

— **Wardle Drilling** — & Geotechnical Ltd



Wardle Drilling & Geotechnical Ltd

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WARDLE DRILLING & GEOTECHNICAL LTD

COMPANY PROFILE – *INTRODUCTION*

Wardle Drilling & Geotechnical Ltd is a drilling company who are fully conversant in all aspects of borehole drilling and water well construction.

Based on 40 years experience in the UK and overseas, *Wardle Drilling & Geotechnical Ltd* are specialists in the drilling of water supply boreholes and geotechnical investigation.

Based in Hampshire *Wardle Drilling & Geotechnical Ltd* is a family run business with a reputation for providing a quality service.

Wardle Drilling & Geotechnical Ltd provides a complete service to domestic customers, public and private sector industries.

All aspects of water well construction, geothermal borehole construction and geotechnical investigation are undertaken to the Environment Agency's requirements, appropriate British Standards and with minimal environmental impact.



Hydreq Gryphon 16 tonne rig drilling a water supply borehole to supply a lake and irrigate a garden.

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COMPANY PROFILE – *PLANT & EQUIPMENT*

Wardle Drilling & Geotechnical Ltd own a fleet of percussion and top drive rotary drilling rigs, including:

- Hydreq Gryphon 16 tonne rotary drilling rig mounted on a 6 wheeled Iveco lorry.
- Hydreq Gryphon 10 tonne rotary drilling rig mounted on a county tractor.
- Dando 800 percussion drilling rig.
Dando 3000 site investigation percussion drilling rig.



Hydreq Gryphon 10 tonne rig drilling a borehole through Chalk to supply water to a dairy.



Dando 3000 percussion rig drilling a water sampling borehole for a major international airport.

Wardle Drilling & Geotechnical Ltd is equipped to drill boreholes and water wells utilising the following techniques:

- Rotary direct and reverse circulation.
- Rotary down the hole hammer.
- Cable tool percussion.

Rotary drilling can be undertaken using air, water, foam or mud flush methods, dependent on the geological formation and site requirements.

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COMPANY PROFILE – *WATER WELL DRILLING & PUMP INSTALLATION*

Wardle Drilling & Geotechnical Ltd provides a complete service for the construction of water wells including:

- Hydrogeological evaluation.
- Water well design.
- Water well drilling.
- Test pumping and development.
- Pump installation.
- Pump maintenance and servicing.



Pump installation for a domestic supply in Surrey.



Twin booster pump set with ultraviolet and filter cleansing system for a farm dairy and nearby houses.

Wardle Drilling & Geotechnical Ltd is fully conversant with all aspects of the Environment Agency's licensing requirements. An abstraction licence is only required for groundwater abstractions in excess of 20 m³/day.

Wardle Drilling & Geotechnical Ltd has extensive experience in the selection and installation of submersible pumps. Solutions for larger water supply's can be designed, including custom built booster pump sets, electrical control panels, ultraviolet water purification systems and water storage tanks.

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COMPANY PROFILE – *PROJECT EXPERIENCE*



Dando 800 percussion rig drilling an observation borehole for Wessex Water.

Southern Water Authority (Public Water Utility) – Construction of a series of boreholes using cable tool percussion method was undertaken to provide water for pumping into the River Itchen at times of low water levels to maintain river level and flow.

Portsmouth Water PLC (Public Water Utility) – A series of boreholes were drilled to investigate a new public water source. Boreholes were drilled using a combination of rotary mud flush and cable tool percussion drilling methods through 100 metres of clay into the underlying Chalk. Yield testing of the wells was undertaken and acidisation was used to improve the water supply. Up to 1.5 mega litres per day ($\approx 62 \text{ m}^3/\text{hr}$) was achieved from one borehole.

Wessex Water (Public Water Utility) – Projects undertaken for Wessex Water have included drilling a water supply production borehole for a biosolids treatment works and a series of groundwater monitoring boreholes around a sewage treatment site to monitor groundwater quality. In addition a water well through tertiary deposits into the underlying Chalk was constructed to prove yield and quality in the groundwater. Acidisation of the Chalk was completed successfully followed by a 4 week continuous pump test.

Hildon House Mineral Water – Two boreholes were drilled to 80 metres for mineral water production through chalk using the rotary foam flush method. Test pumping of the boreholes was also undertaken.

Cotswold Spring Water – Two boreholes were drilled using a combination of rotary foam and mud flush to investigate an alternative water supply for mineral water extraction. Geophysical logging of each borehole was undertaken. Pump testing and water sampling for testing to mineral water standards was also undertaken on each borehole as required by the Environment Agency.

Fonthill Spring Water - A borehole was drilled to 108 metres through chalk using rotary foam flush techniques to supply water for a water bottling plant.

Hall & Woodhouse Brewery Water Supply, Dorset – A water supply borehole was drilled for the brewery through chalk to 50 metres using cable tool percussion method. Test pumping was undertaken and a water supply of 3.5 mega litres per day ($\approx 145 \text{ m}^3/\text{hr}$) was achieved.

Addington Palace Golf Club, Surrey – A borehole was drilled through Chalk to 60 metres depth using rotary foam flush method for a water supply to irrigate the golf course.

Mitchum Golf Club, Surrey - A borehole was drilled through 90 metres of London Clay overlying Chalk to a total depth of 140 metres using rotary foam flush method for a water supply to irrigate the golf course.

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COMPANY PROFILE – PROJECT EXPERIENCE CONTINUED

Environment Agency – Wardle Drilling & Geotechnical Ltd was awarded the Environment Agency's (southern region) Framework Contract in 2004. Projects completed include various *Hampshire Observation Borehole Contracts and Sussex Chalk Groundwater Investigation Scheme*, where observation boreholes were drilled to monitor groundwater levels and movement.

Arreton Valley Nurseries – Two boreholes were drilled through sands using rotary mud flush to supply 70 acres of glass houses growing tomatoes and peppers. Johnson continuous slot stainless steel screen with a graded filter sand pack was installed. The permanent pump installation was completed and provided a water supply of 1 mega litre per day ($\approx 42 \text{ m}^3/\text{hr}$).

London Underground, Jubilee Line Extension – Dewatering boreholes were drilled using rotary mud flush method through London Clay into chalk to lower the groundwater table and allow tunnelling to progress.

Dorchester Hospital – A 170 metres deep borehole was drilled through clay overlying chalk using rotary mud flush method to provide a new hospital water supply. Yield testing was also undertaken.

St Richards Hospital, Chichester – Replacement borehole was drilled to supply the hospital laundry. The borehole was drilled through sands/clays overlying Chalk to a depth of 125 metres. A submersible pump was installed and pump testing completed to the Environment Agency's requirements.

Poole Hospital, Dorset - A borehole was drilled to 120 metres through sands using rotary mud flush for a new hospital water supply. Johnson continuous slot stainless steel screen complete with a graded filter sand pack was installed. Pump testing of the borehole to Environment Agency's requirements was undertaken.

Royal Naval Hospital, Hasler – A borehole was drilled to 112 metres through sands using rotary mud flush for a new hospital water supply. Johnson continuous slot stainless steel screen complete with a graded filter sand pack was installed. Pump testing of the borehole to Environment Agency's requirements was undertaken. The permanent pump was installed to provide a $25 \text{ m}^3/\text{hr}$ water supply.

RHS Wisley Gardens, Guildford – Refurbishment of an existing borehole was undertaken involving cleaning out the borehole to 241 metres depth and then installing screen and sand pack. A new pump installation was then undertaken to complete the work.

Water Sampling Boreholes for an International Airport – Observation boreholes of 300mm diameter were drilled using the cable tool percussion method at various locations around the airport to allow water sampling to be undertaken as part of the Airport's on-going environmental monitoring requirements.



Hydreq Gryphon 16 tonne rotary rig drilling a 140 metres deep limestone borehole in Gloucestershire.

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Hydreq Gryphon 16 tonne rotary rig foam drilling through limestone for a bottled water supply borehole.

COMPANY PROFILE – GEOTECHNICAL INVESTIGATION

Wardle Drilling & Geotechnical Ltd can undertake ground investigations on previously developed, undeveloped or challenging sites using standard exploratory methods including:

- Excavation of trial pits.
- Shell and auger boreholes.
- Rotary cored boreholes (conventional or wireline methods).
- Rotary drilled open hole boreholes.
- Rotary augered boreholes (hollow stem or continuous flight augers).

All stages of a site investigation can be supervised by an appropriate degree qualified engineering geologist if required. Sampling and on site testing can also be undertaken. Permanent borehole instruments including gas standpipes, piezometers and slope inclinometers can be installed.

All aspects of the site investigation are undertaken in accordance with the appropriate British Standard. The final results of the site investigation are compiled into a comprehensive factual report.

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Hydreq Gryphon 16 tonne rotary rig drilling a borehole for a water bottling plant.

The depths and spacing of the geothermal boreholes is dependent on the size of the building and geological conditions of the site. Open or closed loop systems are available.

- An open loop system requires a water supply borehole with an additional borehole for groundwater recharge.
- Closed loop systems require a series of interconnected boreholes.

COMPANY PROFILE – ***GEOTHERMAL BOREHOLES***

Wardle Drilling & Geotechnical Ltd can also drill boreholes for geothermal heating systems (also known as ground source heat pumps). Geothermal heating systems provide a constant energy source where the ground can be used as either a source for heating or cooling a building, be it a private dwelling, office or factory.

Once a borehole has been drilled a looped plastic pipe is installed and grouted into the borehole. A pump circulates a fluid through the pipe absorbing the geothermal heat from the ground. Heat is then made available to the building via a heat pump exchanger.



Hydreq Gryphon 10 tonne rig drilling a 140 metres deep water supply borehole in central London

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COMPANY PROFILE – *CONTACT DETAILS*



Drilling through Lower Chalk into the Upper Greensands in a former chalk quarry for a domestic water supply in Dorset.

For further details please contact either Robert Wardle or Keith Wardle:

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