

**AILLWEE CAVE
SITE ASSESSMENT REPORT**



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(Updated February 2015 to include Visitor Survey data)

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1. SITE DESCRIPTION

1.1. LOCATION

The GeoparkLIFE demonstration site at Aillwee Cave is situated in Zone 2 (the central zone) as defined by this project. This zone attracts informed tourists who take an active interest in the heritage of the area. The Aillwee Cave Visitor Centre is located to the east of the regional road R480 approximately 3km south of Ballyvaughan.

The R480 route runs through the centre of the Burren and has an array of prominent attractions and natural and cultural heritage sites along its length. The route is used by coach tours and individual travellers, mainly travelling by car. In addition to Aillwee Cave, visitor attractions along this route include the archaeological sites of An Rath, Cahermore, and Carran Church (all of which are also GeoparkLIFE demonstrations sites) and Caherconnell visitor centre, which consists of a medieval stone fort and a demonstration sheep farm.

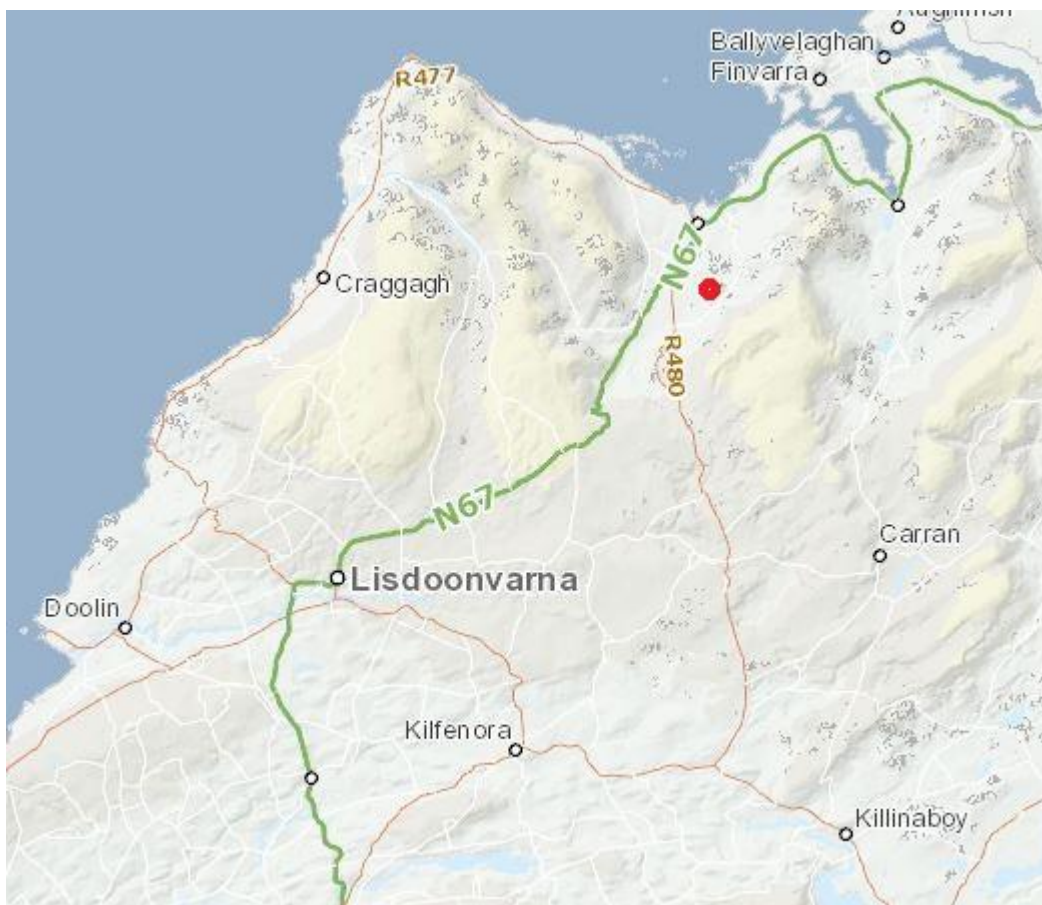


Figure 1: Location of Aillwee cave (denoted with red circle)

1.2. LAND DESIGNATIONS

Aillwee Cave Visitor centre lies on the boundary of Moneen Mountain SAC. The indoor entrance area to the cave which houses a shop and restaurant is built into the Mountain. All other facilities – access road, car parks, Birds of Prey Centre, Farm Shop and Woodlands Activity Area are all located outside the SAC.



Figure 2: Aerial view of Aillwee Cave Visitor Centre in relation to Moneen Mountain SAC boundary (SAC area indicated with red hash marking)

1.3. FEATURES OF VISITOR INTEREST

1.3.1. Natural Heritage

Aillwee Cave was first open to the public in 1976.

The cave has a long complex history and radioisotope data suggest it is more than one million years old and was already formed before the last major ice advance. It was formed by rainwater dissolving the limestone as it flowed from the surface through vertical fissures called ‘grikes’ in the limestone over long periods of time. Water continues to flow in parts of the cave although the main passage is now inactive and dry.

The cave system consists of over a kilometre of passages leading into the heart of the mountain. Its features include an underground river and a waterfall as well as some large stalactites and stalagmites. The cave is typical of the caves of the Burren region, consisting in the main of stream passage and ending in a sump. The general direction is east–west but turns due south some 600 metres (2,000 ft) into the cave.

The cave originally contained a large stream but is now heavily backfilled with glacial infill. The formations visible on the show cave tour are rarely more than 8,000 years old but calcite samples in the recesses of the cave have been dated to over 350,000 years old.

The bones of bears found in Aillwee Cave and the shallow pits discovered in the passage suggest bears may have used the cave for hibernation.

The limestone terraces on the hill behind the cave contain evidence of fossil soils that are over 300 million years old.

The bases of the rocky terraces on Aillwee Hill mark the position of thin clay or shale layers in the limestone. These shale layers are thought to mark periods of exposure when sea-levels were lowered due to an ice age 330 million years ago. As sea-levels dropped the seafloor was exposed to weathering and soil formation. The subsequent sea-level rise covered these layers with limestone again. These clay layers are impermeable barriers to water and springs often emerge where they occur.

The Burren Birds of Prey Centre was established in 2008 with the objective of educating and entertaining visitors with dynamic flying displays set against the dramatic Burren Landscape. The mission of the Centre is to aid the conservation of Birds of Prey through visitor awareness and education, whilst actively fund raising for Raptor conservation monitoring efforts within Ireland. Eagles, Falcons, Hawks, and Owls from all over the world are housed at the centre and can be viewed by the public.

1.3.2. Built Heritage

The access building leading into the cave was the winner of the EC Europa Nostra prize. The entrance contains tourist information, craft shop and tea room.

2. SITE CONDITION

2.1. Access

2.1.1. Approach Roads

A branch road off the R480 leads to the entrance gateway to the site. This road is in very good condition and has a number of pull-in areas to allow two cars to pass. From the entrance gateway to the site, where the payment kiosk is located, the road ascends gently to the Birds of Prey Centre and Farm Shop. From this level to the car park in front of the cave entrance building there is a very sharp ascent. All roads are in good condition and well signed.

2.1.2. Directional Signage

The Aillwee Cave Visitor Centre is comprehensively signed on all approach roads.

2.1.3. Parking

Two parking areas are provided on site. One outside the Birds of Prey centre and a larger one at the Cave entrance building. There is adequate parking available for both cars and coaches.

2.1.4. Sanitary Facilities

Visitor's toilets are provided in the Cave building and in the Birds of Prey Centre. A licensed reed system treatment plant is maintained on the site and it is checked on a regular basis by the Environment Section of Clare County Council. An onsite Waste Management and Composting Systems is operated to reduce all waster produced on the site. All staff members operate under the 'Leave No Trace' policy and request visitors to do the same.

2.1.5. Environmental Policy

Aillwee Cave Visitor Centre is a member of the Burren Ecotourism Network. It operates under a set Environmental policy promising to undertake the following actions:

- To achieve sound environmental practices across their entire operation.
- To produce an Annual Environmental Plan setting out their Objectives, Targets and planned Actions.
- To comply fully with all relevant legislation.
- To minimise their waste and reduce our water consumption where possible.
- To Reduce, Reuse and Recycle the resources consumed by their business wherever practical.
- To invite our customers, visitors, suppliers and contractors to participate in our efforts to protect the environment.
- To provide all employees with the training and resources required to meet their objectives.
- To constantly and consistently engage with and support charitable partners within the Burren and nationally.
- To openly communicate their policies, respecting the Burren and Cliffs of Moher Geopark Sustainable Code of Practice, to interested parties likes our staff, visitors, suppliers and charitable partners within the Burren and nationally.
- To monitor and record their environmental impacts on a regular basis and compare their performance with their policies, objectives and targets which are listed in their action plan.

2.2. Visitor Facilities

2.2.1. Recreational Facilities

Attractions at the site which are open to visitors on a year round basis are

- 30 minute guided tours of the cave;
- the Birds of Prey Centre with regular flight demonstrations;
- hawk walks through the woodland;
- bushcraft activities in the woods
- cheese making demonstrations in the Farm shop and
- access to a mountain walk to the rear of the cave through the karst landscape.
- Seasonal events include Santa in the Cave at Christmas and Halloween events.

2.2.2. Interpretation

Guided tours are provided of the cave at 30 minute intervals.

At the Birds of Prey Centre information boards provide details of the types of birds and their habitats which are on view. The flying displays are fully narrated. Staff provide educational talks on site and occasionally in local schools on Raptors, their biology, conservation and the ancient art of Falconry.

A hour long 'Hawk Walk' through hazel woodland and across Burren limestone pavement, is guided and instructed by experienced Falconers.

3. CURRENT VISITOR USE OF SITE AND RESULTING IMPACTS

In September 2014, a number of GeoparkLIFE initiatives were developed to provide baseline data on visitor numbers at each of the demonstration sites and to develop a methodology to determine how visitors' behaviour is impacting on the natural and built heritage of sites.

3.1. Visitor Numbers

Unlike the other demonstration sites visitor numbers are recorded on a regular basis at Aillwee Cave. In 2014 the visitor numbers recorded at Aillwee Cave Visitor Centre was 110,000 people. Numbers have doubled since the 1990s (pers. Comm. Nuala Mulqueeney Site Manager)

Through the GeoparkLIFE initiative a footfall counter was installed at the entrance to the Mountain Trail above the cave building on September 11, 2014 to measure visitor numbers and times of visit. The following numbers were recorded between September 9, 2014 and February 13, 2015:

Poulnabrone Visitor Numbers	
Month	Numbers Recorded
September 2014	614
October 2014	531
November 2014	305
December 2014	174
January 2015	167
February 2015	188
Total (9-9-14 to 13-2-15)	1979

Table 2: Data recorded by GeoparkLIFE footfall counter September 2014 – February 2015

3.2. Visitor Attitudes Survey

A Visitor Survey was conducted at Aillwee Cave between 5th September and 11th October 2014 as part of a wider survey of the GeoparkLIFE demonstration sites by Millward Brown Ltd. 84 people were interviewed. The purpose of this survey was to record visitors' attitudes to the infrastructure at the sites and to the Burren. The results indicate:

- 94% of visitors interviewed gave a rating of between 8-10 for signposting to the site (1 being poor and 10 high):
- 96% rated physical entry between 8 and 10
- 100% rated parking facilities between 8 and 10
- 64% arrived by car to the site and 27% by coach
- 78% noticed the information; 65% read them entirely and 28% partially; of those that read the boards 98% felt that they added to their understanding of the Burren.
- 57% were very satisfied with the site and 40% were satisfied.

The full results of the interviews at Aillwee Cave are contained in Appendix I.

3.3. Visitor Survey and Observation Studies

On the 6 September 2014 visitor observations were undertaken as part of the CAAS Ltd.¹ study to assist GeoparkLIFE to develop a survey methodology for assessing environmental impacts at the demonstration sites. One surveyor was present at the site, stationed on the mountain walk to the rear of the cave building. 114 visitors were observed during this exercise.

The results indicate that

- 45% of visitors arrived by car and 47% by bus

¹ CAAS Ltd. 2015 'Pilot Visitor Observation Studies of Environmental Impacts at the Burren & Cliffs of Moher Geopark, Co. Clare'.

- The majority of visitors climbed up the steps and upon observing the steep incline and lack of marked pathway descended quickly. Some climbed up a short way to look at the view or take a photo and departed quickly.
- 46% caused incidental movement of stones or rooted vegetation as they climbed up the slope, this however had no discernible impact and no lasting damage was observed.
- One child was observed removing a rock from the area, this group of visitors represents 3% of all visitors to the site.
- Overall, the activities and effects observed during the study were not reported to result in any significant, long term adverse effects.

3.4. Ecological Study of Visitor Movement

As part of the CAAS Visitor Observation Study, EirEco Environmental Consultants were commissioned to carry out vegetation monitoring at the GeoparkLIFE demonstrations sites between October 21, 2014 and December 2, 2014. Vegetation was analysed in 1m² quadrats at pre-selected locations identified by CAAS in each site. Seven quadrat surveys were conducted at the Aillwee Cave site on the Mountain trail above the Cave building, as illustrated in Figure 3.

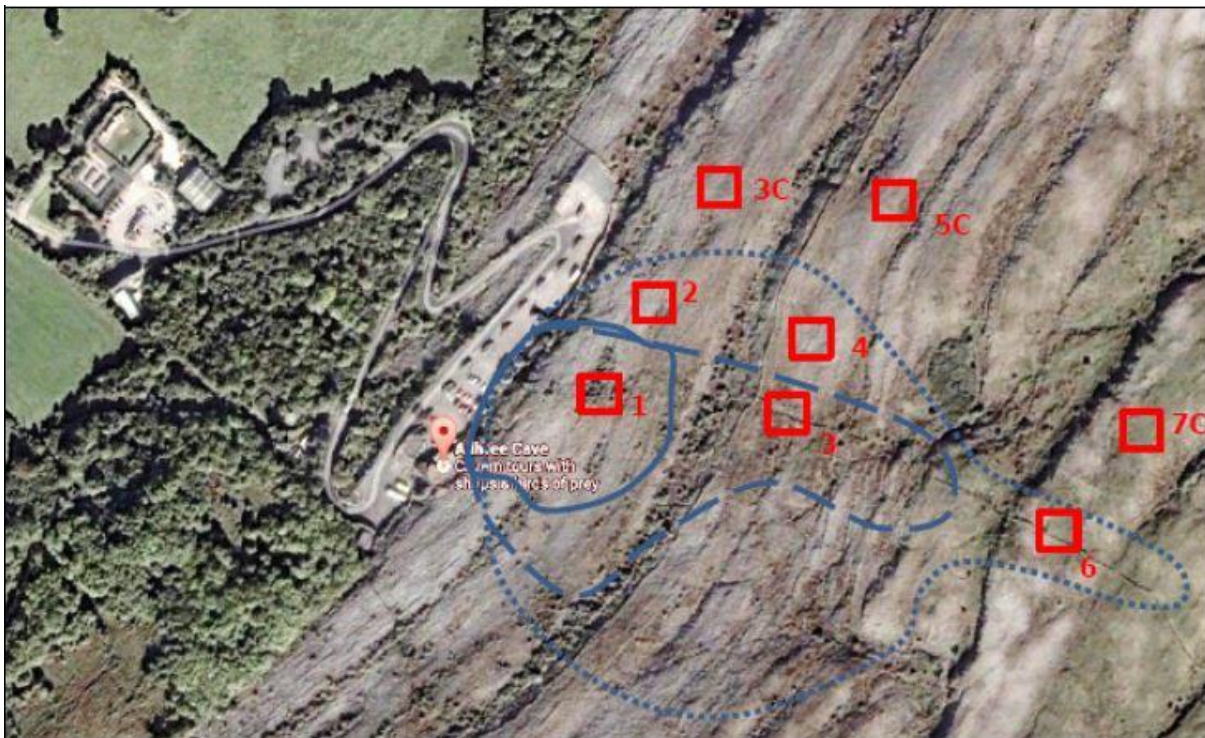


Figure 3: Quadrat locations on the mountain trail above Aillwee Cave.

The site results in the report state:

‘All quadrats are located in this unmanaged but periodically grazed environment which consists of open limestone pavement with strongly structure terracing. There are distinct vegetation bands associated with the larger flat terraces, with vegetation varying between calcareous grassland, heath and scrub.

*The strongly structured terracing of the site limits the accessibility of certain areas to grazing by cattle, which results in localised areas of rank vegetation and scrub. The non-native plant Red Valerian (*Centranthus rubra*) was introduced around the cave approximately 20 years ago and has since established itself widely within the limestone pavement in the vicinity of the upper car-park. The plant was present over a considerable area on the pavement above the car-park facility and presents a very significant threat to the native communities of plant associated with the Burren karst*

landscape. The visual effect of tourist activity on the vegetation at this site is limited to the immediate vicinity of the steps leading from the carpark. While there is an obvious trail at the lower level with localised compaction of vegetation, it appears that visitors spread out over a broader area higher up. As with many sites which have exposed limestone pavement, visitors tend to walk preferentially on the rock thus avoiding trampling the vegetation. The grazing and poaching by over-wintering cattle has a far greater and more discernible impact on the vegetation at the higher levels. There is evidence of mini –dolmen and cairn building at a number of locations in the area’.

3.4. Conclusions: Site Appraisal of Recreational Pressure Points

Aillwee Cave is a very good example of how a visitor centre, using the natural heritage of the area as an attraction, can be managed successfully under a strict environmental policy. The enterprise is very successful in terms of visitor numbers, the employment of local people on a year round basis, protection of its environment and environmental awareness raising among its staff and clientele.

The only possible negative that appears through this assessment is the presence of Red Valerian (*Centranthus rubra*) at the site. This plant is a non-native and considered by some as an alien invasive. Further research is required to establish whether this plant is causing displacement of native plants.

4. SITE MANAGEMENT

Aillwee Cave is owner managed by the Mulqueeny and Johnson families. Nuala Mulqueeny is the on-site manager.

Several actions have been undertaken by the management in recent years to reduce any adverse effects the operation might have on its environment. These include:

- Reduction of the numbers of visitors entering the cave during each tour from 30/35 to 25. This action was undertaken to protect the humidity of the cave and due to customer feedback that it was too noisy and the guides were hard to hear.
- To control numbers of visitors at the entrance building to the cave and prevent build-up at the reception desk, each visitor group is met at the road entrance gate, greeted warmly and given a map. The parking areas are indicated on the map with directions to all the attractions within the site.
- A road train has been introduced to ferry people around the site should they wish to avail of it. This is particularly aimed at the less able bodied.
- The lighting in the cave is kept at a low level to maintain humidity and habitat. Guides turn on spotlights along the tour as required.
- The colony of lesser horseshoe bats who inhabit the cave are regularly monitored by a professional ecologist to maintain a healthy population.
- Radon levels are regularly monitored by monitor boxes in the cave chambers and portable monitors carried by the guides.
- The Birds of Prey Centre operates under a Zoo licence which is monitored by the national Parks and Wildlife Service once every 18 months.

APPENDIX I

VISITOR ATTITUDES SURVEY Aillwee Cave 2014 (MWB)

1. How long do you intend visiting this site?

Less than 1 hour	1-2 hours	3-4 hours	5-6 hours	Full day
27	66	7	0	0

2. How would you rate the signposting for directions to this site on a scale of 1-10 (1=poor; 10=very good)

1	2	3	4	5	6	7	8	9	10
0	0	1	0	5	0	1	20	26	48

3. How would you rate the physical entry to this site (including stiles and footpaths)

1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	5	21	27	48

4. How would you rate the parking facilities at this site? (Scale 1-10)

1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	20	29	51

5. Have you noticed any information boards at this site/location?

Yes	No
78	22

6. Have you read the information on them?

Yes	Partially	No
65	28	8

7. Did the information add to your understanding of the Burren?

Yes	No
98	2

8. How would you rate your overall satisfaction with your visit to this site?

Very dissatisfied	Dissatisfied	Neither satisfied or dissatisfied	Satisfied	Very satisfied
0	2	0	40	57

9. What is the main type of transport you are using to travel within the Burren?

Own car	Hired/rented	Public transport	Motorbike	Coach day tour	Coach guided tour	Private chauffeur tour	Bicycle	Other
40	24	0	2	21	6	1	1	4