

National Groundwater Level Monitoring programme

Prepared by Dr Portia L. Mokoena

The purpose of the monitoring network is to identify temporal and spatial variations of groundwater thus giving status of the water resource in line with the National Water Act No. 36 of 1998. The objective of the National Water Act (NWA) is “to ensure that the nation’s water resources are protected, used, developed, conserved, managed and controlled in ways which take into account amongst other factors” - in a sustainable and equitable manner, for the benefit of all persons. The National Groundwater Level Monitoring programmes aims at conducting frequent assessment of our water resources to ensure reliable and sustainable water availability and quality for our communities.

The National Groundwater Level Monitoring programme is conducted through daily (hourly readings), monthly, quarterly and biannual monitoring through the use of data loggers (hourly readings) and water level meters (collected manually on monthly basis). Figure 1 shows the active sites used for groundwater level monitoring in South Africa.

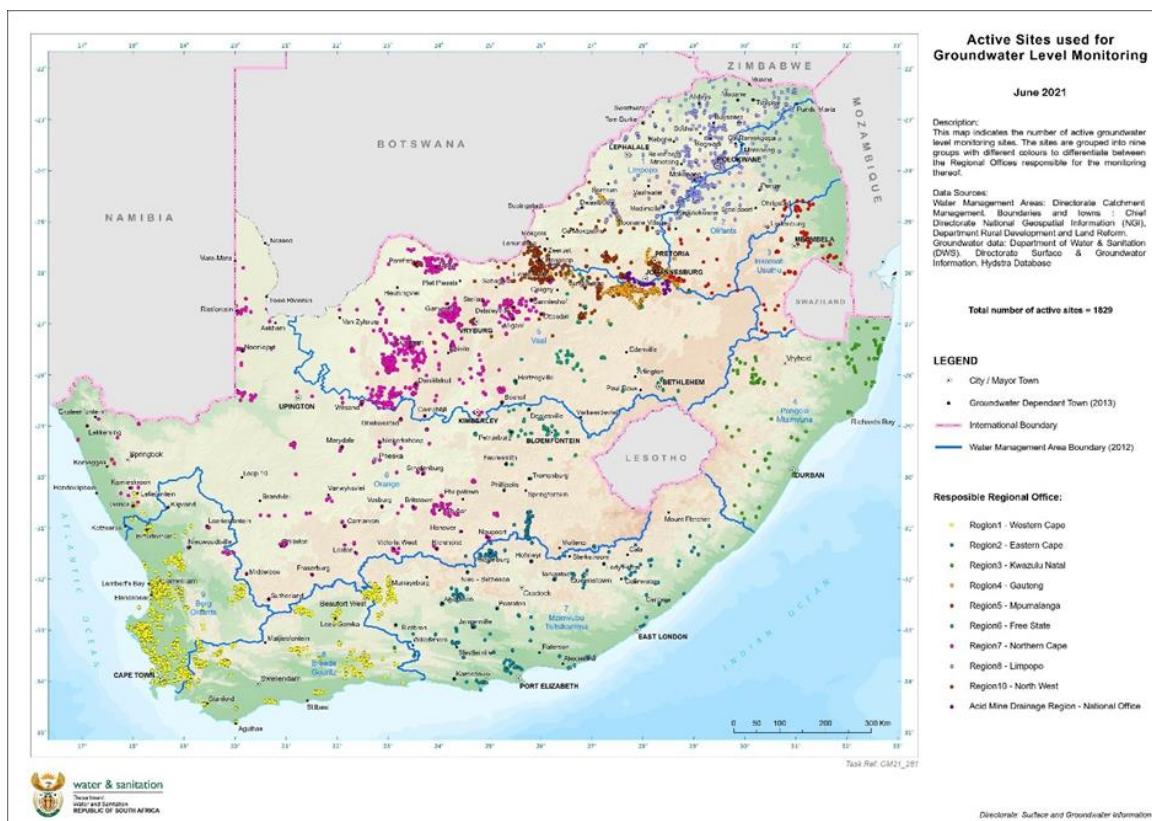


Figure 1: National overview of groundwater level monitoring stations

On monthly, quarterly, biannual and annual basis, analysis of groundwater data is conducted at regional scale and monthly at national scale. Analysed data and reports are available online at <http://www.dws.gov.za/ghreport> and <https://www.dws.gov.za/NGANet/> and on the National

State of Water report at <https://www.dws.gov.za/Groundwater>. Figure 2 shows Groundwater level fluctuation for 2020/2021 Hydrological Year. Major parts of the country indicated groundwater level increase between 0.1 - 6 meter below ground level as indicated by the light orange colour on the map. The western part of the country and some parts in the north indicated an increase of groundwater level between 0.1 – 15 meters below ground level. In Table 1 is summarised range of National groundwater level fluctuations. The table indicates 54.4% of the monitored station during the 2020/2021 Hydrological Year indicated an increase in groundwater levels while 45.6% indicated a decline. In depth analysis of the groundwater level can be accessed in the National State of Water Resource Report available online DWS website.

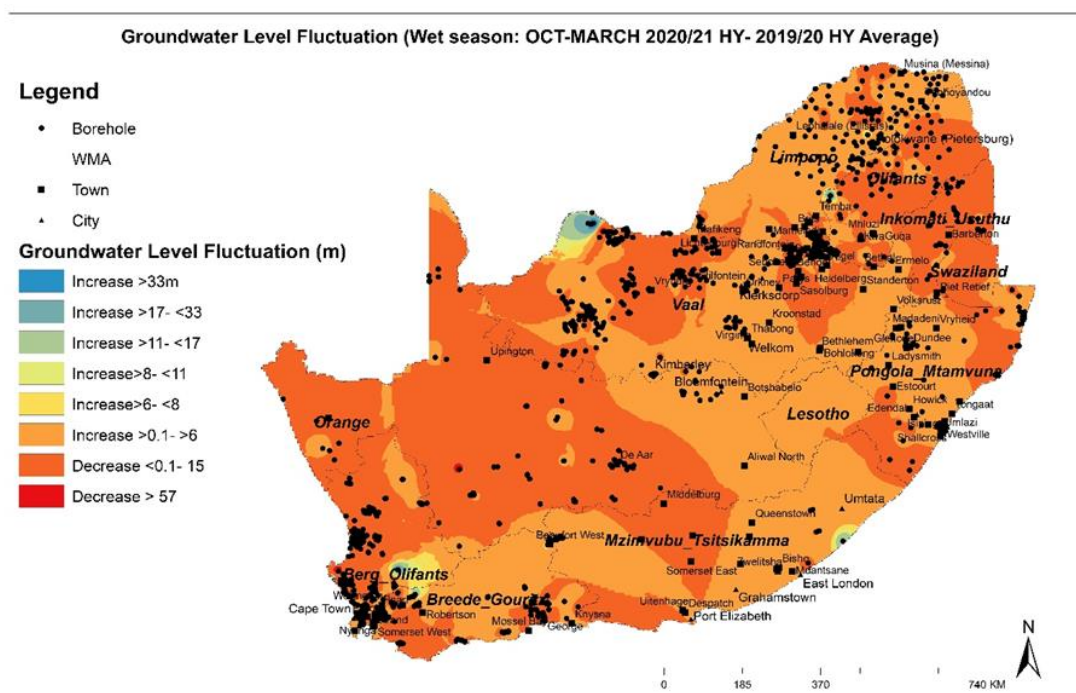


Table 1: range of National groundwater level fluctuations

Groundwater Level Fluctuation (m)	No. of boreholes	%
Increase >20	10	0.8
Increase >10-20	20	1.5
Increase >5- 10	48	3.7
Increase >1- 5	216	16.6
Between <1 - >-1	802	61.5
Decrease >1- 5	144	11.1
Decrease >5- 10	28	2.1
Decrease >10- 20	20	1.5
Decrease >20	15	1.2
Total Number of boreholes	1303	100
Groundwater level ↑	709	54.4
Groundwater level ↓	594	45.6

Sustainability and future plans:

Expansion of the network is underway to implement the recommendation made from the Optimisation of the South African Water Resources Monitoring Network project. The optimisation network project available online at <https://www.dws.gov.za/Projects/NWRM/> includes plans on expansion and improvement of the national groundwater level monitoring programme.