

A Remote Accommodation System for Cairngorms Mountain Heritage Project

COAT is now part way through the 4 year Cairngorms Mountain Heritage Project, a £2.1m ERDF and HLF assisted initiative to repair eroded mountain paths on Abernethy, Cairngorm, Rothiemurchus and Glenfeshie Estates.

One of the key features that was identified to make work in the more remote areas successful was the development of a Remote Accommodation System (RAS) to support workers engaged on project contracts far into the mountains. COAT required this for the more remote work at Shelter Stone, the Loch A'an basin and on Braeriach during the summers of 2012, 2013 and 2014.

COAT had looked at hiring in a system but there was nothing available with the required specification to withstand both the harsh conditions and the environmental standards required to operate this far into what is Scotland's most protected upland habitat.

Specialist advice was sought and a system compiled suitable to allow us to operate to the highest of environmental standards. It is vital that:

- Our power systems are low fuel dependent, to reduce carbon emissions and the need to fly in and store excessive fuel
- All waste is removed, including the human type!
- The units themselves had to be both warm and effectively ventilated; robust and able to withstand the 120mph winds that can and do happen in the Cairngorms; and the team able to wash, cook, dry wet kit and work clothes and store perishable food items

Powering the Remote System

This was and always will be the biggest challenge in supporting remote working in the mountains. Generators that breakdown could not be repaired in situ, and yet the recovery costs of a damaged unit would be in thousands of pounds, the price of bringing out a helicopter! Fuel use and storage would have to be at a minimum, partly to minimise carbon impact and partly to reduce the volume of fuel that would need to be flown and stored.

A system was put together using two 15 KVA generators and an inverter system with batteries. The generators are programmed to start up only when the batteries drop beneath 40%, and when the generators kick in they both provide peak energy and recharge the batteries at the same time. The use of 2 generators reduces wear and tear, and provides back up should one fail, to prevent the need for recovery of a damaged unit by helicopter. The net effect is a hugely efficient system which runs on generators 2-3 hours a day only on peak load and recharge, in the morning and evening when the team need to heat water for washing and cooking. The Remote System runs on batteries for the rest of the day and night, with the biolett running constantly at low energy, and dehumidifiers and lights when required.

Waste Management

It is important in area such as this to handle waste as efficiently as possible, and to remove everything solid at the end. To those ends the management of human and food waste is vital to the success of the System

- Large plastic boxes that can be sealed with lids were procured. The type used are generally used for transportation of fish farming produce and were therefore waterproof and sealable. All food waste is stored in these boxes and then recovered at the end of the deployment for disposal in civic facilities
- The Human waste problem required some thought both in terms of composting in cold temperatures, storing in sealable containers and providing something that the contract

workers would be prepared to use and maintain. A Biolett was secured that could separate solids and liquids. Solids were composted and stored in sealed biodegradable bags, and liquids diverted into specialised sealed units that could be emptied and washed. Both will be recovered and the end of the deployment and disposed of in suitable civic amenities.

The Accommodation Units

A good deal of thought went into the design of the accommodation units. In the end COAT settled on 4 units:

- 1 to provide a kitchen and dining facilities. This had a basic cooker, fridge and wash hand basin, and was kitted out with table and chairs to eat and socialise.
- 1 to provide sleeping quarters, it was important that these were separate from the cooking area for welfare and health and safety reasons
- 1 to provide storage for kit, tools and non-perishable foods, as well as a drying room for wet oilskins
- 1 to house the Biolett toilet system, with sealed pipes to storage and effective roof ventilation. It was important this was well separated from the living quarters.

Summary

We now have an effective Remote System for work in the Cairngorms, and this is an innovative initiative that Scotland should take some pride in, it is not easy supporting people to work in extreme conditions! The system will be recovered from the mountains towards the end of September, and will then need to be cleaned, serviced, any repairs made and stored for use next year.

Dougie Baird, August 2012



Assembling the Remote Accommodation System at Shelter Stone



The system took 7 hours to fly in and assemble