

## 1400 METER DEEP GEOTHERMAL EXPLORATORY BOREHOLE DRILLING IN DUBLIN

Patrick Briody & Sons Ltd in conjunction with their U.K. Joint Venture Partners P.R. Marriott Drilling (UK) Ltd has completed 2 deep exploratory geothermal boreholes in South County Dublin.

Drilling methodology was a combination of down hole hammer and direct mud rotary. One borehole extended to 1360 metres and a second borehole was completed to a total depth of 1400 Mts Bgl. A Cement column extended up to 300mts and 150mts respectively cementing in 8" diameter mild steel casing and drilling advanced @ 8" diameter in both wells from 300/150mts respectively to completion depth.



## WEBSITE

Our website is a source of detailed information on well drilling, well design, pump testing, well sealing, geothermal drilling and well rehabilitation. It is regularly updated and is well worthwhile a browse for some additional information or just a fresh perspective. Our website has achieved a 5-star rating from various Website Review Panels.

[www.briodydrilling.com](http://www.briodydrilling.com)



**You Get What it Says On the Label.....Patrick Briody & Sons Ltd.** Patrick Briody & his sons Aidan, Pdraig & Eric accompanied by their spouses. Also in the picture is Ms. Orla Martin, Offaly County Enterprise Board (second from left) attending the National Enterprise Awards Cermony.

## EPA award drilling and installation of 3 river basin districts monitoring wells to Patrick Briody & Son Ltd.

Having been shortlisted in September 2007 following a prequalification tender review, Patrick Briody & Sons Ltd. have successfully tendered for 3 river basin districts in 2008 including:-

South Western R.B.D.  
Eastern R.B.D.  
Western R.B.D.

As part of National Monitoring Infrastructural Works, a programme of groundwater monitoring has been proposed, primarily for the poorly

productive bedrock aquifer units, to enhance our understanding of groundwater movement in these rock types. It is envisaged that the knowledge gained from this National Monitoring Programme will ultimately provide a clearer understanding of groundwater movement in poorly productive aquifers, and that it will also provide information to enhance our understanding of the groundwater from these aquifer units discharging into

their respective river systems.

The overall objective of the Works Programme is to establish high quality groundwater monitoring networks at each catchment area. The drilling works are fully supervised and the focus is on quality workmanship/Driller operational skills and attention to detail as very little is known about the hydrogeological characteristics of the selected rock types.

[www.wfdireland.ie/RBDIreland.htm](http://www.wfdireland.ie/RBDIreland.htm)

## New Grout Plant Geo-Loop-40-500

This Grout Plant has an 8" stroke piston pump and will hold up under the most extreme duty cycles you push it through. It can easily handle 250m depths with most grouts at unequalled 34 Bar. Great for several application including bentonite grouts, sand-enhanced grouts and cement grouts. Innovative knock off union construction makes cleaning quick and simple.

We have accumulated significant skill and experience in cement grouting. Pressure grouting the annulus from the bottom upwards means that as

the cement grout flows up the annulus, ie outside the uPVC casing within the drilled open hole. It flows into all the irregularities, fractures and cavities in the rock and overburden linked to the annulus. We do not cease injecting the grout until neat grout has flowed out of the annulus at the surface. The casing is therefore completely sealed into the overburden and bedrock, and only water from the producing section below the casing and grout seal can enter the borehole. We have carried out many difficult and complex cement and/or

bentonite mix procedures to various specific gravity with viscous grout mixes, such as those containing calcium chloride accelerators. Our commitment to proper construction and cement grout sealing of production boreholes is reinforced in our active participation in the sub-committee that recently produced the joint EPA-IGI guidelines for the construction of Water Wells. These guidelines recommend the design and proper completion of water supply boreholes that we have been following for over 15 years.



# Water

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THE WELL DRILLING NEWSLETTER OF BRIODY DRILLING

## Editor's Foreword

PATRICK BRIODY & SONS LTD is a family firm of water well drillers. Patrick Briody started the business in the 1950's and though retired from day to day drilling is still actively involved in the business and provides a great source of advice and mentoring.

The firm is now run by his three sons: Aidan, Pdraig and Eric. Pdraig is the commercial manager, whilst Aidan and Eric are Lead Drillers. We take great pride in our modern suite of drilling equipment and are totally committed to providing a comprehensive customer service.

We have found, working with many of the country's leading hydrogeologists and groundwater engineers, that it is important that the driller and the supervisor discuss their observations and findings on site as they arise, and make a joint assessment of the best strategy to complete the main parts of the well. It is important for us to be flexible and try to find the best and most cost effective way of using our equipment in conjunction with the professional staff supervising our work. We welcome the opportunity to try to accommodate design changes that are brought about as a result of the real findings in the actual drilling programme. In this way we work together, and we try to ensure that we always have new or alternative

equipment, ideas and materials available in a timely manner, in order to keep the project running smoothly.

Drilling Contractors are required as part of a public tender submission to provide a statement of the educational and technical qualifications of both managerial staff and in particular those responsible for carrying out the works. Whilst we provide C.V's in the prequalification questionnaire, we are mindful that our main training and qualifications are less formal. There is no driller's training programme in Ireland. Driller training programmes in Britain, Europe or the United States teach drillers techniques and methods that are seldom used in Ireland because of the nature of the work and the geology are different. Most drillers in Ireland do not receive formal drilling training qualifications, however, all our staff have received ongoing professional development and training through our work with supervising hydrogeologists and groundwater engineers. As this introduction hopefully



### INSIDE:

Well Rehabilitation  
New Grout Plant  
Website Initiative  
New Knebel Drill Rig  
National Enterprise Award

## “Rethinking and creating a new approach to water”

illustrates, we have a sound conceptual and practical understanding of well construction and groundwater flow. We have received this training during days of continuous on site supervision from most of the leading hydrogeologists and groundwater engineers in the country. Together, we have experienced, and overcome the problems involved in proper water well construction in rocks as diverse as esker gravels and beach sands, weathered Devonian sandstones, fractured granites, deep highly altered dolomites in Tipperary, vast open karst caves in the Galway and Roscommon lowlands, and clogged, but ultimately high yield palaeo-karst cavities in

Laois, Kildare, Kilkenny, Carlow and Offaly. We realise, in compiling this introduction, that Aidan Briody, for example has worked in tandem with full-time, on-site, experienced hydrogeologists for probably a total of 5 man-years in the last 10 years. In recent years, we have drilled over 20 - 40 boreholes per annum with an experienced hydrogeologist full-time on-site.

We also work in a joint venture association with PR Marriott Drilling, one of the biggest drilling companies in Britain, and we have just completed drilling two deep geothermal boreholes to a total depth 1400mts & 1360 mts in South Dublin. We can call on their particular expertise on equipment and different drilling techniques at any time.

# New Knebel Drill Rig

This new Hydraulic Top Head Drive Drilling Rig is mounted on a 6 x 6 WD Renault truck. It is designed for drilling to a depth of more than 800mts by Reverse Air Mud Circulation and Down The Hole hammer drilling and various other drilling methods. The Rig has open holing diameter capability from 5" out to 30" dia.

The Drill Rig is fully equipped with the Knebel Break-O-Matic system. The Drill mast is a portal construction allowing the operator full access to the flat drill table and vertical drilling line. The drilling tools are located on the flat and a handling winch is mounted at a 4.6m hydraulically operated JIB BOOM with capacity to swing 360o continuously around and above the mast.

In the centre line is mounted a manual drill pipe loading frame. All routine operations are possible within an arms length of the operator.

All drilling operations are electrically operated from a cable remote control. The electrical systems provides full control during making and breaking the threads.

The rig is equipped with an emergency shut down system that safely shuts down the entire power supply. The rig is also designed to minimise exhaust and noise emissions and is fully compliant with EU regulations in this regard.

Our air compressor is mounted on a separate dedicated Twin Axel Trailer. It is a new fully silenced XRV3476 Atlas Copco 950cfm/350psi. In addition we purchased in 2008 a second Sullair Air Compressor 950cfm /350psi and it is also mounted on a separate dedicated Twin Axel Trailer.

The Knebel Rig is particularly versatile at various drilling techniques including:-

Reverse Circulation Drilling: The use of dual wall drill pipe combined with drill collars/stabilisers and special hard formation bits mean a cleaner drill site and drill system that is environmentally 'greener'. Drilling cuttings are directed into holding tanks or pits and all surplus clean drill fluid is re-directed down hole as part of the drilling operation.

Odex & Rotex OY (Symmetrix) Drilling: Where the overburden (Quarternary) deposits are unconsolidated it is customary for temporary casing to be drilled/driven through the unstable formation as the oversized drill bits/drill column advances down hole to target depth.

Down hole hammer; A combined process of an air operated piston within the hammer striking the button bit attached to the bottom of the hammer. In addition air & water & foam additive is injected thereby flushing out the hole as drilling proceeds.



## COMPANY AWARDS

**Finalists in 2008 National Enterprise Awards organised by City & County Enterprise Boards.**



Left to right: Eamon Ryan, City & County Enterprise Boards, Minister of State Mr. Sean Mc Guinness presenting a National Finalist Plaque to Pdraig Briody & Aidan Briody, Patrick Briody & Sons Ltd.

Patrick Briody & Sons Ltd were selected as a finalist in the 2008 National Enterprise Awards.

Over 450 companies initially participated in the 2008 competition. This nationwide event adjudicated these Entrepreneurs and their Business through the format of both interviews and

documentation assessment.

Each County & City Enterprise Board nominate a Business following a county wide competition to participate in one of the six Regional Finals. From the Regional Finals, only eight finalists are selected to compete in the National Enterprise Awards.

## LATEST NEWS



Production Well Drilling at Portlaoise/Mountmellick WSIS



# Well Rehabilitation - A One Stop Shop Water Supply Borehole Maintenance & Rehabilitation Service

Water supply boreholes or wells decline in yield with time. This deterioration usually happens slowly for natural reasons, but can be created, or accelerated by an inappropriate pumping regime.

The deterioration is not spotted until it is too late: then, often in a crisis, another borehole has to be drilled. Additional drilling is expensive and often involves land acquisition, planning implications and more exploratory drilling & testing.

We are now offering a complimentary service to our well drilling and geothermal drilling operations ; the Assessment, Maintenance and Rehabilitation of existing wells.

## RANGE OF SERVICES PROVIDED BY Patrick Briody & Sons Ltd

1. Professional team of drillers, independent hydrogeologists, technicians and specialist sub-contractors.
2. Hydrogeological tests and assessments before, during and after work has been carried out.
3. Down-hole camera surveys and if necessary borehole geophysics to assess problems.

4. Physical and chemical treatments to improve well efficiency and yield.

5. Installation of new pump chamber casing with cement grout seal to prevent ingress of shallow polluted water, where appropriate within existing well design.

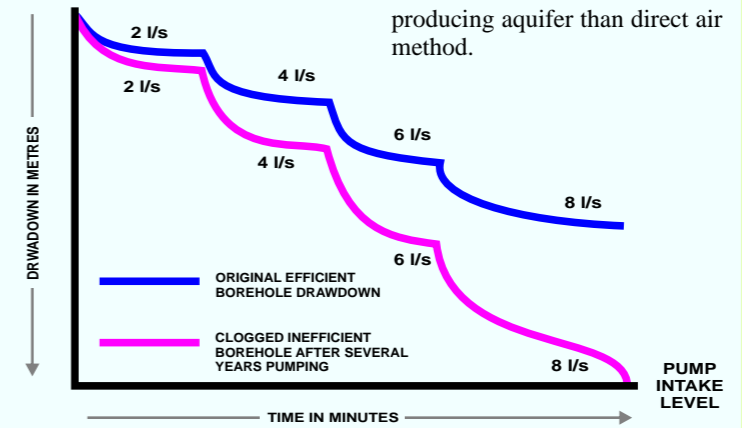
6. Comprehensive pumping test and water analyses.

7. Deeper drilling in existing wells, where appropriate.

8. An advanced method of well development both for new and existing wells described as dual airlift system. This technique comprises a dual pipe eductor system where well water fines and sediment is "hovered"

through the centre of an eductor pipe to surface and discharged to waste. A column of air is connected to centre of the eductor pipe at prescribed distance set-off the bottom of the eductor pipe displacing well water in the hollow centre of pipe and thereby creating a vacuum for additional well water to enter at the base of eductor pipe and continue the process of displacement at surface.

This method has advantages over direct air method as larger volumes of water can be displaced and the dual pipe eductor system is more gentle to abstract (i.e hoover) fines and sand and sediment from the producing aquifer than direct air method.



# Health & Safety Initiative

**PATRICK BRIODY & SONS LTD. has adopted the safe system of work plans (SSWP) to achieve the critical link between our comprehensive safety Statement and our on-site Drilling activities.**

Our Site Specific Safety Plan is displayed on our Safety Notice Board. The SSWP format is displayed including an assessment of hazards/activities which are pertinent to the site and the scale of risk (1-3) of any particular hazard occurring. Our SSWP sets out control measures to be taken in advance of works commencing to minimise the prospect of the risk occurring.

## Objectives of SSWP

- 1) Identify hazards associated with the work activity and ensure control measures are in place before work starts.
- 2) Use of pictograms are designed to get the safety message across to every member of the team.
- 3) Focuses safety on a particular work activity.
- 4) Increases awareness of safety and assists in communicating the safety message.
- 5) Links the Safety Statement/Method Statement to the work activity.
- 6) Helps users to complete work activities in a safe manner.
- 7) Helps the responsible person/users to meet their legal requirements.

# Complete range of Drilling Machinery

We have at our disposal a comprehensive range of drilling machinery and equipment. As the occasion demands we will ensure our machinery and equipment for any Project will be a whole lot more than just satisfactory. We can offer a range of drilling equipment and accessories including:-

- o Track mounted Drill Rig: Drilltech D40K
- o New Holland 4 WD Digger
- o Chem Grout Plant, including newly purchased geo-loop 40-500 model mounted on a dedicated Trailer complete with 500 gallon water storage and working area/cement storage area on board
- o Reichdrill T-650-W with Knebel patented clamps mounted below the drill table.
- o New Knebel Rig HY97-BRS mounted on a Renault Truck 6x6WD with floating Clamps and capacity to drill by reverse circulation, down hole hammer & and symmetrix drilling systems
- o Marooka All Terrain Rubber Track mounted service vehicle. (Generally used as support vehicle to our Track Mounted Drill rig.)
- o Booster air compressor package including new Atlas Copco & Sullair Compressors both trailer mounted, total air package capacity 1900cfm/800psi.

