ASCENT

Upskilling Training Event

at Sliabh Liag

January 23rd & 24th 2018

Event Report

1. Background

As part of the ASCENT project, activity T3.3 is to enable an upskilling programme for path management to be undertaken in partner regions. The focus of the activity is to ensure learning and retention of skills within each partner community for the long term maintenance and sustainability for upland paths in the projects sites.

Any intervention(s) to repair and restore the habitat on ASCENT site Errigal Mountain in County Donegal would be subjected to the necessary environmental and planning assessments. Therefore onsite training on Errigal would not be possible until the planning consent was achieved. Donegal County Council are currently overseeing remedial works along the coastal path at Sliabh Liag in south west Donegal; one of the County's main tourist destinations which is being affected by erosion and increased visitor numbers. Therefore it was proposed to host the upskilling programme at Sliabh Liag until on-site work would be permitted on Errigal Mountain, possibly at a later date during the project term.

Figure 1: Sliabh Liag / Slieve League 601 metres Sea Cliffs along the Atlantic Coast is South West Donegal

A two day course was developed by McGowan Ltd in conjunction with engineering staff from the Community, Culture and Planning Directorate within Donegal County Council, from the 24th to the 25th of January 2018 as part the Sliabh Liag Strategic Development Project. The purpose of the course was to have both theory and practical on-site training on upland path construction techniques to provide attendees with the basic understanding of construction techniques and path maintenance.

Through the Errigal Stakeholders Group, three members from the local community near Errigal expressed an interest in undertaking the course, along with the ASCENT project co-ordinator and two members of the path team from ASCENT's sub partner Mourne Heritage Trust in Northern Ireland.

Figure 2- Participants at the Sliabh Liag Training Programme, January 2018

Figure 3 - Theory based training at Sliabh Liag Visitor Centre in County Donegal

'To provide the skills to local people to have expertise to maintain paths'

2. The Training Programme

The training event had bespoke programmes for the two target audiences to include – trainees and managers as follows:

Trainees were to attend both days with:

a. **Day 1** (23rd January) focussing on the theory element prior to an onsite induction, practical demonstrations and application of practical path constructions techniques.
b. **Day 2** (24th January) included practical path construction techniques continuing on site.

Managers were to attend Day 1 only which included elements of theory appropriate to the target audience followed by survey techniques.

2.1 Day 1 – Part 1

Day 1 commenced in a classroom environment setting at the Sliabh Liag Visitor Centre focussing on:

1. **An Introduction to Upland Path Work** - to include principles, Environmental Impact, Surveying, Maintenance, Working Practises, Tools and Equipment, Health and Safety and Climate Change

'Project planning is key to path construction projects'

Figure 4 - Project Planning & Development

Consultations:
It is important that all stakeholders, agencies and landowners are **consulted** widely during the project planning phase and to garner the views of users groups and their requirements.

Environmental Impact:
The environmental impacts are important to consider with regard to the environmental designations of the site and the impact to the habitats the proposed development will have. More often planning conditions have to be adhered to. If funding was awarded, then specific requirements and conditions will have to be met. Timescales for the delivery of projects have to be realistic to ensure that the project is brought to fruition.

Design Considerations:

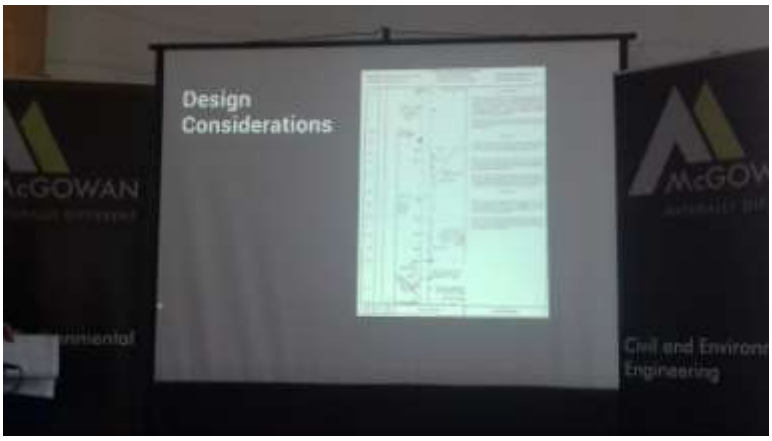

Figure 5 – Design Considerations for upland paths

The Upland Path Advisory Group and Scottish National Heritage have developed path construction standards which cover design considerations including drainage features, aspects, gradients and path alignment.
(http://www.snh.org.uk/pdfs/publications/heritagemanagement/UplandPathwork.pdf)
They have also published a complementary publication that looks at Upland Path Management.
http://www.snh.org.uk/pdfs/publications/heritagemanagement/UplandPathManagement.pdf

A key consideration when designing paths is water erosion, which can cause considerable damage to paths and surrounding land if not managed appropriately, and moreover is particularly detrimental on higher elevated sites with steeper gradients. A second consideration is materials; where possible the use of indigenous materials including on site aggregate is strongly encouraged. If those materials are not available, then quarry aggregate of a requested specification can be imported locally.
Visitor usage is a third consideration as factors such as user numbers will inform the path width. Other visitor factors will also impact path design, including user requirements, predicted visitor aptitude, the likelihood and the frequency of charity and sporting events. Trail remoteness and terrain considerations (e.g. wind exposure, gradient, aspect) should also be reflected within the path design. Finally, on-going

maintenance once the path has been completed should be factored into the design stage also.

'It is paramount that the path fits naturally into the landscape'

Erosion Control Techniques:
The path route should avoid a direct ascent as this can exacerbate the effects of erosion due water channels being created. Therefore re-alignment may be required with a more natural path contour to reduce the gradient and supplemented with stone pitching. If the drainage regime is not considered correctly, then this can create further erosion. It is advisable to blend in with natural land forms like stone boulders which guide the user along the path.

Figure 6 - Blending in with natural features at Sliabh Liag

The use of hand built versus machinery built paths will be dictated by the final width of the path. Keeping the summit as the end destination is advisable also.

Surveying:

Surveying involves assessing where priority routes or sections need repair or re-alignment. An amber survey or a condition assessment is the first stage in the process, followed by a red detailed specification. This survey type is targeted to a path or sections and includes a meter by metre survey to identify and prioritise in a hierarchical fashion, the roughness, and degradation aspects. The technique allows for a consistent approach and methodology across sites.

The red survey will identify building elements, a bill of quantities and how to transport materials on site. Others aspects will consider re-vegetation and regenerations on site, with restoration and landscaping requirements.

Site Access Constraints:

Site Access Network = Road –Path – None!

Figure 7 – Site Access Constraints

In the first instance natural materials on site should be used, for example for scree slopes for nature conservations purposes, otherwise a helicopter is an option to transport materials at a suitable location on site.

Design Specification:

An executive summary and detailed site location and layout maps are important for the specification. Health and Safety includes the path contractors risk assessment at construction phase.

'Good mapping is central for the design specification'

Assuming that building a good standard of path is the paramount goal of the client, then the first marker towards this goal are good specifications produced by the potential contractor. Of course really good specifications will be expensive to implement so the client/contractor relationship has to agree on which areas need a higher standard of specification.

One way of achieving this is for the client to buy time from the contractor, giving the contractor, the latitude to focus on the things that the client requires. Other ways to achieve this higher standard would be to imbed an in-house team and/or trained volunteers that were free of the time and money constraints that contractors have.

Stakeholder Engagement:

The specific skills are not necessarily in the local community and therefore skilled contractors are brought in to complete the path work. There is accredited training through UPAG with a level 2 SVQ offered to train path workers which covers Risk Assessments, Health and Safety and Habitat reviews. Volunteer training is suitable for large scale projects and is an opportunity for local involvement to assist in path development, and more importantly, the ongoing maintenance of the path once the contractor has moved on. Community training is very appropriate in remote environments, for example, weekend training.

Maintenance:

As part of the large scale capital projects, maintenance works should be built it as part of the overall project costs for on-going works required.

'Maintenance varies and depends on the project'

Principles of Path Work:

The terrain of the path route often designs the materials necessary to construct a well made path. Geotextile can be used to build a 'floating path' and is appropriate to boggy, peat conditions. The geotextile is pinned down and used where peat is >0.5 metres deep. Therefore the root system underneath is not interfered with and it binds together. Geotextile in an artificial elevation and therefore doesn't damage the habitats. Natural materials can also be used to the same effect, for example, the use of sheep's wool or rushes to create floating paths has been proven useful in the past.

An identification of material on site, for example on scree slopes, should be undertaken with a decision made if imported materials are required. If consent is given by NPWS, the stones are located using GPS technology and handpicked into bags as to reduce the risk to birds nesting there. A visual match is undertaken to ensure no gaps in the available stones are left. Airlifting of materials should be considered which is an environmentally friendly and a quicker method, although costs are higher. However, often when scree is defined as a natural heritage feature of the landscape, such as within areas designated as ASSIs or AONBs, stone must be collected elsewhere or else imported from quarries. A remote work camps may also be required if the duration to the path works is greater than 1hr 15 minutes.

Figure 8 – Transportation of Materials

Glacial till and borrow pits are very important natural sources of materials. Restoration works and reseeding are effective in re-landscaping disturbed land surrounding the path, and can also effectively be used to cover desire lines. Landscaping can also be an important measure to stop dominant species such as purple moor grass (*molinia caerulea)* comeing through and preventing the growth of native plant species such as heathers or native wildflowers.

2. **Upland Drainage** with examples of ditching, water bars, cross drains, culverts and fords

Figure 9 – Drainage Techniques

Drainage techniques are to ensure the sustainability of the path and managed the hydrology on site.

Water bars are used to capture water on the surface and shed it to the side. The steeper the path, the more regular the water bars at 30 – 50 metre spacing.

Stone culverts transport water from one part to another

Ditching is a technique to stabilise path work and for an aesthetic look using natural crops or alternatively allows native vegetations to establish there. Fords have been used traditionally although have been replaced with bridging over water due to health and safety issues. A general rule of thumb is that if it is marked on a 1:50,000 OS map, then it has to be bridged.

'Good design is very important and it has to be prioritised to ensure long terms sustainability'

3. **Upland Path Construction** regarding aggregate paths, reinforced surfacing, anchor bars and stone pitching

Surfaces:

Aggregate path are constructed using a soil reversal technique and compacted in layers with bigger stones and screed on the top layer, which helps with water drainage. Aggregate can be places on geotextile.

Figure 10 – Aggregate Paths

Natural materials like sheep wool have been effectively trialled.

Stone pitching is used with the right stone / rock match on site taken from scree slopes. This is determined by the amount of stone available.

Revetting involves natural materials to blend into the natural environment, although it is difficult work to undertake.

Figure 11 – Revetting

4. **Upland Path Site Restoration and Landscaping** discussing techniques, materials and use, path alignment, containing, stabilisation and restoring vegetation.

   Restoration involves blocking to contain users along a path with varying widths that fits into the natural environment, with an emphasis on careful design.

   Re-vegetation is transplanting indigenous plants, with nursery crops and grass seeds, which is concentrated into the immediate margins. The edges are defined with stones, vegetation and supplementing with seeding. Spot turfing is ideal for revegetation, but it is recommended to avoid depressions as this creates micro climate conditions.

   A maintenance schedule is a brief description and the frequency with recommendations, for example, how often to clear out drains. Maintenance is paramount to safe guard what is created!

'Empower communities to develop specialised skills'

2.1 Practical on site sessions

The afternoon session took place on site along the upland coastal path adjacent to the sea cliffs on Sliabh Liag with all participants encouraged to take park. (Insert map and photos):

1. Pitching Demonstration along Sections 7

2. Aggregate Path and Stone Drainage Demonstration along Section 8
3. Practical Path Construction

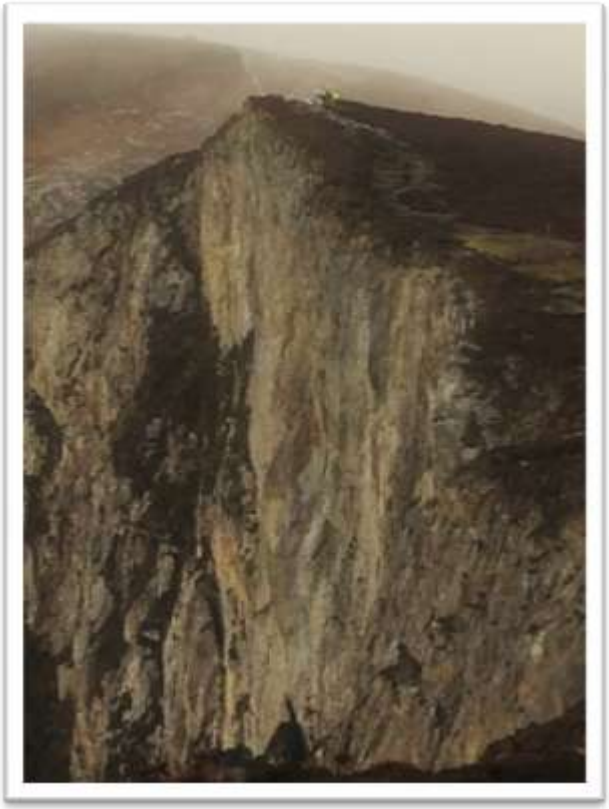

Figure 12 – Practical sessions on sites at Sliabh Liag

1. Pitching Demonstration along Sections 7

Stone pitching was used on Section 7 as a means of defining a route across the cliffs and to protect the wider corridor from increasing footfall. The use of stone pitching in this area had multiple benefits:

- It creates a durable surface suitable for steep slopes
- It can withstand high visitor and water erosion pressures - Pitched paths have a long life expectancy and require minimal maintenance because of these features.
- Used natural rock collected from scree deposits, in order to ensure that the path fit in with the natural landscape of the area.

Figure 13 - ASCENT team on site at Sliabh Liag

Pitching was conducted with techniques such as using hand tools (pinch bars, shovels, rock hammers), stone and gravel to complete the work. The width of the path was integral to its suitability; too narrow and visitors would veer off the stone to avoid other walkers or to seek shelter from prevailing winds coming off the Atlantic, yet unnecessary width would lead to inefficient usage of path materials and work time.

The design of the path also included multiple levels per step to blend the infrastructure more naturally with the surroundings, and to give walkers more variation when walking. Additional consideration was given to the height and direction of pitched stone, with each step less than 'two hands' higher than the one before, and stones were placed with a slight forward facing slop to ensure efficient water runoff and ease of use for walkers. Strategic water bars were fitted within the step infrastructure to navigate water flows off the path efficiently.

Stone placement for pitched paths involved the placement of a large 'setting' stone at the lowest point of a path gradient, from which other stones might be braced against. Paths were built with a 'bottom up' approach, with each pitching stone placed lengthways and butted tightly together against adjoining stones, on all side faces. All gaps between stones were wedged firmly with small stones, before the next row of stone was pitched. This ensures that the pitched stone was solid and would not be dislodged when the next row of stone was laid. Joints on adjoining rows of pitched stone were overlapped to give a solid and immoveable structure. Once this was completed, workers infilled all gaps between pitched stones with smaller stones, gravel and peat. This sealed the joints and thus preventing water getting in and under the pitching, as this would eventually loosen, wash out, or break up the stone when the water freezes and expands in cold winter temperatures.

Figure 14 - Before and after pitched path section with local lad James receiving some training

2. Building Stone Cross Drain and Landscaping along Section 8

Figure 15 - Before and After: cross drain; ditching; landscaping

Important to ensure a slight gradient from right to left, so water wouldn't back up and possibly seep onto the trail tread.

- Built one side of drain wall
- Laid in stone liner at the base of drain
- Built the other side of drain wall
- Formed a ditch using soil and turf as well as cutting a channel
- Packed and sealed drain joints
- Landscaping/Demarcation

One observation by the ASCENT path team was that the work was carried out using a small range of hand tools – relative to the range of tools we use in the Mournes.

They had: small shovel and small spade; stone hammers; a bar; and bucket; The ASCENT teams tool inventory consists of: several types of spade, shovel, and rock bars; Tampers;

various type bags and buckets; six types of draw tools (adze); two types of slipe (for skidding stone, gravel and turf); rubber malls and mallets etc.

3. Training Outcomes

'As an introduction to Upland path construction I found the two day extremely useful to me to learn and to undertake path work. I would be very interested in participation in any future training offered'

Clearly shown here are the stages for constructing an aggregate path:

- Remove turf and form a 'tray'
- Lay geotextile pin down edges
- Apply 1st layer of aggregate and compact
- Apply 2nd layer of aggregate
- Shape a camber to allow water to run off;
  Compact with whacker plate

Figure 16 - Aggregate path on suitable gradient.