



## Chalking up a success

Nicholls Boreholes drilled through a Lambeth formation to install a water borehole in Ascot

**S**ussex-based firm Nicholls Boreholes drills and installs boreholes for water and ground-source heat-pump (GSHP) systems. Working mainly in the southeast of England, the company provides solutions for some of the most complex geologies in the area.

Nicholls uses many techniques in many geological conditions. The firm adapts and develops its equipment and methods to each site-specific challenge.

The company has a close working relationship with a network of hydrologists and water diviners, and uses these

sources to obtain the best information relating to the underlying geological conditions, likely yield and predicted water quality.

These close links ensure that Nicholls Boreholes is able to deliver a quick turnaround for customers while having ready access to experts.

The firm was recently commissioned to install a 201m water borehole for a private client at a site in Ascot.

The client had previously commissioned another drilling company, which had abandoned the project at 140m.

In this instance, the client provided a geological report, which varied greatly from the original drilling company's BGS log.

The geological report indicated an underlying band of Lambeth group formation below the London Clay, which would meet the chalk at approximately 110m below ground level (BGL).

The original drilling company had found they were still drilling in clay at 140m. With this information in mind, it was difficult to predict the level at which the drilling team would strike the chalk.

Nicholls Boreholes used a Massenza M15 drilling rig (the latest addition to its fleet), and a custom-built, high-pressure, direct-displacement mud pump.

The drilling operatives drilled through thick, blue London Clay to run a 300mm surface casing. Drilling continued through the Lambeth formation and finished 6m into the chalk.

A 168mm-diameter, threaded-steel well casing with 10mm walls was installed and grouted into position.

The grouting was performed through a grouting shoe, mounted at the bottom of the steel well casing. This provided the best possible means of protecting the borehole from the ingress of sand from the Lambeth formation in the future.

After the grout had set over a period of several days, the drillers used an open-hole drilling technique at 141mm diameter to a final depth of 201m – some 50m into the chalk aquifer underlying the London Clay.

The drillers then installed a well head and manhole cover prior to leaving the site.

The next step in the process was to test-pump the borehole to establish the yield. With this information, Nicholls Boreholes were able to design, supply and install a suitable pumping and filtration system to meet the customer's water requirements.

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