

## Rachel's Dairy slashes water supply costs

**Paul Thomas, general manager of Rachel's Dairy, is a happy man: Having invested in a water borehole, his company has slashed its water costs to just 10% of the previous figure.**

'We were spending a colossal amount of money every year on mains water, but since installing the borehole, our cost of pumping and sterilising water has plummeted.

'What is even better, is that the capital cost of the borehole and associated equipment—including a chlorine dioxide dosing unit—was recouped within the first year of operation.'

Rachel's Dairy has built a solid reputation for producing and marketing premium quality organic dairy products, and is a leader in its field.

### The private water supply choice

Rachel's manufacturing processes run to the highest standard, and washing down equipment after production at its Aberystwyth factory—located in an industrial estate—consumes enormous quantities of water, in the order of 150 cubic metres daily.

'Having a private water supply seemed to be a sensible measure to reduce costs,' says Thomas, 'and we looked at a number of potential well drillers.'

Because of the critical quality requirements, it was important that the driller could show a good track record, and we selected WB&AD Morgan whose credentials for drilling boreholes for spring water companies and the Environment Agency were impressive: I was convinced they would do a superior job.

'Morgans were not the cheapest, but their product ticked all the boxes as far as we were concerned. Quite simply we cannot afford problems.'

### Testing the supply potential

At the request of the Environment Agency, before the main production borehole was created, two trial boreholes were drilled, to monitor water levels over a period of time to provide accumulated data, giving a water level history.

This gives a reference point: the EA won't knowingly license a borehole that could cause derogation of other supplies, or have an adverse impact on the river.

These trial boreholes also allowed Morgans to collect gravel and sand samples that were analysed for particle size in a lab; the particle size determined the slot width of the stainless steel screen, so that we could determine its maximum possible open area while keeping the sand at bay.

### Avoiding future problems

Brian Morgan explains some of the special considerations involved in this project: 'Drilling operations went to plan, and the installation was to the highest specification, and includes stainless steel well screen, piping and headworks.

'The choice of a stainless finish was important; firstly we are dealing with a food product and pipework within the factory uses this material. Secondly as the target aquifer is a gravel and sand bed, the wedge-wire stainless steel screen provides a maximum open area to be hydraulically efficient, as this gives a minimum entrance velocity of the surrounding water.

'This means that water is not carrying suspended solids, so we can pump



clean, pure water. In turn this gives a maximum pump life and requires minimum treatment of the water at the surface.

After installing the screen, the borehole was developed by air to winnow out the surround fines from the sands and gravels and create a natural filter pack around the screen.

Morgan tells that this list of considerations should not be taken for granted: 'These are all factors which can often be overlooked, and will differentiate a good quality borehole from an inferior production: In other words, what at first might appear good value can in the long term prove to be very costly, due both to the high levels of filtration needed by poor quality water and associated excessive pump wear.

### Keeping it clean

Adds Brian Morgan: 'Environmental considerations were paramount, the site is very close to the Rheidol and we had to make sure that we did not contaminate the river.

'And in terms of drilling the borehole, we took great care to avoid water contamination. The entire below-ground system is carefully grouted to ensure a sanitary seal, which prevents the ingress of surface water and any potential contaminants reaching the aquifer.'

### Demonstrating dependability

Paul Thomas is pleased with the project and concludes: 'Although we do check the pumping function daily, over the two years the borehole has been installed it hasn't missed a beat.' And the huge cost savings continue to reward Rachel's investment with each year that passes.

