REPORT TO MONITORING COMMITTEE OF 2017 ENVIRONMENTAL SURVEYING AND MONITORING PROGRAMME OF THE WILD ATLANTIC WAY

WILD ATLANTIC WAY OPERATIONAL PROGRAMME 2015-2019

for: **Fáilte Ireland**
88-95 Amiens Street
Dublin 1

by: **CAAS Ltd.**
1st Floor
24-26 Ormond Quay Upper
Dublin 7

DECEMBER 2017

Table of Contents

Table of Figures

List of Tables

1. Introduction

- This is the Third report to the Monitoring Committee about the results of the Environmental Surveying and Monitoring Programme that is being carried out to assess the effects of the implementation of the Wild Atlantic Way Operational Programme 2015 – 2019.

- From the outset, Fáilte Ireland has been aware of concerns that the Wild Atlantic Way could increase pressures on these sensitive areas. A Strategic Environmental Assessment and the Appropriate Assessment [of the ecological effects] informed the design and development of the Operational project – from the outset.

- The result was that Wild Atlantic Way Operational Programme aimed, in its conception, to avoid and minimise impacts on the natural environment and to raise awareness and engender protection of the wealth of natural assets along the Atlantic coast. As a result of this process Fáilte Ireland are committed to continuous monitoring of the environmental effects of the Wild Atlantic Way.

Reporting to Monitoring Group

Fáilte Ireland is committed to presenting the results of Wild Atlantic Way monitoring activities to a Monitoring Group twice each year.

- The objective of the Monitoring Groups is to ensure that that robust systems are in place, in appropriate existing authorities, to ensure that all key commitments made at the programme level will be delivered effectively (including at the appropriate time), and to ensure that no adverse effects on the integrity of the environment.

- The 6th meeting will be a chance to review the results gathered from the third year of monitoring. This will allow the identification of areas where the 2017 monitoring highlights any pressures to the environment.

- This information can then be used by relevant members of the Working Group to identify protective, remedial or improvement actions within their own areas of responsibility during the following year.

- The second meeting, in Q1 of the following year and in advance of the tourist season commencing, will be to approve the proposed next annual monitoring programme. The purpose of the meeting will be to ensure that monitoring is addressing areas of concern using methods and personnel that are appropriate. A secondary purpose would be to review progress made in addressing concerns raised by previous monitoring – in order to amend monitoring accordingly.

An annual summary of the results of monitoring will be publicly available on the Fáilte Ireland website.

Background

The Wild Atlantic Way is a branding exercise that unifies a series of existing and long-established touring routes along existing roads, viewing points and lay-bys. These predominantly seasonal activities have evolved over many years and now co-exist with a wide range of other year-round uses including farming, forestry and uses associated with settlement.

Tourism and its promotion are long-established activities in Ireland. The first promotion of Irish tourism is generally credited to Thomas Browne, 4th Viscount Kenmare who began to promote Killarney and its environs in the 1750's. By the beginning of the 20th century, tourism was being actively branded and promoted on a national scale, initially by the Irish Tourism Association and subsequently by Bord Fáilte since 1955 who have continually and consistently promoted Ireland as a tourist destination both as a country and as specific local/iconic destinations.

Touring guides to Ireland date to the late 18th century and large-scale touring in Ireland dates back to the latter part of the 19th century. At that time railways and associated large hotels offered access to areas, such as the West of Ireland, that had hitherto been remote and inaccessible. Indeed, one major part of the Wild Atlantic Way (between Killarney and Glengarriff) has been in existence since the 1860's when it was known as The Prince of Wales Route.

Thus, it is important to understand that all Wild Atlantic Way routes are existing touring routes, on existing and long established public roads that have been subject to long-established promotion activities. The routes, their promotion and the intensity of their use are not new. It is acknowledged, however, that the Wild Atlantic Way itself constitutes a concerted promotional effort with the intention of sustainably growing revenue from tourism within the Atlantic coastal counties of Ireland.

Environmental Surveying and Monitoring Programme

To address the issue of ensuring that sustainably growing revenue from tourism within the Atlantic coastal counties of Ireland, without compromising the receiving environment, a surveying, monitoring and reporting strategy has been commenced to identify and assess environmental impacts of visitors at sites along the Wild Atlantic Way.

The monitoring includes:

- the compilation of relevant regional data that is collected by other agencies as well as site specific data collected on behalf of Fáilte Ireland.
- Future monitoring will expand to include other candidate Discovery points prioritised in order of sensitivity and significance as directed by a Monitoring Group.
- Part of this work involves the development of generic monitoring methodologies and templates that may be used across a range of sites and conditions.

The principle concern is the capacity of the receiving environment, giving particular regard to European Sites, to sustainably absorb the impacts of the activities of existing visitors, and new.

- The monitoring examines types, spatial patterns and intensity of existing visitor activities at and adjacent to discovery points;
- This in turn directs ecologists to areas that receive maximum, moderate, minimum and no loading.

Monitoring work is intended to describe the existing conditions of sites with a view to:

- contributing to Visitor Management Strategies;
- contributing to future editions of Fáilte Ireland's Wild Atlantic Way Operational Programmes and Guidelines.;
- identifying medial action/works required;
- assessing the capacity for future loadings;
- integrating site management with future European Site Management Plans.

The Environmental Surveying and Monitoring Strategy is based on a pilot ex-post survey that has provided benchmarks for the effectiveness of survey methods and facilitated the preparation and presentation of evidence about the likely effects of tourism on the receiving environment with increased level of reliability. This pilot survey was undertaken as part of the Burren and Cliffs of Moher Geopark LIFE Project[1].

The Environmental Survey and Monitoring Strategy is intended to produce data relating to:

- movement patterns of visitors at sites along the route;
- variations in visitor/traffic numbers;
- water quality effects at tourism settlements along the route;
- increases in tourism related planning applications;
- patterns of visitor activity, movement and behavior at candidate Discovery Points and control sites;
- an indication of types of impacting activities at candidate Discovery Points and control sites;
- an indication of extent of ecological effect zones at candidate Discovery Points and control sites; and the need and type of mitigation responses.

[1] The Burren and Cliffs of Moher Geopark Co. Clare have been designated as one the European Geoparks Network for its unique glacio-karst landscape. It is recognised by UNESCO and is involved in the EU Life Project. Demonstration sites within the Geopark have been chosen as part of the EU Life Project requirements. These sites differ in size and represent a range of environments. The Burren and Cliffs of Moher Geopark is one of a number of locations worldwide the form part of the Global Network of National Geoparks.

- The results aim to identify the extent and significance of effects from both typical circumstances and those that give rise to increased effects.

- This evidence can then be used as a guide for designers, decision-makers and the general public at times when the likely effects of proposed tourism activities are being evaluated

The collection of a combination of:

- macro data,
- observational and ecological evidence

This provides the basis for the definition of monitoring for site-specific vulnerabilities as well as site specific indicators in addition to the indicators used among all sites.

The former can be used to guide specific project and management interventions, while the latter can be used to report on the sustainability of emerging use patterns on a larger over a longer time.

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

Annual Method Review/Comparison

- During 2017 Observation survey, monitoring was carried out predominantly by two surveyors, with the survey team being adjusted to three people depending on the site. Compared to 2016 which saw a three-person team carry out the surveys at each site and 2015 which saw a two-person survey team
- Large sites were monitored more efficiently as a result of the addition of the extra surveyor
- During the 2015 surveys, visitor numbers and activities were recorded during the pre-planning day, resulting in two days of survey information being gathered
- The 2016 and 2017 surveys were completed with a full day of pre-planning, with visitor numbers not being recorded, and a full day of surveying
- Having a three-person survey team allowed sites be surveyed within the recommended 8-10-hour period
- Comparatively there are less numbers of visitors observed in 2016 and 2017 than 2015 due to the recording of visitor information during the pre-planning surveys in 2015, along with the selection of smaller discovery points, which receive less visitors overall
- The methods are designed to be standalone site-specific assessments and therefore the recording of visitor numbers during the preplanning visits in 2015 is not seen to have significant impacts on the monitoring program.
- All of the Signature Discovery Sites in 2015 were selected to be monitored as these were the flagship sites for the Wild Atlantic Way (WAW) brand and were expected to receive the largest visitor numbers per year
- A long list of all discovery points along the WAW was considered for the 2016 and 2017 monitoring
- The sites monitored in 2015 were spatially constrained, which resulted in tourist impacts being condensed within a defined area
- It was determined that a focus on sites which had potential for disperse impacts was required
- Visitor interactions on Beaches were expected to be disperse in nature and therefore a short list of beach sites was prepared
- Following further discussions with the WAW Monitoring Group it was proposed to also include Island Sites which would also fit the criteria of disperse impact potential
- The 2017 Monitoring selection was focused on avian species being used as an indicator species for ecological integrity. Attention was placed on Estuarine Sites which have complex ecological processes present as well as sites within or adjacent to SPAs.

The distribution of all sites monitored to date can be seen in Figure 1.1 and 1.2 below.

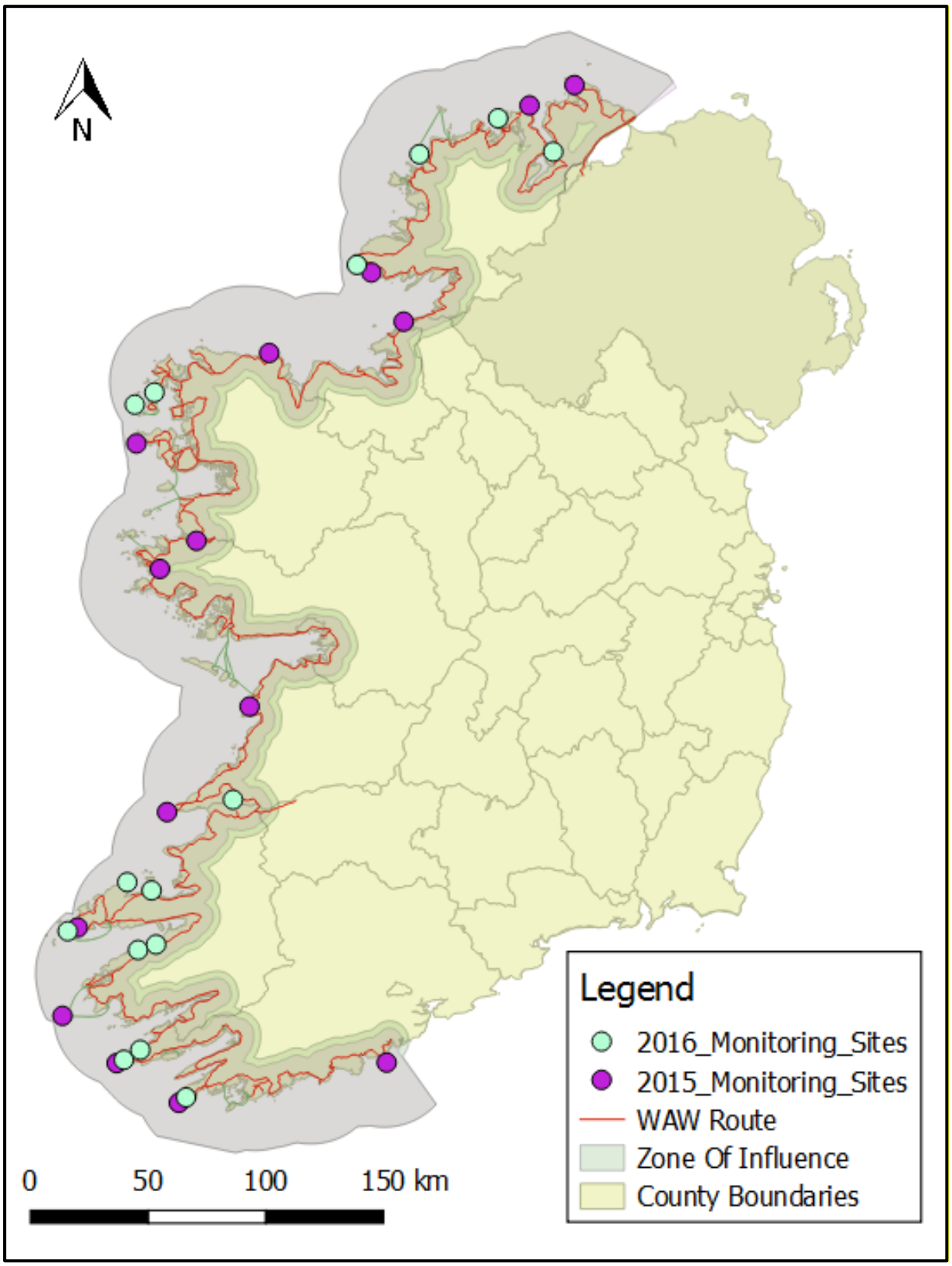

Figure 1.1 Wild Atlantic Way sites selected for monitoring in 2015 and 2016

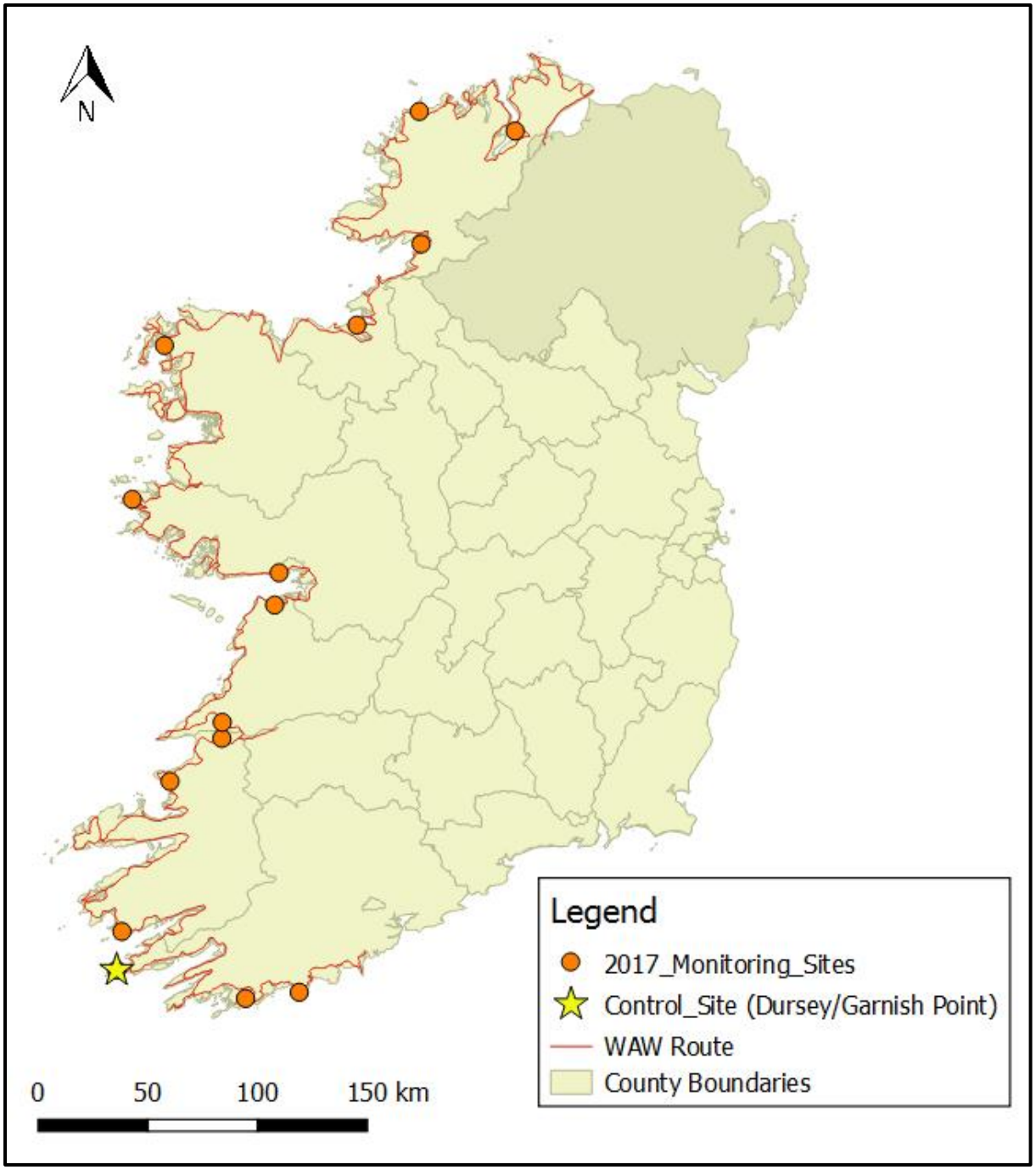

Figure 1.2 Wild Atlantic Way Sites selected for monitoring in 2017

Objectives for surveying and monitoring impacts of visitor at sites

The Environmental Survey and Monitoring Strategy encompass three levels of monitoring:

1. Macro monitoring of regional and/or county visitor numbers and associated level effects caused by the visitor contributions to loadings on transportation, waste and water infrastructure.

2. Site Surveys of visitor behaviour to describe general activities and associated environmental effects (including wear and tear of wildlife habitats, vegetation, monuments and site features.)

3. Site Surveys to describe the specific effects on the ecology of areas that were observed to have been used/trafficked by visitors and adjacent control areas.

The objectives of the Surveying and Monitoring Strategy are:

1. To establish

    - Visitor behaviour at sites (both tourist and local)
    - Environmental conditions (sensitivities or specific site issues)
    - Causes of pressures (effects, threats and trends)

2. To Understand

    - Nature and extent of behaviours and associated effects
    - Contribution of visitor behaviour to environmental effects
    - Causes of visitor behaviour causing adverse environmental effects

3. To Inform

    - Predictions about likely effects of future behaviour (at new or intensified sites)
    - Design and management measures to avoid adverse effects

4. To measure movement patterns

    - Vehicle types, numbers, age of visitors
    - Parking, arrival, departure
    - Times

5. To establish the extent of visitor movement at specific sites

    - the distances, routes and locations, movements (zones travelled from/to sensitivities and initial landing point)
    - the numbers, frequency and duration of activities

6. To establish the nature of the visitor behaviour at sites

    - Walking, climbing interacting with site features
    - Sitting, picnicking, playing
    - Filming, photography, drawing, writing etc.

7. To evaluate

    - Activities observed to most impact the resources
    - Visitor types observed to most impact the resources

The methodology is replicable and will assist in establishing trends over time and across programmes. The information collected can be assessed to identify and isolate what can:

- most efficiently be measured in future monitoring programmes;
- provide the most reliable indicators to be used for future monitoring;
- provide the most effective methodologies to be used for observation; and
- identify site-specific dynamics and pathways to guide the development of mitigation responses if required.

The evidence collected from observing visitor behaviour has been used to direct monitoring ecologists to areas known to receive maximum, moderate, minimum and no loading. The ecologists surveyed these and control areas, having particular regard to the specific conservation objectives of relevant European Sites.

The combination of observation and quantitative evidence has been used to report on programme outcomes and advise on the present impacts arising from visitor behaviour onsite and assist in developing mitigation or remedial measures as directed by a Monitoring Group.

Outline of Summary Reporting

This summary will provide the following information

Summary Report on Strand One Monitoring - using Existing Datasets
Strand One of the monitoring concentrates on long-established, high quality, official baselines that measure inter alia the seasonal variances in environmental loading caused by visitors - such as water quality, road traffic, Blue Flag Beach conditions and Green Coast Awards.

Summary Report on Strand Two Monitoring - Visitor Observation Survey
Strand Two of the monitoring concentrates on the examination of patterns of visitor behaviour at sites along the Wild Atlantic Way. The aim of the Visitor Observation Survey is to collect evidence of stay duration, activities undertaken, location and direction of excursions from vehicles.

Summary Report on Strand Three Monitoring - Ecological Survey
Strand Three of the monitoring concentrates on the collection of ecological evidence, the evidence collected identifies core and secondary movement areas trafficked by users. This informs and guides the collection of ecological evidence. The zones identified during the Visitor Observation Survey provides evidence about where to examine evidence for the location, number, shape and extent of detailed ecological surveys to provide quantitative evidence of effects that can be compared to unaffected similar 'control' sites elsewhere.

2. Summary Report on Strand 1- Macro Monitoring using Existing Dataset

Figure 2.1 Macro Monitoring Locations

Background

Strand One of the monitoring strategy concentrates at nine long-established, high quality, official baselines at seven locations. These measures *inter alia* the seasonal variances in environmental loading caused by visitors - such as water quality, road traffic, Blue Flag Beach conditions and Green Coast Awards.

The use of existing, robust datasets will be annually assessed to identify any emerging trends and changes in a small number of key diagnostic environmental performance indicators. These macro-indicators provide a very high level of coordination for the cumulative impact assessment of other activities. Strategic Environmental Assessment of these plans and policies – at county, regional and sectoral levels utilise the same indicators. This also facilities the isolation of the contribution of tourism though in-combination effects.

The monitoring focuses on intra-urban settlements between gateway towns along the Wild Atlantic Way. Gateways such as Cork and Galway that capture the infiltration of visitors. These also supply the high-level 'input' data for the monitoring before they become dissipated among many smaller destinations and intra-urban settlements. The purpose of macro monitoring is to identify the state of the environment between the gateway settlements because these intra-urban settlements, such as Bundoran in Co. Donegal, often accommodate and entertain the bulk of overnight visitors. There are 7 monitoring sites and 4 control sites selected to for the purpose of the macro monitoring. Each site is located in the counties situated along the Wild Atlantic Way, the 7 sites are;

- Dungloe,
- Bundoran,
- Newport,
- Galway Bay,
- Kilrush,
- Bantry and
- Cahersiveen.

The 4 control points are;

- Ballybofey,
- Gort,
- Castleisland and
- Lahinch.

This strategy facilitates the direct identification and assessment, at a high level, of the effects that visitor numbers have on key environmental indicators. These use long-established baselines (from agencies such as the National Roads Authority, Environmental Protection Agency, Department of Environment, Community and Local Government, Department of Arts, Heritage and the Gaeltacht, etc.).

Conclusions and Recommendations

The macro monitoring element of the *Environmental Surveying and Monitoring for the Wild Atlantic Way Operational Programme*, as discussed in this document concentrates on long-established, high quality, official baselines. These official baselines were adopted for this monitoring survey in order to represent a number of key performance indicators, the intended use of which being to identify trends and changes in the state of the environment along the Wild Atlantic Way.

The key performance indicators, as described in detailed in Table 1.1 of this document, were applied to six monitoring points and a further four control sites inland from the route in order to provide an insight into the state of the environment along the Wild Atlantic Way during the year 2015. The results of these macro monitoring activities will be collated and presented to a Monitoring Group along with results of all other Wild Atlantic Way monitoring activities.

The Strategy for Environmental Surveying and Monitoring is an evolving tool that will be informed and updated by emerging findings. Presentation of all monitoring results should thus be presented to the Monitoring Group once a year hereafter. This information can be used by relevant members of the Monitoring Group to identify protective, remedial or improvement actions within their own areas of responsibility during the following year. An annual summary of the results of monitoring will be published on the Fáilte Ireland website at the end of each monitoring year.

Site	Indicator 1	Indicator 2	Indicator 3	Indicator 4	Indicator 5	Indicator 6	Indicator 7	Indicator 8	Indicator 9
Dungloe	Non-Complaint	Increase in 24- hour traffic across all sites during weekends and summer months	N	N	Database exceeding 4 million records which is a Notable rise in data sets from 2014-2016	Overall Finding: Irelands Environment is in a generally good condition	Status of Protected Habitats Good - 5 Poor - 27 Bad - 25 Status of Protected Species Good -31 Poor-11 Bad -5		Results show that every development in the six counties that was refused planning permission in 2016 as a result of tourism related reasons were all located along the Wild Atlantic Way route.
Bundoran	Non-Complaint		Y	N					
Newport	Non-Complaint		N	N					
Galway Bay	Compliant		N	N					
Kilrush	N/A		N	N					
Cahersiveen	Compliant		N	N					
Bantry	Compliant		N	N					
Ballybofey	Compliant		N/A	N					
Gort	Non-Compliant		N/A	N					
Castleisland	N/A		N	N					
Lahinch	N/A		Y	N					

3. Summary Report on Strand Two Monitoring - Visitor Observation Survey

Strand Two of the monitoring concentrates on the examination of patterns of visitor behaviour at sites along the Wild Atlantic Way. Below is a summary of results collected, details are fully presented in the Visitor Observation Report. The aim of the Visitor Observation Survey was to collect evidence of stay duration, activities undertaken, location and direction of excursions from vehicles.

The Environmental Surveying and Monitoring was carried out as part of Fáilte Ireland's commitments in the Wild Atlantic Way Operational Programme 2015-2019.

Effective methods for visitor observation have been designed and tested using Pilot Visitor Observation Studies at the Burren and Cliffs of Moher Geopark in Co. Clare. The studies were carried out at full spectrum of types of circumstances that range from small spatially-concentrated areas to large diffuse sites. The study sites had a range of existing management regimes that range from those that are complex and highly structured, private enterprises to the simpler smaller sites.

The method is designed to have a simple, replicable template that allows easy identification patterns of visitor activity, movement and behaviour using a standardised visitor observation and tracking methodology for a range of site types. The collation of the data including the tracking of onsite movement by visitors result in the identification of core and secondary movement zones. The Discovery Points and Control Sites represent the following habitats/landscape types:

1. Rocky shores
2. Soft shores/beaches/dunes
3. Montane/upland/peat
4. Marine areas (sea, estuaries, salt marsh)
5. Improved Grasslands (farm land)

The third round of monitoring focuses on 15 sites with avian species being used as an indicator species for ecological integrity. Attention was placed on Estuarine Sites which have complex ecological processes present as well as sites within or adjacent to SPAs.

A list of general activities and effects was developed to assist in the categorisation of visitor behaviour While these are generic to all sites, the list is non-exhaustive and was expanded depending on the individual site or emerging trends. Activities and effects were categorised depending on their severity to guide accurate reporting in an effective, efficient and easily replicated manner (See Table 0.1 and Table 0.2).

Effects	
Low Impact	No impact or a discernible impact i.e. no significant, lasting damage is identified
Medium Impact	A short term, reversible effect that is intermittent but will have no significant, long term impact
High/Severe Impact	Severe effect that has potential to have a significant, long-term, irreversible or permanent impact

Activities	
Low Level	Activity for which the site is intended
Medium Level	Activities, often incidental, depending on site management whereby the visitor engages in behaviour that may result in an effect
High Level	Activity where visitors engage in behaviour that is likely to have an effect on the site but may not be directly linked to a high impact

Table 0.1 Description of Activity Categorisation

Effects	
Low Impact	No impact or a discernible impact i.e. no significant, lasting damage is identified
Medium Impact	A short term, reversible effect that is intermittent but will have no significant, long term impact
High/Severe Impact	Severe effect that has potential to have a significant, long-term, irreversible or permanent impact

Table 0.2 Description of Effects Categorisation

Results and Analysis for all site

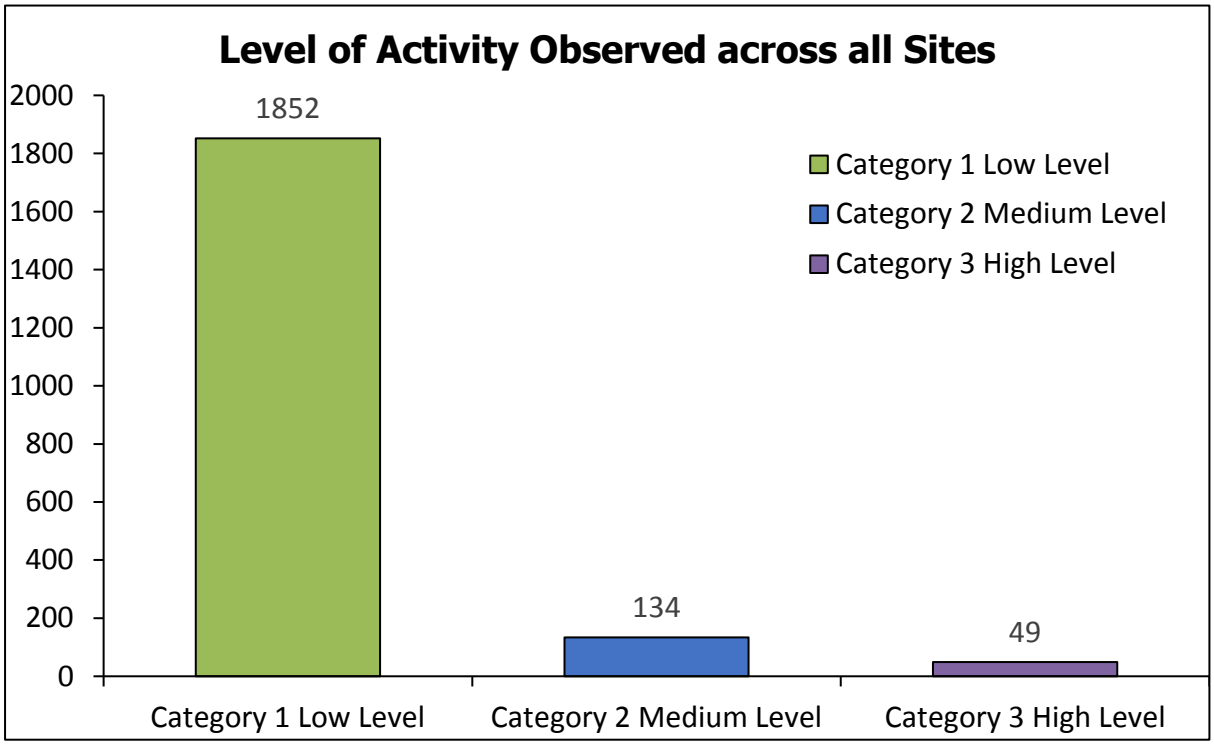

Figure 3.1 Overall level of activity recorded

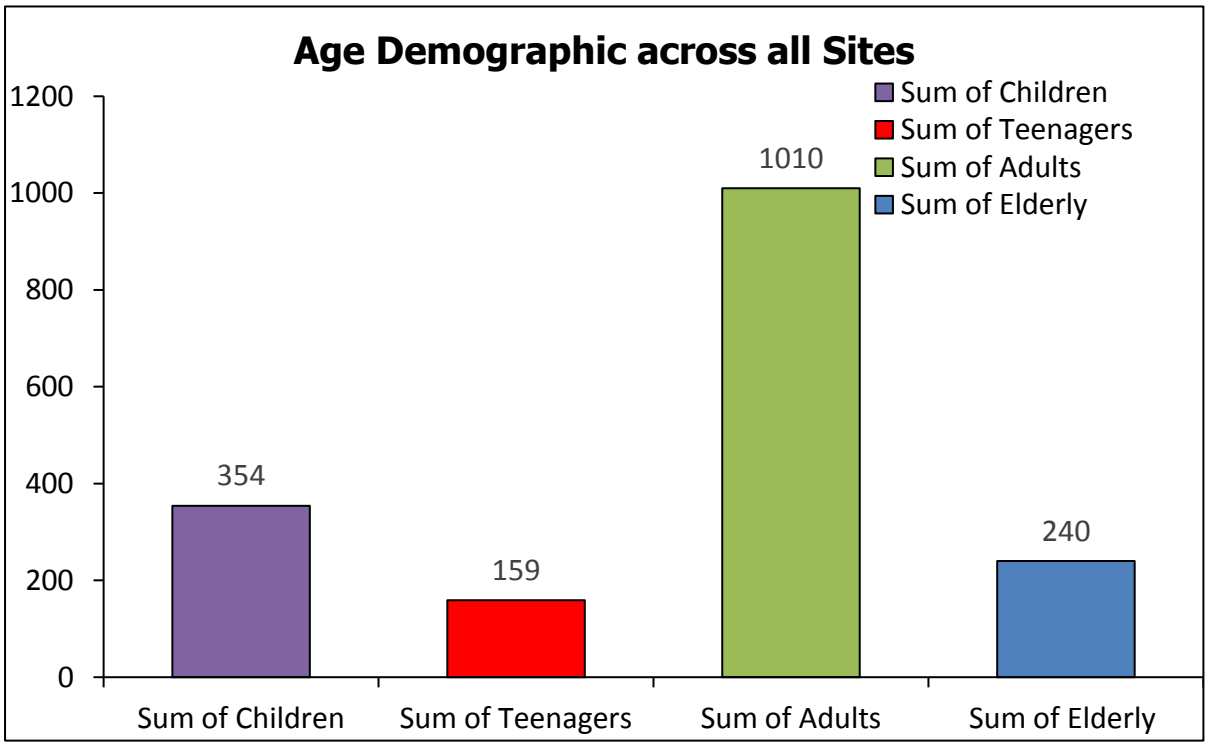

Figure 3.5 Age Demographic across all sites

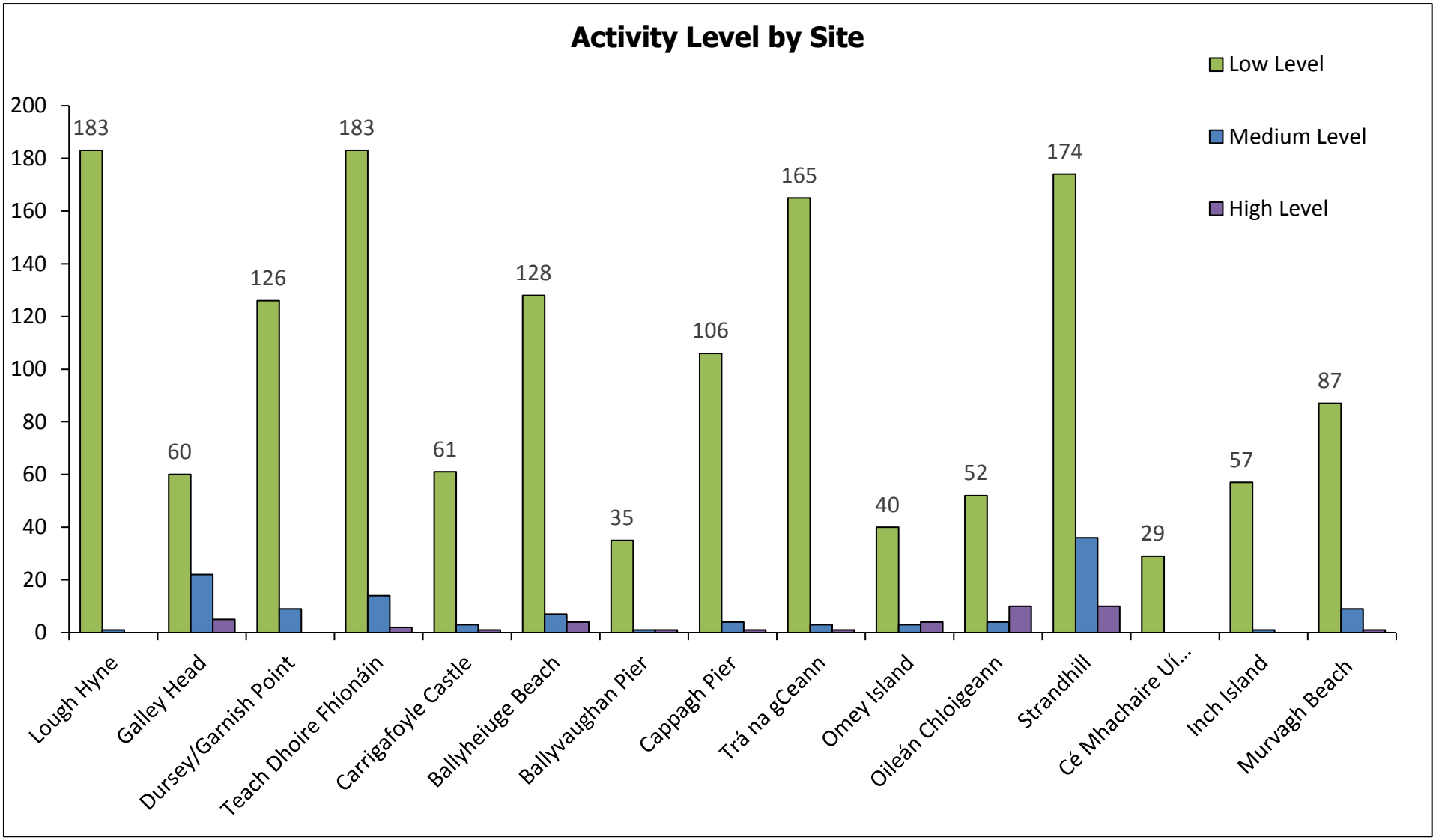

Figure 3.6 Level of Activity across all sites

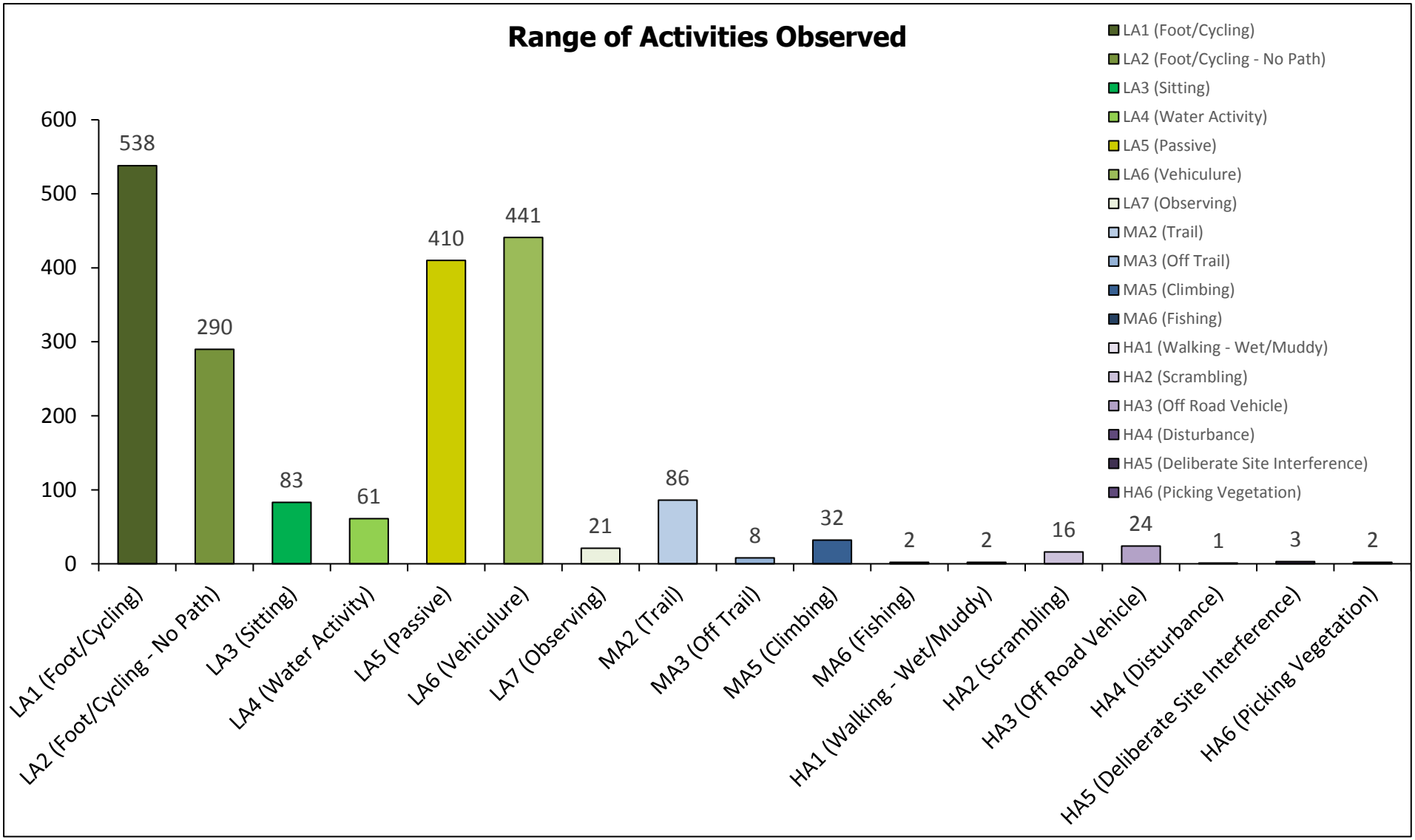

Figure 3.7 Range of activities recorded across all sites

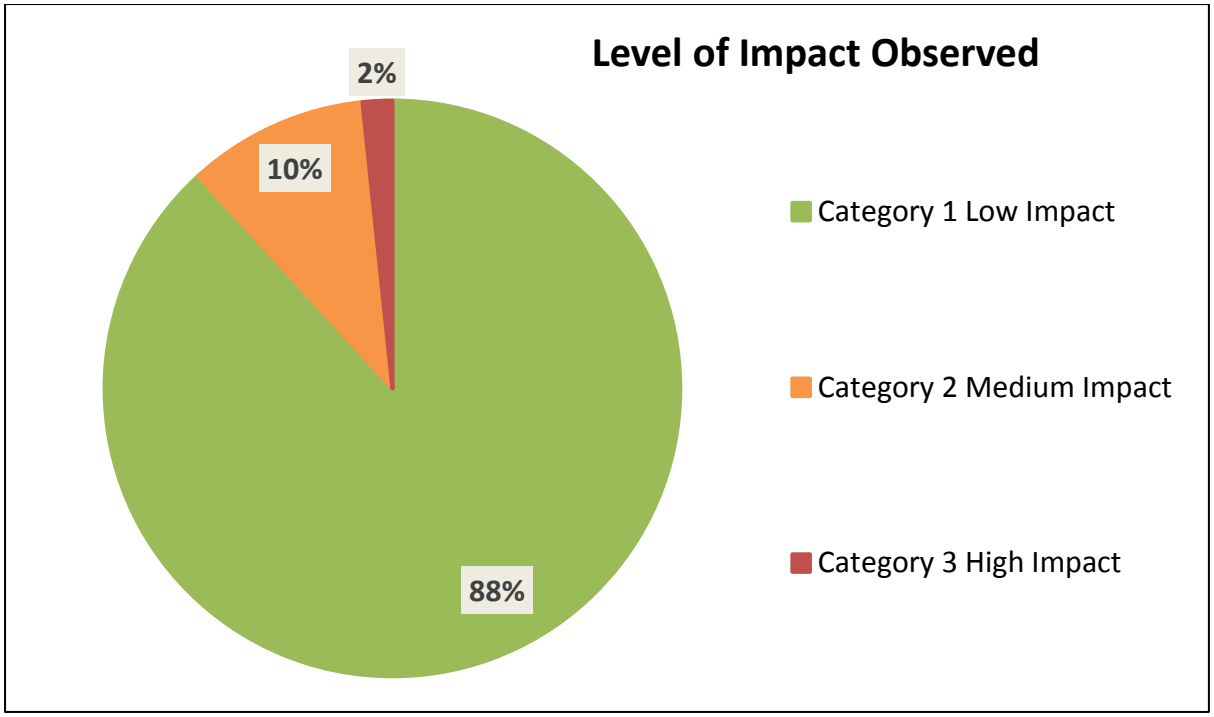

Figure 3.8 Overall level of impact recorded across all sites

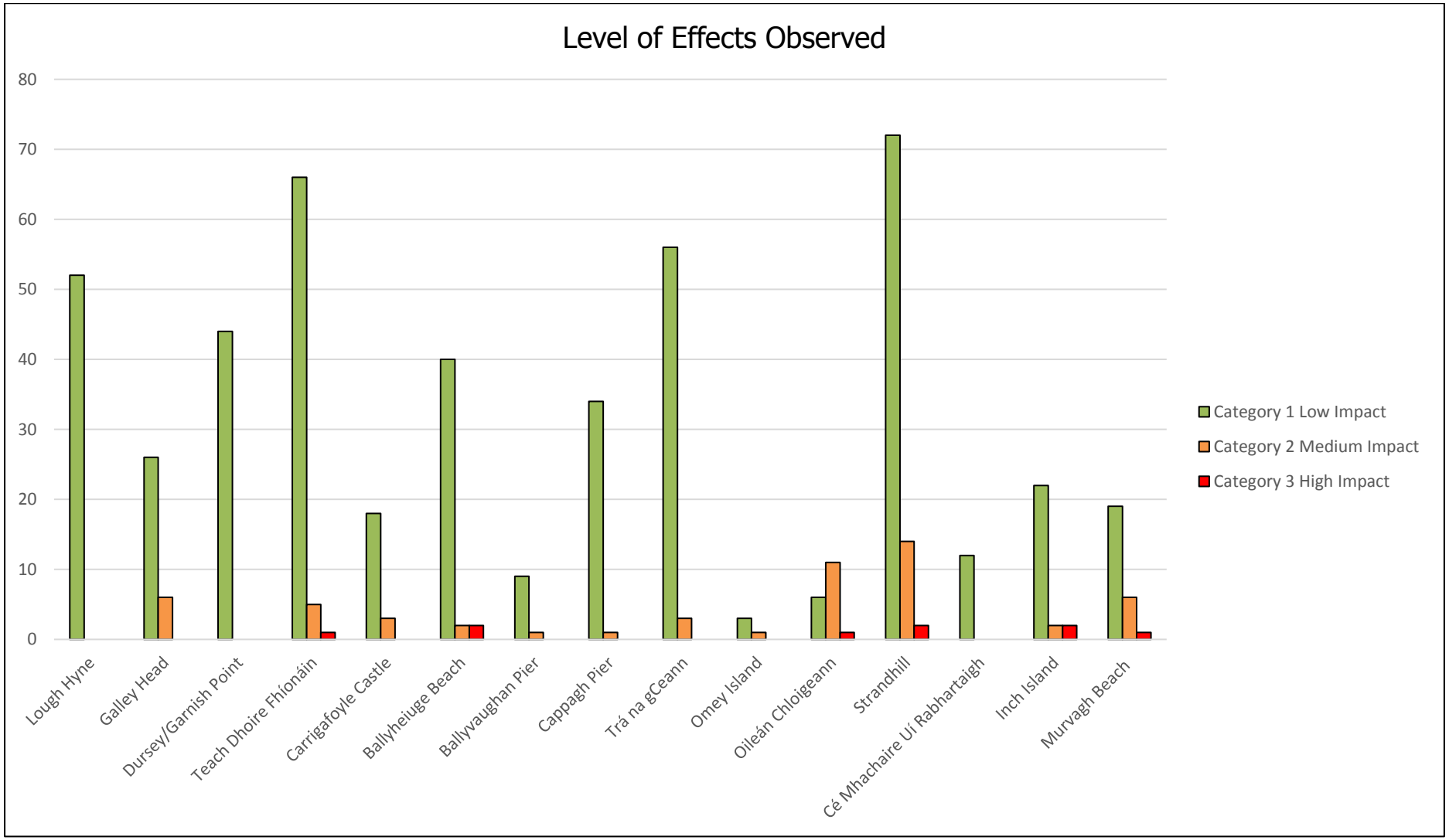

Figure 3.9 Level of Activity across all sites

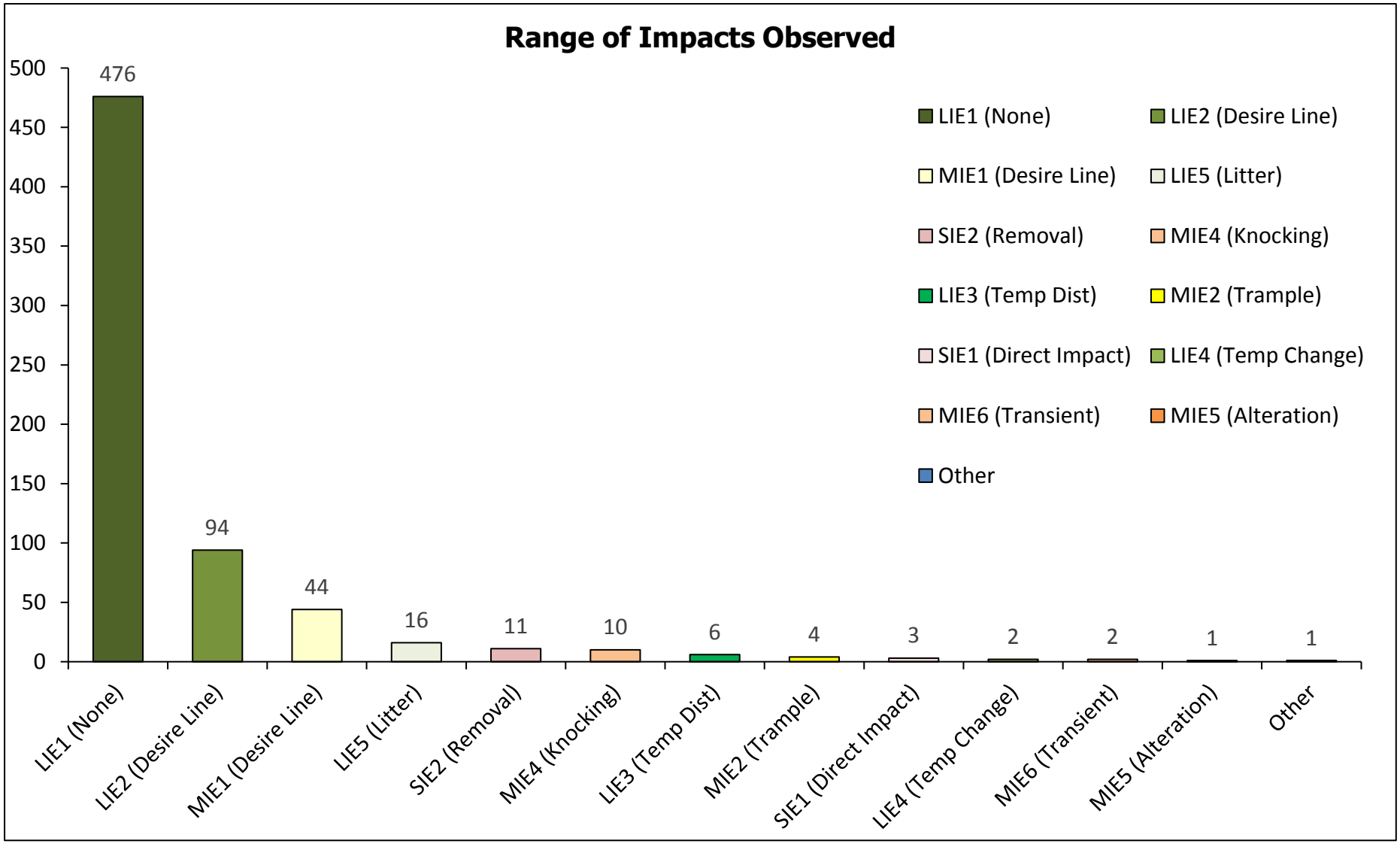

Figure 3.10 Range of Impacts Observed across all Sites

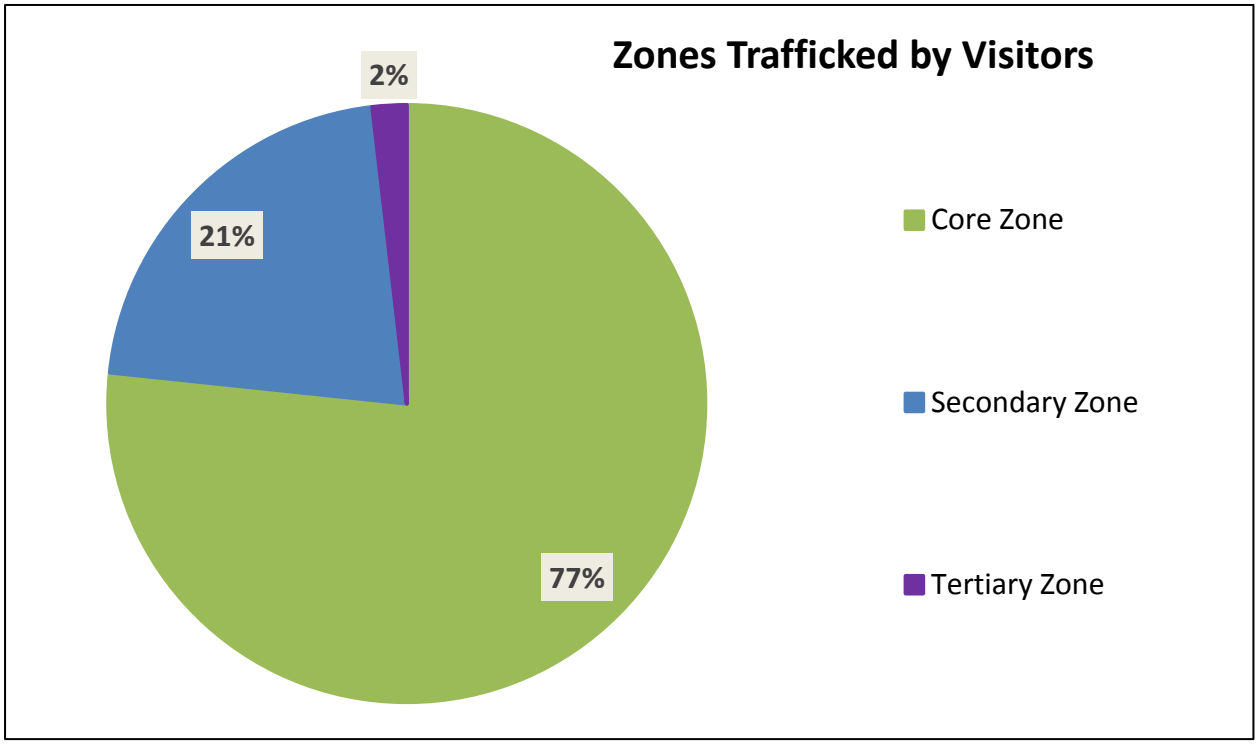

Figure 3.11 Zones trafficked by visitors across all sites

Core Zone	**Existing car parks, paved areas, viewing platforms, marked pathways, trails, tracks and managed grassland and areas where pathways, trails or roads exist. The majority of visitors remain in these zones.**
Secondary Zone	Areas outside of existing car park, paved areas, marked pathways, trails, tracks and managed grassland. Visitors are likely to traffic areas of grassland (in some cases farmland grazed by sheep or cattle), heath or bare rock, usually to get a better view of site attractions or to access trails at the site.
Tertiary Zone	Areas where no car park, paved areas, marked pathways, trails, tracks and managed grassland are identifiable and beyond the immediate boundaries of the site.

Analysis of Results for all Sites

Site Analysis

Of the 1763 visitors observed during the 2017 survey:

- 87% were reported to have a low impact on sites,
- 3% were reported to have a medium impact on sites, however these effects were not thought to have any significant lasting impacts on the sites,
- 10% of visitors were recorded to have a high impact, (Oileán Chloigeann) analysis of this figure showed that a very low number of visitors took part in activities to cause any lasting significant effects to the sites.
- Visitors spent most time at sites with trails or looped walks, beaches, or areas where recreational activities were available: Garnish Point/Dursey Island (Control Point) (1 hr 30 mins), Derrynane House (1 hr 02 mins), Claggan Island (1 hr 04 mins), Inch Island (2hrs 26 mins).

Table 3.7 Summary of Results from Each site

Discovery Point	**County**	Activities/Impacts
Galley Head	Cork	• 60% of visitors to Galley Head had no identifiable effect on the Site. • 46% of visitors left the core zone to get to better viewing points. • Overall (81%) Visitors did not engage in any activities that would have adverse effects on the environment.
Lough Hyne	Cork	• 86% of visitors had no identifiable effect to the site • Evidence of dumping was visible on arrival to the site • 73% of visitors stayed within core zones • 27% used secondary zones (triathlon training)
Dursey Island/Garnish Point	Cork	• 92% of visitors had no identifiable effect to the site • 59% of visitors stayed within the core area of the carpark and marked trails • 5% where observed to make their way off the marked trails (photographing and sightseeing)
Teach Dhoire Fhíonáin	Kerry	• 52% of people had no identifiable effect on the site • desire lines visible in the dunes as a result of horse-riding • 6% trafficked the secondary zone (throwing stones/bricks)
Ballyheigue Beach	Kerry	• 86% had no identifiable effect on the site • 96% of visitors stayed within the core areas of the car park and beach • 4% of visitors used the dunes as an access point for the beach
Carrigafoyle Castle	Kerry	• 76% of visitors had no identifiable effect on the site • 60% visitors stayed within core zones • castle ruin was closed due to nesting swallow on day of observation • 11% trafficked the secondary zones • 29% trafficked the tertiary zones (photographs) • overall visitors had a low impact on the site

Cappagh Pier	Clare	• 91% of visitors had no identifiable effect to the site • 80% of all visitors stayed within core zones • 20% left core zones to go on boat tours • Overall no activities observed would have a lasting effect to the site
Ballyvaughan Pier	Clare	• 90% of visitors had no identifiable effect on the site • 86% of visitors stayed within the core zones • 14% entered the water from the pier • Overall visitors had no discernible effects on the site
Trá na gCeann	Galway	• 90% of visitors had no identifiable effect on the site • Ecological Assessment recorded overgrazing having a medium impact to the site • 76% of visitors stayed within the core zone • 24% trafficked the secondary zones
Omey Island	Galway	• 75% had a low impact on the site • 25% had a medium level of impact on the site • 91% of visitors stayed within the marked boundaries • 9% trafficked across bare rock and down to the cliff edge
Oileán Chloigeann	Mayo	• highest level of impact with 41% of visitors having a medium level effect • 37% having a high impact. • caused as a result of visitors (56%) using the dunes as a means of accessing the beach, resulting in visible desire lines throughout.
Strandhill	Mayo	• 41% of visitors had a medium effect to the site • 37% had a high impact • 56% of visitors used the dunes as an access point to the beach • 68% stayed within the boundaries • overall visitors had an effect to the site resulting from desire lines and erosion
Murvagh Beach	Donegal	• 42% had no identifiable effect to the site • 65% stayed on marked trials and pathways • Overall no visitor activities resulted in any long-term damage
Cé Mhachaire Uí Rabhartaigh	Donegal	• No identifiable effects recorded at this site
Inch Island	Donegal	• 100% of visitors had no identifiable effect to the site

Conclusions

- A total of **1763** visitor were observed across fifteen discovery points. The majority of visitors to these sites where aware of the importance to respect the natural environment.
- Of the **1763** visitors observed during the survey **88%** were reported to have a low impact on the sites, **10%** were reported to have a medium impact, these effects however were not thought to have a significant or lasting effect on the sites. **2%** of all visitors where recorded to have a high impact, this however was a very small number of people and their activities did not have a lasting impact on the sites.
- A direct link between sites with physical landmarks and the likelihood of environmental effects arising has been established upon analysing the results. It was also evident that the longer visitors spent on site the likelihood of effects increased.
- The average duration recorded was 00:49:00, this resulting from the high number of large disperse sites being observed. Visitors who remained at a site for longer than 30 minutes were recorded at these larger sites.

Recommendations

Site management is recommended where visitors spend more than 15/20 minutes at one site. When considering the level of management warranted at a site a number of factors should be taken into account:

- Site size and dispersal;
- Level of activity recorded;
- Average duration of time spent at site.

All sites should be evaluated and developed to ensure the correct facilities are out in place to deal with the level of footfall each site receives. If sites are left without any intervention, effects that are currently not causing significant impacts, may in the long-term cause effects to worsen.

- At sites with little or no signage, it is suggested to erect new signage at access points and Car Parks to make visitors aware of the sensitivities associated with the site (Galley Head, Cé Mhachaire Uí Rabhartaigh)
- Sites where visitors frequently take part in recreational activities could be facilitated by a warden during months in which sites have the highest visitor numbers to ensure activities don't have any adverse effects to the site (Lough Hyne)
- Information notices at sites with dune systems should be erected to inform visitors of the highly sensitive nature of the dune systems and to be aware of sticking to marked trails and paths (Ballyheuige Beach, Strandhill, Cé Mhachaire Uí Rabhartaigh)

Yearly Trends

- Over the last three years of Observational Surveying carried out along the Wild Atlantic Way, evidence has shown that the smaller less disperse sites receive less visitor movement which in turn results in fewer impacts.
- The 2017 survey recorded the smallest number of visitors and in turn recorded the least number of effects to the 15 chosen sites.
- Statistical analysis shows that there is no significant difference in impact levels year on year (χ^2 = 6.00; p = 0.199). Thus, the overall impact levels identified each year are similar in nature.

4. Summary Report on Strand Three Monitoring - Ecological Survey

CAAS Ltd. were commissioned by Fáilte Ireland to undertake detailed ecological baseline surveys at fifteen Discovery Points on the Wild Atlantic Way.

The aim of the ecological survey was too:

- 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 should prove useful as a baseline for any future ecological monitoring at the sites.

An assessment of ornithological interest at selected sites along the Wild Atlantic Way was carried out in July and August 2017. This detailed assessment forms an appendix to the ecological report.

Study aims

The main aims of the ecological study included:

- Describe the existing ecological characteristics of areas at and in proximity to Signature Discover Points;
- 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 signature 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 signature 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 areas designated for nature conservation (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 4.1 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/Garnish Point	EP16	Cork	450743	541914
Teach Dhoire Fhíonáin	135a	Cork	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
Omey 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 4.1: Signature Discovery Points along the Wild Atlantic Way surveyed during 2017

Methods

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. Dursey Sound (formerly referred to as Garnish Point) was revisited in 2017 after similar visitor impact surveys were undertaken in 2015 and 2016.

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 ecological surveys.

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).

Field survey methods

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 measureable 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, substrate stability, cover and height values for different plant groups etc.).

Photographic record 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).

1.1.1 Habitat condition assessment

An assessment of habitat condition was undertaken for each quadrat using a five point scale from good too bad as outlined in Table 4.. 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 4.2 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

1.1.2 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 Parnell & Curtis (2012) 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.

1.1.3 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.

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 are 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.

Summary results of the survey in relation to each Discovery Point are presented in Table 4.3 below. Details that are presented include relevant designated sites, sensitive ecological features, impacts, and recommendations.

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 Puier
- 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 surrounding 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;
- Garnish Point;
- Teach Dhoire Fhíonáin;
- Ballyheiuge 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 at these sites was recorded to be low and the recommendation made are minor suggestions to further minimise any potential effects.

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
- Oiléan Chloigeann
- Strandhill

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 id based on the following factors:

- The highest number of visitors occur during the summer months when birds are at their summer breeding grounds;
- 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.

Potential conflicts exist at sites such as Silver Strand and Strandhill where there is an overlap between the area used by waterbirds and recreational visitors (i.e. inter-tidal beach). An assessment of potential impacts on breeding waders 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.
- 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 if Improve interpretation facilities informing visitors of the sensitivity of the area and appropriate behaviour/activities;
  - Review of existing management facilities and access routes. Create surfaces 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 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;
  - Reinforce unstable ecological feature 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.

- 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.

For detailed analysis and recommendations refer to detailed Ecological Monitoring Report.

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

Table 4.4 Summary of Visitor Impacts and Ecological Impacts; taking note of habitat features and ornithological interests

Discovery Point	Visitor Impacts	Ecological Impacts	Recommendations
Galley Head	Low-High Impacts	Trampling of clifftop vegetation	Consideration of visitor management Signage in respect of nesting birds Further ecological monitoring in event of increased visitor numbers
Lough Hyne	Low-Medium Impacts	None at current levels of site activity	Temporary facilities at peak tourist season to minimize water quality impacts Growth in visitor numbers would require a review of current parking facilities
Garnish Point	Low-Medium Impact	Disturbance to breeding bird species and trampling of Annex Habitats	Additional Signage regarding marked trials Temporary moving trials Fixed marking of walkways
Teach Dhoire Fhíonáin	Low-High Impact	Risk of increased disturbance to breeding birds and incidences of trampling if visitor number increase	Signage in respect of the sensitivity of the Dunes Growth in visitor numbers would require a review of current road access
Ballyheigue Beach	Low-High impact	Potential for disturbance to sand martin nests. Evidence of desire lines within the dune systems.	Signage in respect of the sensitivity of the Dunes Signage to indicate the importance of the site for wintering birds
Carrigafoyle Castle	Low-Medium Impact	Castle is closed to the public due to breeding swallows. Site has robust management practices in place.	Well managed site with limited visitor numbers No recommendations are suggested
Cappagh Pier	Low-High Impact	No effects identified	Well-Managed urban site with low ecological value No recommendations are suggested
Ballyvaughan Pier	Low-Medium impact	Overall visitors had no discernible effects on the site.	Erection of signage in regards: ○ Importance of wintering waterbirds ○ Nearby woodland walk and bird hide
Trá na gCeann	Low Impact	Trampling of dry humid acid grasslands that could be supportive habitat for designated bird species.	Signage in respect of the importance of the sensitive habitat- including details of existing threats Further monitoring required to assess cause of trampling observed in dry-humid grassland
Omey Island	Low-Medium Impact	Trampling of sensitive vegetation	Signage in respect of the sensitive habitats

			Any increase in visitor numbers would require a review of current road access Review of site management if visitor numbers increase
Oileán Chloigeann	Low-High Impact	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 from the site.	As a result of significant damage to the dunes system, suggested measures include: • Restricted access for vehicles to the beach and dunes; • Erection of more signage detailing importance of habitat • An increase in visitor numbers should require review of current road access • Further Monitoring required
Strandhill	Low-High Impact	Trampling of priority habitats. In combination effects of visitor numbers is accumulating to a direct effect.	Further Monitoring and a review of current management strategies and an assessment of management options are recommended for the site
Murvagh Beach	Low-High Impact	No discernible effects	Recommendations for the site are to consider updating signage to include information of the importance of dune habitats.
Cé Mhachaire Uí Rabhartaigh	Low-Hight Impact	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. Impacts from in-combination effect of trampling due to visitor movements.	Further Monitoring required to identify the cause of the vegetative condition
Inch Island	Low-Medium Impact	No discernible effects	No Recommendations, site is excellent example of the amenity use of ecological spaces.