# HAG DYKE – How things work.

Because of the remote location Hag Dyke has no access to the services we all take for granted. We have to find ingenious solutions to keep the facilities running.

## Water

Water comes from a spring on the moor around 50m above the hostel. This is filtered and then piped to a 2800 litre underground storage tank. From there it comes into the building to the water treatment plant in the extension behind the kitchen. This room is heavily insulated and heated in winter to prevent freezing. Here the water is further filtered and treated to remove minerals and the brown colouring and to correct the pH.

It then goes to the Ultra Violet steriliser in the kitchen. Now meeting environmental health standards the water is used throughout the building.



**Waste water** goes to a 3500 litre septic tank underground on the moor side of the building. The liquid run off from the tank is filtered naturally and the solids removed when the tank is emptied each year. We do not use any bleach or strong disinfectants which would prevent this process working properly.

## Electricity

Hag Dyke was originally lit by candles or paraffin lamps. Later we progressed to gas lighting but now we rely on electricity. Without electricity we have no lighting, no water, no heating or hot water and no refrigerator.

On the south east facing roof are eighteen solar panels. On a bright summers day these can produce up to 5kW which charges four banks of 48 volt batteries housed in the pantry and the old generator room.

The batteries are the most expensive part of the system (around £20,000 at todays prices) and we must look after them carefully. This means not overcharging them and not letting them run too low. The equipment which controls all this is housed in the pantry and the drying room.

We also have a 1kw wind turbine in the field behind the chapel. This provides additional power in winter but requires much more maintenance than solar panels.

For those gloomy winter days when there is no sun and no wind we have an 11kVA diesel generator in it's own purpose built shed behind the hostel. This is seldom required and runs for less than 100 hours each year. The generator can be started from inside the building, it will start automatically if there is danger of the batteries running too low and can also be used when we are working with large power tools or other equipment.



When there is more wind and solar power than we are able to use we send the surplus to heat the hot water and reduce consumption of gas.
The small wind turbine and solar panel on the roof of the main building charges a separate set of batteries which power the night lights, fire alarm and internet router.

All the lights around the hostel are low energy LEDs and run directly from the 48 Volt supply. We use 2 inverters to provide 230 V A.C. for all the mains powered equipment.




**Fuel supplies.**
Coal is kept in the barn for the dining room stove and the lounge fire.
Gas for cooking and for the central heating boiler is piped from an outdoor storage area underground.
There are 4x 47kg propane bottles in use at any one time. Coal and gas have to be transported from the village by tractor; this is the largest expense of running the hostel.

We are constantly looking for ways to improve the systems and further reduce our dependence on fossil fuels