National Tourism and Environmental Monitoring Programme

Keem Bay, Achill 2023

Fáilte Ireland
Turasóireacht Náisúnta
An tÚdara Eorbartha
National Tourism
Development Authority

National Tourism and Environmental Monitoring Programme

Annual Report for Keem Bay 2023

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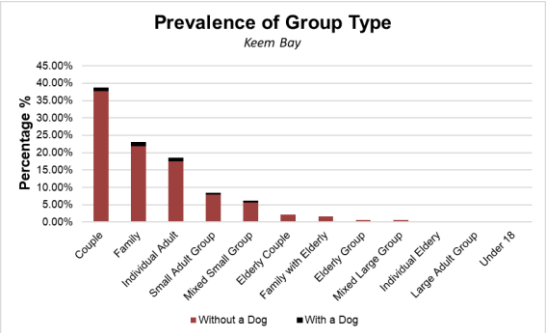
KEEM BAY – INTERESTING FINDS

Meadow Pipit (*Anthus pratensis*)
This Red-listed species is found in a variety of habitats, including the heath and grasslands found at Keem Bay, and feeds primarily on seeds and insects. Their song is short, sounding somewhat comparable to their "pipit" name.

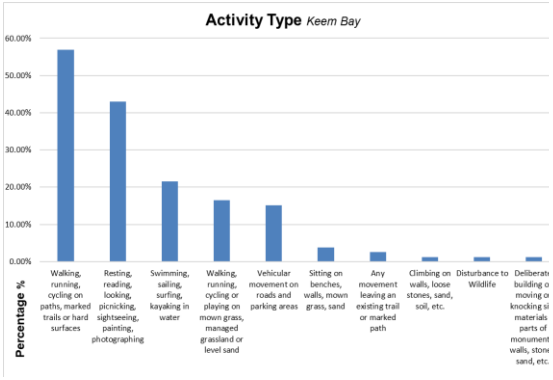
Visitors

- 241 groups visited this site during the 8-hour survey period.
- The average dwell time for the site was 43 minutes.



Visitor Interaction

- Over 90% of the activities observed were low-level activities.
- Over 20% visitor groups undertook water-based activities.



Key Recommendations

- Increased toilet facilities should be provided close to the Keem Beach.
- Improved signage regarding littering and firepits.
- Provision of a designated barbequing area.
- Employment of a site warden during peak season to manage visitors.
- Trail improvements to trails by Keem Beach car park.
- Signage and way markers to guide walkers may reduce informal paths.

1.0 INTRODUCTION

1.1 Background

Roughan & O'Donovan (ROD) Consulting Engineers was appointed by Fáilte Ireland to conduct Visitor and Environmental Surveys as part of the National Environmental Surveying & Monitoring Programme. Fáilte Ireland regularly engages with environmental research that is used to make informed management decisions and produce robust guidelines to facilitate the protection of the environment. From its inception in 2014, the Wild Atlantic Way (WAW) Operational Monitoring Programme has been conducting research into the impacts of tourism on the receiving environment. To date the surveys have been monitoring 57 sites and recorded the activities and effects of over 26,000 visitors to WAW discovery points.

Building on the success of the WAW environmental monitoring programme which ran from 2015-2019, Fáilte Ireland expanded the programme to a national level. From 2021 to 2022 the programme monitored 19 individual sites located in all of Fáilte Ireland's regional areas; The Wild Atlantic Way, Irelands Hidden Heartlands, Ireland's Ancient East, and Dublin. This 2023 National Monitoring report builds on environmental surveying and monitoring undertaken on behalf of Fáilte Ireland as far back as 2015.

Due to constraints with the timing of the ROD appointment in mid-2023 and the need to undertake the surveys before the end of peak summer season (i.e. end of August) it was decided that a reduced scope be implemented. Surveying was carried out at four of the sites, namely Bray Head (Valentia Island) in Co. Kerry, Malin Head in Co. Donegal, Dursey Island in Co. Cork and Keem Bay in Achill Island, Co. Mayo. Figure 1.1 below shows the locations of these sites.

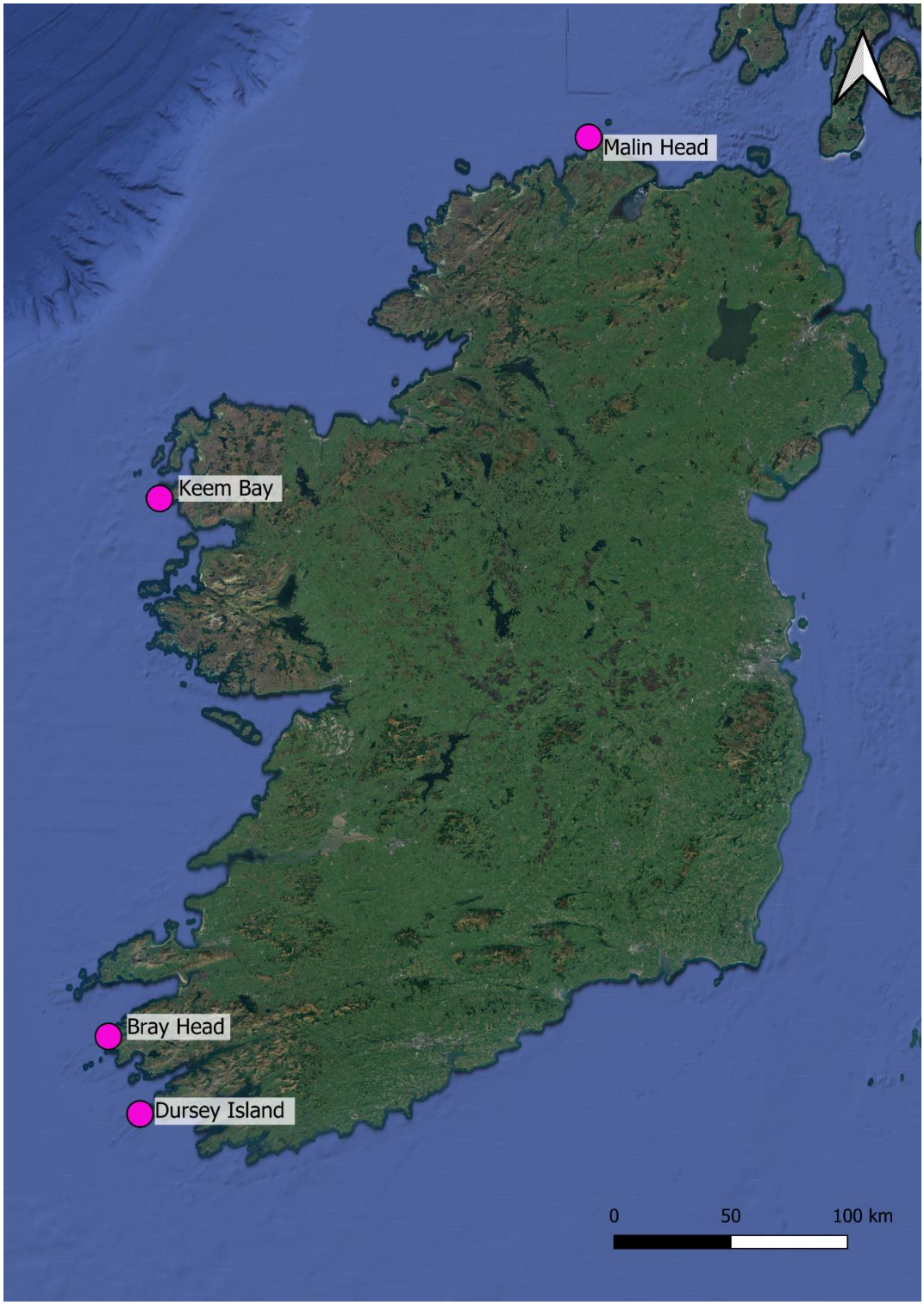


Figure 1.1 **Environmental Monitoring Programme 2023 locations. Basemap provided by Google.**

1.2 Aim of the Report

The purpose of the monitoring programme is as follows:

- To gain insight from an environmental perspective at popular tourism sites across Ireland;
- To obtain data on visitor numbers, visitor behaviour, path, and trail conditions etc. for each site;
- To obtain data relating to habitats, flora, and fauna for each site;
- To identify observable trends or variations among the sites;
- To identify favourable and unfavourable behaviour and practices at sites; and,
- To make recommendations where appropriate for site management for the benefit of the site, the visitor, and the natural environment.

The purpose of the visitor and environmental monitoring is to gather information on a select sample of visitors to Keem Bay on a typical Friday during the month of August. Subsequently answering the following questions:

- How many people visit Keem Bay?
- How long do visitors spend at Keem Bay?
- What is the demographic spread of visitors to Keem Bay?
- What modes of transport do visitors to Keem Bay use?
- What habitats are found on Keem Bay, and what condition are they in?
- What type of paths are present on Keem Bay, and what condition are they in?
- How is tourism impacting on the ecological integrity of Keem Bay?
- What can be done to reduce any impacts on the natural environment as a result of tourism?

1.3 Site Description of Keem Bay

Keem Bay is situated on the western end of Achill Island in Co. Mayo. It is accessed from the R319, which connects the area to the nearest settlement of Dooagh and further to the mainland of Co. Mayo. The area being considered in this report ("the site") consists of Moyteoge Head, Keem Beach and the surrounding parking and toilet facilities. There are five car parks at Keem Bay, as shown in Figure 3.13. Two of the car parks are on unbound granular material, and three are paved. Combined, the car parks can hold approximately 85 cars. Public toilets, informative signage and bins are available. There are bicycle parking facilities at the smaller carpark near the public toilets. There was a food truck and 6 porta-loos at the car park closest to the beach at the time of the survey. Keem Beach attracts a large number of visitors throughout the year. The beach holds a Blue Flag award and is popular for water sports activities. Lifeguards are present on certain days and times during peak bathing season. A lifeguard was observed on duty from 12pm up until 5pm, when the surveyors left the site. Other features at the site include the Benmore Cliffs and the Moyteoge Head and the remains of the World War Two lookout post building. A number of informal trails link the car parking areas to Moyteoge Head, the Benmore Cliffs and Croaghaun Mountain to the north.

The land surrounding Keem Bay is designated as the Croaghaun/Slievemore SAC (Special Area of Conservation), whereas the sea and intertidal areas are designated as the Achill Head SAC. The land is surrounding Keem Bay is also designated as the Croaghaun/Slievemore proposed Natural Heritage Area (pNHA). Plates 1.1 and 1.2 present images of the site.

Plate 1.1 Car park at Keem Bay, looking east with the approach road in the background.

Plate 1.2 Keem Bay, looking east towards Dooagh and the Mainland.

1.4 Critical Infrastructure

Tables 1.1 - 1.3 below provide information on the infrastructure at Keem Bay. Uisce Éireann's (UE) website was used to access information on the Water Supply and Wastewater Treatment Capacity Registers for County Mayo (Uisce Éireann, 2023a, b). The Mayo County Development Plan (CDP) 2022-2028 provided information on water supply, wastewater treatment and transport infrastructure at Keem Bay (MCC, 2022).

Table 1.1 Keem Bay Wastewater Infrastructure

Wastewater Treatment Plant (WWTP)	Uisce Éireann Indication of Capacity	Comment
• Public toilet facilities are available on this site. • There is no current WWTP at this site. • The nearest WWTP settlement is Keel-Dooagh with the Achill Island Central WWTP.	Amber – "potential spare capacity, applications to be considered on an individual basis considering their specific load requirements" (UE, 2023).	There is no capacity for implementation of wastewater treatment at this site to be treated by Achill Island Central WWTP.

Table 1.2 Summary of Drinking Water infrastructure at Keem Bay

Drinking Water	Water Resource Name (WRZ)	Uisce Éireann Indication of Capacity	Comment
The nearest settlement to Keem Bay is Keel-Dooagh.	Achill	Potential Capacity Available (Level of Service (LoS) improvement required).	Service required for water supply. It is an objective for MCC to upgrade water supply at Achill under 'Drinking Water Objective' INO 5 within the Mayo CDP 2022-2028 (MCC, 2022).

Table 1.3 Summary of Transport infrastructure at Keem Bay

Nearest Settlement	Current Transport Infrastructure	Comment
Keel-Dooagh	Keem Bay is accessible via the R319.	Keem Bay is only accessible via the R319, there are no segregated walking or cycling routes to the site. MCC is currently improving accessibility to the site.

2.0 METHODOLOGY

In line with the methodology used in 2021 and 2022, the following surveys were undertaken:

- Visitor Characterisation Surveys
- Ecological Surveys
- Pathway and Habitat Condition Surveys

The survey at Keem Bay was undertaken on the 25th of August 2023. The survey was undertaken using two surveyors over an eight-hour period between 9am and 5pm. There were periods of rainfall throughout the duration of the survey. Maximum temperatures were between 14.1° C and 17.7° C, with high cloud cover and a mean wind speed of 11.6 knots (Met Éireann, 2023). The survey was undertaken on a Friday and in reasonable weather conditions, to ensure that the data was comparable to previous years. The sub-sections below present the methodology used at each site.

2.1 Visitor Characterisation Survey

A 'visitor' refers to an individual, couple or group who arrive together. The following variables were recorded for each visitor:

- Activity Type
- Dwell Time
- Group Type
- Transport Type
- Use of Available Interpretive Signage

The visitor characterisation survey was undertaken continuously over an eight-hour period, between 9am and 5pm.

One surveyor was positioned at the car park closest to the beach and recorded each group as they arrived and left, recording the variables listed above. The second surveyor undertook the other surveys, including the survey of visitor behaviour, which was carried out by monitoring a sample of visitors. This surveyor also undertook the ecological and pathway surveys, and habitat condition assessments. The activities and impacts were recorded following the conventions presented in Appendix I.

2.2 Ecological, Pathway and Habitat Condition Surveys

The habitat condition survey was carried out following the methodology outlined in the 2021 report. All habitats were classified and mapped in accordance with *A Guide to Habitats in Ireland* (Fossitt, 2000) and *Best Practice Guidance for Habitat Surveying and Mapping* (Smith et al. 2011). Notes were taken on species composition, habitat condition and existing pressures. A desktop study was undertaken to identify rare and protected species and designated sites in the vicinity of each site. Incidental sightings of birds, mammals, reptiles etc. were also recorded during the survey.

The paths and desire lines at each site were surveyed and mapped, and notes were taken on substrate, details of any path construction, evidence of erosion such as braiding and path widening, and any changes in the condition when compared to previous surveys. Notes were taken on whether the paths were accessible for wheelchairs, buggies, and less able-bodied people.

Pathways were mapped and colour-coded to show the path type (e.g., tarmac, grit, desire line etc.) and condition (good/ moderate/ poor) for each 100 m section. The path condition survey covered the areas on the site surveyed in 2021 and 2022, as well as any other paths on the sites. In addition to the pathway assessment, any features on site, including buildings, cairns, and dry-stone walls were documented. Notes and photographs were taken of these features to document their condition.

In addition to the information collected in 2021 and 2022, in 2023, the publicly available heatmaps (available at: <www.strava.com/heatmap>) were used to ascertain the routes being used by people with the online fitness app downloaded over the previous two-year period. In addition to the pathway condition assessment, the heat maps provided valuable information on braiding and/or desire lines.

2.2.1 Habitat Condition Assessment Methodology

A rating scale was used to assess habitat conditions across all sites (See Table 2.1). The following criteria were used to assess habitat condition:

- Extent of habitat degradation;
- Impact of habitat degradation (localised or widespread);
- Potential for the habitat to recover; and
- Whether or not intervention is required.

For the purpose of this report, as was the case with the 2021 and 2022 reports, degradation is defined as any change to a habitat which reduces its viability or the viability of the species which occur there in the long-term. An assessment of the habitat condition was made every 100m of the transect. Habitat conditions were rated on a scale of 1 to 5; with 1 indicating to that there was no impact, and 5 being that there was a high impact on the habitat.

Table 2.1 Habitat Condition Assessment Rating Scale

Scale	Condition
1	No evidence of habitat degradation
2	Localised habitat degradation. Habitat capable of rapid recovery.
3	Widespread habitat degradation. Habitat capable of rapid recovery.
4	Localised habitat degradation. Intervention required for full recovery.
5	Widespread habitat degradation. Intervention required for full recovery.

3.0 RESULTS

3.1 Visitor Characterization Survey

The visitor monitoring surveys recorded a total of 241 visitor groups. This site was most popular amongst the 'couple' group with cars being the most prevalent mode of transport to reach the site. The following activities undertaken during the survey (listed in order of occurrence rate):

- Walking, running, or cycling on paths, marked trails or hard surface.
- Resting, reading, looking, picnicking, sightseeing, painting, photographing.
- Swimming, sailing, surfing, kayaking in water.
- Walking, running, cycling, or playing on mown grass, managed grassland, or level sand.
- Vehicular movement on roads and parking areas.
- Sitting on benches, walls, mown grass, sand.
- Any movement leaving an existing trail or marked path.
- Climbing on walls, loose stones, sand, soil, etc.
- Disturbance to Wildlife.
- Deliberate building or moving or knocking site materials - parts of monuments, walls, stones, sand, etc.

3.1.1 Dwell Time

The average dwell time for visitor groups observed was 43 minutes. The median dwell time of 31 minutes shows that 50% of the visitor groups observed remained at the site for less than 31 minutes. Approximately 10% of visitor groups did not leave the car park. Figure 3.1 presents the dwell time of visitor groups.

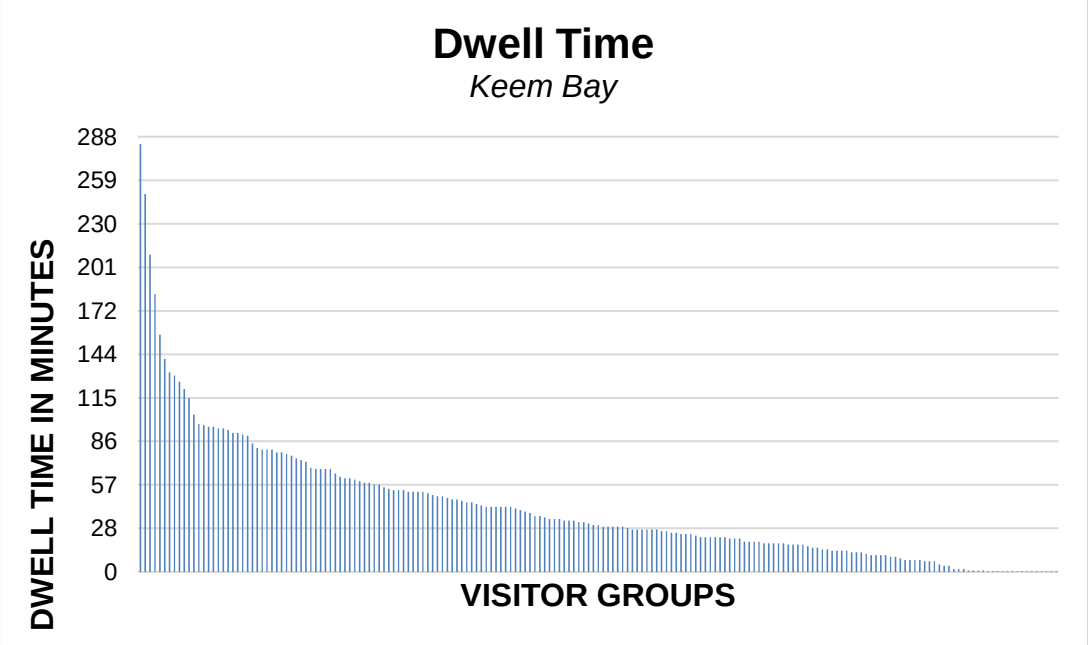


Figure 3.1 Dwell Time of Visitor Groups at Keem Bay

3.1.2 Prevalence of Group Type

Figure 3.2 presents the prevalence of group types observed visiting the site, either without a dog or with a dog. 'Couples' made up the largest proportion of group type with 39% of visitor groups observed. The second largest group type was 'family' with 23%. The third largest was the 'individual adult' group type with 19%. The remaining group types observed in order of prevalence were 'small adult group', 'mixed small group', 'elderly couple', 'family with elderly', 'elderly group', and 'mixed large group.' There were no records made for the following group types 'individual elderly', 'large adult group', and 'under 18'. The 'couple', 'family', and 'individual adult' group types had 1% or two groups each which had a dog. The 'small adult group' and 'mixed small group' group types had 1% or one group each which had a dog. All groups, when observed, kept their dogs on leads.

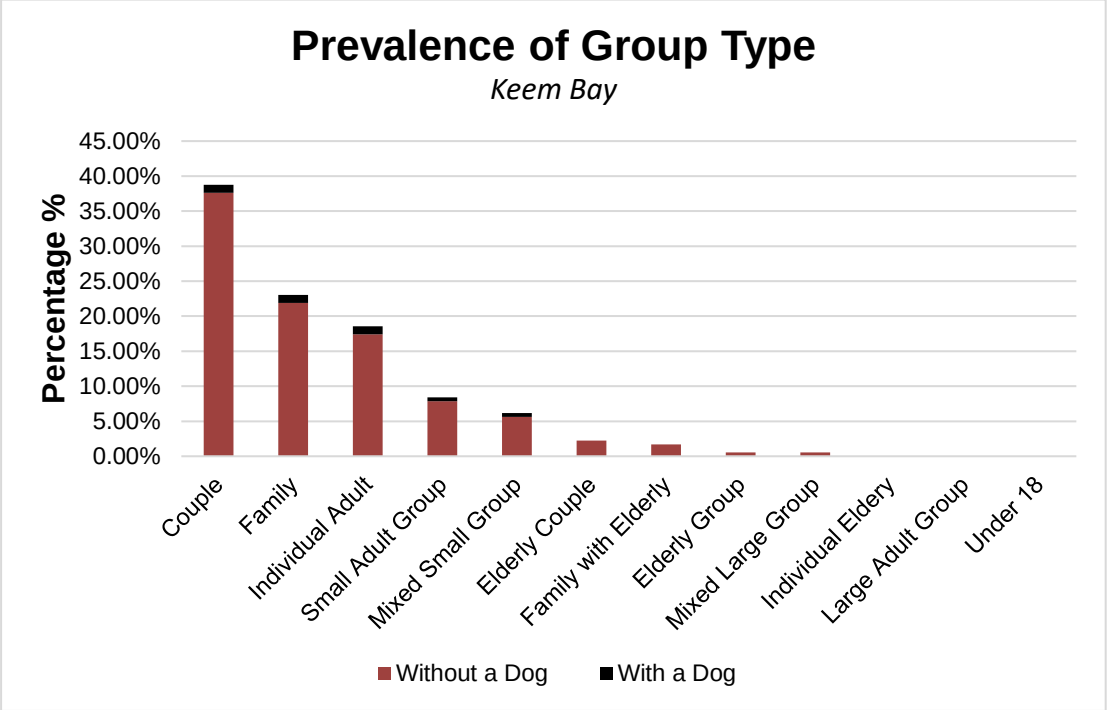


Figure 3.2 Group Types that Visited Keem Bay

3.1.3 Prevalence of Transport Type

Figure 3.3 presents the transport types observed. Cars were the most prevalent mode of transport, with 90% of groups, using cars to get to the site. The second most prevalent type was walking with 5% of all groups. The third most prevalent type was 'other' with 2% of all groups, other included commercial and construction vehicles. The remaining transport types were motorbikes, bicycles, and campers. For the visitor groups that arrived on foot, it should be taken into account that the surveyors were observing from the car park closest to the beach. Therefore, these visitor groups probably used cars to get to the site and parked their cars in the car parks further way from the beach. Throughout the survey, there was a constant flow of cars arriving and leaving and most visitors arriving by car could find parking here. It should be taken into account that previous reports document extensive traffic issues at the site during periods of hot weather and during peak season weekends. Keem Bay is only accessible via the R319, there are no segregated walking or cycling routes to the site. Although there is no footpath along the road leading to Keem Bay, there is potential for some visitors to arrive on foot from Dooagh, 5km to the east.

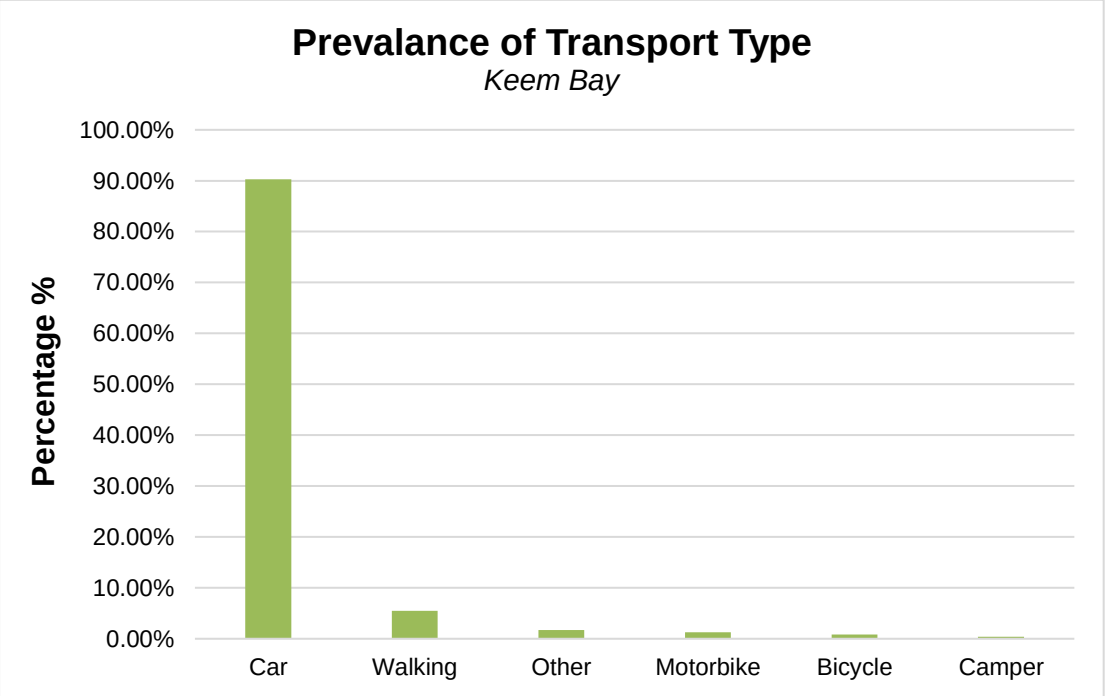


Figure 3.3 Mode of Transport Used to Visit Keem Bay

3.1.4 Read Available Signage

Figure 3.4 presents the number of visitor groups observed reading the available signage at the car park. A higher proportion of visitor groups did not read the signage, with 71% of visitor groups not reading the signage, and only 29% of visitor groups reading the signage. However, it must be taken into consideration that a proportion of the visitor groups may be local to the area and may have previously read the signage on past visits.

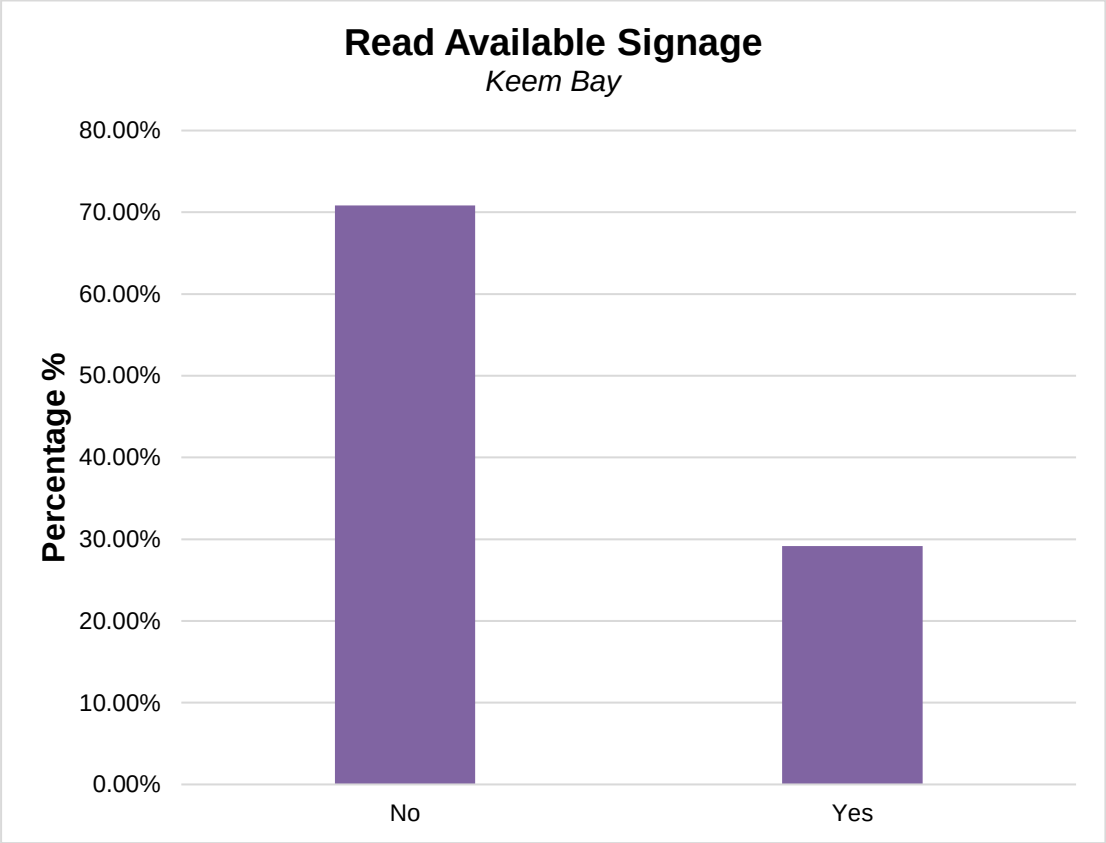


Figure 3.4 Use of Signage at Keem Bay

3.1.5 Activity Levels

Figure 3.5 presents the activity levels at Keem Bay. A sample of 80 visitor groups' activities were observed. The results from this are shown below in Figure 3.5. Activity categories are detailed in Appendix I. Activities such as walking on marked trails and hard surfaces is a low-level activity, whereas disturbing wildlife and picking herbaceous vegetation are considered high level activities. 96% of the activities observed at Keem Bay were considered low level activities. The low-level activities observed included walking, sitting, resting, sightseeing, photographing, picnicking, swimming, and vehicular movements on roads and in the car park. 3% of the activities observed were considered medium level activities. The medium level activities observed included walking off an existing trail or marked path and climbing on walls, loose stones, sand, and soil. 1% of the activities observed were considered high level activities. The high-level activities observed included disturbance to wildlife and deliberate moving or knocking of site materials.

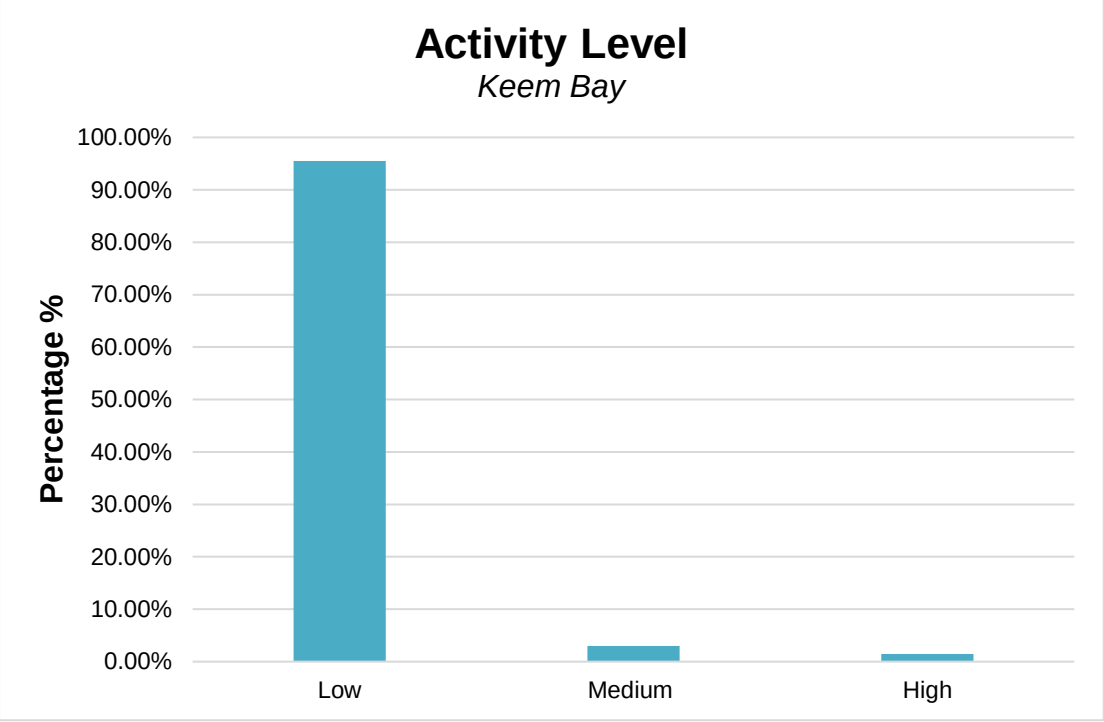


Figure 3.5 Categories of Activity Level at Keem Bay

3.1.6 Impact Severity Levels

Figure 3.6 presents the impact severity level observed at the site. A sample of 80 visitor groups' activities were observed. Impact severity level relates to the damage of an activity on the site. The levels of impact severity are detailed in Appendix I. The survey found that 86% of the activities observed had low level impact severity on the site. Low level includes no effects, desire lines on grassy and leafy vegetation, temporary disturbance of wildlife, temporary change of character, and general/light littering. 14% had a medium level of impact severity, medium level includes alteration of site features, and transient disturbance from emissions and noise.

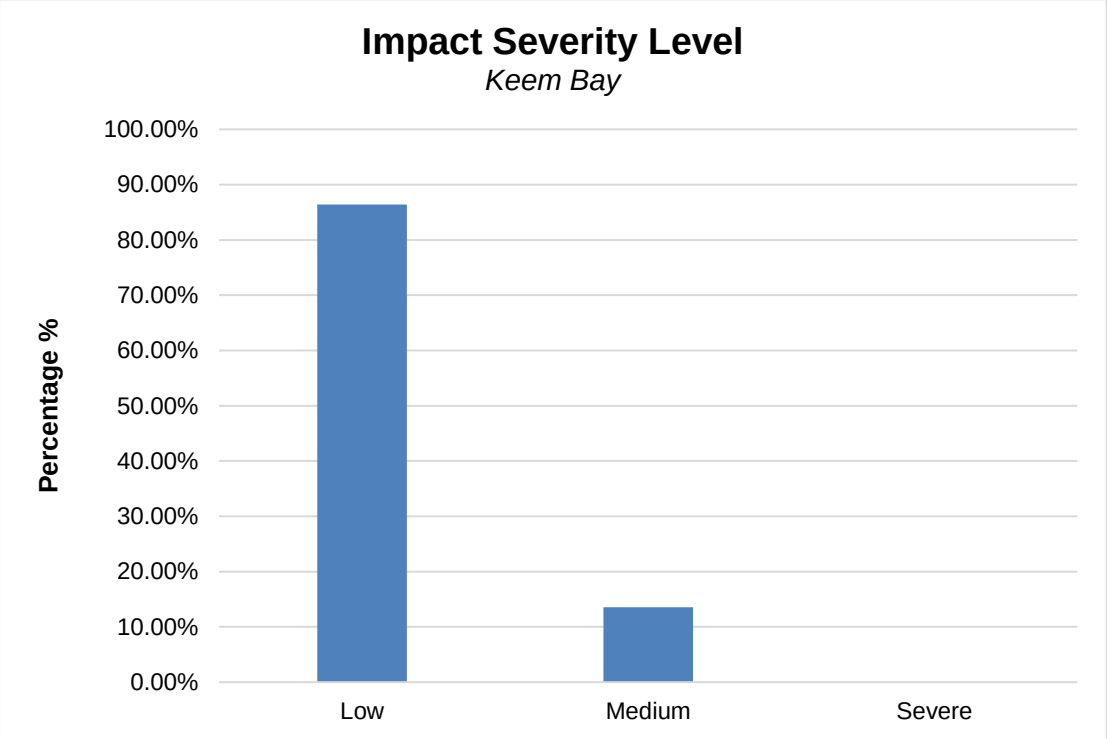


Figure 3.6 Categories of Impact Severity Level at Keem Bay

3.1.7 Activities Undertaken Other than Walking

Figure 3.7 presents the number of visitor groups observed undertaking activities other than just walking. The majority of visitor groups did undertake activities other than walking, representing 79% of groups. Other activities observed other than walking include sitting, resting, sightseeing, photographing, picnicking, swimming, and climbing. 21% of groups were observed only walking.

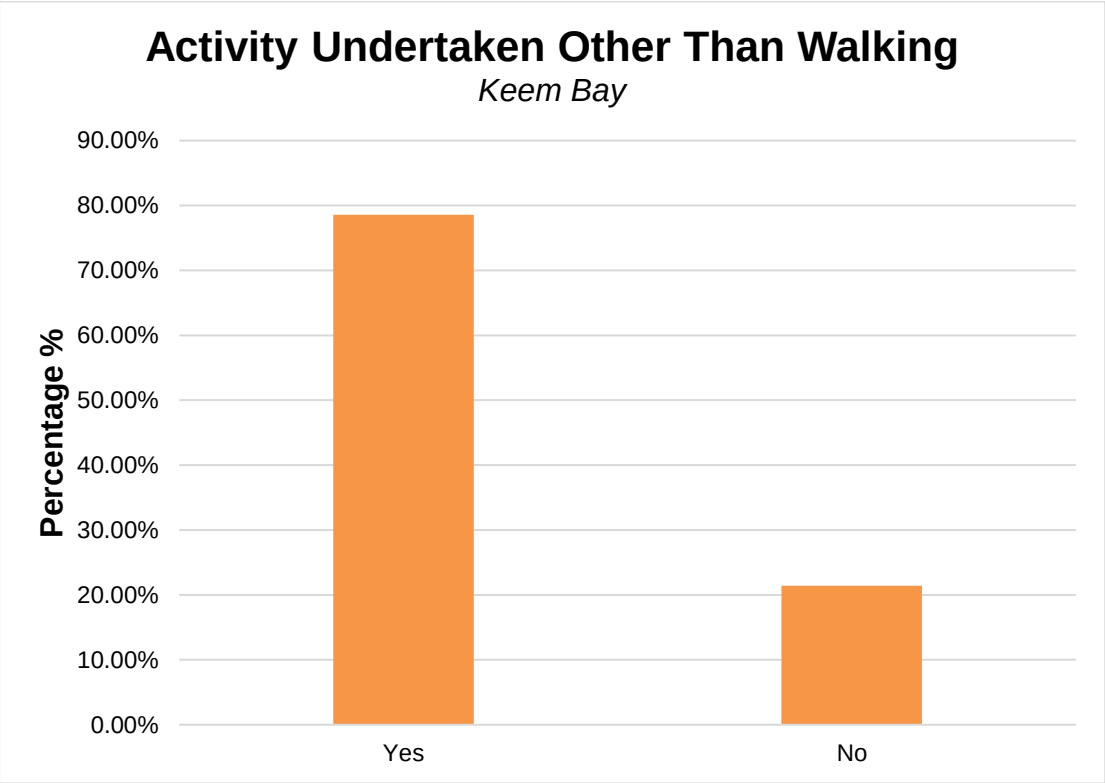


Figure 3.7 Activities Undertaken Other than Walking at Keem Bay

3.1.8 Activity Type

Figure 3.8 presents the percentage of visitor groups' activity types observed. A sample of 80 visitor groups' activities were observed. The survey found that 96% of the activities observed were low level activity types as presented in the Figure 3.5. Low-level activity types observed included walking, sitting, resting, sightseeing, photographing, picnicking, and swimming. Only 3% of the activities observed were medium level, which included walking off an existing trail or marked path and climbing on walls, loose stones, sand, and soil. Only 1% of the activities observed were considered high level activities. The high-level activities observed included disturbance to wildlife and deliberate moving or knocking of site materials.

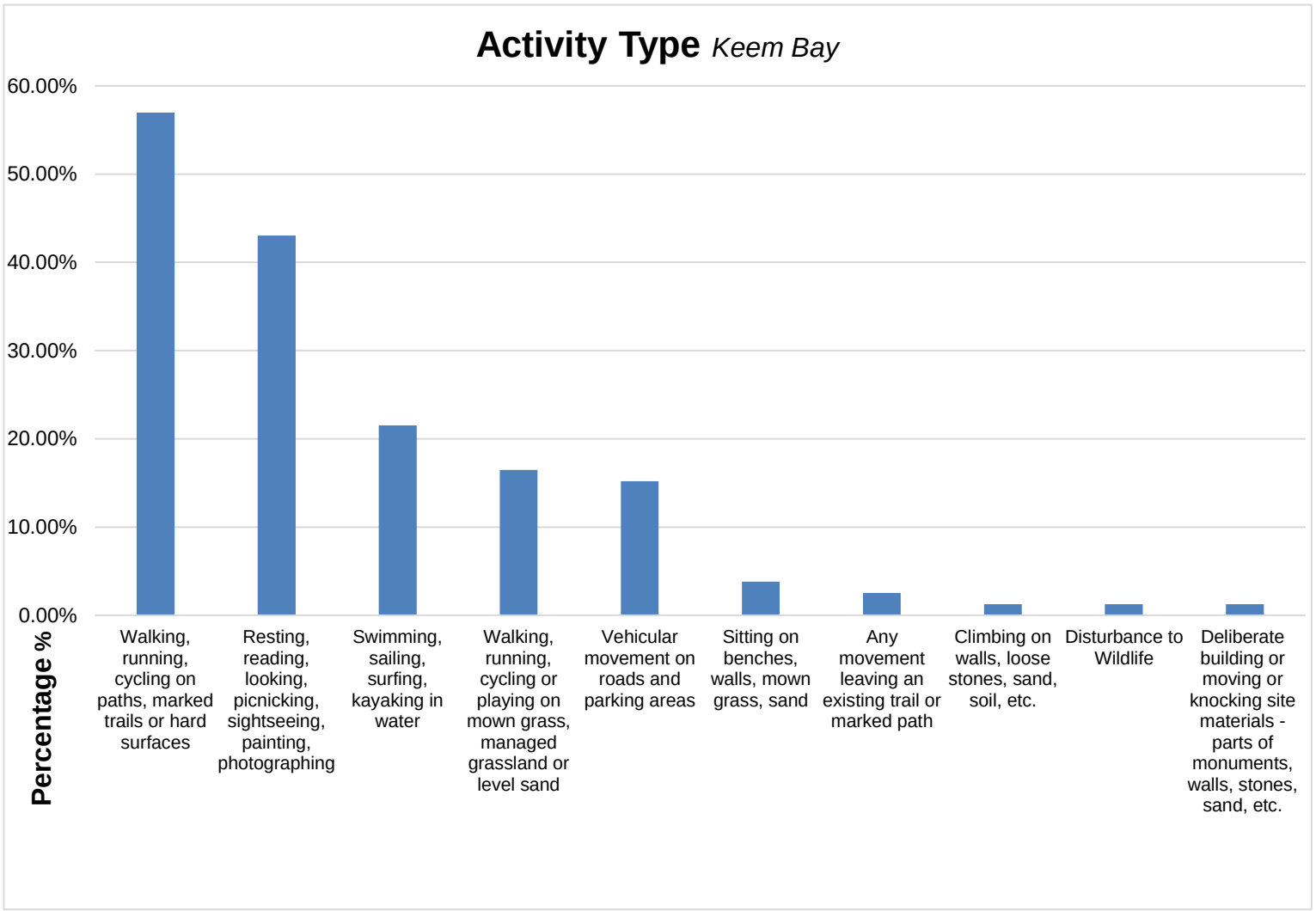


Figure 3.8 Activity Types at Keem Bay

3.1.9 Heat Map

Figure 3.9 presents a heat map of visitor movements at the site, provided by Strava. Strava aggregates data from users on its app who opt-in to share their activities and locations. The map shows that a high level of movement occurs heading towards Keem Bay on the R319 and at the car parking areas and at the public toilet facility. The map highlights the number of informal trails that exist between the car parks and Moyteoge Head, the Benmore Cliffs, and the wider area to the north and west. These trails are all informal and unmarked trails.

Figure 3.9 Heat map of visitor movements at Keem Bay (Strava, 2023).

3.2 Pathways and Habitat Condition

3.2.1 Pathway Condition

The pathways at this site comprised of paved roads and grassy paths, with one example of a gravel path which leads from the car park to the beach. The R319 is a paved road. Approximately 25% of the pathways surveyed were in bad condition, and approximately 50% were in moderate condition. The pathways observed to be in bad condition were concentrated at several areas including: at the start of an informal trail at the car park closest to the beach; an informal path starting at the bridge on the R319 and leading down to the beach; and an informal trail starting in proximity to the public toilets and heading northwest (See Figure 3.10). Compacted areas on pathways ranged from 0% to 80%. Exposed areas on pathways ranged from 0% to 90%, however only one stretch of 100 meters was noted to have 90% compaction; the remainder has less than 25% of bare ground exposed. The main types of damage to pathways were erosion and trampling.

The condition (good, moderate, bad) of the main pathways on the site (paved road, grassy path, gravel) are illustrated below in Figure 3.10. Examples of pathway types are presented below in Plate 3.1. The site contains numerous informal tracks, as illustrated in Figure 3.9 and these are not mapped.

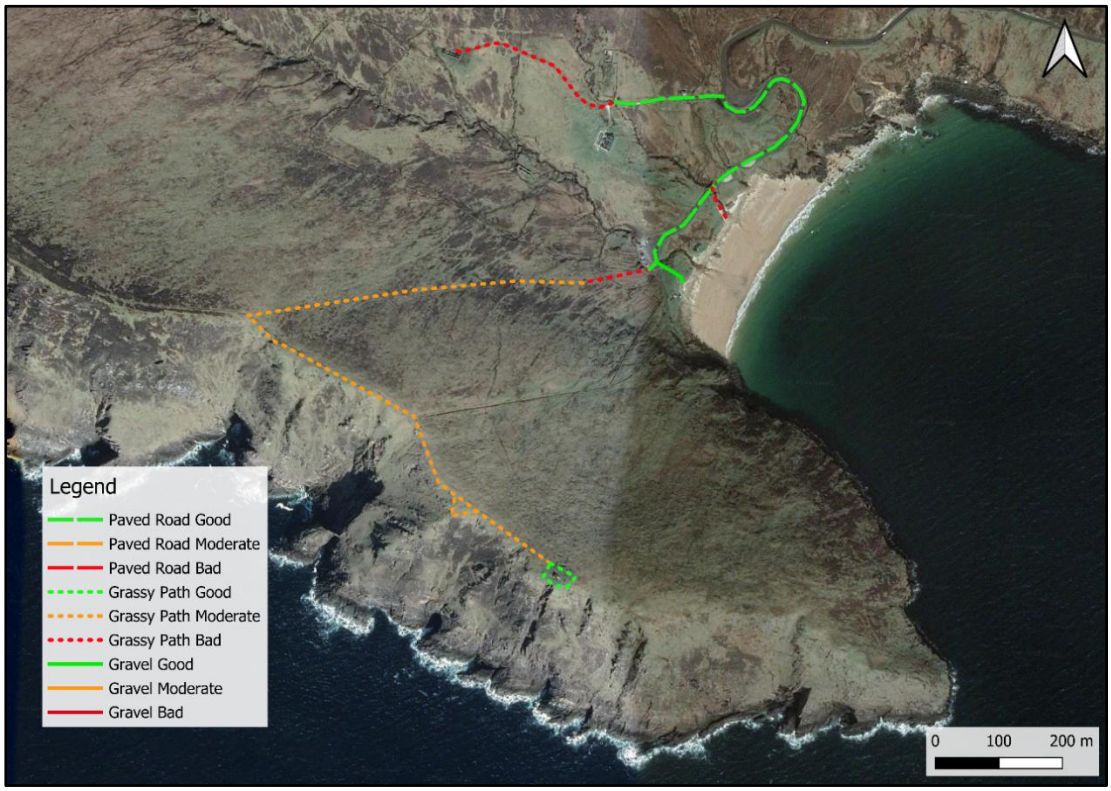
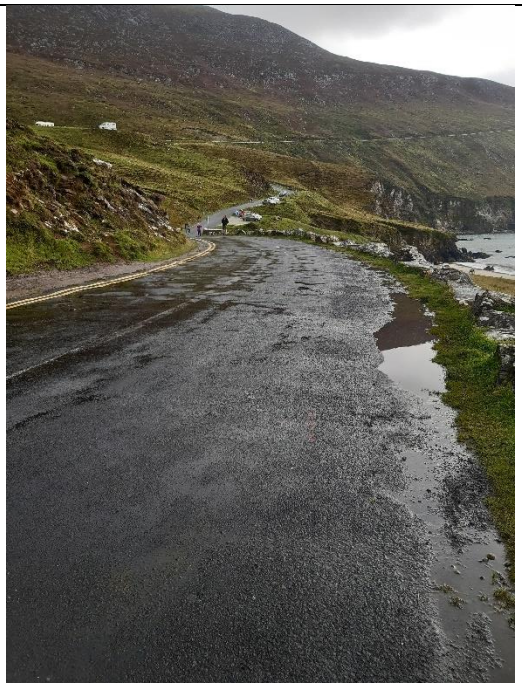


Figure 3.10 **Colour-coded condition of the main pathway types recorded on the site. Basemap provided by Google.**



Paved Road

Grassy Path

Eroded path

Plate 3.1 Examples of pathway types recorded at Keem Bay.

3.2.2 Pathway Impact

Figure 3.11 represents the pathway impact type at the site. The types of impact observed was desire lines at 38%, erosion at 35%, trampling at 15%, overgrazing at 8%, and exposed soil at 4% of the impact types observed.

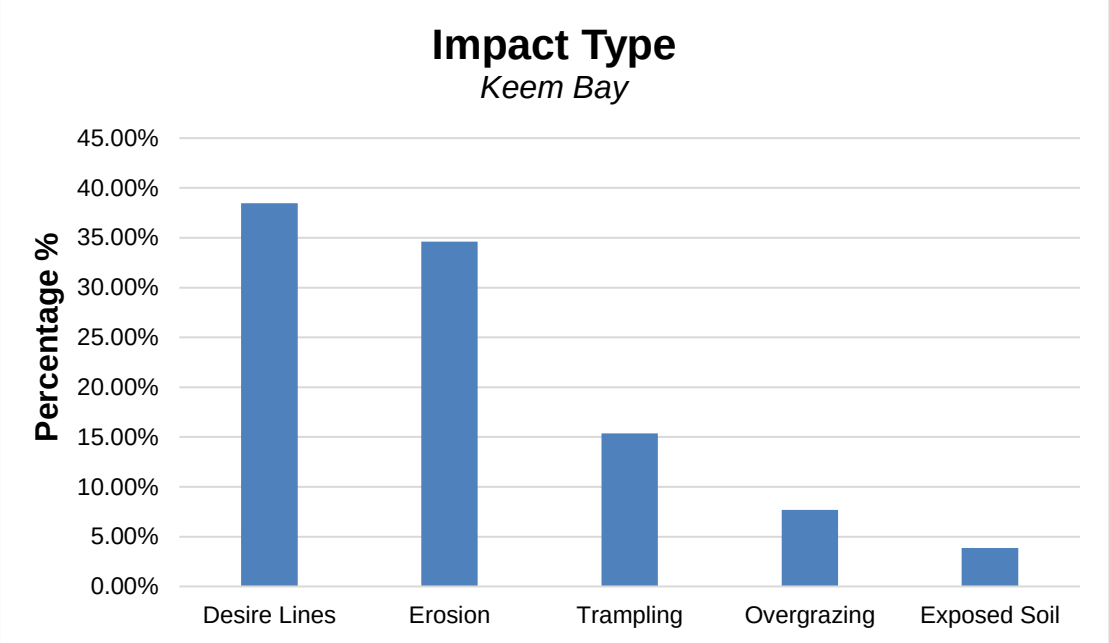


Figure 3.11 Impact Type Observed at Keem Bay.

3.2.3 Habitat Condition

Habitats were surveyed during the optimum habitat survey season i.e., April to September (Smith et al., 2011). Habitats were classified according to *A Guide to Habitats* in *Ireland* (Fossitt, 2000). Habitats identified at Keem Bay are listed below and mapped in Figure 3.12:

- Buildings and artificial surfaces BL3
- Sedimentary Sea Cliffs (CS3)
- Eroding/Upland Rivers (FW1)
- Dry-humid Acid Grassland (GS3)
- Wet Heath (HH3)
- Shingle and Gravel Shores (LS1)
- Sea Shores (LS2)

The habitat condition assessment follows a rating scale, that has been designed specifically for this monitoring programme as a standardised, repeatable measurement for assessing habitat condition across all Fáilte Ireland sites.

Habitat damage was recorded in varying degrees on 75% of the transect. The most common types of damage to both habitats and pathways were erosion and trampling, with some damage from overgrazing to the northern extent of the transect.

The Irish Business Against Litter (IBAL) report from 2023 reported that Keem Bay was "moderately littered" (IBAL 2023). Signs of human impacts were fire pits and litter, which largely comprised of food, clothing, and marine items (IBAL 2023). Litter of this nature has the potential to negatively impact wildlife, such as through injury from fishing line via entanglement. It should be noted that during this survey on the 25th of August, there was very little litter recorded, however 8 no. firepits were observed on grassy areas by the beach front. The presence of bins on site may have reduced the level of littering recorded in the IBAL survey.

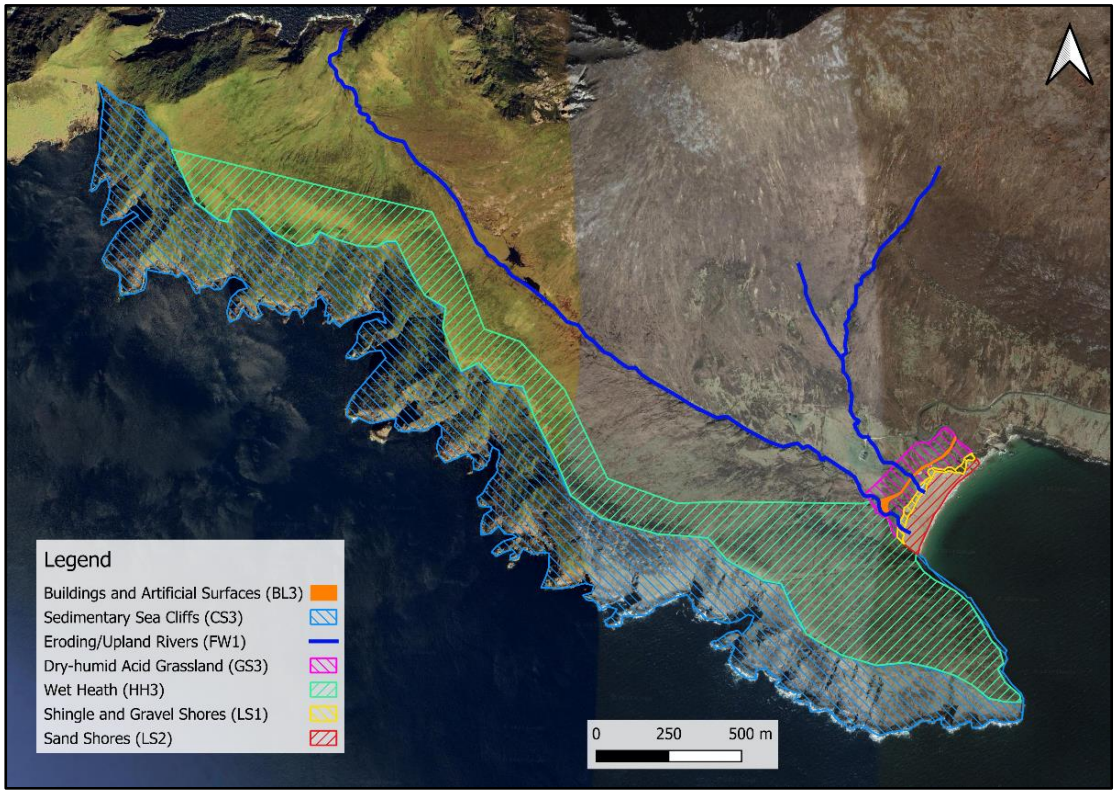


Figure 3.12 Habitat Map of Keem Bay. Basemap provided by Google.

Table 3.1 below presents the species recorded incidentally during the ecological surveys at Keem Bay.

Table 3.1 Incidental Species Records

Scientific Name	Common Name
Anthus pratensis	Meadow Pipit
Pyrrhocorax pyrrhocorax	Chough

3.2.4 Ecological Constraints

As previously discussed, there two European sites (SACs) and one Nationally designated site (pNHA) within or adjacent to Keem Bay. Information on these sites was obtained from the NPWS website and their respective Natura 2000 Standard Data Forms. These sites are described in Table 3.2 below.

Table 3.2 Designated sites within 2 km of Keem Bay.

Site Name [Site Code]	Qualifying Interests	Distance (km) from Site	Pressures and Threats (those related to tourism are in bold)
European Designated Sites			
Croaghaun/Slievemore SAC [001955]	• Northern Atlantic wet heaths with *Erica tetralix* [4010] • European dry heaths [4030] • Alpine and Boreal heaths [4060] • Blanket bogs (* if active bog) [7130] • Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110] • Siliceous rocky slopes with chasmophytic vegetation [8220]	Within site boundary	• **Outdoor sports and leisure activities, recreational activities** • Grazing • Invasive non-native species
Achill Head SAC [002268]	• Reefs [1170] • Mudflats and sandflats not covered by seawater at low tide [1140] • Large shallow inlets and bays [1160]	Within site boundary	No threats or pressures
National Designated Sites			
Croaghaun/Slievemore pNHA [001955]	• No site description available	Within site boundary	• n/a

3.3 Records of Rare, Protected and Invasive Species

Records of rare, protected, and invasive species from the past ten years from Hectads F50H, F50M, F50L, F50R & F50S were obtained the National Biodiversity Data Centre (NBDC) online database. These records are presented in Table 3.3 below.

Table 3.3 Rare protected and invasive species recorded from Hectads F50H, F50M, F50L, F50R & F50S from NBDC database.

Scientific name	Common Name	Date of last record	Status*
Mammals			
Phocoena phocoena	Porpoise	10/01/2015	Annex II, IV HD; WA
Tursiops truncatus	Bottle-nosed Dolphin	27/05/2018	Annex II, IV HD; WA
Birds			
Falco tinnunculus	Kestrel	26/05/2018	WA; Amber List
Delichon urbicum	House Martin	26/05/2018	WA; Amber List
Larus argentatus	Herring Gull	30/10/2016	WA; Red List
Oenanthe oenanthe	Northern Wheatear	13/07/2021	WA; Amber List
Pyrrhocorax pyrrhocorax	Red-billed Chough	31/07/2015	Annex I BD; WA; Amber List
Carduelis flavirostris	Twite	06/05/2018	WA; Red List
Reptiles & Amphibians			
Zootoca vivipara	Common Lizard	05/04/2013	WA
Rana temporaria	Common Frog	14/09/2017	Annex V; WA
Fish and Aquatic Fauna			
Cetorhinus maximus	Basking Shark	02/04/2023	Threatened Species: OSPAR Convention
Invertebrates			
Nucella lapillus	Dog Whelk	05/05/2013	Threatened Species: OSPAR Convention
Flora			
Huperzia selago	Fir Clubmoss	14/09/2017	Annex V

**Abbreviations: Annex II/IV/V (non-avian species) = Habitats Directive (HD); Annex I, II, III = Birds Directive (BD); Red/Amber List = Birds of Conservation Concern in Ireland 2020-2026 (BOCCI) (Gilbert et al., 2021).*

3.4 Features, Signage and Hazards

3.4.1 Features and Signage

There are a number of signage in the car parking areas at the site. Signage pertained to information on the area, including information on the environment and local wildlife, and highlighting that the site is part of the WAW. Some of the signage was also directional, though little signage was provided beyond the established roadway and car parking areas, this may be due to the informal nature of the trail pathways, or rather desire lines. Figure 3.13 illustrates the features and signage present at Keem Bay. Examples of features at the site are shown in Plates 3.2-3.4.

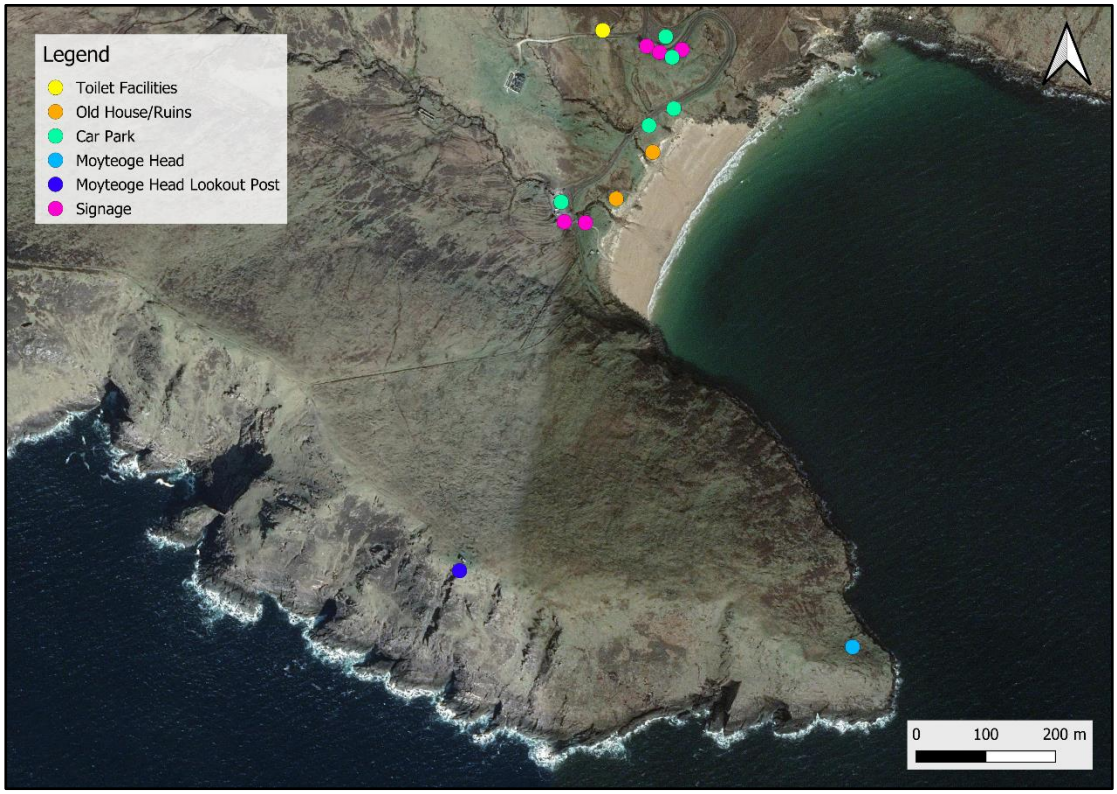


Figure 3.13 Features and signage mapped at Keem Bay. Basemap provided by Google.

Keem Bay is one of fifteen Signature Discovery Points along the WAW, due to its unique character. To support this designation, improved walking access and toilet facilities are planned for the site according to the Mayo CDP 2022-2028.

Moyteoge Head Lookout Post at the southern end of the site is a popular point for visitors exploring the unofficial and informal trails at the site. The building was a World War Two lookout post which appears on the National Inventory of Architectural Heritage (NIAH), registration number 31305303. The structure is showing signs of damage which is expected given its age and the exposure of its location.

Benmore Cliffs shown in Plate 3.2 is also a popular site for visitors at Keem Bay. A number of the unofficial and informal trails traverse the top of the cliffs.

The valley in between Benmore Cliffs to the west and Croaghaun Mountain to the east contains a number of archaeological features listed on the Sites and Monuments Record (SMR). These features include a settlement cluster [MA053-003003], altar [MA053-003002], cross [MA053-003001], standing stone [MA053-003008], and three houses [MA053-003005, MA053-003006 & MA053-003007]. These features are in a conditional expected for their age and they do not appear to be effected by recreational activity.

Plate 3.2 Benmore Cliffs (L) Informal Keem Bay to Benmore Cliffs Trail (R).

3.4.2 Hazards

No specific hazards were recorded, although, as a coastal area in the Atlantic Ocean, the weather and sea conditions are changeable, and there are cliffs close to Keem Bay.

3.5 Comparison with Previous Survey Results

Visitor Numbers

The 2023 survey recorded 241 visitor groups. This increased from 33 visitor groups recorded in 2022. In 2022 the 33 groups consisted of 106 individuals. In 2023, the 241 groups consisted of 602 individuals. Although this is a significant increase, it should be noted that the surveys were carried out over a single day, and there could be a number of variables leading to this change such as weather, the easing effects of the Covid-19 pandemic on travel and sporting or music events which could have led to this change. The 2022 survey noted heavy rain during the day, which would have reduced the numbers of visitors.

Dwell Time

The average dwell time in the 2023 survey was 43 minutes, whereas the average dwell time observed in the 2022 survey was 34 minutes. This is an increase of 26%. However, the reasons above could have affected the result.

Prevalence of Group Type

'Couples' made up the highest proportion of group types in both 2023 and 2022. The 'family' group type was the second largest proportion in 2023 and 20222. 'Small adult group' was the third largest proportion in 2023 and 2022. The results are presented in Table 3.4.

Table 3.4 Prevalence of Group Type 2022 vs 2023

Group Type	2022	2023
Couple	39%	39%
Family	18%	23%
Individual Adult	15%	19%
Small Adult Group	15%	8%
Mixed Small Group	0%	6%
Elderly Couple	0%	2%
Family with Elderly	6%	2%
Elderly Group	0%	1%
Mixed Large Group	6%	1%
Individual Elderly	0%	0%
Large Adult Group	0%	0%
Under 18	0%	0%

Prevalence of Transport Type

Cars were the most popular type of transport in 2023 and 2022. In 2023, walking was the second most popular mode of transport. In 2022 the second most popular category was campers. 'Other' was the third most popular mode of transport in 2023. 'Other' included commercial vehicles. While in 2022 it was bus/coach. Travel by motorbike, bicycle and camper in order were the least popular modes of transport in 2023. The 2022 survey did not observe any other modes. The results are presented in Table 3.5.

Table 3.5 Prevalence of Transport Type 2022 vs 2023

Transport Type	2022	2023
Car	88%	90%
Walking	0%	5%
Other	0%	2%
Motorbike	0%	1%
Bicycle	0%	1%

Camper	9%	1%
Bus/ Coach	3%	0%

Read Available Signage

The 2023 Survey found an increase in the proportion of visitor groups observed reading the signage at 29%, when compared to 2023 at 15%. However, it should be considered that the team that conducted the survey in 2022 included an 'unknown' variable in their graph.

Activity Levels

Low activity levels make up over 90% of the activity levels observed in both 2023 and 2022. Subsequently moderate or medium activity levels made up under 10% of the activity levels observed in both years. However, it should be taken into account that as two different teams conducted the surveys in each year there is potential for discrepancies in the assigning of activity levels observed.

Activities Undertaken Other than Walking

The majority of visitor groups did undertake activities other than walking. 79% of visitor groups observed undertook activities other than walking in 2023 and 2022. Activities other than walking included running, sitting, picnicking, resting, sightseeing, photographing, picnicking, and watching nature, etc.

Activity Type

The 2023 and 2022 surveys noted similar activity types at varying proportions. However, the 2022 Survey included 'flying drone' and 'other' as activities which were not recorded in 2023. The 2022 Survey included 'camping, BBQing and lighting campfire' and 'fishing, shell collecting and rock pooling' as activities which were not recorded in 2023.

Impact Severity Level

Impact severity levels relates to the impact and severity of the activities undertaken at the site. In the 2023 survey, 86% of the groups observed had low level impact severity on the site, 11% had a medium level, and 3% had a severe level. The 2022 survey found over 80% of the groups observed had low level impact severity on the site and under 20% had a medium level, no severe level of impact severity was recoded that year.

Impact Type

The 2023 survey noted various impact types including desire lines, erosion, trampling, overgrazing, and exposed soil. The 2022 survey noted damage to natural features, light desire lines, loosening of substrate, temporary disturbance to wildlife, and trampling. However, it should be taken into account that as two different teams conducted the surveys in each year there is potential for discrepancies in the assigning of impact types observed.

4.0 RECOMMENDATIONS

Based on the information discussed and presented in this report, the following recommendations are made:

- Fáilte Ireland should support the provision of additional public toilet facilities at Keem Bay. Environmentally friendly toilet facilities that utilise composting, and do not need water and wastewater connections should be considered.
- There was very little litter recorded at the site during the survey, however, 8 no. firepits were noted on grassy areas by the beach. Though there is signage regarding fire pits, additional signage relating to littering and explaining the damage caused by firepits is recommended. The use of teleological signage (signage with instruction and justification for the instruction) has been shown to be more effective in environmentally sensitive areas.
- The provision of a designated barbequing area would reduce the impact of BBQ fire pits at the site as they would be conducted in a designated area and within a controlled environment.
- Increasing active and public transport routes to the site would reduce the proportion of private car transport to the site. This would reduce greenhouse gas emissions from private cars to the site and reduce the number of cars in the car parking areas, improving the visitor amenity at the site. The provision of a segregated cycle and pathway should be considered.
- The 2021, 2022, and 2023 surveys show that couples made up the largest proportion of visitor groups to Keem Bay. A shuttle bus service from Dooagh, the closest settlement should be considered. A shuttle bus is more likely to be used by couples, rather than families who tend to visit tourism destinations with more equipment.
- The employment of a site warden during peak season, who would manage traffic, parking, barbequing, and camping. This would reduce the environmental impact to the site and would improve environmental quality and visitor amenity at the site.
- It is recommended that trail improvement works are carried out close to the car park, where walker traffic has caused erosion. This could involve constructing steps. Signage and way markers to guide walkers to the top of the headland would also be beneficial to reduce the number of informal paths across the wider area.
- Appropriate land management is recommended to promote sustainable farming practices and reduce overgrazing. This would lead to improved habitat quality and resilience.

5.0 REFERENCES

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Appendix I

Activities		
Category 1 Low Level		
Walking, running or cycling on paths, marked trails or hard surfaces		LA 1
Walking, running, cycling or playing in mown grass, managed grassland or level sand		LA 2
Sitting on benches, walls, mown grass, sand		LA 3
Swimming, sailing, surfing, kayaking in water		LA 4
Resting, reading, looking, picnicking, sightseeing, painting, photographing		LA 5
Vehicular movement on roads and parking areas		LA 6
Watching nature in hedges, woods, streams, pools and intertidal areas		LA 7
Category 2 Medium Level		
Powered movement through water		MA 1
Any movement leaving an existing trail or marked path		MA 2
Any movement leaving a trail through leafy vegetation		MA 3
Any movement leaving a trail through woody vegetation		MA 4
Climbing on walls, loose stones, sand, soil etc.		MA 5
Fishing		MA 6
Category 3 High Level		
Walking through wet/muddy soil		HA 1
Scrambling on steep or loose slopes		HA 2
Off road vehicular movement		HA 3
Disturbance of wildlife		HA 4
Deliberate building or moving or knocking site materials - parts of monuments, walls, stones, sand etc.		HA 5
Picking herbaceous vegetation		HA 6

Impacts		
Category 1 Low Impact		
No identifiable effect		LIE 1
Desire lines or trails visible on grass and leafy vegetation		LIE 2
Temporary disturbance (including chasing and feeding) of insects, fish, amphibian, reptiles, insects, birds and mammals		LIE 3
Temporary change of character - due to the appearance or nature of activities (noise, crowds, etc.)		LIE 4
General/light littering		LIE 5
Category 2 Medium Impact		
Desire lines or tracks visible outside of existing trail or marked path		MIE 1
Trampling of herbaceous vegetation		MIE 2
Damage to woody vegetation		MIE 3
Incidentally moving or knocking site materials - parts of monuments, walls, stones, sand, rooted vegetation, flora, fauna etc.		MIE 4
Addition/alteration of site features, transient emissions, noise		MIE 5
Transient disturbance, emissions, noise		MIE 6
Disturbance of wildlife		MIE 7
Category 3 Severe Impact		
Direct interference with site material - parts of monuments, walls, stones, sand, rooted vegetation, flora, fauna etc.		SIE 1
Removal of material - parts of monuments, walls, stones, sand, rooted vegetation, flora, fauna etc.		SIE 2
Vandalism or graffiti		SIE 3
Destruction of structures, vegetation or fauna		SIE 4
Heavy littering or dumping quantities of waste		SIE 5
Burning materials or lighting a fire		SIE 6
Injuring, killing or taking wildlife		SIE 7

Appendix II

Habitat Condition Assessment Methodology

A rating scale has been designed for this monitoring programme as a standardised, repeatable measurement for assessing habitat condition across all sites[1]. For the purposes of this monitoring programme, habitat condition is assessed at ever site by the surveyor examining four core criteria:

1. The extent to which habitat degradation (due to human activity), if any, is observed;
2. If habitat degradation is observed, the degree to which the impact is localised or widespread;
3. The potential ability for the habitat to recover (related to scale of degradation); and,
4. The requirement for intervention (related to the degree of the previous 3 elements).

For these assessments the term 'degradation' is taken to mean that any change that reduces the long-term viability of habitats and their qualifying interest (i.e. flora and fauna). Degradation can include readily visible evidence of factors such as surface erosion or compaction, vegetation loss, crowd disturbance (noise), disturbance by pets, littering, burning or pollution. Based on these four criteria, each site is walked along transects established by the principal pathways that are used for visitor access and movement through each site. At 100 metre intervals along the selected pathways, an assessment of habitat condition is made, using an established rating scale of 1 to 5 with 1 being no impact and 5 being high impact. Each rating is then translated into a condition assessment, as displayed in Table 1 below.
These ratings are gathered for each site and are then grouped; from which the mode is taken (i.e., the rating that occurs most frequently. This is then recorded and reported as the resultant overall rating of the assessed habitat condition for each site.

Scale	Condition
1	No evidence of habitat degradation
2	Localised habitat degradation. Habitat capable of rapid recovery.
3	Widespread habitat degradation. Habitat capable of rapid recovery.
4	Localised habitat degradation. Intervention required for full recovery.
5	Widespread habitat degradation. Intervention required for full recovery.

[1] Note: Where possible, the same surveyor is used across multiple sites, but in some instances, different surveyors survey different sites. This can lead to a human variation in the assigning of the rating scale for impact. However, there will be sufficient repetition of the data through the several years of the monitoring programme to account for any variations in human interpretation on this scale.