Repair and Habitat Restoration for Sustainable Access on Errigal Mountain, Co. Donegal

ASCENT
Promoting Sustainable Access to Uplands & Natural Environments

Comhairle Contae Dhún na nGall
Donegal County Council

Prepared
for: Donegal County Council

by:
Earthy Matters Environmental Consultants
Glenvar
Letterkenny
Co. Donegal
Tel: 0749177613
E mail: flo@earthymatters.ie
www.earthymatters.ie

Earthy Matters

Jan 2019

Table of Contents

1. Introduction

One of the objectives of the ASCENT project is to repair and assist the restoration of the damaged habitats present within the area of Errigal Mountain, in line with the conservation objectives of the Cloghernagore Bog and Glenveagh National Park Special Area of Conservation (SAC), a protected European site. Article 6 of the Habitats Directive (Directive 92/43/EEC) which took effect in Ireland in 1997 (S.I. No. 94/1997 – European Communities (Natural Habitats) Regulations, 1997) stipulates how European site are managed and protected by:

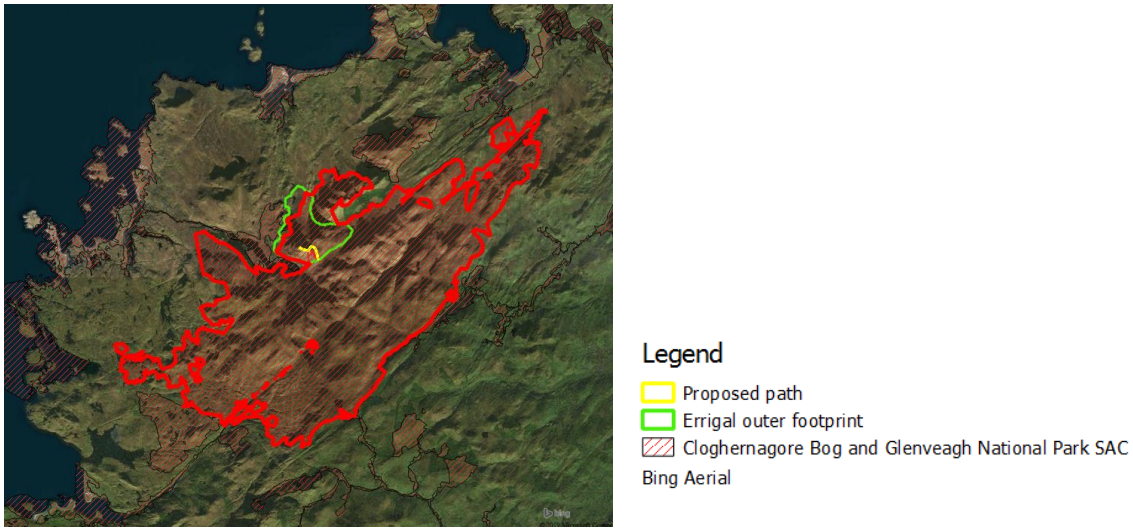
a) establishing necessary conservation measures to protect it
b) taking appropriate steps to avoid the deterioration of natural habitats and species for which the site has been designated.
c) restoring those habitats if required.

Therefore, a tailored Restoration Management Plan has been drafted in conjunction with the sustainable access path to Errigal Mountain. This was carried out in close collaboration with the National Parks and Wildlife Service (NPWS).

2. Conservation objectives

The proposed project is located within the Cloghernagore Bog and Glenveagh National Park SAC (002047), which is an exceptionally large (33,459 ha) inland mountainous site in the heart of Co. Donegal (see extent in Figure 1 below).

Figure 1: Cloghernagore Bog and Glenveagh National Park SAC in Co. Donegal vis-à-vis Errigal Mountain footprint



It has been designated in order to maintain or restore the favourable conservation condition of the following habitats and species listed on the Annex I/II of the EU Habitats Directive (* denotes priority habitat):

- [1029] Margaritifera margaritifera
- [1106] *Salmo salar* (only in fresh water)
- [1355] Lutra lutra
- [1421] Trichomanes speciosum
- [3110] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflora*e)
- [3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *allitricho-Batrachion* vegetation
- [4010] Northern Atlantic wet heaths with *Erica tetralix*
- [4030] European dry heaths
- [4060] Alpine and Boreal heaths
- [6410] *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinia caeruleae*)
- [7130] Blanket bogs (* if active only)
- [7150] Depressions on peat substrates of the *Rhynchosporion*
- [91A0] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

3. Assessment of condition within the whole SAC

As a European Site, Cloghernagore Bog and Glenveagh National Park SAC has been monitored and assessed to identify its conservation status vis-à-vis the above list of habitats and species. It should be noted that no management plan currently exists for the SAC.

The approximate areas for Wet heaths, Dry heaths, Alpine and Boreal heaths and Blanket bogs (* if active bog) have been published (Table 1 below), together with the Conservation objectives supporting document for blanket bogs and associated habitats. National Conservation Assessment (NCA) for each of the Annex I habitats (NPWS, 2013) was utilised to indicate the condition of the habitats in the SAC. If the area and the structure/functions were both assessed as "Favourable", the objective for that habitat is to maintain a favourable conservation condition. If either parameter was assessed as "Unfavourable – Inadequate" or "Unfavourable – Bad", the objective for that habitat is to restore the favourable conservation condition.

All aforementioned habitats were assessed as 'Unfavourable – Bad' for structure/ function. All habitats (with the exception of Alpine and boreal heaths) were also assessed as 'Unfavourable – Bad' for area (Table 1). **It has thus been concluded that the conservation objectives were the restoration of the favourable conservation conditions of Wet heath, Dry heath, Alpine boreal heath and Blanket bog for this SAC.**

Overall conservation objective of a European Site:

Achieving 'Favourable Conservation Status' is the overall objective to be reached for all the above habitats and species for this SAC. It is defined in positive terms such as that 'a habitat type or species must be prospering and have good prospects of continuing to do so' (NPWS, 2017).

Table 1: Estimated extent and conservation status of habitats listed as qualifying interests for Cloghernagore Bog and Glenveagh SAC (adapted from NPWS 2017).

Habitat	Conservation Status	Approximate area (ha)	% SAC
4010 Wet heaths	Unfavourable	3396	10
4030 Dry heaths	Unfavourable	5744	17
4060 Alpine and Boreal heaths	Favourable	245	1
7130 Blanket bogs (* if active bog)	Unfavourable	22607	68

4. Assessment condition of Errigal Mountain

Errigal Mountain is a typical upland ecosystem with habitats (wet heath and blanket bogs) that are sensitive to natural and anthropogenic damage. The land on the lower slopes of Errigal has been used in the past for extensive sheep grazing and turf cutting. The turn of the 21st century saw a dramatic increase in walkers climbing Errigal, generally using the most 'direct' route located west of the stream from the car park. Figure 2 below shows all existing routes which are referred to below when describing the condition and potential for restoration of each area.

Figure 2: Map showing existing routes, used and damaged areas. The proposed route follows the 'Stream side' route.

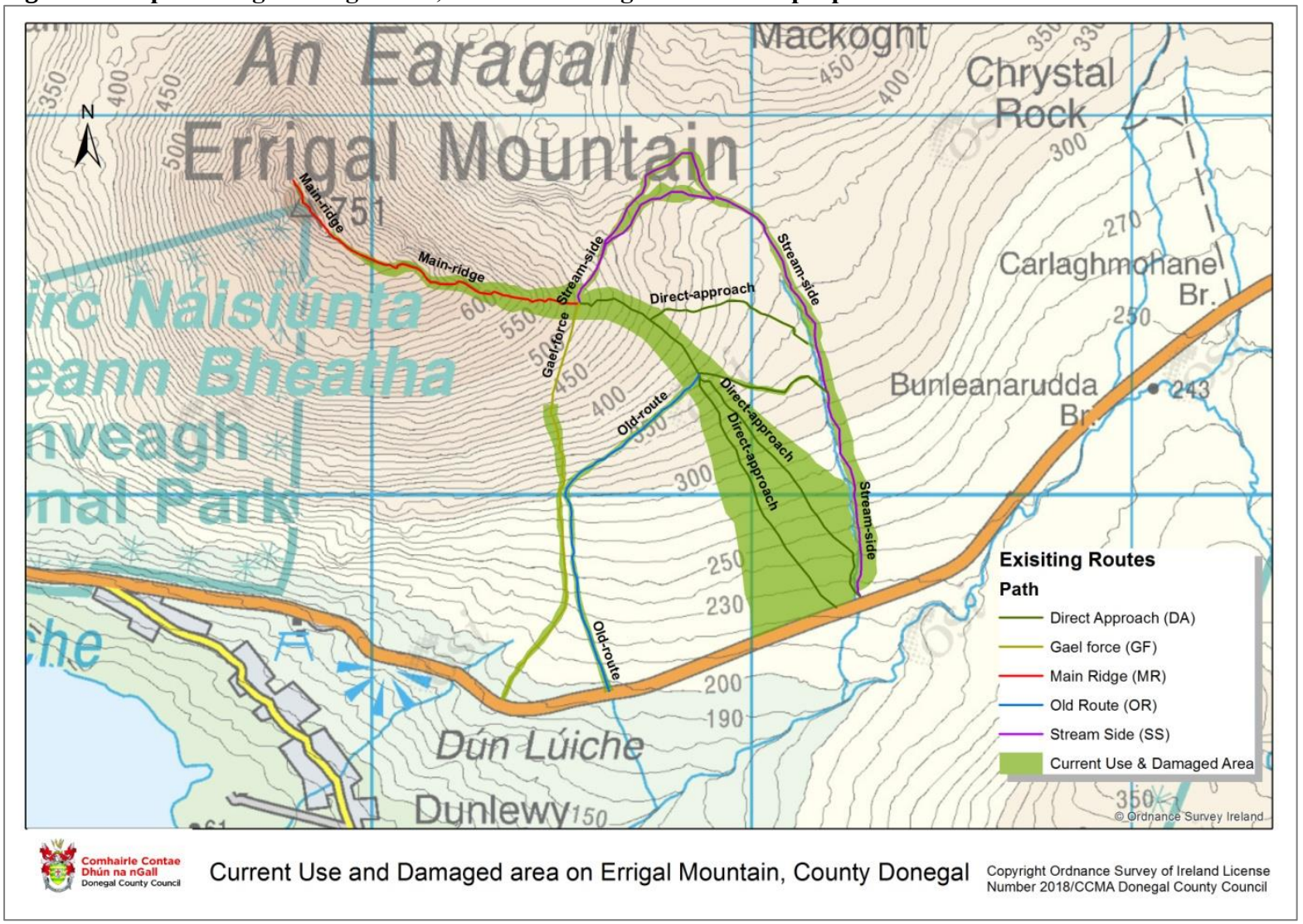
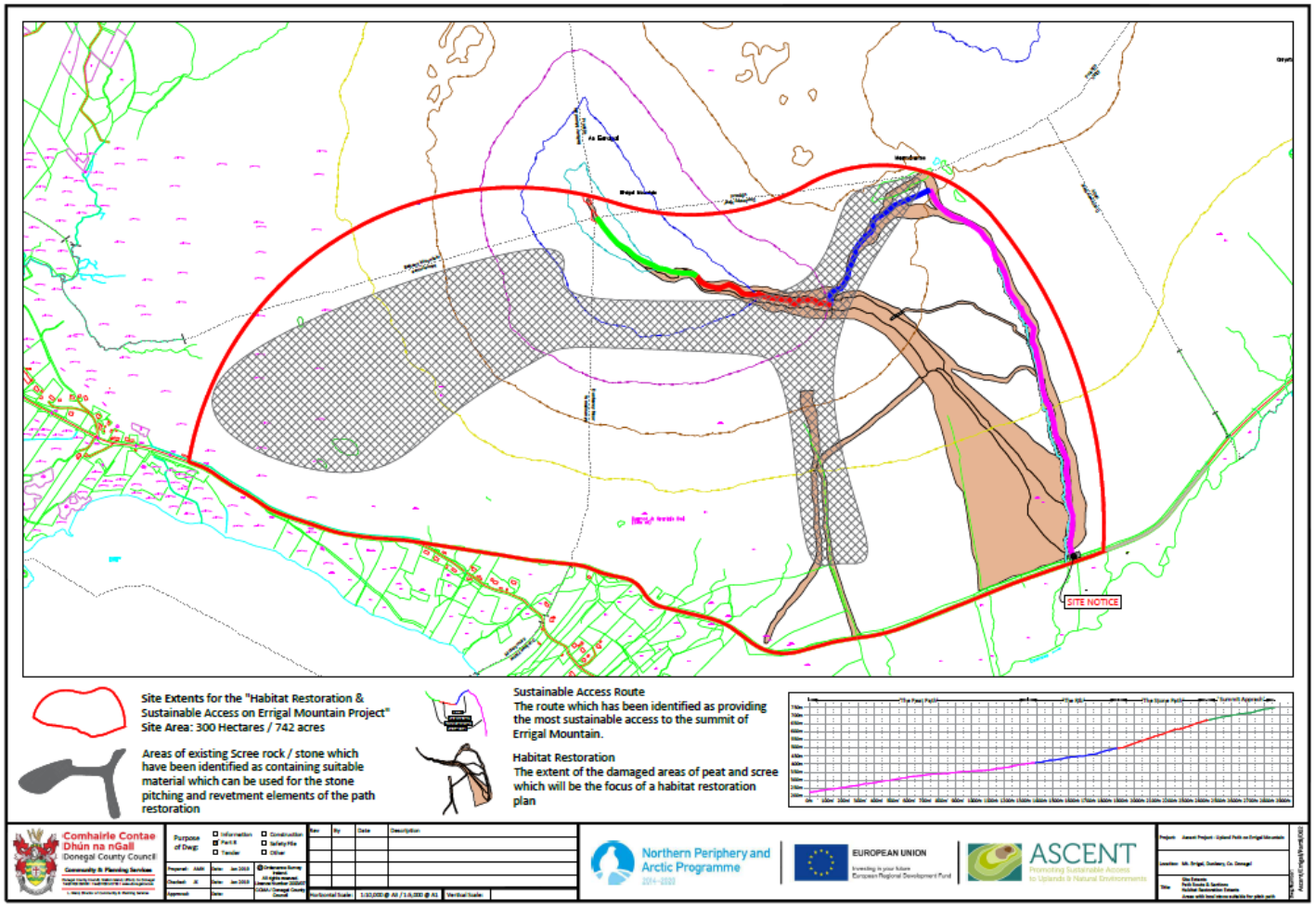


Figure 3: Map showing path sections of the proposed Sustainable Access Route, extent of Habitat Restoration Plan and areas to source boulders.

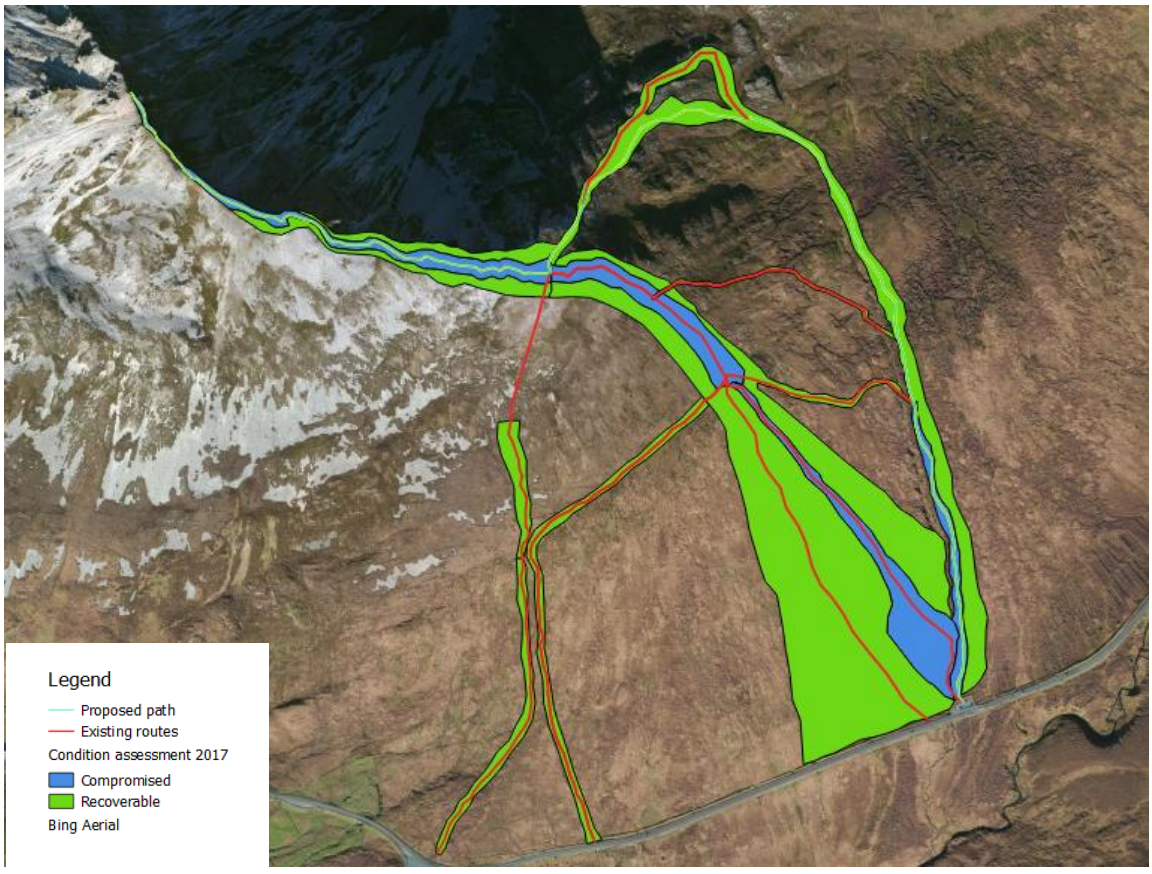


Habitat condition in main areas

Footpath erosion, together with on-going wind and water erosion, is now re-shaping the landscape of the mountain at a rapid rate. A 'Condition Assessment' of habitats carried out in 2017 shows the most 'compromised' areas used by walkers (Figure 3).

All the routes were further monitored over the course of 2018. In Appendix 1, a plate of photos shows the damage incurred in the more degraded parts of the various access routes. The dry summer of 2018 brought heavy walkers' traffic and the trampling of vegetation extended to an even wider area in both the 'Direct Approach' and 'Stream Side' routes, especially at the lower slopes of the eastern part of the stream, up to a point where walkers cross the stream to join the existing Direct Approach' route. The subsequent heavy rainfall during the autumn 2018 eroded the now almost-bare area. Erosion has been exacerbated by damage of walkers climbing peat hags (see photos in Appendix 1). The steeper areas have seen continued erosion with more material being moved down. Meanwhile the 'old route' has not been visibly further damaged and looks the least degraded. This assessment supports the design of a sustainable access path along the eastern side of the steam which will assist the restoration of the most degraded areas currently within the SAC while removing additional pressures on other parts.

Figure 3: Condition assessment of habitats (carried out in 2017).



5. Repair and habitat ecological restoration actions

An in-depth ecological assessment of the damaged areas demonstrated the need for a tailored management plan to accompany the path design (Detailed Design Report by Dougie Baird, Kland ltd, 2019). Wet heaths occur in an intimate mosaic with blanket bog on the lower southern-eastern slopes of Errigal and are by far the most affected of the habitats for which the SAC was designated. Disturbance in the form of human trampling has resulted in loss of characteristic plant species and some severely eroded heath and bog habitats are present, especially nearer the car park where a large patch of disturbed bare ground is currently exposed to wind and rain and contributes to sediments entering the river systems (see Plate of photos in Appendix 1). Since walkers avoid these muddy areas, an increasingly wider area is being trampled and further eroded (currently reaching 50 m on the western side of the stream). Further trampling has occurred on the bank of the stream where walkers move back and forth between the two sides to find an easier route (see Plate of photos in Appendix 1).

The lower section of the mountain should be the focus of the Repair and Habitat Restoration Plan and the main recommendations are summarised as follows:

1 A **successful repair and restoration plan** can only be achieved by providing a sustainable access path (proposed stream route), which will in effect **remove all activities** in the most damaged area (existing route west of the stream).

2 It is also expected that the proposed path and associated displayed information will confine the walkers to this new path and, therefore, will permit the natural recovery of nearby vegetation and habitat in the vicinity of the path (existing Stream Side route east of the stream). The path has been specifically designed to encompass the corridor of already eroded areas (see Plate of photos in Appendix 1) and to protect sensitive micro-habitats (e.g. hags).

3 The Method Statement (Detailed Design Report) includes a series of prevention measures to avoid any further peat erosion from the path: the combination of splash plates stone (in steep drop or soft ground) and anchor bars to hold the surfacing on the ramp below the waterbar, creating a more durable walking surface, will prevent erosion behind the face stones. Monitoring of these sensitive areas should be conducted after construction.

4 Sourcing of the larger boulder to ‘anchor’ the path will take place in pre-approved locations within the footprint of Errigal Mountain (requirement appropriate Ministerial consent) and will be gathered by hand and transported by helicopter (see proposed areas in Figure 2). This will help the natural regeneration as well as natural landscape features.

5 In consultation with NPWS, it is proposed that a chestnut paled fencing will be temporarily installed at judicious locations along the eastern part of the stream in order to restrict passage over the stream to further restrain stray walkers.

6 Based on restoration experience gained in other Irish blanket bogs, the removal of trampling alone will likely be successful in the areas that have retained their natural hydrology and where the physical conditions of the bog surface were not irreversibly damaged as a result of combination of peat depth, vegetation, slope and erosion. Photo 1 below shows the middle section of the 'Direct Approach' route which includes relatively deep peat area and robust vegetation and where recovery will likely be successful once trampling is removed.

Photo 1: Mid-section of the 'Direct Approach Route' likely to natural regenerate (facing north).

7 However, some patches or sections along the 'Direct Approach' on the western side of the stream have suffered extreme degradation. Photo 2 below shows an extremely degraded part of the bog where all vegetation has been removed and the peat mass is now compacted and hydrologically isolated. It is proposed to first monitor geo-referenced quadrats within these several damaged areas over the course of two years following the path construction. Initially, peat sods may be strategically placed to dam eroded gullies that are carrying fine sediments from the sub-peat mineral soil. Further planting with heather may be recommended in the bare peat hags to help the colonisation of vegetation by removing wind erosion effect. No further management will be implemented until further assessment of recovery is carried out. It should be noted that there will be **no** use of artificial or natural fertiliser under any circumstances.

Photo 2: Lower area, near car park on the 'Direct Approach'route. December 2018. Facing east.

8 Further up on the steeper grounds, the peat is thinner and thus more sensitive to degradation exposing sub-peat mineral soils and aggregate material. In some cases, a gully has formed exposing large aggregate material that are sensitive to physical disturbance (by walkers' boots or major rainfall events) (see Photos 3&4 below).

Photos 3: Upper section of the peat area showing large gully erosion (direct approach, facing south-east).

Photos 4: Steeper section of the peat area showing large gully erosion (direct approach, facing north).

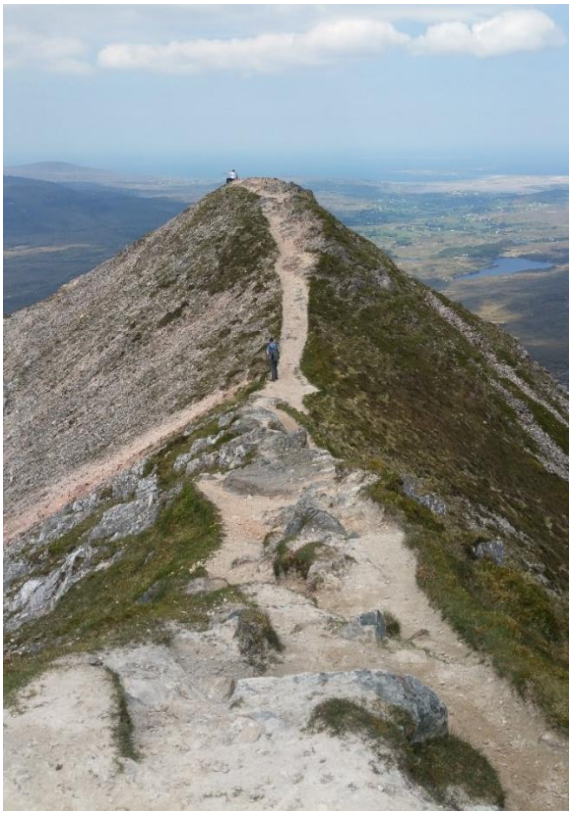
In terms of habitat restoration, these areas are extremely problematic and, while the exclusion of hill walkers will help recovery by stabilising the aggregate and the remaining soil, the recolonisation by vegetation will be very slow. It is proposed to monitor geo-reference quadrats to appraise the development of vegetation. Some aggregates that have been kicked further down may be brought back up to slow the runoff of surface water through large gullies, creating small dams that will help the recovery of bog-specific vegetation.

9 The stony, steep slope (see Photos 5&6 below) has very thin soil and short vegetation, if any, in the vicinity of the current route. This section will require little action since the path will follow the worse affected areas. Vegetation will slowly recolonise where possible as the walkers are restricted to the new constructed path, thus preventing the further movement of aggregates down the slope.

10 Finally, the flat ridge near the summit of Errigal has currently a very narrow path, which will also form part of the new proposed path (see Photos 7&8 below). On either side, the Alpine and Boreal heaths, which occur there naturally, are mostly intact and will remain unaffected. However, monitoring is also prescribed for this section to appraise the effect of the path construction.

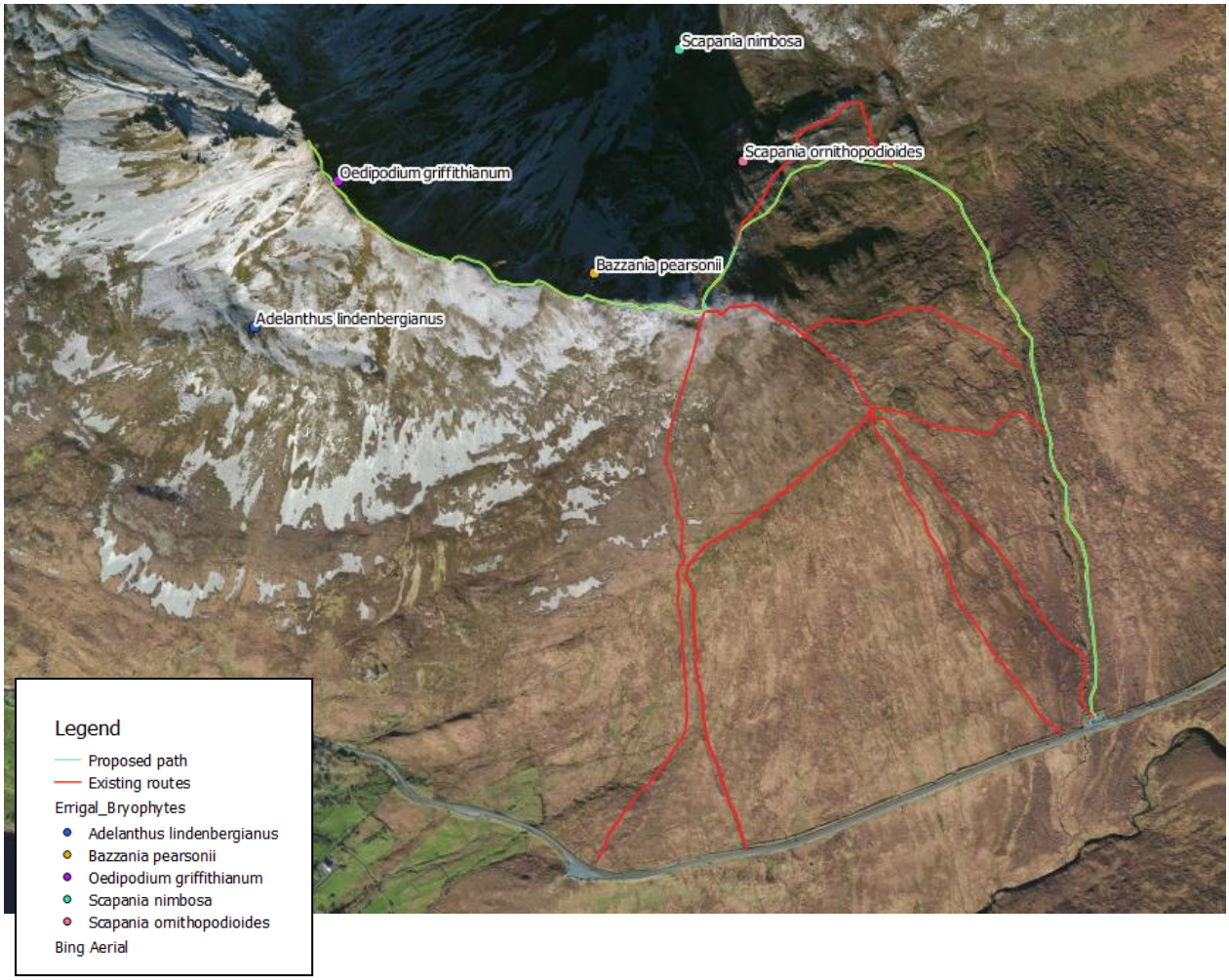
Photos 5&6: Steep ridge facing west on the steepest part of the climb (main ridge facing north).

Photos 7&8: Main ridge near the summit of Errigal (facing north).



11 Finally, rare species can occur within the mountainous habitats found on Errigal Mountain and rare mosses and liverworts have been recorded within the vicinity of the project (see Figure 9 below map of location). Therefore, care should be taken not to disturb these species that usually occur within hepatic mats (Calluna vulgaris-Herbertus aduncus community). From the Flora (Protection) Order (updated January 2018), the following four mosses have been identified in the vicinity of the project: *Adelanthus lindenbergianus, Scapania nimbosa*, *Bazzania pearsonii* and *Oedipodium griffithianum*. Their locations have been recorded (see map below) and the working corridor will remain outside their vicinity. The moss *Oedipodium griffithianum* (located on the summit of Errigal mountain) is growing on a very steep rocky northeast-facing slope below the summit; the route is located just above. Supervision by a suitable ecologist, together with appropriate methods at this location will be employed to avoid any disturbance to this population. Meanwhile, the proposed path will prevent further damage of the Alpine Heath habitat and by presenting one line will help restore habitat on either side.

Figure 9: Location of rare species (mosses and liverworts) vis-à-vis project (proposed path in green; used routes in red).



6. Wider positive effects

Repair and Habitat Restoration will directly restore the favourable conservation status of several habitats, which will also favourably affect the conservation condition of species using these habitats.

The stream at this location enters the Lackagh-Owencarrow catchment, which is located within Fawnboy/Lough Nacung SAC. This European site has been designated mainly because it is a Freshwater pearl mussel (*Margaritifera margaritifera*) catchment. It is, therefore, critical to restore the bog vegetation upstream on Errigal Mountain in order to stop any sediments entering hydrological pathways.

Wet heath and blanket bogs support both upland and woodland bird communities for which Derryveagh and Glendowan mountains SPA has been designated. The proposed project is located within this SPA, which overlaps with the Cloghernagore Bog and Glenveagh National Park SAC at this location. It is an extensive upland site (9592 ha) with blanket bog and heath being the principal habitats present. The site supports good examples of both upland and woodland bird communities with breeding Merlin (*Falco columbarius*), Peregrine (*Falco peregrinus*), Golden Plover (*Pluvialis apricaraia*), Red-throated Diver (*Gavia stellata*) and Dunlin (*Calidris aplina scinzii*) all being listed on Annex I of the Birds Directive, as well as *Turdus torquatus* and *Lagopus lagopus*, both Red-listed species in Ireland. The lakes and the woods provide important habitats for these bird species. The objective of this designated site is to maintain or restore the favourable conservation condition of the Annex I habitats and Annex II species for which the SPA has been selected.

- Gavia arctica [breeding]
- Falco columbarius [breeding]
- Falco peregrinus [breeding]
- Pluvialis apricaria [breeding]
- Calidris alpina schinzii [breeding]

The restoration works proposed as part of this project will have, therefore, a wider positive effect on the conservation objectives of Cloghernagore Bog and Glenveagh National Park SAC and also those located in the vicinity, namely Derryveagh and Glendowan mountains SPA.

7. Conclusion

In conclusion, this report presents a tailored Repair and Habitat Restoration Plan for the Sustainable Access of Errigal Mountain depending on the physical characteristics of the existing areas. Amongst the crucial action is the total removal of trampling impact on the currently predominantly used access path (west (left) of the stream). This will not only help habitat restoration within the most degraded part of the area but also prevent wider negative ecological impact downstream. Natural regeneration should be closely monitored, and further actions assumed in cognisance of the very sensitive elements of the environment (peat soils and water quality).

Overall, the long-term restoration of these disturbed areas would appear to support the conservation objectives outlined above and refers to the specific measures needed to address the ecological requirements of protected habitats and species present on site.

Appendix 1: Plates of photos over 2018

Lower area, near care park, left of stream. December 2018. Facing north.

Lower area, near car park, right of stream. March 2018 (facing west)

Lower area, near car park, right of stream. December 2018 (facing west)

Gully developing following severe erosion of the peat in the lower slopes of the route (west of stream; near car park).

Lower area, left of the stream. December 2018, (facing north).

Trampled area on the bank of the stream near car park (facing south).

Deep peat section showing damage of walkers climbing peat hags and leading to further erosion by water. Right of stream. October 2018. Facing north.

Existing path right of stream (facing north)

Existing parth right of stream mid-section (facing north)