



STATEMENT BY THE GROUND WATER DIVISION: 1 NOVEMBER 2016
Water in South Africa – is groundwater an option?

Water scarcity, droughts and issues around potable water are frequent in the mass media. In the shadows of the concerns in the news, social media are abuzz with finger-pointing as to what the reasons are for water scarcity in South Africa.

In many instances, the issues can be solved by our water professionals, provided that we can get past the general misconception that South Africa has no water. Yes, South Africa is water scarce, and yes, water needs to be imported vast distances for supply, most notably to the urban areas. But in many areas of South Africa, groundwater is a vastly underrated source of water, which can possibly ameliorate many of the ever growing demands.

Few people are truly aware of the groundwater supply to many of South Africa's towns and cities. The City of Tshwane has been supplied by the springs at Fountains Valley since the founding of the city until this day. Situated in the Groenkloof Nature Reserve, the springs are protected against pollution associated with urban development and the water quality remains pristine. The City of Cape Town is known for a vast number of springs around Table Mountain which have historically supplied parts of the city. One example of such a spring is at Oranjezicht, although its use has since ceased. A number of boreholes contribute to the water supply of Polokwane – one of the rapidly expanding cities in South Africa.

Whereas dam levels reflect the imminent threat of droughts and climate change, the impact on groundwater is less obvious. We rely on regional monitoring networks of boreholes and models to anticipate the long term behaviour of aquifers. This hidden nature is easily misinterpreted, leading to assumptions that groundwater is privately owned or completely resilient to climate change. Ownership of groundwater is not private; the use thereof is licensed and it is a shared resource for the people of South Africa.

Proper qualified, professional practicing geohydrologists or hydrogeologists (the terms are used interchangeably) are responsible for the characterisation of subsurface waters. When characterising groundwater, we aim to consider both the water quantity and its quality. In terms of the quantity of water, knowledge is applied to studying the movement of water and the design of water supply schemes. Regarding the quality of water, one considers whether the water can be used without adverse effects to people or the environment, as well as to solve problems related to pollution.

Groundwater scientists have the knowledge and skill to address groundwater as a source for water supply in specific areas. Knowledge about geology teaches us about the water-bearing properties of rocks, and when sufficiently high, we term these aquifers. Our understanding of fluid mechanics and chemistry allows us to determine flow rates, the composition of water and rates at which it can be pumped to supply water without any permanent damage to the aquifer. And few people are better equipped to outline the management plan for the use of this very valuable resource.



Groundwater use is not merely a matter of acquiring a drill rig and drilling a borehole. The groundwater specialist relies on a holistic scientific approach of pre-identifying geological targets using geophysical technology and knowledge of the behaviour of groundwater systems. Existing regional knowledge on boreholes in the region, mapped geology and other physical measurements and models contribute to the understanding of the aquifer to increase the success of drilling.

For a successful borehole, finding water is not enough. A certain yield has to be guaranteed for sustainable pumping over prolonged periods of time. This is not a straight-forward task, and, especially in times of drought, an aquifer can be stressed.

During the water scarcity we are presently facing, the Ground Water Division would like to encourage the following:

- (i) Use groundwater as sparingly as you would any other source of water. Groundwater at one locality inevitably influence water in rivers and aquifers elsewhere. One cannot see the water cycle as independent. Rainwater, groundwater and surface water all occur interdependently.
- (ii) Groundwater recharge (implying the effect of rainfall on the groundwater levels) are not immediately linked to rainfall events. We require a substantial amount of continuous rainfall to raise the groundwater levels in the next seasons or even years. Do not expect that a little rainfall on one day solves the water supply problem.
- (iii) We are facing a drought and climate change issues. It is not certain when, or even if, we will ever return to our “normal” rainfall in South Africa. Only climatologists and meteorologists can answer this question. Nonetheless, we should plan for a period of water scarcity that exceeds 2016.
- (iv) If you are drilling a borehole, note that you are sharing an aquifer with other water users. You are not only pumping a borehole, but a shared resource that requires you to consider sustainable use.

Now is not the time to shy away from using groundwater, but rather the time to emphasise that we can tap into this resource, provided that we use the very special skill set of our country’s highly competent hydrogeologists and geohydrologists. Groundwater is more abundant than surface water – undoubtedly so – but, as with surface water, its occurrence and quality are highly variable. Specialist input is required, and, as the groundwater professionals of South Africa, we urge all to abide by the water act and ensure that this resource is used sustainably.

This message is released by the Ground Water Division (GWD). If you enquire further information about us, please visit our website at www.gwd.org.za.