

## Ccc (Callander: climate and community)

[The first 2 pages are an overview, to be made suitable for general use.

The next 3 pages outline the 3 parts of the proposal in some more detail, with examples.

The final page is a wish list that will grow and shrink over time.]

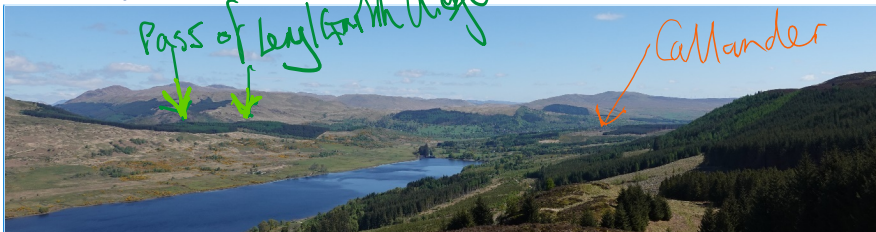
Callander is a community that lives in a varied landscape and its life is shaped dramatically by climate and weather. The community has a long history but has always had to adjust to the ongoing climate. Climate determines what parts of our landscape can be used for habitation and for other human activities. Much of the landscape is too wet or too cold or too exposed for community use. As climate changes, the land changes and the community needs to adapt.

Because of this, Callander is a highly suitable location for letting people experience how strongly communities, even in the prosperous west, are dependent on climate. We propose a broad project intended to demonstrate the meaning (past, present and future) of climate and climate-change for communities. New technology opens up innovative, immersive and appealing ways of doing this.

The broad concept is to deliver this experience as an attraction for visitors to the area. The experience will be educational and entertaining at the same time. We propose three different types of infrastructure:

- i. trails and tours through the landscape that would involve only internet resources;
- ii. observatories at specific places in the landscape that would involve physical structures/buildings;
- iii. a hub close to the centre of town to hold a permanent exhibition.

### The Landscape



This picture shows how Callander is sheltered beneath the surrounding landscape. It is just out of sight in the narrow gap beneath the Craggs (visible just right of centre and Cock Hill (to the right of the Venachar dam).

This picture shows the three main valleys that drain through the gap between Callander Craggs and Cock Hill. The main valley here, broad and fertile, is Venachar and the river Eas Gobhain drains it round Cock Hill (right). Coming from the upper left and out of sight, the Garbh Uisage comes down from Loch Lubnaig. Centre ahead lies the upland moor that drains through the Leny burn into the Garbh Uisage.

These three very different watercourses define what happens at Callander. Altitude and gradient profile determine their individual characteristics. Whatever happens in Callander has begin in these three rivers.

Land use for human habitation, agriculture and transport depends on the land being:

**Commented [RW1]:** A drone shot of this, but from 1000ft higher.

**Commented [RW2]:** Drone videos tracing each from the edge of our area down to Callander and under the red bridge.

**Commented [RW3]:** Provide mapping of this.

- not too wet (flooding and saturation are problems)
- not too high (extreme cold is a problem)
- not too steep (high gradients make building and access difficult)
- not too windy

The portions of this landscape that are suitable, when set against these criteria, are limited. They are determined by the climate. As climate changes, so will patterns of land use need to change.

### **The Visitor Experience**

The purpose of this is to provide an engrossing visitor experience. Visitors could focus on different climatic themes. Here are 6 themes that the experience can be built around:

- Geology: climate is directly linked to glaciation, narrow glens and broad straths.
- Natural History: climate is visible from ancient forests, peatland, marshland and floodplains.
- Human settlements: Pre-history, Romans, Picts, settlers on Claish land - all choosing local sites and getting a living determined by climate, geology and natural history.
- Economy: iron working, forestry, agriculture, water resources and tourism – all determined by climate, geology, natural history and settlement.
- Food: what food can our landscape & climate produce?
- Leisure & Culture:

Visitors would access high-tech interpretation:

You are at Cock Hill. There is a quickly growing summer thunder cloud. VR technology allows you to watch it from a bird's eye-view and see how quickly the form changes.

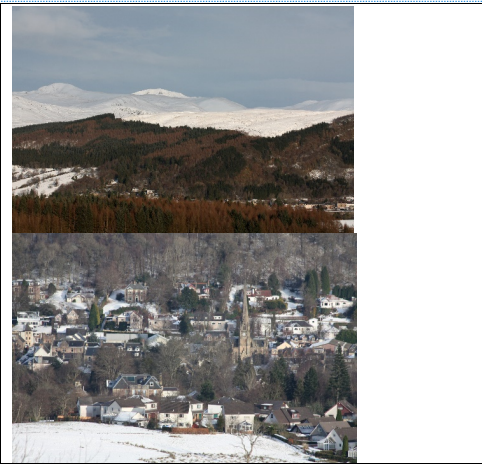

- Experience wind, watch it blow weather down Loch Venachar
- Experience daylight levels, watch the place of sunset change (and the effect of hills on this)
- VR demos of land surface characteristics: incident light, temperature, water saturation, vegetation colours

For all of these applications, you can see the past (replay last 24hrs or last year) as well as the present.

### Trails and Tours concept

The idea is to deliver information and interactive experiences to people as they follow trails along well established routes in the landscape. Technologies would include augmented reality. The routes are chosen for ease of access, suitability for most and the opportunities that they offer for understanding climate and community.

For example:



<p>a) Cock Hill &amp; Ben Gullipen This route explores how Callander sits in the narrow gap between Cock Hill and the Craggs. A large portion of the catchment area for this narrow gap can be seen and the three main valleys that dominate everything.</p> <p>All the water that falls to the north and west of this gap as far as can be seen all has to move through this gap.</p> <p>At the same time, the land south of Callander is markedly different, the terminal moraine of an ancient glacier, now agricultural.</p>	
<p>b) Bochastle &amp; Stank Glen This route explores the Pass of Leny, an transport link northwards.</p> <p>A detour to Samson's putting stone shows the difference between the broad valley of Venachar and the narrow rocky valley of Lubnaig.</p>	

Commented [RW4]: Drone footage, with commentary from community members.

### Observatories concept

This is not a single building project, but instead a distributed network of highly inter-linked observation posts, some small and some large. Each would be specialised for observing one or a few topics. The structures should be iconic and sympathetic. The concept is that people would visit the observatories and spend an hour or more, watching the landscape but also watching live feed from various sources (weather radar, person movements from IAS tower, etc). Typically the observatories would be placed on prominences where landscape features provide a dominant experience.

For example:

<p>a) a wooden tower rising above the tree line at the top of Coilhallan would allow observation of weather coming from the west and running along the length of Venachar.</p>	
<p>b) Samson's putting stone (no structure needed) would allow observation of human habitation and activity throughout the area.</p>	

### The Hub

An iconic new built structure. Ideally on the 70m contour of the south river bank (Claish Farm) just west of the proposed new bridge. It would be planned to make this a building a bit like a sea-life centre, but with a focus on the local landscape and rivers. The Sill, National Landscape Discovery Centre, Northumberland is a model of what might be achieved. See:

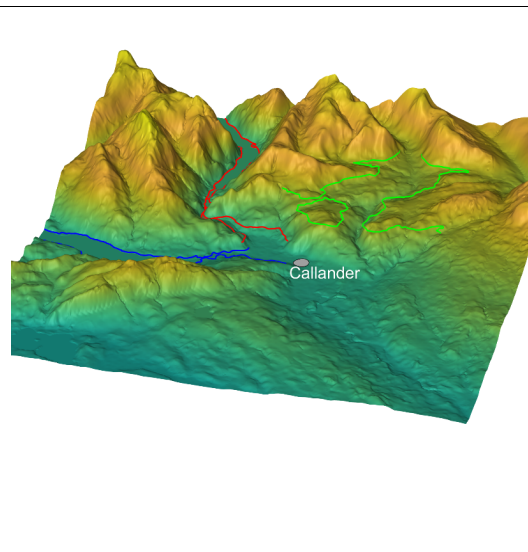
<https://www.thesill.org.uk/>

This would have static and interactive interpretations and exhibitions. See this for an example:

<https://youtu.be/I9MZIJAG56c>

For example:

A group of people are sitting around a table at Claish. They are looking at a VR model showing the area roughly bounded by Ben Ledi, Ben Gullipen and Uamh Beah which appears to float as a 2m cube object in front of them. Someone says "It's raining over Ben Ledi, I'd like to see where the water is in this landscape right now" and presses a button. The surface of the virtual object is false coloured to show water; they can see the rainfall move. Someone else says, "Where are the people now?". They can zoom in to Callander itself and see (not individual people) but false colours showing where most people are. "Where's energy being used now?" and so on.



## Appendix: Data Wishlist

### Static Data Maps

A high resolution data map for each of these would support VR applications:

- soil type
- soil depth
- rock type
- altitude
- vegetation type

### Dynamic Data streams

Networks of sensors, recording and transmitting information.

Focus 1: Watercourses

- Flow rate every 15 minutes
- Water depth every 15 minutes
- Water temperature every 15 minutes
- pH every day

Focus 2: Ridges/land masses

- Sky colour and intensity every minute
- Rainfall every minute
- Incident light (eg sunlight) every minute
- Air temperature every minute
- Windspeed every minute
- Soil temperature every hour
- Soil saturation every hour
- Foliage spectroscopy every day

Focus 3: People

- Vehicle sensors
- (count & speed) every second
- Footfall sensors every second
- Air temperature every minute