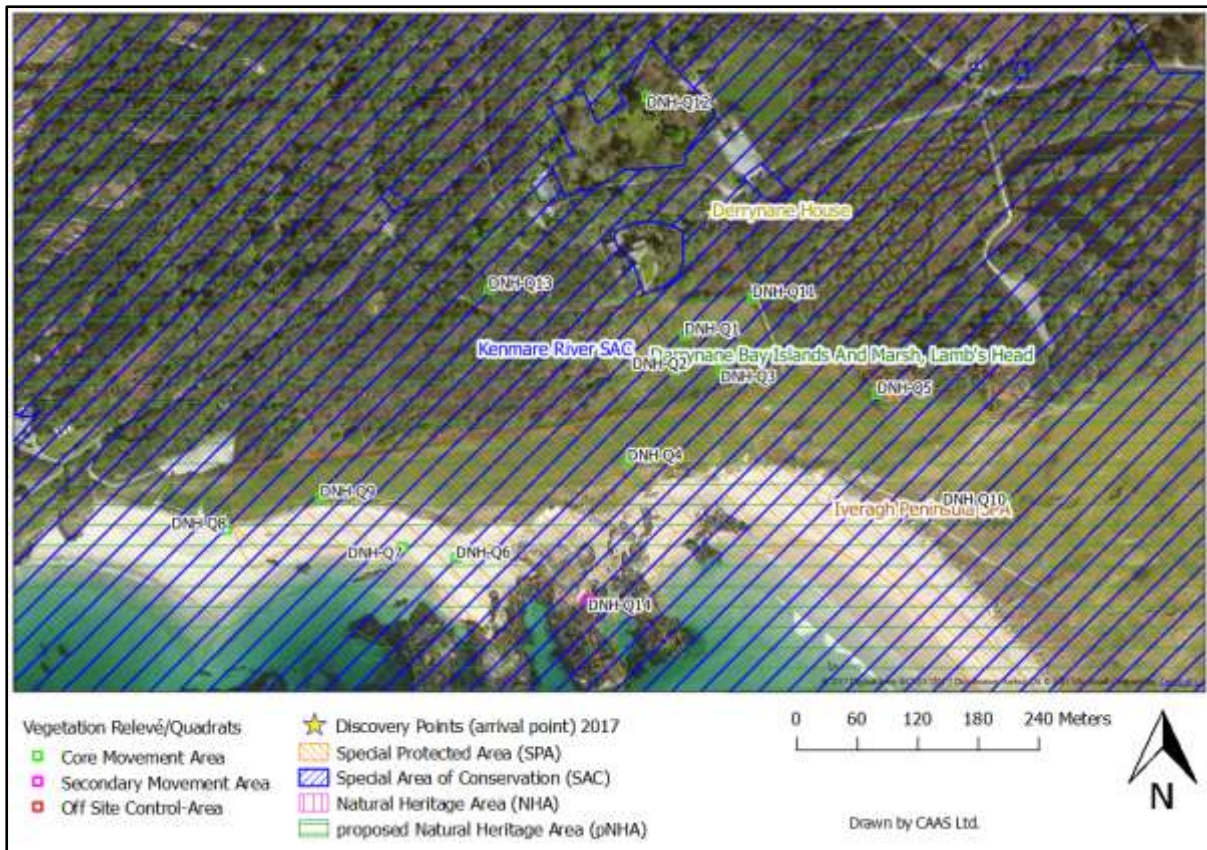


Figure 3.4 Teach Dhoire Fhionáin (Derrynane House) discovery point. The location of quadrats and designated sites are indicated.

3.4.4 Preliminary Assessment of Visitor Impact

52% of people had no identifiable effect on the site. Desire lines were visible (38%) in the Dunes as a result of people horse-riding, reaching the dunes from a separate carpark located adjacent to the beach.

The majority of visitors (93%) stayed within the core areas of the Beach and the marked trails of Derrynane house. 6% of people trafficked the secondary zone and were observed to throw matter (stones, bricks) into the water.

As there is access to the Dunes from both the beach and the car park, measures should be put in place to ensure visitors are aware of the sensitivity of the surrounding landscape and stick to marked trails and paths.

3.4.4.1 Iveragh Peninsula SPA

The site is designated for Fulmar (*Fulmarus glacialis*), Peregrine (*Falco peregrinus*), Kittiwake (*Rissa tridactyla*), Guillemot (*Uria aalge*) and Chough (*Pyrrhocorax pyrrhocorax*). The potential risks to local bird population of current levels of visitors using the site are mainly centred on the risk of increased disturbance to breeding birds using the sand dunes including a small risk of trampling of ground-nesting birds near trails/paths (e.g. Meadow Pipit; Skylark, Stonechat). The impacts identified during the Visitor Movement Surveys identified low level impacts with minimal movement outside of the managed areas.

3.4.4.2 Kenmare River SAC & Derrynane Bay Island and Marsh, Lambs Head pNHA

The SAC is designated for Large shallow inlets and bays as well as fixed coastal dunes with herbaceous vegetation (grey dunes). Impacts arising from aquaculture, fishing, dumping of wastes and water pollution are the principal threats to the nature conservation interests of Kenmare River SAC. These activities were not recorded on site. There were no effects identified during the visitor movement surveys that would affect the habitat quality of this site. Otter (*Lutra lutra*) and Harbour Seal (*Phoca vitulina*) are known to be tolerant to human disturbances and persist in urban environments. The lesser horseshoe bat is a nocturnal species, and the discovery point is only open to the public during daytime hours. The Narrow-mouthed Whorl Snail (*Vertigo angustior*) is sensitive to ground water interactions and changes to water quality, however there were no records of visitor activities that interacted with these factors.

3.4.4.3 Killarney National Park, MacGullycuddy Reeks and Caragh River SAC

Apart from grazing, the woodlands are particularly threatened by Rhododendron (*Rhododendron ponticum*) invasion. There was no Rhododendron recorded on site during the floral habitat assessments.

3.4.5 Recommendations

At present, there is general signage at this site indicating the history of the site and also the importance of the site for birds including seabirds and other wildlife in the area (e.g. Natterjack Toads). However, some errors on the existing signage should be amended if not replaced altogether.

Access to Sand dunes from both the beach and visitor car park should include a notice of the sensitive nature of the dunes so that visitors are aware of the importance of sticking to the walking routes marked to avoid negative impacts on the site conservation interests.

Any increase in visitor numbers to the site should require a review of current road access which is narrow for larger vehicles such as camper vans and should take into account road safety considerations and local residents.

Any review of facility upgrades must be undertaken in compliance with the WAW Site Maintenance Guidelines.

3.5 Ballyheigue Beach, County Kerry

3.5.1 Site Description

Ballyheigue Beach starts with a robust carpark facility, the beach stretches from the village of



Ballyheigue to Black Rock or to the outlet from Lough Akeragh, which is famous with birdwatchers as one of the best sites in Europe for migrant American waterfowl.

The beach is lifeguard patrolled during the bathing season and more information can be found on the notice board located at the beach. The beach has received the International Blue Flag award for 2017. The dunes that run along the shore have small sheltered

Plate 3.5: Ballyheigue dunes lining the shoreline.

alcoves cut into them, intended for picnicking and amenity use.

Ballyheigue is a scenic resort town with many miles of beaches that connect to Banna Strand to the south, and Kerry Head to the north.

3.5.2 Ecological Constraints

Ballyheigue Beach has three European Sites within the receiving environment, one proposed Natural Heritage Area and no Natural Heritage Areas (Table 3.9). These sites have ecological characteristics for which they have been designated.

Ballyheigue is part of a 10km stretch of sandy beach which is backed by sand dunes. It is located within the Akeragh, Banna and Barrow Harbour SAC/pNHA, as well as the Tralee Bay Complex SPA.

Sand dunes run southwards from Ballyheigue and they become especially interesting south of the Akeragh outflow where they show great variety in both physiography and vegetation. The largest proportion of the sand dune system is fixed dune grassland. The vegetation is made up of a mosaic of Marram (*Ammophila arenaria*) tussocks interspersed with low-lying patches of a Red Fescue-Lady's Bedstraw (*Festuca rubra-Galium verum*) community. Mobile Marram dunes occur as a narrow band running along the seaward side of the entire coastal strip. The site contains a number of dune slack areas, these being best developed on the landward side of Carrahane dunes. Of particular ecological interest is the gradation from fixed dune and dune slack to saltmarsh at Carrahane.

Table 3.9 Designated sites in proximity to Ballyheigue Beach and relevant sensitive ecological receptor

NPWS Site Code	Site name	Conservation Objectives (August 2017)	Relationship with discovery point	Qualifying Interests / Sensitive Ecological Receptors
004188	Tralee Bay Complex SPA	SSCO Version 1 (NPWS 2014)	Adjacent	Three Annex I Species Whooper Swan (<i>Cygnus cygnus</i>) [A038] Golden Plover (<i>Pluvialis apricaria</i>) [A140]

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				<p>Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]</p> <p><u>19 Annex II Species, 13 of which have potential to occur on site:</u> Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Ringed Plover (<i>Charadrius hiaticula</i>) [A137] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Lapwing (<i>Vanellus vanellus</i>) [A142] Sanderling (<i>Calidris alba</i>) [A144] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Turnstone (<i>Arenaria interpres</i>) [A169] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182] <u>Habitats:</u> Wetland and Waterbirds [A999]</p>
000332	Akeragh, Banna and Barrow Harbour SAC	SSCO Version 1 (NPWS 2017)	Adjacent	<p><u>Designated for nine Annex I habitats, one of which occur in proximity to the discovery point:</u> Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]</p>
000332	Akeragh, Banna and Barrow Harbour	N/A	Adjacent	<p><u>Designated for nine Annex I habitats, one of which occur in proximity to the discovery point:</u> Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]</p>
004189	Kerry Head SPA	Generic Version 5.0. (NPWS 2016)	3km North-West	<p>Fulmar (<i>Fulmarus glacialis</i>) [A009] Chough (<i>Pyrrhocorax pyrrhocorax</i>) [A346]</p>

3.5.3 Baseline Ecology of study area

A total of eight quadrats were located at Ballyheigue Beach as summarised in Table 3.10 and their locations have been mapped in Figure 3.5.

The site is a long stretch of sandy shores with an adjacent dune system. The vegetation is made up of a mosaic of Marram (*Ammophila arenaria*) tussocks interspersed with low-lying patches of a Red Fescue (*Festuca rubra*) community; with pyramidal orchids being dominant within the system. The dunes comprise of green dune habitat preceding mixed fix dunes.

Detailed quadrat data for the site is presented in Appendix I.

Key species recorded on the site visit included the Red-listed Black-legged Kittiwake, which was seen onshore near the main car parking area. An important discovery was a Sand Martin breeding colony at cliffs at the north end of the beach (see Site Map above) with a minimum of 8 nest holes occupied and a total of 35 holes visible. Breeding Sand Martins were constantly flying into the occupied holes to feed young. The Sand Martin is Amber-listed and is sensitive to disturbance at nest sites. A dedicated

ornithological assessment was undertaken to characterise the potential of the site with respect to bird species (see Appendix II).

Table 3.10 Summary details of each quadrat recorded at Ballyheigue Beach

Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
BHB-Q1	Tertiary Movement Zone	CD3 Fixed Dunes	N/A	Recreation	Good
BHB-Q2	Tertiary Movement Zone	CD3 Fixed Dunes	N/A	Recreation	Fair
BHB-Q3	Tertiary Movement Zone	CD3 Fixed Dunes	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	Recreation	Good
BHB-Q4	Tertiary Movement Zone	CD3 Fixed Dunes	N/A	Recreation	Fair
BHB-Q5	Tertiary Movement Zone	CD3 Fixed Dunes	N/A	Recreation	Good
BHB-Q6	Tertiary Movement Zone	CD3 Fixed Dunes	N/A	Recreation	Good
BHB-Q7	Core Movement Zone	LS2 Sand Shores	N/A	Recreation	Good
BHB-Q8	Core Movement Zone	LS2 Sand Shores	N/A	Recreation	Good



Figure 3.5 Ballyheigue Beach discovery point. The location of quadrats and designated sites are indicated.

3.5.4 Preliminary Assessment of Visitor Impact

The majority of visitors (86%) had no identifiable effect on the site. Due to the large visitor carpark and the additional car park and access road, visitors are able to access the beach through the designated paths and walkways.

96% of visitors stayed within the core areas of the car park and beach., however it became apparent that a number of locals (4%) use the dunes as a means of accessing the beach.

The beach is of high value importance for recreation for local residents and holiday-maker, while it is evident that the majority of visitors are aware of the sensitivity of the site, there may be need for guidance to walkers on the value of the dunes.

There were no incidences of visitor movements recorded within the dunes during the visitor monitoring surveys. However, there is evidence of trampling and visitor movements within the dunes. Clear desire lines through the dunes are narrow and there is little evidence of impacts beyond the tracks within the dunes. The desire lines are lined with disturbance tolerant species such as birdsfoot trefoil, which diversify the dunes from being dominated by grasses.

The location of the Sand Martin colony at the north end of the beach (on cliffs adjacent to existing man-made sea defences and below apartments) is precarious. Certainly, disturbance by walkers along this section of the beach is a consideration; however, visitor movements were predominantly contained within the carpark and beach areas.

3.5.4.1 Tralee Bay Complex SPA

The site is most important for wintering waterbirds when visitor numbers are likely to be somewhat lower. Therefore, it is unlikely that visitors will cause significant disturbance during peak winter months except for the risks of disturbance from any loose dogs. Ideally owners would ensure their dogs are kept on leads, especially near the rocky shore section at the north end of the beach and at Black Rock where most of the intertidal feeding by waterbirds occurs.

3.5.4.2 Akeragh, Banna and Barrow Harbour SAC/pNHA

The site is designated for dune vegetation and although dune activity was recorded to be low there were signs recorded of trampling of sensitive species such as the pyramidal orchid. Desire lines within the dunes were present and there were no signs indicating the importance of the dune vegetation.

3.5.4.3 Kerry Head SPA

The discovery point is to the south of the SPA and is somewhat isolated from Kerry Head by variable coastal topography. Visitor movements were recorded along the beach system with minimal evidence of visitor activity north of the discovery point arrival area.

3.5.5 Recommendations

Access to Sand dunes from both the beach and visitor car park should include a notice of the sensitive nature of the dunes so that visitors are aware of the importance of sticking to the walking routes marked to avoid negative impacts on the site conservation interests and important flora species.

At present, there is limited signage at this site to indicate the importance of the site for wintering water birds and for breeding Sand Martins. New signage could be put in place to educate visitors of its importance for wildlife (including the priority sand dune habitats) and highlight the importance of keeping dogs on leads, especially throughout the winter period.

Any works to prevent further coastal erosion would need to be mindful of the existing colony; and in compliance with the WAW Site Maintenance Guidelines.

3.6 Carrigafoyle Castle, County Kerry

3.6.1 Site Description

Standing on the edge of the Shannon estuary on what was originally an island, Carrigafoyle Castle rises



to five storeys with vaults over the second and fourth storeys. The castle is adjacent to the roadside and has a carpark associated with it. The castle has detailed historical signage and is managed by the local county council to protect the swallows nesting in the structure itself; the castle is locked and there is a sign explaining the reason for its closure.

Plate 3.6: Salt march to the east of Carrigafoyle Castle

Activity at the site is restricted to the carpark due to the absence of

paths, or the soft sediment in the salt marsh and mud flats.

3.6.2 Ecological Constraints

Carrigafoyle Castle has two European Sites within the receiving environment, one proposed Natural Heritage Area and no Natural Heritage Areas (Table 3.11). These sites have ecological characteristics for which they have been designated

The River Shannon and River Fergus estuaries SPA has vast expanses of intertidal flats which contain a diverse macroinvertebrate community, e.g. *Macoma-Scrobicularia-Nereis*, which provides a rich food resource for the wintering birds. Salt marsh vegetation frequently fringes the mudflats and this provides important high tide roost areas for the wintering birds. Elsewhere in the site, the shoreline comprises stony or shingle beaches.

Lower River Shannon SAC vast expanses of intertidal mudflats, often fringed with saltmarsh vegetation. The smaller estuaries also feature mudflats, but have their own unique characteristics, e.g. Poulasherry Bay is stony and unusually rich in species and biotopes. Plant species are typically scarce on the mudflats, although there is some eelgrass (*Zostera* spp.) beds and patches of green algae (e.g. *Ulva* sp. and *Enteromorpha* sp.). The main macro-invertebrate community which has been noted from the inner Shannon and Fergus estuaries is a *Macoma-Scrobicularia-Nereis* community. In the transition zone between mudflats and saltmarsh, specialised colonisers of mud predominate.

Table 3.11 Designated sites in proximity to Carrigafoyle Castle and relevant sensitive ecological receptor

NPWS Site Code	Site name	Conservation Objectives (August 2017)	Relationship with discovery point	Qualifying Interests / Sensitive Ecological Receptors
004077	River Shannon and River Fergus Estuary SPA	SSCO Version 1 (NPWS 2012)	Within	Three Annex I Species Whooper Swan (<i>Cygnus cygnus</i>) [A038] Golden Plover (<i>Pluvialis apricaria</i>) [A140]

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				<p>Bar-tailed Godwit (Limosa lapponica) [A157] <u>19 Annex II Species, 13 of which have potential to occur on site:</u> Light-bellied Brent Goose (Branta bernicla hrota) [A046] Oystercatcher (Haematopus ostralegus) [A130] Ringed Plover (Charadrius hiaticula) [A137] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Sanderling (Calidris alba) [A144] Dunlin (Calidris alpina) [A149] Black-tailed Godwit (Limosa limosa) [A156] Curlew (Numenius arquata) [A160] Redshank (Tringa totanus) [A162] Turnstone (Arenaria interpres) [A169] Black-headed Gull (Chroicocephalus ridibundus) [A179] Common Gull (Larus canus) [A182] <u>Habitats:</u> Wetland and Waterbirds [A999]</p>
002165	Lower River Shannon SAC	SSCO Version 1 (NPWS 2012)	Within	<p><u>Designated for 14 Annex I habitats, one of which occur in proximity to the discovery point:</u> Mudflats and sandflats not covered by seawater at low tide [1140] <u>Seven annex II species; three which are likely to occur in proximity to the discovery point:</u> Petromyzon marinus (Sea Lamprey) [1095] Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355]</p>
001332	Ballylongford Bay pNHA	N/A	Within	<u>No site-specific information from the NPWS pNHA Database</u>

3.6.3 Baseline Ecology of study area

A total of seven quadrats were located at Carrigafoyle Castle as summarised in Table 3.12 and their locations have been mapped in Figure 3.6.

This site consists of an upper salt marsh habitat with intertidal mud flat zones. The castle site his home to a colony of nesting swallows and is closed off to visitors during the breeding season. Visitor movements are restricted to the built road and path surfaces. There is a small area of the salt marsh habitat which is close to the castle itself which has been subject to trampling due to visitors on the far side of the existing wall (CFC-Q4). This area is less than 5m² and is not a conservation concern as this is the only area of the salt marsh which is firm enough to facilitate visitor movements.

Detailed quadrat data for the site is presented in Appendix I.

Breeding Swallows were present in the castle feature. Key species recorded on the site visit included the Little Egret, Dunlin, Redshank, Curlew, Common Sandpiper, Turnstone and Greenshank. Breeding was likely for the Amber-listed Little Grebe (adult in breeding plumage seen) A dedicated ornithological

assessment was undertaken to characterise the potential of the site with respect to bird species (see Appendix II).

Table 3.12 Summary details of each quadrat recorded at Carrigafoyle Castle

Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
CFC-Q1	Off-Site Control Area	CM2 Upper Salt Marsh	N/A	Recreation	Good
CFC-Q2	Off-Site Control Area	CM2 Upper Salt Marsh	N/A	Recreation	Good
CFC-Q3	Off-Site Control Area	CM2 Upper Salt Marsh	N/A	Recreation	Fair
CFC-Q4	Off-Site Control Area	CM2 Upper Salt Marsh	N/A	Recreation	Poor
CFC-Q5	Off-Site Control Area	CM2 Upper Salt Marsh	N/A	Recreation	Good
CFC-Q6	Off-Site Control Area	CM2 Upper Salt Marsh	N/A	Recreation	Good
CFC-Q7	Off-Site Control Area	CM4 Mud Shores	[1140] Mudflats and sandflats not covered by seawater at low tide	Recreation	Good



Figure 3.6 Carrigafoyle Castle discovery point. The location of quadrats and designated sites are indicated.

3.6.4 Preliminary Assessment of Visitor Impact

76% of visitors had no identifiable effect on the site. The site receives a small number of visitors per day. The adjacent car park is small with enough capacity to hold the level of footfall the site receives.

The majority of visitors (60%) stayed within the core zones of the car park and the surrounds of the castle. On the day of the survey the Castle ruin was closed due to nesting swallows which resulted in visitors leaving the core zones and trafficking between the secondary (11%) and Tertiary (29%) to take photographs.

Overall visitors had a low impact on the site.

3.6.4.1 River Shannon and River Fergus Estuary SPA

Visitor activities were restricted to artificial structures and surfaces associated with the discovery point. There were no effects observed and the site access is restricted by existing infrastructure which limits footfall at the site.

3.6.4.2 Lower River Shannon SAC

Visitor activities were restricted to artificial structures and surfaces associated with the discovery point. There were no effects observed and the site access is restricted by existing infrastructure which limits footfall at the site.

3.6.4.3 Ballylongford Bay pNHA

No site-specific information from the NPWS pNHA Database.

3.6.5 Recommendations

The site is well managed and the characteristics of the site limit visitor numbers. The wet silt nature of salt marshes enables them to be self-protecting from visitor movements. No recommendations are suggested.

3.7 Cappagh Pier, County Clare

3.7.1 Site Description

Situated in west Clare, Cappagh Pier positioned on the Shannon Estuary is used for fishing and transport purposes. Kilrush Creek, now the location for Kilrush Marina, is an exceptionally well-sheltered area for boats. Hog Island and Scatterry Island lie across from Claddagh pier in the main estuary.



Plate 3.7: Shingle and gravel intertidal shoreline adjacent to Claddagh pier.

The estuary shoreline is primarily gravel and shingle. The depth of water in the harbour enabled larger vessels to berth here in the past. Cappagh Pier is an embarkation Point for Hog Island and Scatterry Island which lie across from Claddagh pier in the main estuary. The main pier car park (small) is adjacent to the pier from which boat tours of the Shannon

Estuary depart in peak season.

Kilrush, together with Carrigaholt, are the main departure points for those who wish to view the large group of bottlenose dolphins that reside in the Shannon Estuary. With 3-4 sailings, daily during the peak season (April-October), the boat tour operators adhere to a strict code of standards to protect and preserve the dolphin's environment.

3.7.2 Ecological Constraints

Cappagh Pier has two European Sites within the receiving environment, and no proposed Natural Heritage Areas or Natural Heritage Areas (Table 3.13). These sites have ecological characteristics for which they have been designated.

Lower River Shannon Estuary SAC, which is designated for multiple habitats along with Common Bottlenose Dolphin, Otter, River Lamprey, Sea Lamprey, Brook Lamprey, Salmon and Freshwater Pearl Mussel. Other sea mammals to be seen here throughout the year include Grey and Common Seals which are also regularly seen in Kilrush Creek Marina.

River Shannon and River Fergus Estuaries SPA which is Ireland's largest wetland complex and is designated for 21 wintering waterbird species. Other bird species often found along the coastline at Kilrush include Black Guillemot, Common Tern, Redshank, Rock Pipits, Turnstone and Dunlin. Birds of prey include the Kestrel and Sparrow hawk.

Table 3.13 Designated sites in proximity to Cappagh Pier and relevant sensitive ecological receptor

NPWS Site Code	Site name	Conservation Objectives (August 2017)	Relationship with discovery point	Qualifying Interests / Sensitive Ecological Receptors
004077	River Shannon	SSCO Version 1 (NPWS 2012)	Within	Cormorant (<i>Phalacrocorax carbo</i>) [A017] Whooper Swan (<i>Cygnus cygnus</i>) [A038]

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	and River Fergus Estuary SPA			Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Pintail (<i>Anas acuta</i>) [A054] Shoveler (<i>Anas clypeata</i>) [A056] Scaup (<i>Aythya marila</i>) [A062] Ringed Plover (<i>Charadrius hiaticula</i>) [A137] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Lapwing (<i>Vanellus vanellus</i>) [A142] Knot (<i>Calidris canutus</i>) [A143] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Greenshank (<i>Tringa nebularia</i>) [A164] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Wetland and Waterbirds [A999]
002165	Lower River Shannon SAC	SSCO Version 1 (NPWS 2012)	Within	<u>Designated for 14 Annex I habitats, none of which occur in proximity to the discovery point.</u> <u>Seven annex II species; three which are likely to occur in proximity to the discovery point:</u> Lampetra planeri (Brook Lamprey) [1096] Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355]

3.7.3 Baseline Ecology of study area

A total of three quadrats were located at Carrigafoyle Castle as summarised in Table 3.14 and their locations have been mapped in Figure 3.7.

The site comprises of a built pier and cobble shores, with minimal vegetation. The seaweed lined littoral zone provides intertidal foraging habitat for bird species such as Rock Pipit and Pied Wagtails. The site has low local ecological value.

Detailed quadrat data for the site is presented in Appendix I.

Egret and the Red-listed Curlew feeding along the shingle intertidal margins. A dedicated ornithological assessment was undertaken to characterise the potential of the site with respect to bird species (see Appendix II).

Table 3.14 Summary details of each quadrat recorded at Cappagh Pier

Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
CP-Q1	Core Movement Zone	LS1 Cobble and Gravel Shores	N/A	Recreation/ Nautical	Good

Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
CP-Q2	Core Movement Zone	LS1 Cobble and Gravel Shores	N/A	Recreation/Nautical	Good
CP-Q3	Core Movement Zone	LS1 Cobble and Gravel Shores	N/A	Recreation/Nautical	Fair



Figure 3.7 Cappagh Pier discovery point. The location of quadrats and designated sites are indicated.

3.7.4 Preliminary Assessment of Visitor Impact

The majority of visitors (91%) had no identifiable effect to the site. 2% of visitors were observed to remove large rocks from the beach and throw them to the other side of the beach.

The main use for this site is recreation, 80% of all visitors stayed within the core zones of the beach and the paths which leads to a small playground. 20% of visitors left these areas to get access the different boat tours that leave from the pier.

Overall visitors did not take part in any activity that would jeopardise the ecological value of the site.

3.7.4.1 River Shannon and River Fergus Estuary SPA

The discovery point is directly adjacent to a town center; the urban setting and low impact levels identified in the visitor movement surveys indicate that visitor activity has no effect on the ecological integrity of the site.

3.7.4.2 Lower River Shannon SAC

Otter (*Lutra lutra*) are habituated to anthropogenic disturbances and are known to persist in urban environments. Visitor activities recorded on site have no interaction with the ecological integrity of the site due to the low impacts of the activities observed. There were no effects to water quality recorded and no designated habitats identified at the discovery point or within the visitor movement zones.

3.7.5 Recommendations

The site is a well-managed urban site with low ecological value. No recommendations are suggested.

3.8 Ballyvaughan Pier, County Clare

3.8.1 Site Description

Ballyvaughan Pier is located in the northwest corner of The Burren, considered by many to be a unique



landscape. Ballyvaughan village is nestled within the furthest corner of the south shores of Galway Bay under the high ridge of Gleninagh Mountain which affords shelter from westerly gales. The harbour is defined by a 50m long pier and a working quay used by the boats that ply the bay. Both locations are favourite places for anglers.

Plate 3.8: Ballyvaughan Pier looking inland towards the salt marsh

Ballyvaughan is small harbour village in County Clare located off the N67 along the southern shores

of Galway Bay. The roadside has an abundance of parking available and the site has a public bicycle repair station for cyclists.

3.8.2 Ecological Constraints

Ballyvaughan Pier has five European Sites within the receiving environment, one proposed Natural Heritage Area and no Natural Heritage Areas (Table 3.15). These sites have ecological characteristics for which they have been designated.

Galway Bay Complex SAC/pNHA south holds a very high number of littoral communities. They range from rocky terraces, to sandy beaches with rock or sand dunes behind. The intertidal sediments of Galway Bay support good examples of communities that are moderately exposed to wave action. A well-defined talitrid amphipod zone in the upper shore gives way to an intertidal, mid shore zone with sparse epifauna or infauna. On the lower, flat part of the shore, the tubes of the deposit-feeding terebellid worm, *Lanice conchilega*, are common on the surface. Saltmarshes are frequent within this extensive coastal site, with both E.U. Habitats Directive types, 'Atlantic Salt Meadow' and 'Mediterranean Salt Meadow' well represented. Most of the saltmarshes are classified as the bay type, with the substrate being mud or mud/sand. The seals use a range of haul-out sites distributed through the bay - these include Ballyvaughan.

Inner Galway Bay SPA supports an excellent diversity of wintering wetland birds. The long shoreline is noted for its diversity, and comprises complex mixtures of bedrock shore, shingle beach, sandy beach and fringing salt marshes. Intertidal sand and mud flats occur around much of the shoreline, with the largest areas being found on the sheltered eastern coast between Oranmore Bay and Kinvarra Bay. A number of small islands and rocky islets in the Bay are included within the site. The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Great Northern Diver, Cormorant, Grey Heron, Light-bellied Brent Goose, Wigeon, Teal, Shoveler, Red-breasted Merganser, Ringed Plover, Golden Plover, Lapwing, Dunlin, Bar-tailed Godwit, Curlew, Redshank, Turnstone, Black-headed Gull, Common Gull, Sandwich Tern and Common Tern. 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 & Waterbirds.

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The Black Head-Poulsallagh complex encompasses a complete range of rocky Burren habitats from coastal, glacially planed limestone pavements to high level heaths. The Caher River, the only river found in the high Burren, and Fanore dunes, one of the best dune systems in Clare, are included in the site. The shoreline, littoral and sublittoral areas are also interesting because of the rock type, physical exposure, and flora and fauna communities.

Ballyvaughan Turlough SAC site consists of a small, rather dry turlough and is situated about 1 km southwest of Ballyvaughan.

Moneen Mountain SAC is made up of limestone pavement, a priority habitat listed on Annex I of the E.U. Habitats Directive and its associated calcareous grasslands, juniper scrub and heaths

Table 3.15 Designated sites in proximity to Ballyvaughan Pier and relevant sensitive ecological receptor

NPWS Site Code	Site name	Conservation Objectives (August 2017)	Relationship with discovery point	Qualifying Interests / Sensitive Ecological Receptors
000268	Galway Bay Complex SAC	SSCO Version 1 (NPWS 2013)	Within	Designated for 15 Annex I habitats, 5 of which occur in proximity to the discovery point: Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] <u>Two annex II species; both which are likely to occur in proximity to the discovery point:</u> Lutra lutra (Otter) [1355] Phoca vitulina (Harbour Seal) [1365]
00268	Galway Bay Complex pNHA	N/A	Within	Designated for 15 Annex I habitats, 5 of which occur in proximity to the discovery point: Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] <u>Two annex II species; both which are likely to occur in proximity to the discovery point:</u> Lutra lutra (Otter) [1355] Phoca vitulina (Harbour Seal) [1365]
004031	Inner Galway Bay SPA	SSCO Version 1 (NPWS 2013)	Within	<u>Designated for 20 Bird Species of note. Species that are likely to occur</u>

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				<p><u>in proximity to the discovery point are:</u> Great Northern Diver (<i>Gavia immer</i>) [A003] Cormorant (<i>Phalacrocorax carbo</i>) [A017] Grey Heron (<i>Ardea cinerea</i>) [A028] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shoveler (<i>Anas clypeata</i>) [A056] Red-breasted Merganser (<i>Mergus serrator</i>) [A069] Ringed Plover (<i>Charadrius hiaticula</i>) [A137] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Dunlin (<i>Calidris alpina</i>) [A149] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Turnstone (<i>Arenaria interpres</i>) [A169] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182] Sandwich Tern (<i>Sterna sandvicensis</i>) [A191] Common Tern (<i>Sterna hirundo</i>) [A193]</p>
000020	Black Head Poolsallagh Complex SAC	SSCO Version 1 (NPWS 2014)	1km West	<p><u>Designated for 11 Annex I habitats, none of which occur in proximity to the discovery point.</u></p> <p><u>One annex II species; which is not likely to occur in proximity to the discovery point.</u></p>
000996	Ballyvaughan Turlough SAC	Generic Version 5.0 (NPWS 2016)	1km South West	[3180] Turloughs*
000054	Moneen Mountain SAC	Generic Version 5.0 (NPWS 2016)	1km South	<p><u>Designated for six Annex I habitats, none of which occur in proximity to the discovery point.</u></p> <p><u>One annex II species; which is not likely to occur in proximity to the discovery point.</u></p>

3.8.3 Baseline Ecology of study area

A total of five quadrats were located at Ballyvaughan Pier as summarised in Table 3.16 and their locations have been mapped in Figure 3.8.

The Ballyvaughan pier is a built structure with limited available habitat. The salt marsh within the inlet is heavily grazing by Donkeys and currently exists in a very degraded state. There are small patches of tidal exposed rocky shores along the sea wall.

Detailed quadrat data for the site is presented in Appendix I.

Sandwich Terns and Common Terns (both Annex 1-listed) could be seen feeding for sprat over sandbanks close to the pier. Other species recorded included the Red-listed Curlew feeding along the shingle intertidal margins. A dedicated ornithological assessment was undertaken to characterise the potential of the site with respect to bird species (see Appendix II).

Table 3.16 Summary details of each quadrat recorded at Ballyvaughan Pier

Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
BVP-Q1	Off-Site Control Area	CM2 Upper Salt Marsh	N/A	Grazing	Poor
BVP-Q2	Off-Site Control Area	CM2 Upper Salt Marsh	N/A	Grazing	Poor
BVP-Q3	Off-Site Control Area	CM2 Upper Salt Marsh	N/A	Grazing	Poor
BVP-Q4	Core Movement Area	LR1 Exposed Rocky Shores	N/A	Recreation	Good
BVP-Q5	Core Movement Area	CC1 Sea Walls, piers and jetties	N/A	Recreation	N/A



Figure 3.8 Ballyvaughan Pier discovery point. The location of quadrats and designated sites are indicated.

3.8.4 Preliminary Assessment of Visitor Impact

90% of visitors had no identifiable effect on the site.

The majority of visitors (86%) stayed within the core zones of the car park and the pier, walking to the end for photographs. 14% of visitors were recorded to enter the water from the pier.

There is limited signage at this site to inform visitors of the nearby woodland walk, amenities such as, would aid in educating visitors about the importance of the site and its surrounds.

Disturbance to waterbirds feeding along the upper intertidal shore is likely to be minimal, given the numbers recorded behind the pier, particularly in summer when visitor numbers are greater.

Overall visitors had no discernible effects on the site.

3.8.4.1 Galway Bay Complex SAC/pNHA

There were no discernible effects on the site caused by visitors observed during the Visitor Movement Surveys. Therefore, there is no source for affects to the ecological integrity of the SAC.

3.8.4.2 Inner Galway Bay SPA

There were no discernible effects on the site caused by visitors observed during the Visitor Movement Surveys. Therefore, there is no source for affects to the ecological integrity of the SPA.

3.8.4.3 Black Head Poulsallagh Complex SAC

There were no discernible effects on the site caused by visitors observed during the Visitor Movement Surveys. Therefore, there is no source for affects to the ecological integrity of the SAC.

3.8.4.4 Ballyvaughan Turlough SAC

There were no discernible effects on the site caused by visitors observed during the Visitor Movement Surveys. Therefore, there is no source for affects to the ecological integrity of the SAC.

3.8.4.5 Moneen Mountain SAC

There were no discernible effects on the site caused by visitors observed during the Visitor Movement Surveys. Therefore, there is no source for affects to the ecological integrity of the SAC.

3.8.5 Recommendations

At present, there is limited signage at this site to indicate the importance of the site for ecological interests. There is an opportunity to inform visitors of the importance of the site through the erection of signs detailing the following:

- Importance for wintering waterbirds and for breeding terns, which can be seen feeding offshore.
- Opportunity to inform visitors of the nearby woodland walk and bird hide by including signage at the pier and marking the walk more clearly so that visitors can appreciate the local scenic walkways, and facilitate an appreciation of ecological amenity use.
- Opportunity to create a local wildlife walk to highlight key local biodiversity hotspots such as birding spots from which visitors can watch feeding terns in summer, divers and scoters offshore in winter for example.

Any review of facility upgrades must be undertaken in compliance with the WAW Site Maintenance Guidelines.

3.9 Barna, Trá na gCeann (Silver Strand), County Galway

3.9.1 Site Description

Situated 5km due west of Galway City and nearby to the village of Barna, Trá na gCeann (Silver Strand)



Plate 3.9: Inner estuary on landward side of beach with car park and visitor toilet block visible

consists of a shallow, sandy beach, bounded on one side by a by rocks and boulders i.e. on the seaward side, with tall sandy cliffs backing onto a high grassy hill in the centre of the site with a more sheltered inner estuary to the north of the site which is connected via a narrow entrance to the open sea. The fine sandy beach is open to the Atlantic with views out towards Inishturk and Inishbofin. The beach is well served with visitor amenities including a large car park, lifeguard hut,

visitor toilets etc.

3.9.2 Ecological Constraints

Barna, Trá na gCeann (Silver Strand) has two European Sites within the receiving environment, one proposed Natural Heritage Area and no Natural Heritage Areas (Table 3.17). These sites have ecological characteristics for which they have been designated.

Barna, Trá na gCeann (Silver Strand) is part of the much larger Galway Bay Complex Special Area of Conservation (SAC). The strand provides space for Common Harbour Seal (*Phoca vitulina*) and Otter (*Lutra Lutra*).

Barna, Trá na gCeann (Silver Strand) is also part of the wider wetland complex of Inner Galway Bay SPA which is designated for 20 wintering waterbird species including Great Northern Diver, Grey Heron, Red-breasted Merganser, Common Tern, Sandwich Tern, Ringed Plover and Light-bellied Brent Goose. In addition, other wintering waterbird species of note regularly recorded include Whimbrel, Red-throated Diver, Black-throated Diver and Surf Scoter. Other species also recorded include the Annex 1-listed Little Tern, Hen Harrier and Black Redstart have also been recorded at the site.

Table 3.17 Designated sites in proximity to Trá na gCeann (Silver Strand) and relevant sensitive ecological receptor

NPWS Site Code	Site name	Conservation Objectives (August 2017)	Relationship with discovery point	Qualifying Interests / Sensitive Ecological Receptors
000268	Galway Bay Complex SAC	SSCO Version 1 (NPWS 2013)	Within	Designated for 15 Annex I habitats, none of which occur in proximity to the discovery point. Two annex II species; both which are likely to occur in proximity to the discovery point: <i>Lutra lutra</i> (Otter) [1355]

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				Phoca vitulina (Harbour Seal) [1365]
000268	Galway Bay Complex pNHA	N/A	Within	Designated for 15 Annex I habitats, none of which occur in proximity to the discovery point. Two annex II species; both which are likely to occur in proximity to the discovery point: Lutra lutra (Otter) [1355] Phoca vitulina (Harbour Seal) [1365]
004031	Inner Galway Bay SPA	SSCO Version 1 (NPWS 2013)	Within	Designated for 20 Bird Species of note. Species that are likely to occur in proximity to the discovery point are: Great Northern Diver (Gavia immer) [A003] Cormorant (Phalacrocorax carbo) [A017] Grey Heron (Ardea cinerea) [A028] Light-bellied Brent Goose (Branta bernicla hrota) [A046] Shoveler (Anas clypeata) [A056] Red-breasted Merganser (Mergus serrator) [A069] Ringed Plover (Charadrius hiaticula) [A137] Golden Plover (Pluvialis apricaria) [A140] Lapwing (Vanellus vanellus) [A142] Dunlin (Calidris alpina) [A149] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Redshank (Tringa totanus) [A162] Turnstone (Arenaria interpres) [A169] Black-headed Gull (Chroicocephalus ridibundus) [A179] Common Gull (Larus canus) [A182] Sandwich Tern (Sterna sandvicensis) [A191] Common Tern (Sterna hirundo) [A193]

3.9.3 Baseline Ecology of Study Area

A total of three quadrats were located at Barna, Trá na gCeann (Silver Strand) as summarised in Table 3.18 and their locations have been mapped in Figure 3.9.

The receiving carpark is directly adjacent to the sand shore leaving no space for coastal habitat to exist. The site comprised of sandy shores, and an adjacent Dry-humid Acid Grassland that is heavily grazed. This grassland provides feeding habitat for special conservation interest species of the Inner Galway Bay SPA. Access to coastal walks are restricted by local landowners however some amenity uses of the lands surrounding the strand itself were recorded.

Detailed quadrat data for the site is presented in Appendix I.

Annex 1-listed⁸ Common tern and Sandwich Tern, which were recorded roosting on the intertidal lagoon at the back of the beach. Breeding Sand Martins were recorded with young on site. A dedicated

⁸ Birds Directive 2009/147/EC.

ornithological assessment was undertaken to characterise the potential of the site with respect to bird species (see Appendix II).

Table 3.18 Summary details of each quadrat recorded at Trá na gCeann (Silver Strand)

Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
SS-Q1	Off-Site Control Area	LS2 Sandy Shore	N/A	Recreation	Good
SS-Q2	Core Movement Area	LS2 Sandy Shore	N/A	Recreation	Good
SS-Q3	Secondary Movement Area	GS3 Dry-humid Acid Grassland	N/A	Recreation /Grazing	Poor



Figure 3.9 Trá na gCeann (Silver Strand) discovery point. The location of quadrats and designated sites are indicated.

3.9.4 Preliminary Assessment of Visitor Impact

90% of visitors had no identifiable effect on the site.

The main use for the site is recreation; locals and visitors use the site for dog walking, swimming and water sports.

The majority of visitors (76%) stayed with the core zone of the beach and car park, 24% of visitors left went into the secondary area, however this is a restricted area in terms of walkers. Tidal conditions limit accessibility of coastal walks.

Desire lines effects were recorded in the visitor movement surveys, however there was compaction of soil and a degradation of vegetative condition of the dry-humid acid grassland on the hill which was consistent with trampling. The low-level impacts imposed by the visitors could be contributing to in-combination effects of current grazing practices to result in this impact.

Access to the hill behind the cliffs is restricted which accommodates the sensitive habitats present; however, it was noted that some visitors still accessed this area of the site, for protection purposed signage could be erected to ensure visitors are aware of the vulnerability of the area.

3.9.4.1 Galway Bay Complex SAC/pNHA

The visitor activities identified during the monitoring study identified low levels of interactions with the ecological integrity of the site. None of the priority habitats for the site were found to be present within the visitor movement zones.

3.9.4.2 Inner Galway Bay SPA

Two of the designated (Annex 1-listed⁹) species, Common tern and Sandwich Tern, were recorded roosting on the intertidal lagoon at the back of the beach. The site is known to be used for passage for a number of species and has potential to be used by other special conservation interest species. Current access to the SPA is restricted by landowner boundary fencing, however visitor movement within private lands were recorded. Threats to the site include grazing which represent additional pressures outside of the visitor impacts identified during the monitoring.

3.9.5 Recommendations

Due to the sensitive nature of the cliffs (breeding Sand Martins and vulnerability to erosion from the sea) access should remain restricted and signage could be erected to highlight the importance of the habitat for conservation. These signs should include descriptions of existing threats such as grazing.

Coastal restrictions should be put in place to limit visitor movements along the intertidal zone, to ensure disturbance to key species is minimised.

Further monitoring is required to assess the cause of trampling observed in the dry-humid acid grassland.

⁹ Birds Directive 2009/147/EC.

3.10 Omey Island, County Galway

3.10.1 Site Description

Situated off the west Connemara coast, 9km from Clifden, Omey Island is a unique visitor attraction accessible by car from the mainland by a sandy causeway (300m wide) at low tide. Clifden Eco Beach Campsite and Caravan Park are located 2 km to the south.



The northern and western sides of the island support unfenced machair and dry sandy grassland. The remainder largely consists of small extensively farmed fields with herb-rich meadows grazed by cattle reflecting the small agricultural holdings.

Plate 3.10: Machair and Beach site on Omey Island

There is a lake system in the centre of the island, and a sandy beach which provides a visitor attraction. The main bedrock in the area is granite.

3.10.2 Ecological Constraints

Omey Island has Five European Sites within the receiving environment, one proposed Natural Heritage Area and no Natural Heritage Areas (Table 3.19). These sites have ecological characteristics for which they have been designated.

Omey Island is a SAC/pNHA designated for Machair and Hard-water lake habitats. Omey Island holds one of the largest remaining areas of machair in Co. Galway albeit it is severely eroded in places. The problem of widespread erosion on the machair is not helped by the large rabbit population on the island. Fahy Lough, lies to the east of the machair and is a shallow freshwater lake. See Appendix 1 for site and associated signage photos.

West Connaught Coast SAC is designated for the *Tursiops truncatus* (Common Bottlenose Dolphin).

The Inishbofin, Omey Island and Turbot Island SPA supports a breeding population of Corncrake.

Barnahallia Lough SAC is a good example of an oligotrophic system. Of particular note is the presence of Slender Naiad (*Najas flexilis*) in the lough. This rare aquatic plant is legally protected under the Flora (Protection) Order, 2015 and is also listed on Annex II of the E.U. Habitats Directive.

Cloon and Laghtanabba NHA site consists of an extensive plain of intact lowland blanket bog on deep peat with pool systems, quaking scraw lawns of White Beaked-sedge (*Rhynchospora alba*) and hummock-hollow complexes. The blanket bog area is bounded on the south-west by low hills covered with heath and acid grassland vegetation. Other habitats occurring are streams and lakes, flushes, cutover bog and rock outcrops.

Table 3.19 Designated sites in proximity to Omey Island and relevant sensitive ecological receptor

NPWS Site	Site name	Conservation Objectives	Relationship with discovery	Qualifying Interests / Sensitive Ecological Receptors
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Code		(August 2017)	point	
001309	Omey Island Machair SAC	SSCO Version 1 (NPWS 2017)	Within	Machairs (* in Ireland) [21A0] Petalophyllum ralfsii (Petalwort) [1395]
001309	Omey Island Machaire pNHA	N/A	Within	Machairs (* in Ireland) [21A0] Petalophyllum ralfsii (Petalwort) [1395]
002998	West Connaght Coast SAC	SSCO Version 1 (NPWS 2015)	Within	Tursiops truncatus (Common Bottlenose Dolphin) [1349]
004231	Inishboffin, Omey Island and Turbot Island SPA	Generic Version 5.0 (NPWS 2016)	Within	Corncrake (Crex crex) [A122]
002118	Barnahallia Lough SAC	Generic Version 5.0 (NPWS 2016)	2km East	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Najas flexilis (Slender Naiad) [1833]
002374	Cloon and Laghtanabba NHA	N/A	4km East	Peatlands [4]

3.10.3 Baseline Ecology of Study Area

A total of 12 quadrats were located at Omey Island as summarised in Table 3.20 and their locations have been mapped in Figure 3.10.

Omey island is botanically diverse with large expanses of machaire habitat and some dry-humid acid grassland. There are large areas of exposed rock which provide good basking areas for invertebrate species such as beetles. There is a large population of rabbits' present on the island which impose a high level of grazing impacts. The current condition of the site fair/poor, there is evidence of extensive grazing and evidence of significant localised anthropogenic impacts such as tire marks. The machair and grassland habitats present on site are ecologically diverse and vulnerable to trampling. Other habitats on the island include sandy shores, and exposed rocky shores as well as small embryonic dunes. Evidence of soil compaction and vegetation changes due to trampling and vehicle tracks were noted on site.

Detailed quadrat data for the site is presented in Appendix I.

The machair and dunes support the Annex 1-listed Chough and the herb-rich meadows support a breeding population of Corncrake (Annex 1-listed and Red-listed). A dedicated ornithological assessment was undertaken to characterise the potential of the site with respect to bird species (see Appendix II).

Table 3.20 Summary details of each quadrat recorded at Omey Island

Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
Omey-Q1	Core Movement Zones	GS3 Dry-humid Acid Grassland	N/A	Recreation	Poor
Omey-Q2	Core Movement Zones	GS3 Dry-humid Acid Grassland	N/A	Recreation	Poor
Omey-Q3	Secondary Movement Zones	CD6 Machaire	Machairs* [21A0]	Recreation	Fair

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Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
Omey-Q4	Secondary Movement Zones	CD6 Machaire	Machairs* [21A0]	Recreation	Fair
Omey-Q5	Core Movement Zones	GS3 Dry-humid Acid Grassland	N/A	Recreation	Fair
Omey-Q6	Core Movement Zones	GS3 Dry-humid Acid Grassland	N/A	Recreation	Fair
Omey-Q7	Core Movement Zones	LS1 Sandy Shore	N/A	Recreation	Good
Omey-Q8	Core Movement Zones	CD1 Embryonic Dunes	N/A	Recreation	Fair
Omey-Q9	Secondary Movement Zones	CD6 Machaire	Machairs* [21A0]	Recreation	Fair
Omey-Q10	Off-Site Control Area	CD6 Machaire	Machairs* [21A0]	Recreation	Good
Omey-Q11	Secondary Movement Zones	CD6 Machaire	Machairs* [21A0]	Recreation	Fair
Omey-Q12	Secondary Movement Zones	LR1 Exposed Rocky Shore	N/A	Recreation	Good

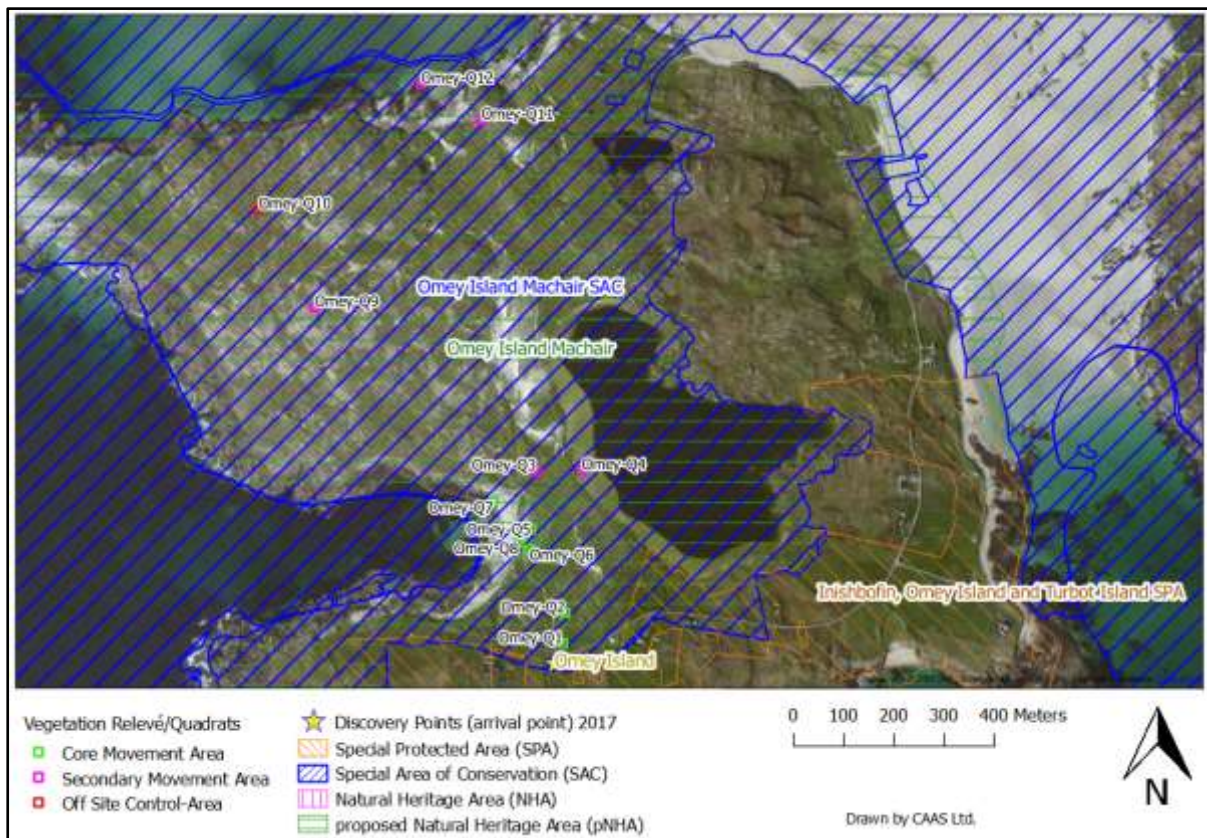


Figure 3.10 Omey Island discovery point. The location of quadrats and designated sites are indicated.

3.10.4 Preliminary Assessment of Visitor Impact

The majority of people (75%) took part in activities which had a low impact on the site. A medium level of impact (25%) was observed on the sand dunes due to desire lines being visible from visitor movement.

91% of visitors stayed within the boundaries of the marked trail across the causeway to the island. 9% of visitors were observed to leave the core areas and traffic across the dunes and bare rock down to the cliff edge.

Visitor effects due to movement were recorded to be low level. As the landscape is dominated by machair and acid grasslands which are sensitive to trampling, areas of high importance should be clearly marked to ensure visitors stick to the marked trails and walking routes. There was evidence observed in the vegetative condition and compaction of soil that trampling was occurring in patches. Further monitoring is required to identify the cause of these trampling effects.

3.10.4.1 Omey Island Machaire SAC/pNHA

The site is currently under managed, and is at risk due to visitor activities. The majority of visitors stayed within the existing marked trails, however the absence of signage to indicate the importance of the habitats present and their sensitivities leaves them open to impacts if visitor numbers increase.

3.10.4.2 West Connaght Coast SAC

There were no impacts/activities identified that would interact with the qualifying interest species or the conservation objectives of the site.

3.10.4.3 Inishboffin, Omey Island and Turbot Island SPA

The machair and dunes support the Annex 1-listed Chough and the herb-rich meadows support a breeding population of Corncrake (Annex 1-listed and Red-listed).

3.10.4.4 Barnahallia Lough SAC

Activities identified during the visitor monitoring surveys have localised impacts; therefore, there are no effects expected from visitor activities due to the distance between the discovery point and the SAC.

3.10.4.5 Cloon and Laghtanabba NHA

Activities identified during the visitor monitoring surveys have localised impacts; therefore, there are no effects expected from visitor activities due to the distance between the discovery point and the NHA.

3.10.5 Recommendations

Access to the Machair and Sand dunes should be clearly marked and include a notice of the sensitive nature of these habitats so that visitors are aware of the importance of sticking to the walking routes marked to avoid negative impacts on the site conservation interests.

Any increase in visitor numbers to the site should require a review of current road access across the causeway taking into account health & safety considerations and local residents. Any review of facility upgrades must be undertaken in compliance with the WAW Site Maintenance Guidelines.

Opportunities for a wildlife trail along the main road of the island heading southwest, with interpretive signage on the islands wildlife and guidance for visitors on activities permissible.

The site carparking facilities on the island itself are lacking and there are clear tire tracks across the grassland leading to the machair habitat. A review of on site management may be required if visitor numbers increase. Further monitoring is required to identify if visitors are the core cause of the impacts observed.

3.11 Oileán Chloigeann (Claggan Island), County Mayo

3.11.1 Site Description

Oileán Chloigeann (Claggan Island) is situated on the north-eastern corner of Blacksod Bay, about 12kms from Belmullet, in the townland of Bunnahowen. The island is linked to the mainland by a narrow, sandy causeway that divides Trawmore Bay from Blacksod Bay.



Srah beach, on the shores of Blacksod Bay, is a long, curved, sandy beach, popular with bathers and with views of Achill Island to the south. Due to the exposure to the wild Atlantic winds, Srah beach (on the causeway) is very popular with kite surfers.

Plate 3.11: Claggan Island and Srah Beach, Co. Mayo

3.11.2 Ecological Constraints

Oileán Chloigeann (Claggan Island) has two European Sites within the receiving environment, one proposed Natural Heritage Area and one Natural Heritage Area (Table 3.21). These sites have ecological characteristics for which they have been designated.

Broadhaven and Blacksod SPA is designated for eleven wintering waterbird species including Light-bellied Brent Goose, Sanderling, Bar-tailed Godwit, Ringed Plover, Great Northern Diver, Sandwich Tern and Common Scoter. In addition, other species of note regularly recorded within the site include Knot and rarities including Slavonian Grebe, Surf Scoter and Eider.

Mullet/Blacksod Bay Complex SAC/pNHA is 16 km in length and 8 km wide at the mouth. It is a shallow bay, reaching a maximum depth of 19 m and with weak tidal streams. The bay has a good range of representative littoral and sublittoral sediment communities, and also infralittoral reefs. Bait digging is potentially damaging to littoral sediment communities if the areas are over-fished.

Tristia Bog NHA forms an extensive, uniformly undulating blanket bog with bog pools containing small island hummocks.

Table 3.21 Designated sites in proximity to Oileán Chloigeann (Claggan Island) and relevant sensitive ecological receptor

NPWS Site Code	Site name	Conservation Objectives (August 2017)	Relationship with discovery point	Qualifying Interests / Sensitive Ecological Receptors
004037	Blacksod Bay/Broadhaven SPA	SSCO Version 1 (NPWS 2014)	Within	Great Northern Diver (<i>Gavia immer</i>) [A003] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Common Scoter (<i>Melanitta nigra</i>) [A065] Red-breasted Merganser (<i>Mergus serrator</i>) [A069]

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				<p>Ringed Plover (<i>Charadrius hiaticula</i>) [A137] Sanderling (<i>Calidris alba</i>) [A144] Dunlin (<i>Calidris alpina</i>) [A149] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Sandwich Tern (<i>Sterna sandvicensis</i>) [A191] Dunlin (<i>Calidris alpina schinzii</i>) [A466] Wetland and Waterbirds [A999]</p>
000470	Mullet/Blacksod Bay Complex SAC	SSCO Version 1 (NPWS 2014)	Within	<p>Designated for 10 Annex I habitats, four of which occur in proximity to the discovery point: Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Salicornia and other annuals colonising mud and sand [1310] Machairs (* in Ireland) [21A0] Two annex II species; one is likely to occur in proximity to the discovery point: Lutra lutra (Otter) [1355]</p>
000470	Mullet/Blacksod Bay Complex	N/A	Within	<p>Designated for 10 Annex I habitats, four of which occur in proximity to the discovery point: Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Salicornia and other annuals colonising mud and sand [1310] Machairs (* in Ireland) [21A0] Two annex II species; one is likely to occur in proximity to the discovery point: Lutra lutra (Otter) [1355]</p>
001566	Tristia Bog NHA	N/A	1km East	Peatland [4]

3.11.3 Baseline Ecology of Study Area

A total of four quadrats were located at Oileán Chloigeann (Claggan Island) as summarised in Table 3.22 and their locations have been mapped in Figure 3.11.

The site comprises of two sandy shores with a large littoral zone, with a very degraded sand dune separating them. The dune system consists of marram grass (*Ammophila arenaria*) and common species such as Sea Holly (*Eryngium maritimum*). The dune ridge has a central car track running through it, with very worn desire lines breaking through the dunes and excessive evidence of erosion.

Along the northern shore, the more sheltered area of intertidal (largely sandy) between the island and the mainland supports feeding waterbirds in winter while Claggan Island supports more typical grassland and hedgerow species e.g. Goldfinch, Linnet and Meadow Pipit.

Detailed quadrat data for the site is presented in Appendix I.

Key species recorded on the site visit included the Annex 1-listed¹⁰ Common Tern (28 seen feeding offshore see Map above), Arctic Tern, Dunlin (89 feeding birds) and Bar-tailed Godwit (flock of 322 feeding). A dedicated ornithological assessment was undertaken to characterise the potential of the site with respect to bird species (see Appendix II).

Table 3.22 Summary details of each quadrat recorded at Oileán Chloigeann (Claggan Island)

Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
OC-Q1	Core Movement Zone	CD1 Embryonic Dunes	N/A	Recreation	Poor
OC-Q2	Core Movement Zone	CD2 Marram Dunes	N/A	Recreation	Poor
OC-Q3	Core Movement Zone	CD3 Fixed Dunes	N/A	Recreation	Poor
OC-Q4	Core Movement Zone	LS2 Sandy Shores	Mudflats and sandflats not covered by seawater at low tide [1140]	Recreation	Fair



Figure 3.11 Oileán Chloigeann (Claggan Island) discovery point. The location of quadrats and designated sites are indicated.

¹⁰ Birds Directive 2009/147/EC .

3.11.4 Preliminary Assessment of Visitor Impact

Claggan Island recorded the highest level of impact with 41% of visitors having a medium level effect on the site and 37% having a high impact. This was caused as a result of visitors (56%) using the dunes as a means of accessing the beach, resulting in visible desire lines throughout.

68% of visitors stayed within the boundaries of the core zones of the beach and designated walkways and paths.

Overall visitors had an impact on the site (Medium Level) resulting from desire lines and erosion outside the marked trails and paths giving access to the beach. Signs detailing dune restoration works of the site, appear to be ignored, and the fencing detailed on the current sign was absent.

3.11.4.1 Blacksod Bay/Broadhaven SPA

The site is part of the Blacksod/Trawmore Bay I-WeBs subsite and part of the larger Blacksod/Tullaghan Bays site which is counted through the winter months. The larger site complex supports significant numbers of Whooper Swan, Light-bellied Brent Goose, Barnacle Goose, Bar-tailed Godwit, Ringed Plover, Sanderling, Dunlin, Curlew and Redshank through the winter months (Irish Wetland Bird Survey unpublished data). Likely breeding on the island include the Red-listed Meadow Pipit along with Linnet and Goldfinch.

3.11.4.2 Mullet/Blacksod Bay Complex SAC/pNHA

Vehicle activity was recorded on the mud flat habitats of the SAC, this is a short-term impact which does not alter the characteristics of the site. Restricting vehicle access to the beach would remove the potential for any further effects such as this, and prevent repeat occurrences.

3.11.4.3 Tristia Bog NHA

The activities identified during the visitor monitoring surveys were seen to be localised. Given the distance between the NHA and the localised nature of impacts, there were no pathways for effects noted.

3.11.5 Recommendations

There is significant damage to the dunes system which separates the two-open water from the tidal mud flats within the sheltered bay at high tide. It is recommended that management measures should be explored to reinforce and protect the dune habitat. Suggested measures include:

- Restrict access for vehicles to the beach and dunes to minimise impact potential, this could be achieved by the placement of rocks to maintain the natural flow of the sites landscape.
- Erect more engaging signage to detail the importance of the habitat and list permissible activities. The current sign is very text heavy and is not engaging, therefore it is overlooked.
- Restrict access to the dunes by erecting structures such as split chestnut pailing fences. The current signage details the presence of protective fencing which is not present.
- Reinforce the dunes to prevent further erosion and allow marram grass to propagate to naturally maintain the dune structure in time.

Any review of facility upgrades must be undertaken in compliance with the WAW Site Maintenance Guidelines. Any increase in visitor numbers to the site should require a review of current road access across the causeway taking into account health & safety considerations and local residents.

Visitor impacts identified that would affect the special conservation interest species were kite surfing and general disturbance effects associated with visitor movements. The erection of signage to highlight the importance of bird species.

Activities such as kite-surfing should be restricted to the outer beach (southern seaward side) where fewer waterbirds are likely to be feeding along the shore.

Further monitoring required.

3.12 Strandhill, County Sligo

3.12.1 Site Description

Strandhill Beach is an area of great natural beauty located 8km west of Sligo town with panoramic views of Knocknarea and Benbulbin. Strandhill is one of the most popular seaside resorts in the west of Ireland famed for its surf and water sports! There are a range of surfing schools that will blow your mind and help all levels of surfers chase those waves.



Plate 3.12: Largest dune at Strandhill, partially fenced off by the NPWS

Overseen by Queen Maeve's Cairn atop its adjoining mountain, Strandhill promises a special stay. Stroll around the village and explore the impressive sand dunes and the ancient Killaspugbrone Church. Or watch the sun set over the beach in the evening.

Adventure seekers can try sea kayaking allowing you to explore the estuaries and inland lakes. Or slow it down on a day at a spa or in a sea weed bath. Golfers can be challenged on the

world class Strandhill links course.

The landing zone of the discovery point is a carpark which acts as a town carpark as well as an access point to the beach. The dune system beside the carpark has signs erected by the NPWS detailing the importance of the dunes in terms of ecology and a large expanse of them are fenced off for protection.

3.12.2 Ecological Constraints

Strandhill has four European Sites within the receiving environment, one proposed Natural Heritage Area and no Natural Heritage Areas (Table 3.23). These sites have ecological characteristics for which they have been designated.

Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC has extensive dunes within it. Sand dune habitats are rare and threatened in Europe and three types are found in this site - embryonic dunes, Marram (*Ammophila arenaria*) dunes and fixed dunes. Embryonic dunes, with characteristic species including Sand Couch (*Elymus farctus*), occur at the southern end of the sand spit at Rosses Point. Shifting Marram dunes are found in a number of locations, including Rosses Point, Strandhill, Coney Island and Yellow Strand. In the latter three areas, the areas of shifting dunes are linked at least to some extent to recent disturbance (e.g. erosion, storm breaches, etc.).

Ballysadare Bay SPA and Cummeen Strand SPA contain extensive intertidal sand and mudflats. The flats support good populations of macro-invertebrates which are important food items for wintering waterfowl.

Ballysadare Bay SAC/pNHA contains extensive intertidal sand and mudflats, approximately 1,500 ha in extent overall. The mud provides an abundance of food for wildfowl, in the form of colonising plants such as Eelgrass (*Zostera marina*) and Tasselweed (*Ruppia maritima*), as well as numerous species of invertebrates on which both wildfowl and waders feed. Well-developed salt marshes occur at several locations around the bay. There is a large sand dune system at Strandhill which has been relatively undisturbed by grazers. The dune system is highly dynamic, with the tip of the peninsula actively

growing and displaying a good, though limited, example of embryonic shifting dunes. Agricultural improvement, and particularly the application of fertilisers, threatens dune vegetation, leading to the eventual loss of species diversity.

Table 3.23 Designated sites in proximity to Strandhill and relevant sensitive ecological receptor

NPWS Site Code	Site name	Conservation Objectives (August 2017)	Relationship with discovery point	Qualifying Interests / Sensitive Ecological Receptors
000622	Ballysadare Bay SAC	SSCO Version 1 (NPWS 2013)	Adjacent	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014] <i>Phoca vitulina</i> (Harbour Seal) [1365]
004129	Ballysadare Bay SPA	SSCO Version 1 (NPWS 2013)	Adjacent	Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Dunlin (<i>Calidris alpina</i>) [A149] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Redshank (<i>Tringa totanus</i>) [A162] Wetland and Waterbirds [A999]
000622	Ballysadare Bay pNHA	N/A	Adjacent	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014] <i>Phoca vitulina</i> (Harbour Seal) [1365]
000627	Cummeen strand/drumcliff bay (Sligo Bay) SAC	SSCO Version 1 (NPWS 2013)	Adjacent	<u>Designated for 8 Annex I habitats, three of which occur in proximity to the discovery point:</u> Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] <u>Four annex II species; two of which are likely to occur in proximity to the discovery point:</u>

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				Petromyzon marinus (Sea Lamprey) [1095] Phoca vitulina (Harbour Seal) [1365]
004035	Cummeen Strand SPA	SSCO Version 1 (NPWS 2013)	2km to the north	Light-bellied Brent Goose (Branta bernicla hrota) [A046] Oystercatcher (Haematopus ostralegus) [A130] Redshank (Tringa totanus) [A162] Wetland and Waterbirds [A999]

3.12.3 Baseline Ecology of Study Area

A total of nine quadrats were located at Strandhill as summarised in Table 3.24 and their locations have been mapped in Figure 3.12.

The dune systems are dominated by marram grass, with an abundance of cats' ear and ragwort. There is significant evidence of extensive damage throughout the dunes causing a reduction in marram coverage which is affecting the dunes stability.

The peninsula (Figure 3.12) acts as a shelter for the internal estuary zone, which facilitates the annex 1 priority habitat Mudflats and sandflats not covered by seawater at low tide [1140]. The dunes are a mosaic of low embryonic shifting dunes that have heavily degraded and more robust fixed dunes towards the landward side of the peninsula. There was an abundance of cinnabar moth caterpillars observed during the field survey due to the abundance of ragwort throughout the vegetated fixed dune habitats.

Detailed quadrat data for the site is presented in Appendix I.

Key species recorded on the site visit included Annex 1-listed Common Scoter, Common Terns and Sandwich Terns. A dedicated ornithological assessment was undertaken to characterise the potential of the site with respect to bird species (see Appendix II).

Table 3.24 Summary details of each quadrat recorded at Strandhill

Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
SH-Q1	Core Movement Area	LS1 Shingle and Gravel Shores	N/A	Recreation	Good
SH-Q2	Core Movement Area	LS2 Sandy Shores	N/A	Recreation	Good
SH-Q3	Secondary Movement Area	CD2 Marram Dune	Embryonic shifting dunes [2110] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	Recreation	Bad
SH-Q4	Secondary Movement Area	CD2 Marram Dune	Embryonic shifting dunes [2110] Shifting dunes along the shoreline with Ammophila	Recreation	Bad

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Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
			arenaria (white dunes) [2120]		
SH-Q5	Secondary Movement Area	CD3 Fixed Dunes	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	Recreation	Fair
SH-Q6	Core Movement Area	LS2 Sandy Shores	N/A	Recreation	Good
SH-Q7	Core Movement Area	LS2 Sandy Shores	Mudflats and sandflats not covered by seawater at low tide [1140]	Recreation	Good
SH-Q8	Secondary Movement Area	CD3 Fixed Dunes	N/A	Recreation	Doubtful
SH-Q9	Off-Site Control Area	CD3 Fixed Dunes	N/A	Recreation/ Grazing	Fair



Figure 3.12 Strandhill discovery point. The location of quadrats and designated sites are indicated.

3.12.4 Preliminary Assessment of Visitor Impact

82% of visitors had no identifiable effect on the Site. majority of visitors to the site stayed within the core zone boundaries.

22% of visitors were observed to climb the highest dune, this became evident at the point where the fencing ends. 33% of people were recorded to have a high impact on the dunes, as a result of trampling caused by visitor movements.

Although there is fencing in place to deter visitors from entering sensitive areas, more guidance is needed for visitors to ensure they stay on the marked trails and paths. The visitor restrictions do not surround the entirety of the sensitive habitat and damage caused by visitors to the dune system is evident at the point where the fencing ends.

Engagement with locals indicated that the dune system was an amenity for the locals and therefore the sign was deliberately ignored. Plate 3.12 shows the clear difference in activity levels.

3.12.4.1 Ballysadare Bay SAC/pNHA

The qualifying interests of the Fixed coastal dunes with herbaceous vegetation (grey dunes) has been shown to be directly impacted by visitors resulting in a reduction in habitat quality.

3.12.4.2 Ballysadare Bay SPA

Any expansion in visitor numbers to the site would be an additional pressure to the sensitive dune habitats and the important feeding and roosting sites for wintering waterbirds, particularly along the more sheltered inner sections. In terms of bird interests, the site is most important for wintering waterbirds when visitor numbers are likely to be lower. However, given the site's proximity to Sligo town, the number of visitors during winter months is still likely to be significant.

3.12.4.3 Cummeen strand/drumcliff bay (Sligo Bay) SAC

Visitor movements at the discovery point were shown to disperse predominately southward away from the SAC and its associated habitats. The effects identified by the visitor observation surveys showed the impacts to be localised and therefore no effect to the SAC were recorded.

3.12.4.4 Cummeen Strand SPA

Visitor movements at the discovery point were shown to disperse predominately southward away from the SPA. The effects identified by the visitor observation surveys showed the impacts to be localised and therefore no effect to the SAC were recorded.

3.12.5 Recommendations

Continued fencing is recommended as a deterrent to prevent visitor movements across the entire large dune site, as the current signage and fencing efforts taken by the NPWS are not protecting the whole dune.

Explore the option of a part time warden to patrol the Strandhill peninsula during peak season, to educate the local community and engage visitors in the valuable ecological resource which exists on their doorstep.

Surf Schools use the site to conduct surf lessons and the beach is a well-known popular surf/kite-surf spot. It is recommended that such activities are controlled so as not to adversely affect the conservation interests of the site is important, particularly for offshore seaduck and diver species in winter which are likely to be more sensitive to disturbance from water-based sports activities than other waterbirds or seabirds.

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Further monitoring, a review of current management strategies and an assessment of management options are recommended for the site. Any review of facility upgrades must be undertaken in compliance with the WAW Site Maintenance Guidelines.

3.13 Murvagh Beach, County Donegal

3.13.1 Site Description

Situated south of Donegal town, Murvagh Beach consists of a sandy beach on the seaward side, with Donegal Golf Course located behind the extensive and high grass sand dune complex. To the south,



the visitor entrance and beach car park is characterised by planted area of mature trees (conifers) on the eastern side of the road.

Murvagh Blue Flag Beach is a long sandy beach approximately 4.5km in length. There are extensive dunes, which lead into Murvagh forest. The forest and the dunes have many open spaces. The parking area sits lower than the dunes making it very sheltered. The

Plate 3.13: Murvagh Beach, from the sand dunes looking north.

composition of the wood and the dunes are continuous on approach except for scattered views to the coast. The car park has exceptional views north to Crownarad and Sliabh Liag

3.13.2 Ecological Constraints

Murvagh Beach has two European Sites within the receiving environment, one proposed Natural Heritage Area and no Natural Heritage Areas (Table 3.25). These sites have ecological characteristics for which they have been designated.

Murvagh Beach is also part of the wider wetland complex of Donegal Bay SPA which is designated for wintering waterbird species including Light-bellied Brent Goose, Sanderling, Great Northern Diver and Common Scoter. In addition, other species of note regularly recorded within the site include Long-tailed Duck (wintering) and Red Throated Diver and Black-throated Diver (wintering).

Murvagh Beach is part of the larger Donegal Bay (Murvagh) SAC/pNHA, which is designated for two sand dune Annex I habitats: Fixed coastal dunes with herbaceous vegetation (grey dunes) and Humid dune slacks.

Table 3.25 Designated sites in proximity to Murvagh Beach and relevant sensitive ecological receptor

NPWS Site Code	Site name	Conservation Objectives (August 2017)	Relationship with discovery point	Qualifying Interests / Sensitive Ecological Receptors
000133	Donegal Bay SAC	SSCO Version 1 (NPWS 2012)	Within	Mudflats and sandflats not covered by seawater at low tide [1140] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] Phoca vitulina (Harbour Seal) [1365]

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000133	Donegal Bay pNHA	N/A	Within	Mudflats and sandflats not covered by seawater at low tide [1140] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] Phoca vitulina (Harbour Seal) [1365]
004151	Donegal Bay (Murvagh) SPA	SSCO Version 1 (NPWS 2012)	Within	Great Northern Diver (Gavia immer) [A003] Light-bellied Brent Goose (Branta bernicla hrota) [A046] Common Scoter (Melanitta nigra) [A065] Sanderling (Calidris alba) [A144] Wetland and Waterbirds [A999]

3.13.3 Baseline Ecology of Study Area

A total of 12 quadrats were located at Murvagh Beach as summarised in Table 3.26 and their locations have been mapped in Figure 3.13.

The Murvagh beach site is split into coastal and woodland habitat. The woodland comprises of Mixed Broadleaved/Conifer Woodland, with conifer trees being dominant along the edges moving into more broadleaf woodlands within. The understory is well vegetated with ferns and shrubs with a partially closed canopy.

Humid dunes slacks are present between the woodland and the fixed dunes, which are well vegetated with grassy tufts, leading into a small strip of marram dunes. The coastline is a sandy shore habitat, and visitor movement along the north is limited to the sand by a golf course. The Northern end of the peninsula (Murv-Q12) comprises of some embryonic dunes.

Detailed quadrat data for the site is presented in Appendix I.

Breeding was confirmed for the Amber-listed Stonechat² (recently fledged young seen) with three pairs holding territories along the edge of the sand dunes on the beachward side. Swallows and House Martins were a common sight across the dunes, with Goldfinches and Linnets also recorded there. A dedicated ornithological assessment was undertaken to characterise the potential of the site with respect to bird species (see Appendix II).

Table 3.26 Summary details of each quadrat recorded at Murvagh Beach

Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Quality	Habitat	Landuse ¹	Quadrat Condition Assessment
Murv-Q1	Off-Site Control Area	WD2 Mixed Broadleaved/Conifer Woodland	N/A		Amenity/Forestry	Good
Murv-Q2	Off-Site Control Area	WD2 Mixed Broadleaved/Conifer Woodland	N/A		Amenity/Forestry	Good
Murv-Q3	Core Movement Zone	LS2 Sandy Shores	N/A		Amenity	Good
Murv-Q4	Core Movement Zone	LS2 Sandy Shores	N/A		Amenity	Good

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Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Quality	Habitat	Landuse ¹	Quadrat Condition Assessment
Murv-Q5	Secondary Movement Zone	CD3 Fixed Dunes	Fixed dunes	coastal with herbaceous vegetation (grey dunes) [2130]	Amenity	Good
Murv-Q6	Secondary Movement Zone	CD3 Fixed Dunes	Fixed dunes	coastal with herbaceous vegetation (grey dunes) [2130]	Amenity	Good
Murv-Q7	Off-Site Control Area	CD2 Marram Dunes	N/A		Amenity	Good
Murv-Q8	Off-Site Control Area	CD2 Marram Dunes	N/A		Amenity	Good
Murv-Q9	Core Movement Zone	CD2 Marram Dunes	N/A		Amenity	Good
Murv-Q10	Off-Site Control Area	LS2 Sandy Shores	N/A		Recreation/ Golf	Good
Murv-Q11	Core Movement Zone	LS2 Sandy Shores	N/A		Recreation	Good
Murv-Q12	Off-Site Control Area	CD1 Embryonic Dunes	N/A		Recreation/ Golf	Good

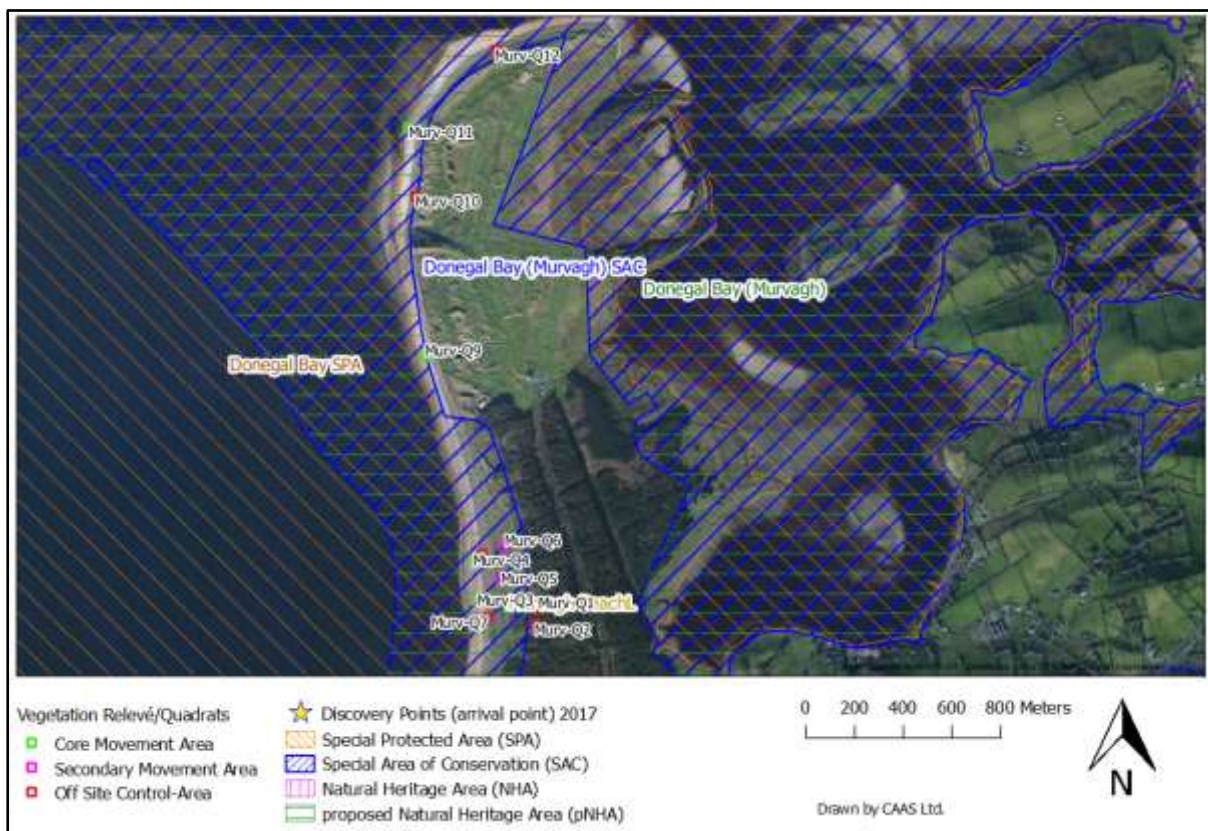


Figure 3.13 Murragh Beach discovery point. The location of quadrats and designated sites are indicated.

3.13.4 Preliminary Assessment of Visitor Impact

The majority of visitors (42%) had no identifiable effect on the site. On the day of Pre-Planning it was noted that a small camp of a tent and camp fire had been set up. On returning the to carry put the survey the subsequent day, the tent, along with a notable amount of litter (4%) was still in situ.

Sand compaction and vegetative changes have resulted in marked tracks which act as a conduit for visitor movements. 65% of visitors remained to the marked paths and beach. As the beach is heavily used for recreational purposes, some visitors (35%) where observed to move away from the beach and paths to utilised the space surround and behind the dunes.

Overall no visitor activities resulted in any long-term damage to the site due to the use of the walking tracks.

3.13.4.1 Donegal Bay SAC/pNHA

Humid dunes slacks and fixed coastal dunes with herbaceous vegetation were recorded on site. Visitor movements were recorded to be restricted to clearly marked paths and visitor effects were recorded to be low. There were no effects to the conservation objectives of the SAC identified.

3.13.4.2 Donegal Bay (Murvagh) SPA

The site is designated for wintering wading species. The visitor impacts were recorded at peak tourist season in July 2017. There were no discernible effects from visitor activities identified and therefore it is not likely that visitors will impact the ecological integrity of the SPA.

3.13.5 Recommendations

The site is robust, and no visitor activities resulted in any long-term damage to the site. Recommendations for the site are to consider updating signage to include information of the importance of dune habitats.

3.14 Cé Mhachaire Uí Rabhartaigh (Embarkation Point for 20, 21), County Donegal

3.14.1 Site Description

The immediate landscape around Cé Mhachaire Uí Rabhartaigh is characterised by a stony coastline to the west with a sloping hillside to the south. The setting offers an exceptional view to Glassan Bay which extends for 3.5km into the Atlantic almost seemingly touching Inis Bo Finne and connecting the views to the remaining islands to the north. Glassan Bay is then backed by distant views to mountainous areas on the eastern peninsula's. The shortest Ferry crossing to Oilean Thoraigh (Tory Island) leaves from here.



Plate 3.14: Salt marsh habitat bordered by Machair to the east of the Cé Mhachaire Uí Rabhartaigh carpark

the west with a sloping hillside to the south. The setting offers an exceptional view to Glassan Bay which extends for 3.5km into the Atlantic almost seemingly touching Inis Bo Finne and connecting the views to the remaining islands to the north. Glassan Bay is then backed by distant views to mountainous areas on the eastern peninsula's. The shortest Ferry crossing to Oilean Thoraigh (Tory Island) leaves from here.

The discovery point itself is a pier with an associated carpark, however to the east of the pier is a long narrow peninsula consisting of sandy shores and dune systems. Visitor numbers are low at this site which may be a result of its remote location. It is an ecologically complex site of immense beauty.

3.14.2 Ecological Constraints

Cé Mhachaire Uí Rabhartaigh has two European Sites within the receiving environment, one proposed Natural Heritage Area and no Natural Heritage Areas (Table 3.27). These sites have ecological characteristics for which they have been designated.

Ballyness Bay SAC/pNHA has intertidal sandflats with rich macro-invertebrate fauna, and notable populations of Lugworm (*Arenicola marina*) and Common Cockle (*Cardium edule*). Eelgrass (*Zostera* sp.) is also present. The bay is almost completely cut off from the open sea by two large sand dune covered spits. The Dooley sand dunes are highly dynamic and have grown to a considerable height near the tip of the spit - they contain what is probably the largest unvegetated sand dune in the country. The succession of vegetation types across the spit and the topographical features make this area of special interest. Of particular importance are the fixed dunes which occur along the length of the Dooley sand spit. They are found east of a large band of mobile Marram (*Ammophila arenaria*) dunes

Falcarragh to Meenlaragh SPA is designated for the Corncrake (*Crex crex*) which uses the mosaic of agricultural habitats within the receiving environment.

Table 3.27 Designated sites in proximity to Cé Mhachaire Uí Rabhartaigh and relevant sensitive ecological receptor

NPWS Site Code	Site name	Conservation Objectives (August 2017)	Relationship with discovery point	Qualifying Interests / Sensitive Ecological Receptors
001090	Ballyness Bay SAC	SSCO Version 1 (NPWS 2014)	Within	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140]

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				Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]
001090	Ballyness Bay pNHA	N/A	Within	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]
004149	Falcarragh to Meenlaragh SPA	Generic Version 5.0 (NPWS 2016)	Within	Corncrake (<i>Crex crex</i>) [A122]

3.14.3 Baseline Ecology of study area

A total of 11 quadrats were located at Cé Mhachaire Uí Rabhartaigh as summarised in Table 3.26 and their locations have been mapped in Figure 3.14.

The discovery point itself is a robust built pier that takes daily ferry trips. To the west of the pier is a tidal cobble shoreline. To the east is a sand lined peninsula with a thin dune system along its entirety. The wider site comprised of sheltered mud flats on the landward side of the peninsula. This inlet is lined by salt marshes bordered by machair habitat. The machair habitat leads into a fixed dune system, with marram tussocks throughout. Species of note recorded on site were the 6-spot burnet moth which thrives on the food plant ragwort. There is evidence of vehicle use on site causing sand compaction and vegetative changes, in some cases this has led to erosion. These impacts were short and appeared to only be in place close to the pier itself. The rest of the dunes appeared to be intact.

Detailed quadrat data for the site is presented in Appendix I.

Key species recorded on the site visit included Eider feeding around the pier and the Red-listed Curlew feeding in the sheltered intertidal flats to the rear of the beach. A dedicated ornithological assessment was undertaken to characterise the potential of the site with respect to bird species (see Appendix II).

Table 3.28 Summary details of each quadrat recorded at Cé Mhachaire Uí Rabhartaigh

Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
TMR-Q1	Off-Site Control Area	CM2 Upper Salt Marsh	N/A	Amenity	Good
TMR-Q2	Off-Site Control Area	CM2 Upper Salt Marsh	N/A	Amenity	Good
TMR-Q3	Off-Site Control Area	CM2 Upper Salt Marsh	N/A	Amenity	Good

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Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
TMR-Q4	Core Movement Zone	LS2 Sandy Shores	N/A	Amenity	Good
TMR-Q5	Core Movement Zone	LS2 Sandy Shores	N/A	Amenity	Good
TMR-Q6	Core Movement Zone	LS2 Sandy Shores	N/A	Amenity	Good
TMR-Q7	Core Movement Zone	CD2 Marram Dunes	N/A	Amenity	Poor
TMR-Q8	Core Movement Zone	CD2 Marram Dunes	N/A	Amenity	Poor
TMR-Q9	Off-Site Control Area	CD6 Machair	N/A	Amenity	Fair
TMR-Q10	Off-Site Control Area	CD3 Fixed Dunes	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	Amenity	Fair
TMR-Q11	Off-Site Control Area	LS1 Shingles and Gravel Shores	N/A	Amenity/Nautical	Fair

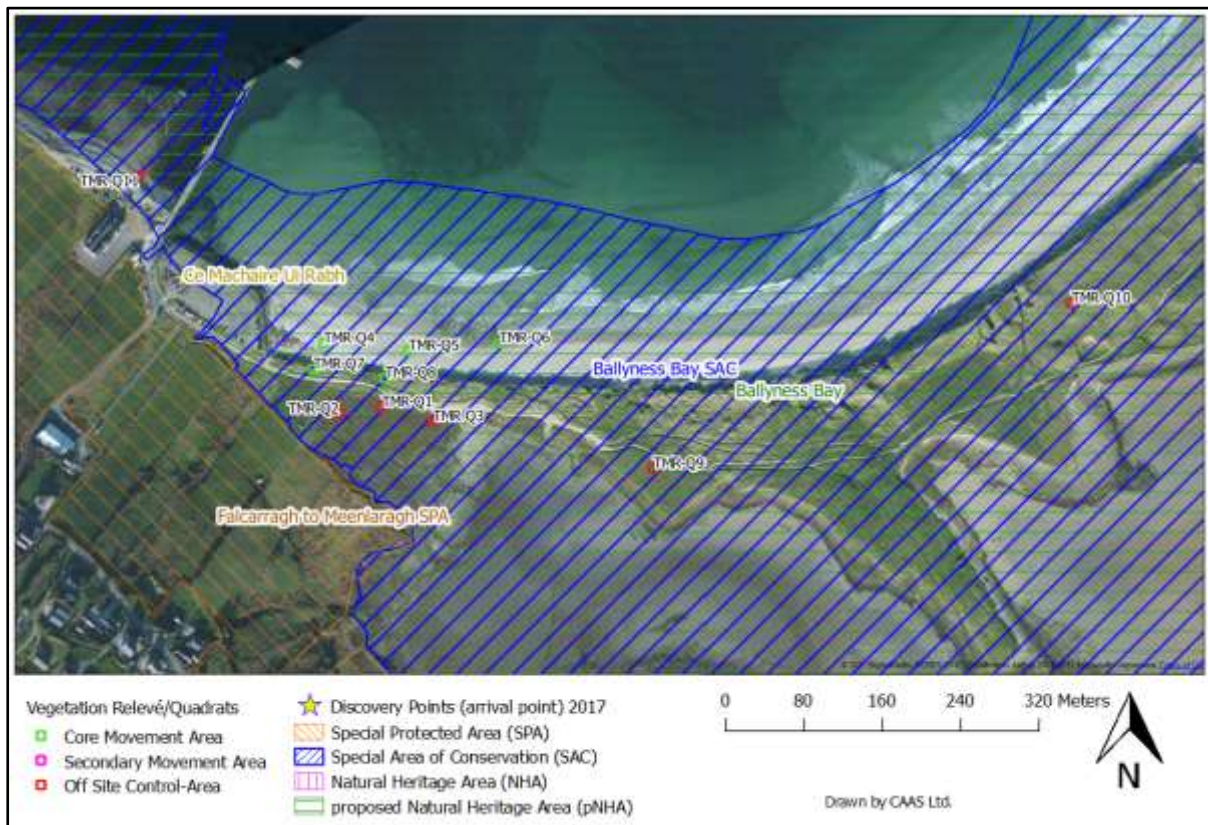


Figure 3.14 Cé Mhachaire Uí Rabhartaigh discovery point. The location of quadrats and designated sites are indicated.

3.14.4 Preliminary Assessment of Visitor Impact

There were no identifiable effects to this site recorded in the visitor movement data.

Visitor numbers recorded were low (26), the condition of the vegetation indicates high vehicular site activity on the dunes and surrounding machair site; despite the presence of a dedicated carpark. The cause of the erosion was not captured by the visitor monitoring; therefore, further monitoring is required.

Vehicular caused eroded tracts appeared to be present within the early stretches of the dune habitats. The rest of the dunes appeared to be intact.

3.14.4.1 Ballyness Bay SAC/pNHA

Habitat quality of the dune systems, machair, salt marshes and associated habitats were seen to be largely intact. There was evidence of erosion in the early stretches of dunes cause by vehicles however this was not recorded by the visitor activity surveys. There were no effects recorded due to visitor activity however, further monitoring is required to identify the sources of impacts observed.

3.14.4.2 Falcarragh to Meenlaragh SPA

There were no effects recorded due to visitor activity. In terms of bird interests, the site is most important for wintering waterbirds when visitor numbers are likely to be lower. Therefore, it is unlikely that visitors will cause significant disturbance during peak winter months. Any suitable breeding habitat for Corncrakes locally is unlikely to be affected by the visitor activity along the beach and at the main visitor car park

3.14.5 Recommendations

It is recommended that site access for vehicles is restricted to eliminate the potential for off road damage to habitats.

The erection of signage to indicate the importance of dune habitats and a list of permissible activities is recommended to encourage ecological responsibility in visitors that use the site. Any review of facility upgrades must be undertaken in compliance with the WAW Site Maintenance Guidelines.

Visitor numbers recorded were low and no effects were identified however there are sign in the vegetation of high level impacts. Further monitoring is required to identify the cause of the vegetative condition.

3.15 Inch Island, County Donegal

3.15.1 Site Description

Inch Island is a beautiful small island in Lough Swilly, County Donegal, that is now connected to the mainland. In 1855, The Lough Swilly Railway Company, drained marshland near Inch and created two



man made embankments which attracted large numbers of migratory birds.

The discovery point has a carpark facility and Wild Atlantic Way signage. From the carpark, there are 3 walking routes, two of which are fully enclosed and run alongside a salt-meadow habitat.

Along the southern walkway there is an embarkation walkway connected to another carpark. This bridge has a

Plate 3.15: Lough Swilly from the Southern embarkation land bridge.

bird hide situated on it which looks out over Lough Swilly towards a small island embankment. Signage about the ornithological interest species is prevalent at the hide.

3.15.2 Ecological Constraints

Inch Island has two European Sites within the receiving environment and no Natural Heritage Areas (Table 3.29). These sites have ecological characteristics for which they have been designated.

Ecological communities present in the intertidal sediments at Lough Swilly SAC include fine sand community complexes, intertidal mixed sediment communities with polychaetes, subtidal mixed sediment communities with polychaetes and bivalves, muddy fine sand communities with *Thyasira flexuosa*, muddy community complexes and *Ostrea edulis* dominated communities. Saltmarshes are well represented in the inner sheltered areas of the site, with good examples in the Ramelton area.

The Lough Swilly SPA supports an excellent diversity of waterfowl species in autumn and winter as well as breeding terns, gulls and ducks. The shallow waters provide suitable habitat for grebes and diving duck, while the intertidal flats are used by an abundance of wildfowl and waders. At high tide, the duck and wader species roost on the salt marshes and shorelines, with some species moving to the adjacent pasture and arable fields. The combination within this site of extensive feeding areas and safe resting and roosting sites makes this one of the most important wetlands in the north-west of the country for wintering waterfowl.

Table 3.29 Designated sites in proximity to Inch Island and relevant sensitive ecological receptor

NPWS Site Code	Site name	Conservation Objectives (Aug 2017)	Relationship with discovery point	Qualifying Interests / Sensitive Ecological Receptors
002287	Lough Swilly SAC	Site Specific Conservation Objectives. Version 1.0 (NPWS 2011)	The Discovery Point occurs within the cSAC.	Annex I Habitat Estuaries [1130] Lagoons* [1150] Atlantic salt meadows [1330] Molinia grasslands [6410]

				Old oak woodlands [91A0] <u>Annex II Species</u> Otter [1355]
004075	Lough Swilly SPA	Site Specific Conservation Objectives. Version 1.0 (NPWS 2011)	The Discovery Point occurs within the SPA.	<u>Annex I Bird Species</u> Whooper Swan [A038] Dunlin (<i>Calidris alpina</i>) [A149] Sandwich Tern [A191] Common Tern [A193] <u>Twenty other water bird species that are likely to use intertidal zone.</u> Wetland and Waterbirds [A999]
000166	Lough Swilly Including Big Isle, Blanket Nook & Inch Lake pNHA	N/A	The Discovery Point occurs within the pNHA	<u>No site-specific information available from the NPWS pNHA Database</u>

3.15.3 Baseline Ecology of study area

A total of eight quadrats were located at Inch Island as summarised in Table 3.30 and their locations have been mapped in Figure 3.15.

The public walkway separates agricultural grassland areas from the coastal Molina meadow. This path is well managed to isolate the visitors from direct interaction with the habitat. The meadow is extremely diverse with a complex overlapping mosaic of floral species which are characteristic of calcareous soils.

The wider site includes a cobble shoreline to the south east (Inch-Q7 & Inch-Q8). The southern manmade bridge has recolonised scrub vegetation.

Detailed quadrat data for the site is presented in Appendix I.

Key species recorded on the site visit included the Annex 1-listed Common Tern and Sandwich Tern which were seen on the island at Inch Levels and are known to breed on the site. Reasonable numbers of likely resident species (Mute Swan, Canada Goose, Coot and Goldeneye) were recorded. Common Sandpiper (Amber-listed) were recorded along the causeway. Breeding was confirmed for the Amber-listed Stonechat¹¹ with a pair holding a territory along main visitor walk towards the bird hide. A pair of Shoveler were recorded with two ducklings. A dedicated ornithological assessment was undertaken to characterise the potential of the site with respect to bird species (see Appendix II).

Table 3.30: Summary details of each quadrat recorded at Inch Island

Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
Inch-Q1	Secondary Movement Area	GM1 Marsh	N/A	Amenity	Good
Inch-Q2	Secondary Movement Area	GS4 Wet Grassland	N/A	Amenity	Good

¹¹ Colhoun, K. & Cummins, S. (2013) Birds of Conservation Concern in Ireland 2014–2019. *Irish Birds*. Vol 9, 523-544.

Quadrat Code	Quadrat Type	Quadrat Habitat Type	EU Habitat Quality	Landuse ¹	Quadrat Condition Assessment
Inch-Q3	Secondary Movement Area	GS4 Wet Grassland	Molinia grasslands [6410]	Amenity	Good
Inch-Q4	Secondary Movement Area	GS4 Wet Grassland	Molinia grasslands [6410]	Amenity	Good
Inch-Q5	Core Movement Area	BL3/WS1 Built Path lined with short mixed scrub	N/A	Amenity	Fair
Inch-Q6	Core Movement Area	BL3/WS1 Built Path lined with short mixed scrub	N/A	Amenity	Fair
Inch-Q7	Tertiary Movement Area	LS1 Shingle and Gravel Shores	N/A	Amenity	Fair
Inch-Q8	Tertiary Movement Area	LS1 Shingle and Gravel Shores	N/A	Amenity	Fair

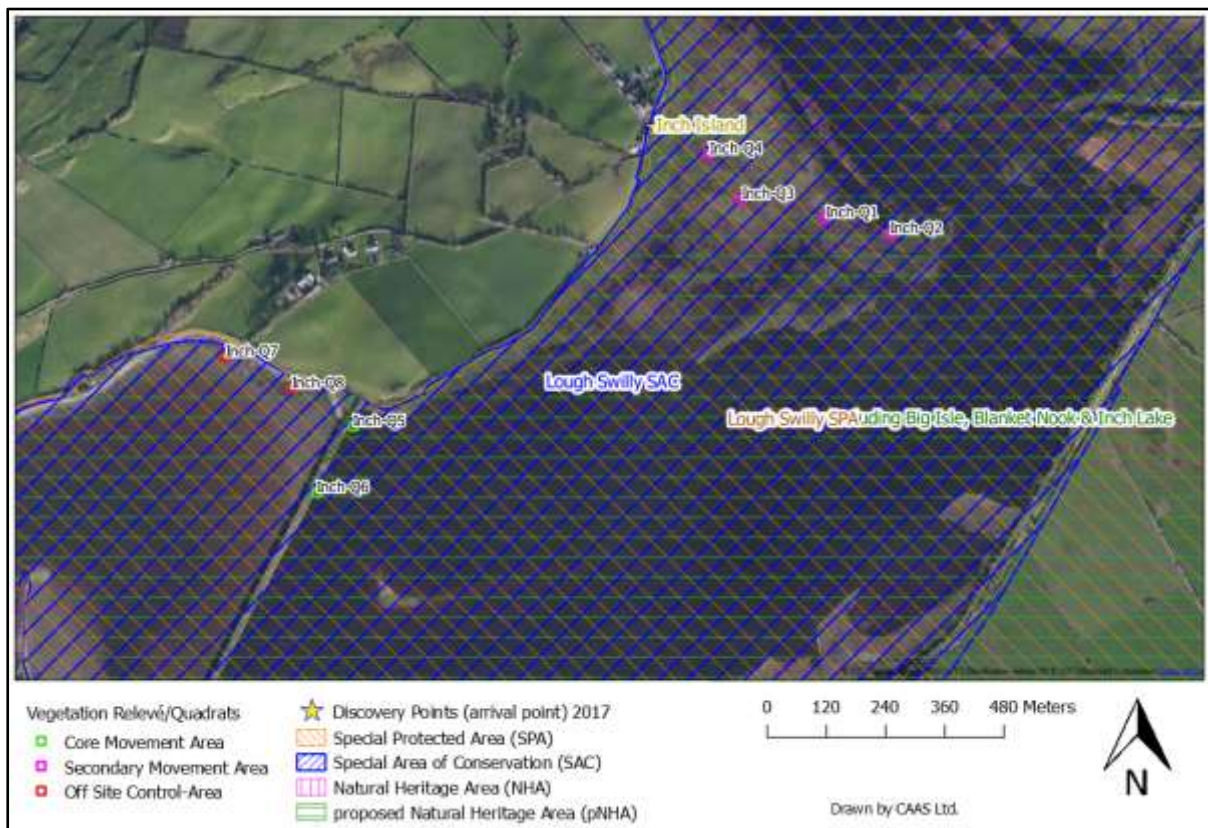


Figure 3.15 Inch Island discovery point. The location of quadrats and designated sites are indicated.

3.15.4 Preliminary Assessment of Visitor Impact

The importance of this site for recreation including cycling, walking and birdwatching is evident by the level of visitor movements on site. 100% of visitors had no identifiable effect to the site.

3.15.4.1 Lough Swilly cSAC

No discernable effects to ecological integrity, the site is well managed.

3.15.4.2 Lough Swilly SPA

No discernable effects to ecological integrity, the site is well managed.

3.15.4.3 Lough Swilly Including Big Isle, Blanket Nook & Inch Lake pNHA

No discernable effects to ecological integrity, the site is well managed.

3.15.5 Recommendations

The site is a perfect example of the amenity use of ecological spaces. No recommendations.

Section 4 Discussion and Recommendations

Summary results of the survey in relation to each Discovery Point are presented in Table 4.1 below. Details that are presented include relevant designated sites, sensitive ecological features, impacts, and recommendations.

All recommendations made as a result of the Visitor Monitoring data and subsequent ecological assessments are to be considered with respect to all of the Policies and Objectives of the WAW Operational Programme. All suggested remedial actions or recommendations must comply with the Policies and Objectives of the WAW Operational Programme; most notably Appendix V: Site Maintenance Guidelines. These guidelines provide robust measures to ensure any works that take place on site are designed and undertaken in an environmentally sensitive manner to ensure the protection of the ecological integrity of the site.

Of the fifteen sites surveyed all of them occur within or directly adjacent to sites designated for nature conservation. All of the sites surveyed are coastal sites. The features of ecological importance are remarkably consistent throughout most sites comprising coastal habitats (principally dune systems, dry heath, maritime grassland, and sea cliffs). Most of the discovery points are located within or nearby SPA sites designated for the protection of coastal sea birds, waterfowl, and waders.

No discernible effects were identified at four of the sites:

- Carrigafoyle Castle,
- Cappagh Pier,
- Murvagh Beach; and
- Inch Island.

These sites were seen to have robust management practices in place which safe guard the ecological processes of the receiving environment and no recommendations were made. Visitor management at these four sites ensures that sensitive habitats in the surroundings are safeguarded from potential impacts. In addition, it is considered that visitor activities at these sites do not result in any significant adverse ecological impacts, due in part to the pattern of use by visitors, short duration of stay, or currently low visitor numbers.

Minimal and localised visitor impacts were observed at a further six sites surveyed in 2017. These included:

- Lough Hyne;
- Dursey Sound;
- Teach Dhoire Fhíonáin;
- Ballyheigue Beach;
- Ballyvaughan Pier; and
- Cé Mhachaire Uí Rabhartaigh

Recommendations have been made to further prevent impacts to ecological processes at the site. It is noted that the impacts identified at these sites were recorded to be low and the recommendations made are minor suggestions to further minimise any potential effects. Further monitoring will ensure that in combination effects of annual visitor numbers will not present future problems for the site.

Those sites which showed more significant visitor impacts, often as a result of visitor use of fragile heath or dune areas for recreational activities such as walking, off road driving, and dog walking included:

- Galley Head;
- Trá na gCeann;
- Omey Island;
- Oileán Chloigeann; and
- Strandhill

At these five sites, visitor impacts were noted on terrestrial habitats of ecological importance. These impacts are mainly associated with trampling of vegetation in areas regularly accessed by significant numbers of visitors. Such trampling may lead to exposure of bare soil/sand surfaces and thereby making the areas vulnerable to further erosion. The impacts are usually localised in nature and confined to the area being directly traversed. The impacted habitats are usually sand dunes, cliff-top maritime grassland and / or heathland areas.

All sites are located close by areas used by large numbers of wintering waterbirds. At most sites, it is considered that the potential for significant displacement impacts is low. This conclusion is based on the following factors; the highest number of visitors occur during summer months when birds are at their summer breeding grounds, and the areas of most interest to wintering birds are intertidal mudflats and other wetlands that are sufficiently removed from those areas most frequently used by the majority of visitors. Despite these considerations, potential conflicts exist at sites such as Barna, Trá na gCeann (Silver Strand) and Strandhill where recreational visitor numbers are likely to be significant even during winter and where there is an overlap between the area used by waterbirds and recreational visitors (i.e. inter-tidal beach). An assessment of such impacts is beyond the scope of the current project but should be considered in any future monitoring programme.

At each of the sites bird species may nest on the upper sandy shores, gravel banks, or semi-natural grasslands which are also frequented by recreational users. An assessment of potential impacts on breeding waders at these sites can be found in Appendix II. It is considered that the potential for cliff nesting sea bird colonies to be impacted is low, as the nest sites typically occur on the near vertical cliff faces that are inaccessible to most visitors and sufficiently removed that disturbance impacts would not occur. Most sea birds do not venture further inland than the coastal cliffs, spending most of their time foraging at sea.

Chough and Peregrine Falcon nest sites typically occur on sea cliffs and therefore impacts on these nesting birds are deemed unlikely. However, chough are known to utilise cliff-top habitats such as semi-improved maritime grassland for foraging such as that found at Galley Head. There is therefore potential for adverse impacts on chough due to displacement as a result of disturbance and habitat alteration. Incidental chough observations recorded from the current survey confirms that the species have not been displaced from these areas. Based on the current level of use of the sites surveyed it is considered that such impacts are highly unlikely to arise at any of the sites surveyed in 2017.

The key recommendations made during the current study relate to:

- Improve visitor management / controls:
In those sites where, ecological impacts have been recorded there is a requirement to improve visitor management. This can include (but not restricted to) such measures as:
 - Improved signage directing visitors away from sensitive areas, particularly in relation to dune systems;
 - Review or Improve interpretation facilities informing visitors of the sensitivity of the area and appropriate behaviour / activities;
 - Review of existing management facilities and access routes. Create surfaced pathways, trail or raised boardwalks appropriate to the habitat requirements and visitor activity levels. Explore the potential for temporary facilities at peak season;
 - Broaden the access to areas surrounding the discovery points. By identifying additional walking trails/facilities in the area to reduce risk of over tourism;
 - Restrict access where harm to the environment is unavoidable, this is particularly important for vehicle access in relation to some sites;
 - Explore the potential for a part time warden to manage human conflicts with the receiving environment of discovery points;
 - Improve safety measures for visitors at select sites where appropriate; and
 - Reinforce unstable ecological features, or construct protective features such as fencing to protect sensitive habitats.

The choice of appropriate actions / measures will be site specific depending on the sensitivity and characteristics of the area.

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- Ecological monitoring:

In those sites where visitor pressures on ecological features have been recorded then further ecological monitoring is suggested. In other instances where there is an absence of sensitive ecological features in proximity to the Discovery Point and / or where visitor management is appropriate to the current and future levels of activity then monitoring is not recommended. These recommendations take account of habitat features as well as flora and bird species and their sensitivities.

Table 4.1: Summary results of ecological monitoring at WAW signature discovery points undertaken in 2017

Discovery Point	Designated sites	Sensitive features with potential to be affected by visitors	Ecological impacts identified ¹²	Recommendation(s) ¹³
Galley Head	Galley Head to Duneen Point SPA Kilkeran Lake and Castlerefreke Dunes SAC Kilkeran Lake and Castle Dunes	Chough (Pyrrhocorax pyrrhocorax) [A346]	Localised Trampling of cliff-top vegetation	<p>Consideration should be given to visitor management of the site to ensure safety around the 'blow holes' and direct visitor movements along prescribed paths.</p> <p>Any increase in visitor numbers to the site would require a review of current parking facilities, which currently are limited (< 10 cars max). Any review of facility upgrades must be undertaken in compliance with the WAW Site Maintenance Guidelines.</p> <p>At present, there is no signage at this site to indicate its importance for birds. The erection of signs at the visitor parking area could highlight the key species breeding in the area and provide guidance to visitors to ensure nesting birds are not disturbed.</p> <p>Access to Galley Head Lighthouse is currently restricted. This hinders the overall visitor experience as some of the best vantage points for viewing seabirds on passage are not readily available. Our recommendation is that access is negotiated with the owners of the lighthouse (Commissioner of Irish Lights) to provide some access to visitors to the grounds of the lighthouse (seasonal and daytime restrictions) to allow visitors to truly experience all that this headland has to offer. This could reduce effects to the cliff-top vegetation by dispersing visitors to other areas of the headland.</p> <p>In the event of increased visitor numbers, then further ecological monitoring is recommended.</p>

¹² Key ecological impacts identified within this report in relation to habitat features, condition and flora species as well as impacts identified to bird species further detailed in Appendix II of this report.

¹³ It should also be noted where recommendations are executed by the relevant authority at site level as a result of this monitoring programme compliance with Article 6 (3) of the Habitats Directive must be adhered to.

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Lough Hyne	<p>Lough Hyne Nature Reserve and Environs SAC</p> <p>Sheep's Head to Toe Head SPA</p> <p>Lough Hyne Nature Reserve and Environs pNHA</p>	None	None at current levels of site activity	<p>The popularity of the site as a visitor attraction is evident from the data obtained during the surveys (CAAS 2017). The marine interest's species present may be sensitive to human waste from large numbers of tourists. Management strategies could be explored to provide temporary facilities during peak tourist season to minimise impacts to water quality. Any review of facility upgrades must be undertaken in compliance with the WAW Site Maintenance Guidelines.</p> <p>Monitoring of the recreational activities at the reserve could be facilitated by a part-time warden during the peak summer months when visitor numbers are highest, to ensure that these activities do not adversely affect the site interests and to facilitate educational options to visitors (daily nature walks/talks for example).</p> <p>Given the narrow roads leading to the site and at the site itself, future growth in visitor numbers would require a review of existing parking options and visitor facilities. Any new developments would have to ensure that there is no risk to the Lough Catchment from pollution.</p> <p>At present, there is some signage at this site to indicate common birds found at Lough Hyne but the signage does not indicate the importance of the site for many species and does not highlight the unique attraction of seeing Gannets feeding in the Lough itself. The erection of new signage at the visitor parking area could highlight key species breeding in the area and promote the site to visitors as a place to view feeding Gannets up close and from the comfort of your vehicle.</p> <p>A fixed visitor telescope could allow visitors to view Gannets and other birds using the Lough.</p>
Durseley Island	<p>Kenmare River SAC</p> <p>Beara Peninsula SPA</p> <p>Garnish Point pNHA</p>	Dry heaths; and Sea cliffs	Localised disturbance to breeding bird species and trampling of Annex Habitats	<p>Visitors are having a minor localised adverse impact at this site. Trampling of vegetation is restricted to the un-surfaced trails which are currently retaining a vegetation structure. However, any expansion in visitor numbers to the site may lead to deteriorating habitat quality of coastal heath and grassland and/or condition of the coastal path. Provisions to minimise impacts from trampling should be explored such as:</p> <ul style="list-style-type: none"> • The erection of additional signage at the visitor parking area could provide guidance to visitors walking the trails behind the cable car

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				<p>station to stick to the paths provided and avoid unnecessary disturbance and/or trampling of dry heath and/or ground-nesting birds.</p> <ul style="list-style-type: none"> Erection of temporary moving trails to disperse trampling across the site sequentially or fixed marking of walkways to ensure a unified area is sacrificed to preserve all surrounding habitat. <p>Any review of facility upgrades must be undertaken in compliance with the WAW Site Maintenance Guidelines.</p> <p>Any increase in visitor numbers to the site should require a review of current road access from the main Allihies to Castletownbere road which is extremely narrow for larger vehicles such as camper vans and should take into account road safety considerations and local residents.</p> <p>These recommendations are in line with those identified as part of the monitoring program in 2016 and 2015.</p>
Teach Dhoire Fhíonáin	<p>Iveragh Peninsula SPA</p> <p>Kenmare River SAC</p> <p>Killarney National Park, MacGullycuddy Reeks and Caragh River SAC</p> <p>Derrynane Bay Island and Marsh, Lambs Head</p>	<p>European dry heaths; Blanket bogs Geomalacus maculosus (Kerry Slug) Margaritifera margaritifera (Freshwater Pearl Mussel) Euphydrias aurinia (Marsh Fritillary) Petromyzon marinus (Sea Lamprey) Lampetra planeri (Brook Lamprey) Lampetra fluviatilis (River Lamprey)</p>	<p>Risk of increased local disturbance to breeding birds and incidences of trampling if visitor number increase</p>	<p>At present, there is general signage at this site indicating the history of the site and also the importance of the site for birds including seabirds and other wildlife in the area (e.g. Natterjack Toads). However, some errors on the existing signage should be amended if not replaced altogether.</p> <p>Access to Sand dunes from both the beach and visitor car park should include a notice of the sensitive nature of the dunes so that visitors are aware of the importance of sticking to the walking routes marked to avoid negative impacts on the site conservation interests.</p> <p>Any increase in visitor numbers to the site should require a review of current road access which is narrow for larger vehicles such as camper vans and should take into account road safety considerations and local residents.</p> <p>Any review of facility upgrades must be undertaken in compliance with the WAW Site Maintenance Guidelines.</p>

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		<p>Salmo salar (Salmon)</p> <p>Rhinolophus hipposideros (Lesser Horseshoe Bat)</p> <p>Lutra lutra (Otter)</p> <p>Trichomanes speciosum (Killarney Fern)</p> <p>Najas flexilis (Slender Naiad)</p> <p>Alosa fallax killarnensis (Killarney Shad)</p>		
Ballyheigue Beach	<p>Tralee Bay Complex SPA</p> <p>Akeragh, Banna and Barrow Harbour SAC</p> <p>Akeragh, Banna and Barrow Harbour</p> <p>Kerry Head SPA</p>	<p>Annex I & II species of birds and Fixed coastal dunes with herbaceous vegetation (grey dunes)</p> <p>Sand Martin nest features/breeding sites</p>	<p>Potential for local disturbance to sand martin nests. Evidence of desire lines within the dune systems.</p>	<p>Access to Sand dunes from both the beach and visitor car park should include a notice of the sensitive nature of the dunes so that visitors are aware of the importance of sticking to the walking routes marked to avoid negative impacts on the site conservation interests and important flora species.</p> <p>At present, there is limited signage at this site to indicate the importance of the site for wintering water birds and for breeding Sand Martins. New signage could be put in place to educate visitors of its importance for wildlife (including the priority sand dune habitats) and highlight the importance of keeping dogs on leads, especially throughout the winter period.</p> <p>Any works to prevent further coastal erosion would need to be mindful of the existing colony; and in compliance with the WAW Site Maintenance Guidelines.</p>
Carrigafoyle Castle	<p>River Shannon and River Fergus Estuary SPA</p> <p>Lower River Shannon SAC</p>	<p>Nesting Swallows</p> <p>Annex I & II species of birds and Mudflats and sandflats not covered by seawater at low tide.</p>	<p>Castle is closed to the public due to breeding swallows. Site has robust management practices in place.</p>	<p>The site is well managed and the characteristics of the site limit visitor numbers. The wet silt nature of salt marshes enables them to be self-protecting from visitor movements. No recommendations are suggested.</p>

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	Ballylongford Bay pNHA	Annex II fauna species		
Cappagh Pier	River Shannon and River Fergus Estuary SPA Lower River Shannon SAC	Annex I & II species of birds and Annex II fauna species	No effects identified	The site is a well-managed urban site with low ecological value. No recommendations are suggested.
Ballyvaughan Pier	Galway Bay Complex SAC Galway Bay Complex pNHA Inner Galway Bay SPA Black Head Poolsallagh Complex SAC Ballyvaughan Turlough SAC Moneen Mountain SAC	Annex I & II species of birds and Annex II fauna species Mudflats and sandflats not covered by seawater at low tide Coastal lagoons Large shallow inlets and bays Perennial vegetation of stony banks Salicornia and other annuals colonising mud and sand	Overall visitors had no discernible effects on the site.	At present, there is limited signage at this site to indicate the importance of the site for ecological interests. There is an opportunity to inform visitors of the importance of the site through the erection of signs detailing the following: <ul style="list-style-type: none"> • Importance for wintering waterbirds and for breeding terns, which can be seen feeding offshore. • Opportunity to inform visitors of the nearby woodland walk and bird hide by including signage at the pier and marking the walk more clearly so that visitors can appreciate the local scenic walkways, and facilitate an appreciation of ecological amenity use. • Opportunity to create a local wildlife walk to highlight key local biodiversity hotspots such as birding spots from which visitors can watch feeding terns in summer, divers and scoters offshore in winter for example. <p>Any review of facility upgrades must be undertaken in compliance with the WAW Site Maintenance Guidelines.</p>
Trá na gCeann	Galway Bay Complex SAC Galway Bay Complex pNHA	Annex I & II species of birds and Annex II fauna species	Localised trampling of dry humid acid grasslands that could be supportive	Due to the sensitive nature of the cliffs (breeding Sand Martins and vulnerability to erosion from the sea) access should remain restricted and signage could be erected to highlight the importance of the habitat for conservation. These signs should include descriptions of existing threats such as grazing.

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	Inner Galway Bay SPA		habitat for designated bird species.	Coastal restrictions should be put in place to limit visitor movements along the intertidal zone, to ensure disturbance to key species is minimised. Further monitoring is required to assess the cause of trampling observed in the dry-humid acid grassland.
Omey Island	Omey Island Machaire SAC Omey Island Machaire pNHA West Connaght Coast SAC Inishboffin, Omey Island and Turbot Island SPA Barnahallia Lough SAC Cloon and Laghtanabba NHA	Machaire	Localised trampling of sensitive vegetation	Access to the Machair and Sand dunes should be clearly marked and include a notice of the sensitive nature of these habitats so that visitors are aware of the importance of sticking to the walking routes marked to avoid negative impacts on the site conservation interests. Any increase in visitor numbers to the site should require a review of current road access across the causeway taking into account health & safety considerations and local residents. Any review of facility upgrades must be undertaken in compliance with the WAW Site Maintenance Guidelines. Opportunities for a wildlife trail along the main road of the island heading southwest, with interpretive signage on the islands wildlife and guidance for visitors on activities permissible. The site carparking facilities on the island itself are lacking and there are clear tire tracks across the grassland leading to the machair habitat. A review of on site management may be required if visitor numbers increase. Further monitoring is required to identify if visitors are the core cause of the impacts observed.
Oileán Chloigeann	Blacksod Bay/Broadhaven SPA Mullet/Blacksod Bay Complex SAC Mullet/Blacksod Bay Complex Tristia Bog NHA	Annex I & II species of birds and Annex II fauna species Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160]	Overall visitors had localised impact on the site (Medium Level) resulting from desire lines and erosion outside the marked trails and paths giving access to the beach. Signs detailing	There is significant damage to the dunes system which separates the two-open water from the tidal mud flats within the sheltered bay at high tide. It is recommended that management measures should be explored to reinforce and protect the dune habitat. Suggested measures include: <ul style="list-style-type: none"> • Restrict access for vehicles to the beach and dunes to minimise impact potential, this could be achieved by the placement of rocks to maintain the natural flow of the sites landscape. • Erect more engaging signage to detail the importance of the habitat and list permissible activities. The current sign is very text heavy and is not engaging, therefore it is overlooked.

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		Salicornia and other annuals colonising mud and sand [1310] Machairs (* in Ireland) [21A0]	dune restoration works of the site, appear to be ignored, and the fencing detailed on the current sign was absent from the site.	<ul style="list-style-type: none"> Restrict access to the dunes by erecting structures such as split chestnut paling fences. The current signage details the presence of protective fencing which is not present. Reinforce the dunes to prevent further erosion and allow marram grass to propagate to naturally maintain the dune structure in time. <p>Any review of facility upgrades must be undertaken in compliance with the WAW Site Maintenance Guidelines. Any increase in visitor numbers to the site should require a review of current road access across the causeway taking into account health & safety considerations and local residents.</p> <p>Visitor impacts identified that would affect the special conservation interest species were kite surfing and general disturbance effects associated with visitor movements. The erection of signage to highlight the importance of bird species.</p> <p>Activities such as kite-surfing should be restricted to the outer beach (southern seaward side) where fewer waterbirds are likely to be feeding along the shore.</p> <p>Further monitoring required.</p>
Strandhill	Ballysadare Bay SAC Ballysadare Bay SPA Ballysadare Bay pNHA Cummeen strand/drumcliff bay (Sligo Bay) SAC Cummeen Strand SPA	Annex I & II species of birds and Annex II fauna species Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with	Localised trampling of priority habitats. In combination effects of visitor numbers is accumulating to a direct effect.	Continued fencing is recommended as a deterrent to prevent visitor movements across the entire large dune site, as the current signage and fencing efforts taken by the NPWS are not protecting the whole dune. Explore the option of a part time warden to patrol the Strandhill peninsula during peak season, to educate the local community and engage visitors in the valuable ecological resource which exists on their doorstep. Surf Schools use the site to conduct surf lessons and the beach is a well-known popular surf/kite-surf spot. It is recommended that such activities are controlled so as not to adversely affect the conservation interests of the site is important, particularly for offshore seaduck and diver species in winter which are likely to be more sensitive to disturbance from water-based sports activities than other waterbirds or seabirds.

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		Ammophila arenaria (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190]		Further monitoring, a review of current management strategies and an assessment of management options are recommended for the site. Any review of facility upgrades must be undertaken in compliance with the WAW Site Maintenance Guidelines.
Murvagh Beach	Donegal Bay SAC Donegal Bay pNHA Donegal Bay (Murvagh) SPA	Mudflats and sandflats not covered by seawater at low tide Fixed coastal dunes with herbaceous vegetation (grey dunes) Humid dune slacks and Annex I & II species of birds	No discernible effects	The site is robust, and no visitor activities resulted in any long-term damage to the site. Recommendations for the site are to consider updating signage to include information of the importance of dune habitats.
Cé Mhachaire Uí Rabhartaigh	Ballyness Bay SAC Ballyness Bay pNHA Falcarragh to Meenlaragh SPA	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with Ammophila	Localised vehicular caused eroded tracts appeared to be present within the early stretches of the dune habitats. The rest of the dunes appeared to be intact. Localised impacts from in-	It is recommended that site access for vehicles is restricted to eliminate the potential for off road damage to habitats. The erection of signage to indicate the importance of dune habitats and a list of permissible activities is recommended to encourage ecological responsibility in visitors that use the site. Any review of facility upgrades must be undertaken in compliance with the WAW Site Maintenance Guidelines. Visitor numbers recorded were low and no effects were identified however there are sign in the vegetation of high level impacts. Further monitoring is required to identify the cause of the vegetative condition.

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		arenaria (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190]	combination effect of trampling due to visitor movements.	
Inch Island	Lough Swilly SAC Lough Swilly SPA Lough Swilly Including Big Isle, Blanket Nook & Inch Lake pNHA	Annex I & II species of birds and Annex II fauna species Estuaries [1130] Lagoons* [1150] Atlantic salt meadows [1330] Molinia grasslands [6410] Old oak woodlands [91A0]	No discernible effects	The site is a perfect example of the amenity use of ecological spaces. No recommendations.

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**Section 6 Appendix I –Ecological Quadrat Monitoring Data - refer to
external document**

Section 7 Appendix II – Ornithological Assessment refer to external document