The Borehole Project

The journey of one allotment site to deliver water by using a solar-powered pump to raise water from a borehole

About five years ago, we first started getting concerned about the use of water on our Parish Council allotments in Haddenham, Bucks. We have quite a big site of 11.5 acres, and the bills for mains water were going up and up - £2000 per annum at the last count! Moreover, it seemed wrong to use treated water to put on plants. We started looking for alternatives: much to our surprise, we were told that there was not enough wind for a wind pump; we don't have and didn't want mains electricity, nor a generator, so we started investigating the possibility of having a solar-powered pump to raise water from a borehole drilled on site.

The project was full of surprises. For starters, we could not find information about any other sites that have done this – they must exist, and solar-powered pumps are used in many hot countries, but we couldn't find anyone to offer us their experience. There were people who could drill boreholes; there were people who sold solar panels and pumps, but no one to tell us how to put it all together. The other problem was cost; initially our estimates were in the region of £16,000. This needed to come from somewhere.

First things first: We had a grant from a Local Area Forum to have a survey done. We needed to check that there was water under the site and how far down we would need to drill. In June 2013, British Geological Survey produced a bespoke survey telling us that there was water, and that we would need to drill to a depth of 16-19 metres to exploit the full saturated thickness of the aquifer.

Next things next: Well, what was next? Quotes? Grants? We started on a rather long merry-go-round of getting quotes for the various items (drilling, pump, solar panels etc.), applying for grants on the basis of these, not getting the grants before the quotes ran out, then starting again. As allotment holders, we raised a considerable sum – fundraising quizzes, BBQs, voluntary contributions – but it wasn't enough. Then we had two great strokes of luck. Firstly, among the allotment holders there was a hydraulic engineer who could put the project together. And secondly, with increased confidence that the project would be successful, the Parish Council agreed to finance the project. With the savings from the water bills, we are now paying them back. The project could go ahead.

From then on it should be easy – not so. Firstly, we arranged to have the borehole drilled. The machinery is massive. The entrance to the allotments is narrow. The turning curve from the approach road tight. However, some skilful handling got the machinery to the right spot. What we hadn't anticipated was the amount of liquid clay that would be displaced and flow on to an outraged plotholder's allotment – one hardy volunteer spent a weekend digging out the clay. Well done, Tony (project manager as well as hard labourer).

Opening ceremony

Borehole drilled, the next step was to install a half container on site to provide a lockable place for the pump and electrical parts, and a roof to hold the water containers to hold the water (which would then gravity drain to a series of troughs round the site) and solar panels. The only problem was that the container was delivered in a huge lorry that couldn't get into the site, so they left the container at the entrance. How to get it to the right location? Again, plotholders to the rescue – one, a farmer's son, brought his tractor and transported it along the track.

Then the really hard work started. A group of volunteers spent weekend after weekend painting the container, lifting the water containers onto the roof, encasing the containers, installing the solar panels at the correct angle, connecting up the water pipes, installing the pump, making sure the electrics worked. and at last, testing. Success!

The whole system has a capacity of 15 cubic metres of water daily, during daylight hours. But, last year in 2017, there was a very hot spell very early in the growing season – although only 7.5 cubic metres were used daily during that period, water ran out in the evenings when everyone wanted to water their seedlings and the sun was no longer on the solar panels. So, this year, the volunteers are back again, installing two back-up water containers and an extra trough to cover all contingencies.

All in all, the project came in under budget and the final price was £10,982. But this was because we had our plotholder expert who could put all the technical parts together. Thanks, Chris. There was an eye to cost at each stage – bargain recycled water containers to go on top of the container. And such a lot of the hard work was done by a wonderful group of volunteers.

It feels like a real achievement. We still want to practise water saving and harvesting, but we are no longer using treated water on our plots and we are saving £££s.

The drill comes on site

Work party hard at it

The half painted cabin with reservoir and solar panels on top

Alison Watt, Haddenham Horticultural Society and Secretary for the Haddenham Allotments