Why wrong type of iron almost left golf course under par

When it comes to sporting facilities such as golf courses, staying on top of water management is essential.

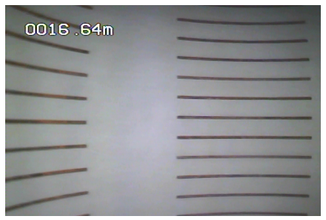
The Renaissance Club, a private members club with an 18-hole golf course situated on 300 acres of the famous golfing coastline on Scotland's Firth of Forth, hosts events including the Aberdeen Standard Investments Scottish Opens.

Its greenkeeping team focuses on ensuring the course is always in tip top condition, favouring indigenous grasses with the minimum use of water and fertilisers.

For essential irrigation however, the course relies solely on water from one main borehole.

Over the period 2017 to 2018, Head Superintendent, Paul Seago, who is in charge of the Greenkeeping team, realised there was a problem.

Original drilling works, carried out when the course was constructed in the mid-2000s, had taken several attempts to find a borehole capable of producing the amount of water required, which meant reduction in flow was potentially a serious matter.



Top: Badly blocked borehole casings which reduced the flow of water. Above: The post-clean result after treatment with BoreSaver

"We were preparing for a major tournament when we discovered the amount of water coming from the main borehole had reduced significantly," said Paul.

"I could see from the regular readings I was taking that there was a problem. Instead of the 24 cubic metres an hour required, we were getting nearer 12 cubic metres an hour and we were worried it was drying up.

"We started looked at alternatives, but mains water was expensive and the cost of increasing our water storage capacity was also very high, so we then decided to take a closer look at the borehole itself."

Paul called in irrigation systems specialists M J Abbott, who in turn put him in touch with Bryn Ager at Treewaters Control Systems. Working together, the M J Abbott team removed the pumping equipment and Bryn carried out a downhole camera survey.

"We could see the borehole casings were badly blocked due to the growth of iron-related bacteria. This prevented the free entry of the groundwater resulting in a reduced flow of water.

"We treated it with a solution of BoreSaver Ultra C PRO, which is excellent at tackling contamination problems. We brushed and cleaned the well on a Friday, left the solution in the borehole and returned on the Monday morning to do another brush to remove any further residues which had softened over the weekend.

"We took water samples at regular intervals to test the pH and performed a further camera survey which allowed us to see that the borehole was now clear of contamination.

"Once it was up and running again, the borehole was back to producing 24-25 cubic metres of water an hour, which was over double what they were seeing before the clean."

The process was so effective that Paul describes BoreSaver as "magic".

"I have worked on golf courses for over 40 years and I know that iron in the water will adhere itself to static sprinklers and drainage pipes, so it makes sense that the same contamination would be going on down the borehole," he said.

"The borehole is at the heart of our irrigation system but because it is below ground no-one sees it. When those first images came back from the downhole camera, it made sense because we could identify what was going on.

"Once the BoreSaver had worked its magic and we saw the post-treatment camera images the difference was like night and day."

As part of the work, a new pump was installed by M J Abbott and Paul is now hoping to put in place a regular maintenance programme to avoid iron contamination building up so badly in the future.

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Recently the club achieved its GEO Certified® certification from the Golf Environment Organisation which promotes sustainability and, as part of an ongoing commitment to environmental best practice, Paul is also working towards reducing water consumption while still maintaining the highest standards for the course.

"It is the ethical way to go. As each year goes by, we are better equipped to cope with drier periods of weather and working towards our certification helped us realise the importance of making a difference by reducing the number of sprinklers we use and taking a more sustainable approach."

Mike Deed, from Geoquip Water Solutions, which supplies the full range of BoreSaver borehole cleaning and well rehabilitation treatments for a wide variety of sporting locations nationwide, says regular monitoring of boreholes is essential.

"Borehole contamination can impact on all equipment, it can block the casings so water can't get through, or deposits can clog up the pumps and the motors which will affect flow rates, as happened in this case," he said.

"It's really important to regularly monitor data and output so you can be alerted to potential problems before they become more serious. Depending on the type of problem, for example iron-related bacteria, iron oxide or manganese oxide contamination, there are different combinations of treatment solutions which can be applied."

Approved by the NSF, all BoreSaver solutions include a biodegradable marker which gives an instant all clear and allows the Geoquip team to guarantee that no chemical residue is left in the water supply.

One treatment will usually be enough to remove the deposits that have built up and the solution is safe and easy to use.