



THE HOMEOWNERS GUIDE TO BOREHOLES

Decision and Action Guide to Ground Water Access

Introduction

Gathering
Info

Selecting
&
Negotiating
With

Contract

Drilling

Select
Pumps

Commis-
signing

Operating
Your
Borehole

Note:

This site has been set up to guide homeowners through the process of acquiring a borehole for normal gardening purposes. It is neither comprehensive or definitive and cannot guarantee a trouble free project. It merely attempts to cover the most obvious pitfalls but by its nature cannot cover them all.

GENERAL INFORMATION

1 INTRODUCTION

This guideline has been prepared to assist the Citizens of the Western Cape through the process of application for the use and drilling of boreholes. For the sake of this document the term "Borehole" means any form of ground water abstraction including wells, well points, spikes or in fact any created access to underground water.

2 REGULATORY FRAMEWORK

The use of water, the drilling of boreholes and the extraction of ground water for bulk consumption purposes is governed by three Acts, namely the **National Environmental Management Act (Act No. 107 of 1998) (NEMA)**, the **National Water Act (Act No. 36 of 1998) (NWA)** and the **Water Services Amendment Act (Act 108 of 1997) (WSA) as Amended in Gazette No 27273 Notice No. 130 – 11th of Feb 2005) (WSA)** all as amended from time to time.

In terms of the above acts any use of water is required to be approved by and registered with and licenced by the Department of Water and Sanitation after going through a rigorous application process including an Environmental Impact Assessment.

However, for the ordinary landowner or occupier using water for reasonable non-commercial domestic, animal watering and garden watering purposes which would classify the use as a Schedule 1 use. In terms of the act Schedule 1 use needs not be registered or licenced however the amount of water abstracted must be monitored with a meter.

3 REGISTRATION OF YOUR BOREHOLE WITH YOUR MUNICIPALITY

Many Municipalities have adopted By-laws governing the drilling and use of Schedule 1 boreholes within their areas of jurisdiction with the purpose of preserving the Aquifer for prosperity, ensuring no contamination of the Municipal water supply and to ensure that fair use is not exceeded. These measures will go some way to reducing wasteful and selfish use of the underground water reserve, and hence ensure that every user (including the environment) gets their fair share of the water. All owners or prospective owners of boreholes are advised to check with their municipalities as to whether they require registration of boreholes and, if they do, comply with their requirements.

4 PROCESS TO FOLLOW IN ACQUIRING A BOREHOLE

The table below lays out the recommended process with reasons.

If you follow the process you will:

- Give your self the best chance of having a successful project.
- Contribute to the proper management and preservation of the under-ground water resource (aquifer).
- Reduce conflict with your contractor and neighbours.
- Ensure the long term life of your borehole.
- Keep you and your family safe from unsafe practices and cross contamination of water.
- Don't use the water for potable water unless you have the proper tests done regularly.

[Next >>>>](#)

[Home](#)

Decision Making & Investigation

- Approach Municipality
- 1 What regulations do you have regarding Section 1 boreholes in the municipal area?
- 2 Check out the Borehole Water Association web site <http://bwa.co.za/>
- 3 Talk to neighbours re their use of boreholes in your neighbourhood
- 4 Do you have a borehole?
- 5 How deep is it?
- 6 Where is your Borehole as you don't want to drill yours too close to it.
- 7 What type of borehole is it?
- 8 Does it work well and give you enough water?
- 9 Who drilled it and were you happy with their service?
- 10 Who decided on the location?
- 11 How many dry wells were drilled before you hit water?
- 12 How much water do you get per hour?
- 13 What is the water quality like?
- 14 Does the amount you get change between winter and summer?
- 15 What is the water quality like.
- 16 Has the amount you can pump reduced over the years, if yes, why?
- Prepare site plan showing services and any adjacent boreholes
- Show all underground and above ground services on your property, you don't want driller to damage services.
- Discuss with the driller.
- Get copies of information and forms - read them and comply with them if you decide to proceed with the project
- Learn why to use Registered Drillers and more about having a borehole drilled. You can also order their Manual.
- Noting the answers will help in your decision making process and warn you of pote

Home

Next >>>>>

SELECTING A DRILLING CONTRACTOR

Use someone who has done a lot of work in your area.

- 1 How many successful boreholes have you drilled in the area in the past five years and give me verifiable references? Check the references
- 2 How many dry boreholes have you drilled in the area in the past five years? Just so you know there is a risk of dry wells and to assist in assessing how high the risk is.
- 3 Are you registered with any borehole drillers society or organisation? Helps weed out fly by night operators. Membership of the Borehole Water Association (BWA) is preferred.
- 4 Who decides where to drill? For deep expensive boreholes it is best to appoint a Hydrogeologist . Certainly for any hole deeper than 20m.
- 5 Do you have a standard contract I can take home and study? Read contracts carefully - know what your and your contractors rights and responsibilities are at all phases of the work. Make sure any changes you desire are added to the contract you sign.
- 6 What type of borehole do you suggest for my location? Compare to successful boreholes in your area. If different ask why?
- 7 What are your charges? At what stages of the job do I pay and how much at each stage? Never choose contractor on price alone, make sure contractor has good references and knows your area. Make sure progress payments are fair value for the work done.
- 8 When can you do the work? Does the date suit you?
- 9 Who does the yield test and what is the cost? This is to test exactly how much water you can safely pump out of the borehole per second.
- 10 Who does the development of the borehole and what is the cost? This is all the work needed to get the water out of the ground and to where you need it. Includes supply and installation of the pump, electricity connection and switch gear etc. Should be experienced in the field of borehole development.
- 11 Casing type This is the pipe put down the borehole to protect it from collapse. Make sure it can give a long life in the circumstances. Check who does this work.
- 12 Measuring Tube This is a small diameter tube running from top of borehole to below the pump or suction tube that enables you to easily measure water depth without the measurement line hooking up on cables or pump. Include it in quote.
- 13 Pump Type? Might be a submersible or above ground type. Choice will depend on depth, power supply and yield. Buy by quality and performance needed - not by price alone.
- 14 Who is responsible for electricity supply and switchboard Must be a qualified electrician experienced in the needs of a borehole installation.
- 15 Cost must include a water meter in the water delivery line, an ammeter and hour meter in the switch panel. These are all important in monitoring your borehole and forewarning of potential problems. A timer might be worthwhile fitting as well.
- 16 Cost of drilling. Normally includes site establishment, setting up the rig, cost per meter, backfilling dry holes and site reinstatement after drilling. Expect separate costs for casing and development of the borehole. Pump and electrical costs will depend on the yield and type.
- 17 Driller to take responsibility for Occupational Health and Safety whilst on site. Make sure that you have a signed indemnity from him before work commences.
- 18 Borehole and equipment must be protected from polluted water incursion and risk of injury to persons and animals. Make sure that edges of boreholes are sealed to prevent mud and pollution from entering the borehole and that moving machinery and electrical equipment is properly protected.
- 19 Site management, clean-up at end of project and workers toilet Who is responsible for what? The clearing of grit and mud from the drilling, the reinstatement of vehicle tracks, garden damage, provision and maintenance of toilet facilities, damage to neighbouring property and municipal property etc.
- 20 Insurance Does the driller carry suitable liability insurance and what is the value. Must be sufficient to cover any eventuality.
- 21 Access to site. What drilling equipment is needed, who removes and replaces walls and fences to gain access, tree felling, garden damage etc needs to be agreed on and considered at time of quote.
- 22 Maintenance of drilling log This is a log of depth drilled and position of each change in strata drilled through. Must be the drillers responsibility and maintained as the drilling proceeds. Make sure you keep a copy.

SIGNING THE CONTRACT

- 1 **Read the contract carefully and make sure that you can comply with all the conditions in it, including the small print.**
- 2
- 3 **Make sure that you are happy with the rights it gives the contractor.**
- 4 **Does the contract have a commencement date? Are you able to make the site available on that date?**
- 5 **Does the contract allow you to cancel it without penalties to you if the contractor keeps delaying the work?**
- 6 **Does the contract contain all the items you agreed with the contractor in the discussions and negotiations you had with them?**
- 7 **Check that the payment schedules are as agreed between you.**
- 7 **What , if any, are the penalties for non-performance by you or the contractor?**

[Home](#)

THE DRILLING HAS STARTED

- 1 Make sure you have complied with the agreed site access conditions.
Delays caused by you not meeting all the agreed criteria are a good excuse for the contractor to charge you more.
- 2 Make sure you have handed the contractor a copy of that site map you drew in step no 14 in the First Step
If you haven't given him the map then you will be liable for the cost of delays and repairing any service he may break or damage.
- 3 Make sure that you are happy with the condition of equipment the contractor has brought on site and that it is fit for the agreed purpose.
if condition of equipment is poor breakdowns can extend the time on site and nuisance to you and neighbours significantly, Equipment must have no oil and fuel leaks, no frayed hoses or cables, operators have and use suitable personal protection equipment.
- 4 Do not place your borehole too close to your neighbours.
Try to keep them at least 10m apart or they will starve each other if pumped at the same time. Even 10m is not a guarantee of them not affecting each other.
- 5 Take regular photos or videos (3 or 4 times a day) of what's happening, what progress they are making and note the depth they have reached.
This sort of record is valuable if any dispute between you and the contractor arises. Also note and record any damage they have done to your or neighbouring or Municipal property and get the contractor to sign acknowledgement.
- 6 Check that driller's log is being kept up to date
Make sure you get a copy and keep it safe for the life of the borehole.
- 7 If the borehole is dry make sure they re-fill it or seal it.
You will have to pay for each dry hole drilled.
- 8 If they find water they will sleeve the borehole.
Make sure they use the type and size of sleeve agreed to in the contract, make sure they properly backfill around the sleeve with the right materials, normally stone chips around the slots, then soil and finally clay or concrete for the top meter or so to stop pollution from entering the borehole.
- 9 Once the borehole is sleeved it's time to do the yield test.
- 10 Test the water quality
Depending on the use you intend to put it to you might have to have it tested by a suitable laboratory.

[Home](#)

CHOOSING YOUR PUMP

- 1 Once yield has been obtained you need to select the pump. Get a pump expert to assist you in the selection

Never select a pump on price alone, use reputable brands of pumps.
- 2 Don't choose too large a pump. Choose one that provides less than the tested yield, something like 50% of the tested yield would be best.

The closer the pump chosen pump's output is to the tested yield the shorter the long term life of your borehole will be. Regularly pumping the borehole dry will take years from the borehole's potential life.
- 3 It's better to run a small pump for long periods rather than a large pump for short periods with rests between.

A pump that can only supply one large sprinkler will have to run 5 times longer to water an area than one that can feed 5 sprinklers at a time. But the small pump will not drop the water height in the borehole as much and will reduce the clogging of the borehole by bacterial slime and metallic salts significantly, This extends the life of your borehole.
- 5 Bear in mind your power supply constraints when selecting a motor.

Normal household supply is limited to single phase with a maximum ability to run motors less that 2kW - Check your supply, ask the Electricity department or a competent electrician.

[Home](#)

COMMISSIONING THE BOREHOLE

- | | | | |
|---------------------|---|---|--|
| Installing the Pump | 1 | The pump should never be installed to draw right from the bottom of the borehole. | Make sure the pump installer knows what they are doing and are experienced in the work. |
| Connecting the pump | 2 | The pump output line will either be connected to a supply line or directly to a tank in accordance with the agreement. | Make sure the water meter is installed and you are happy with the workmanship and materials. Test for leaks. |
| | 3 | It is illegal to connect the borehole water into any pipes that are also supplied by Municipal water without the written consent of the municipality. | Make sure that any system that received municipal water is disconnected before connecting the borehole water. |
| Powering the pump | 4 | This work is to be done by a properly qualified and experienced electrician. | Make sure you are shown exactly how everything works and that all equipment is safely housed in a weather proof housing. |
| Handover | 5 | Test everything to make sure it is working properly. | |
| | 6 | Get written instructions on how to operate the equipment and borehole. | |
| | 7 | Get a copy of the drillers log and details of the lining. | |
| | 8 | Ask them to show you how to measure the water depth | There are good YouTube videos on how to make your own depth measuring devices. |
| | 9 | Get all manufacturers literature on pumps and electrical equipment and copies of the warranties and invoices. | |

[Home](#)

OPERATING YOUR BOREHOLE

- | | | | |
|-------------------|----------|--|---|
| Pumping | 1 | It is better for the life of the borehole to pump slowly for a long time than quickly for short periods | Long, slow pumping preserves the life of the borehole |
| | 2 | Do not pump against closed valves. | Can cause damage to the pump. |
| | 3 | Never pump till the borehole is dry | Drastically reduces the life of the borehole. |
| Monitoring | 4 | Read the water meter, amp meter and hour meter, on a regular schedule. | Weekly is best. Keep a log of the readings. Any noticeable change will warn you of changes in the pump or supply. |
| | 5 | Regularly check for changes in the water quality. | |
| Preserving | 6 | Don't allow polluted water and oil, petrol or diesel to enter the borehole. Keep the area around it free from pollution. | It takes very little hydrocarbon pollution to pollute the whole aquifer. |
| | 7 | Don't waste the water. There is only a limited supply of water underground. | |

[Home](#)