



Changing weather patterns are prompting businesses to rethink their borehole maintenance programmes, according to one borehole expert, who makes use of Geopquip Water Solutions products and services when servicing boreholes

*Above: Before and after photos taken at Brian Humphrey's nursery garden show the water intake at the bottom of the pump was clogged with IRB and, post cleaning, how it looks as good as new*

**B**ryn Ager, from Treewaters Control Systems, said organisations that rely on borehole water are increasingly taking a preventative rather than a reactive approach. Typically, this may include businesses and industrial operations, leisure facilities – such as golf courses and sports stadiums – and the healthcare, horticultural, geothermal and farming sectors.

"With the climate moving towards longer, drier summers, there is definitely a trend towards more regular borehole checks and maintenance," Ager said. "Whereas once cleaning would take place every five to six years, now it is more likely to be every two to three years, and some organisations are even asking for annual checks to stay ahead of the game."

"This more proactive approach is paying dividends in terms of keeping the quantity and quality of water flowing and it saves money in the long term. Investing in a regular cleaning programme is much

quicker than waiting until a pump is completely clogged up with residue and bacteria that requires longer downtime for a major clean; plus regular treatment also helps to prolong the life of a pump."

#### DEWATERING

He points out that, as well as pumps playing an essential role in pumping water up from underground, systems used for essential dewatering also need to be maintained.

"As well as longer dry periods, we're also seeing heavy flooding, as experienced in parts of the UK this October," he said. "Where buildings are built on low-lying flood plains or close to rivers, they are often prone to flooding. We're now seeing increased problems where iron-related bacteria (IRB) is blocking dewatering systems, meaning they are unable to pump out floodwater from basements and underground offices efficiently."

"Dewatering systems should be treated as part of a building's

infrastructure; you wouldn't install an air conditioning system and not have it serviced regularly. In the same way, building managers need to recognise the importance of maintenance programmes for dewatering systems so that, when they are urgently needed to tackle floods, they work first time."

#### GEOHERMAL WELLS

Ager makes the point that IRB can also impact open-loop geothermal wells, which rely on extracting water from underground, passing it through a heat exchanger, and discharging it back into a well to return underground. He explained: "IRB can affect the extraction pump's ability to provide a suitable quantity of water for a building's heating system to run efficiently. The discharge wells are prone to blocking with IRB as the water is often returned under increased velocities, aerating the water within the well."

"This can accelerate the growth of IRB, resulting in the inability to

discharge water back down the well. In turn, this can lead to a possible flooding risk within the building as the water level in the well rises – another reason for regular maintenance to tackle IRB before it causes major problems.”

When it comes to borehole cleaning, Ager works closely with borehole maintenance experts Geoquip Water Solutions and said undertaking an initial downhole camera survey followed by a complete clean and treatment programme provides peace of mind.

### CLEANING IN SITU

He appreciates, however, that this is not always possible and recently worked with one leisure facility to carry out a clean with the pump kept in situ.

“We have to be flexible, and on this occasion, we were able to get the flow back to where it needed to be and ensure the golf club had plenty of water to keep its greens in top condition,” he said.

Another customer who knows the importance of ensuring a consistent supply of water to keep plants healthy is renowned plantsman Brian Humphrey, who owns a commercial garden nursery in Suffolk.

Having previously invested in a borehole, Humphrey found that after a few years, the high iron content in the borehole water meant the yield was gradually decreasing as residue built up and blocked the pump and pipes. The water that did come out was orange-coloured due to the iron and also impacted on the young plants.

“We were warned about the iron in the water and as it got worse, the water extraction dropped off,” Humphrey said. “I bought two or three new pumps, which was pretty expensive, and I would still find that water quantities would fall off halfway through the season, so I needed to do something else.”

### BORESAVER

Humphrey was put in touch with Geoquip, who conducted an initial assessment and recommended applications of its BoreSaver water treatment solution, designed to tackle iron-related bacteria.

Geoquip worked with Humphrey to set up a series of treatment protocols, and while this ensures the necessary yield was maintained, from time to time, the borehole also requires a full-scale clean, which is where Ager’s expertise is required.

With a camera survey having been carried out previously, Ager removed the pumping equipment and completed an airlift, brush and clean to remove sediment and sludge before once again replacing the pump.

“The borehole had been in place for a long time and, because of the high iron content, every few years it needs a full clean to support the treatment programme,” Ager said. “By combining Geoquip’s BoreSaver Ultra C Pro with BoreSaver Multikleen, using the airlift to get rid of the debris and carrying out a surging and brushing process, we were able to ensure both the borehole and the screen were clean as well.

“At the start of the process we took pH tests to establish the natural pH of the groundwater and during the treatment,

we carried out regular tests to determine the chemical levels, making sure at the end that the groundwater was back to normal. I’m pleased to say that Brian is very happy with the results we are able to achieve.”

### REGULAR TREATMENT

A regular cleaning and treatment programme means borehole yield is maintained at around 25-30L a minute throughout the April to September period. Without it, yield typically falls substantially, requiring much longer periods of abstraction and, therefore, cost to maintain sufficient water to enable overnight watering.

Humphrey said: “I was very impressed with both Bryn’s hard work and with the Geoquip team. Having the routine BoreSaver treatment keeps the borehole going throughout the season, which is invaluable for the plants – we couldn’t look after them without the irrigation system.”

BoreSaver is designed to tackle problems such as iron-related bacteria, iron manganese and calcium carbonate and, as well as being completely biodegradable, the solution contains a marker that gives an instant all clear to demonstrate any remaining chemical residue has been removed. ▼

**“Regular treatment also helps to prolong the life of a pump”**

*Before and after photos showing IRB at the top of the pump and how its removal now allows water to flow freely*

