

Drilling for water

Drilling for water involves substantial financial outlay. Many dollars have been wasted by landholders commencing drilling without considering important details which can determine the success of a drilling program. This step-by-step fact sheet will put you on track towards making the correct decisions in developing a reliable groundwater supply, whether it be for stock, domestic or irrigation purposes.

Getting started

Before you contact a driller, there are a number of questions that should be addressed:

- How much and what quality water do I need?
- What supply and water quality can be expected?
- What depth will the bore need to go to?
- What will it cost me?
- What type of drilling rig will be needed?
- Where is the best bore site on my property?
- Do I need a permit to drill a bore?
- Do I need a licence to take water?
- How should the bore be designed?

Information sources

The Department of Environment and Resource Management (the department) may hold information on previous drilling in your area. Contact your local departmental office to determine if drilling or water bore records are available.

You can also seek advice from a private hydrogeological consultant who can provide a groundwater assessment on your behalf.

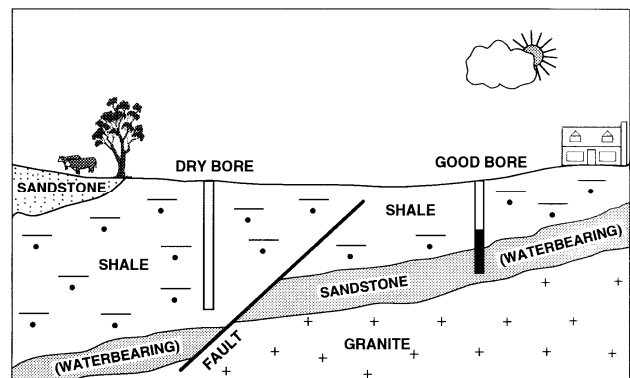
Assessment of potential groundwater supplies will include likely maximum depth, expected water quantity and quality, and preferred drilling sites.

Drilling contractors can be a good source of information especially if they have a good working knowledge of a particular district.

You can make your own assessment if there are existing bores nearby. If they are located in the same geological and topographic setting then you could expect a similar result. It is best to find out as much information as you can on these bores including depth, strata penetrated, and any dry holes drilled.

Water divining—does it work?

There is no scientific evidence to support the claims of diviners that their methods work. In fact many 'divined' sites have proven to be failures, although it is fair to say that others have produced quite good results. No method is guaranteed, but it is far better to rely on factual data and scientific knowledge. If you still wish to use divining, back it up with scientific information.



Sandstone aquifer displaced by a fault

What licence and/or permits do I need?

A water licence is required for the following:

- taking water from an artesian aquifer
- taking water from a sub-artesian aquifer in a regulated groundwater area.

In certain areas, taking water solely for domestic purposes does not require a water licence.

Water licence applications, except where water is used solely for stock or domestic use, need to be advertised in the local newspaper. You should allow at least three months for the licence application to be advertised and investigated.

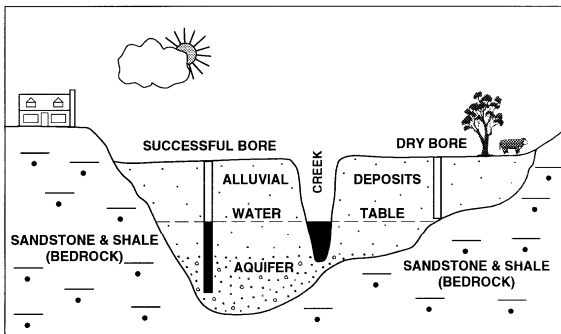
A development permit's needed to authorise the construction of most bores. A proposed bore in a regulated groundwater area needs a development permit issued by the department before any drilling (even test holes) can commence.

Contact your local departmental office for more information.

Siting the bore

In addition to hydrogeological aspects, the following should be considered when siting a bore:

- possible sources of pollution (e.g. septic installation)
- property boundaries and proximity to where the water is required
- source of power to drive pump
- neighbouring bores (avoid potential pumping interference)
- service facilities (power, telephone lines, gas etc.).



Dry bore - poorly sited

Who will drill the bore?

Once you have attended to licensing requirements, you can engage a drilling contractor. A list of registered water bore drillers is available on the department's website at <www.derm.qld.gov.au>. Additional names of contractors are available from the 'Yellow Pages'. The contractor must be licensed appropriately for the particular drilling work that is required.

Before engaging a drilling contractor, you should come to an agreement on a number of points:

- whether the drilling rig is capable of doing the job
- approximate depth to be drilled
- the charge for a 'dry' hole
- the charge for a completed bore
- tests to be carried out on completion (to determine water quality and quantity).

Bore construction

All water bores must be constructed in accordance with the 'Minimum Construction Requirements for Water Bores in Australia'. Bores in artesian basins must also comply with the 'Minimum Standards for the Construction and Reconditioning of Water Bores that Intersect the Sediments of Artesian Basins in Queensland'.

In general, you should be guided by your drilling contractor when it comes to the best means of constructing the bore. However, there are some important details that should be considered before drilling commences:

- bore casing should be of suitable material and strength to prevent collapse of the hole
- sufficient casing should be inserted so that when the pump is operating no part of the pump is exposed to open hole conditions
- the bore does not pump fine particles or sand. Water entry via open hole conditions should be considered only when the stratum is known to be very stable
- casing is large enough to accommodate the pump proposed.

On completion, the driller should provide you with a copy of the 'Drill log form' showing details of depths and material penetrated, construction details and supply obtained. It is recommended you keep a copy of any drilling records so bore details can be retrieved to diagnose any problems which may arise in the future. In all cases the driller is required to forward a copy of the drill log form to the department.

Water quality

Before you equip the bore it is wise to have a complete water analysis carried out. Analyses can be carried out by a private analyst.

Conductivity tests or 'taste' tests give an indication only and do not provide sufficient data to determine the overall suitability of the water for your needs.

Bore disinfection

Significant problems with iron bacteria in bores over much of the state have indicated the need for disinfection of all bores immediately after drilling. The iron bacteria may be transported from bore to bore or can be present in the aquifer. Once a bore is infected, it is extremely difficult to completely eradicate the bacteria. Therefore disinfection of all new bores with a sterilising agent is recommended. For further information see fact sheet W14—Disinfection of water bores.

Assistance

Your local departmental office may be able to assist you further with this topic, or with water supply, irrigation or drainage generally. Call them for details of other fact sheets, available services and associated charges.

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For general enquiries contact the
Queensland Government call centre 13 QGOV (13 74 68)
or visit www.derm.qld.gov.au