Council for Geoscience
Applied Geoscience Solutions

mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

NOTICE

NOTICE REGARDING CONSULTATION WITH INTERESTED AND AFFECTED PERSONS
In terms of Sections 3 and 5 of the Geoscience Act, as amended.

Research Initiative from the Council for Geoscience:

Karoo deep drilling and geo-environmental base line programme

The Council for Geoscience (CGS) is conducting a three year scientific programme that will include the drilling of a deep vertical research borehole near Beaufort West coupled with a wide range of geoscientific investigations to better understand the impact any geo-resource exploration activities (minerals, gas, deep ground water, geothermal) could have on the Karoo environment.

To the uncertainty on the mineral, gas or geothermal economic potential of the Karoo is added the potential threat of damage to its geo-environment, such as deep and shallow water resources, seismicity, soil chemistry as well as gas emission. Presently, quantitative scientifically-based conclusions cannot be drawn on these matters with the currently available information. A vertical deep research borehole is therefore deemed necessary to be able to competently address these issues by providing the necessary information.

Beaufort West was selected because of its geo-resources and geo-environment (uranium, possible shale gas, deep groundwater and geothermal energy), the lack of any deep boreholes in the area (and therefore the lack of knowledge on deep geology) and the fact that there are no exploration licences in the municipal grounds. This CGS research programme is not linked to any exploration activities.

Research programme and activities

The CGS program will run in three phases:

- Base line study at regional and local scales;
- Drilling of a vertical deep borehole (down to 3500m), with “down the hole” geophysics, and including rock core and groundwater sampling;
- Borehole result analyses, including detailed study of the core, gas and/or mineral analysis and on-going monitoring of any geo-environmental changes and impacts.

Activities of the base line programme

The CGS is currently busy establishing Phase 1 (baseline study) before deep drilling takes place. Several surveys at different scales (respective areas of investigation shown on Figure 1) have to be conducted as mandated by the Sections 3 and 5 of the Geoscience Act, as amended.
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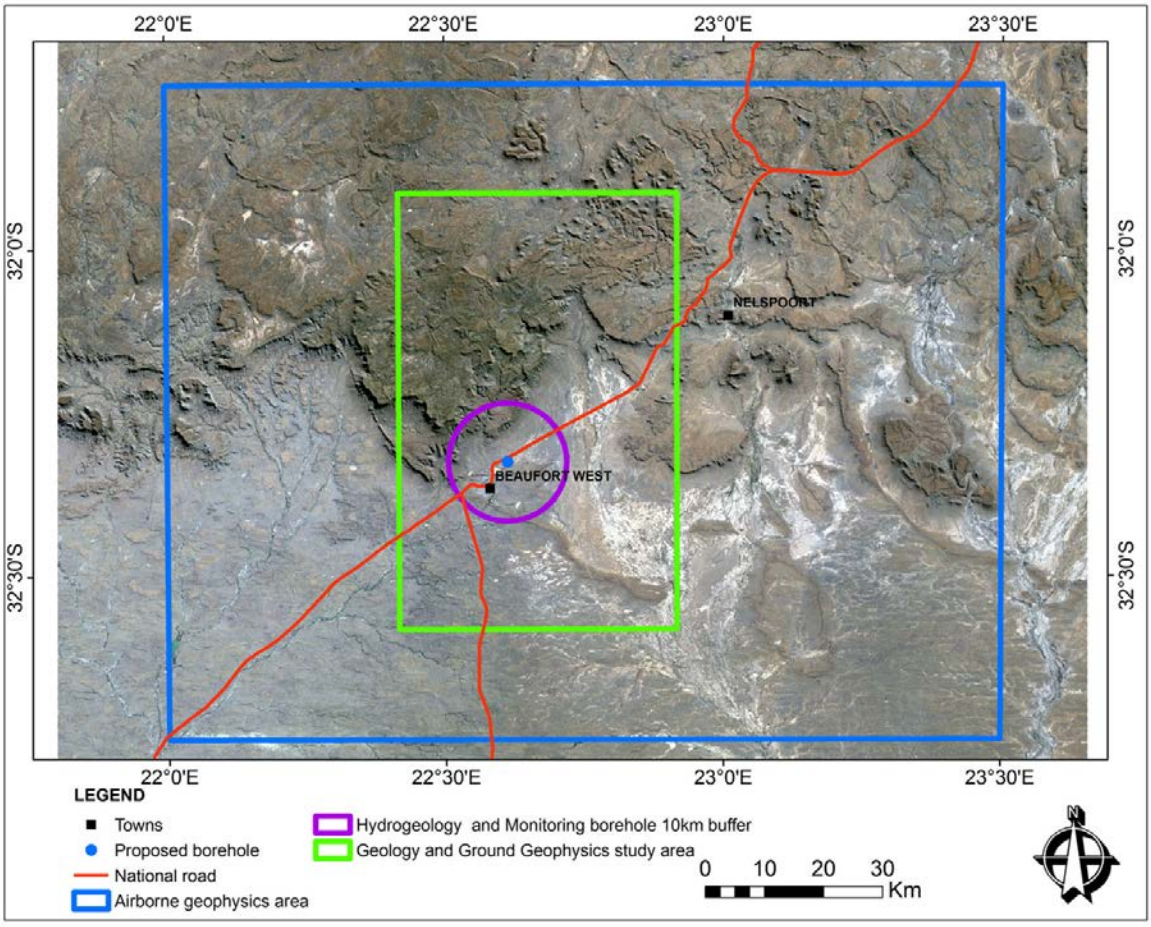

Figure 1: The different base line study areas

1- Airborne geophysics

The high-resolution, fixed-wing airborne geophysical surveys will be flown at an altitude of about 80 metres and a line spacing of 200 metres , covering an area shown on Figure 1. The survey will start in early February 2017. The results will reveal the presence of hidden geological features such as dolerite dykes or sills that cannot be mapped from the surface.

The private land to be overflown by the airborne survey is shown in Figure 2.

2- Geological mapping

The first geological mapping at 1 : 50 000 scale was conducted in 2016 over the catchment area. This survey is however an on-going task that is revised on a regular basis. It does not damage, destroy or interfere with fauna or flora on the properties visited. The geologists use vehicle tracks on the farm and under no circumstances drive across the veld; where there is no vehicle access, they walk. They will contact owners to get permission and arrange for access.

3- Ground geophysics

Ground geolphysics is a non-destructive process that includes several techniques like: magnetotellurics, electromagnetics, resistivity sounding and shallow seismic profiling. They will be used mainly in the vicinity of the proposed deep borehole in order to understand the local geological structure and the presence of shallow or semi-deep aquifers. Some investigations may also be carried out in the catchment area further away from the borehole, according to research needs that may arise.

Individual property owners will be contacted if and when required.

4- Hydrogeology

Groundwater studies will include two investigations:

- A hydrocensus of existing boreholes within a radius of 10 km of the proposed deep borehole site to measure water levels and water quality
- Drilling of several monitoring holes in the vicinity of the deep borehole. They are planned at various depths: 700 m, 300 m and 150 m. They will be drilled mainly on the Beaufort West Commonage but could also be sited on private lands in the catchment area.

Individual property owners will be contacted if and when required.

5- Seismicity

The purpose of this study is to establish a baseline of regional seismicity in the study area so that potential future triggered micro seismic events around the deep drilling site can be identified. Six seismograph stations have been installed and recording has started.

6- Environment

The environmental study has two components:

- The ecology around the deep borehole and groundwater-dependant ecosystems; to be conducted in the vicinity of the deep borehole;
- Soil geochemical investigation (including natural gas emission) to create a base line in the immediate area around the drilling site.

Calendar for the base line study

The airborne project will commence early February 2017. The flight specification will be as follows:

Flight Line Direction	North-South
Tie Line Direction	East – West
Line Spacing	200m
Average Flying Height	80m

Ground geophysics will start in February 2017.

The drilling of monitoring holes will follow the completion of the ground geophysics.

Geological mapping commenced in 2015. It carried on in 2016 and is an on-going process. CGS mapping geologists will be working in the study area as required by the project during 2017.

The different survey teams will use official CGS marked vehicles and carry a letter confirming their identification, purpose of the visit and the supporting signatures from CGS/DMR Management.

The Council for Geoscience will greatly appreciate specific support from the local communities to the respective field crews and help in the implementation of our mandate through a cordial and mutual working relationship for the benefit of the nation.

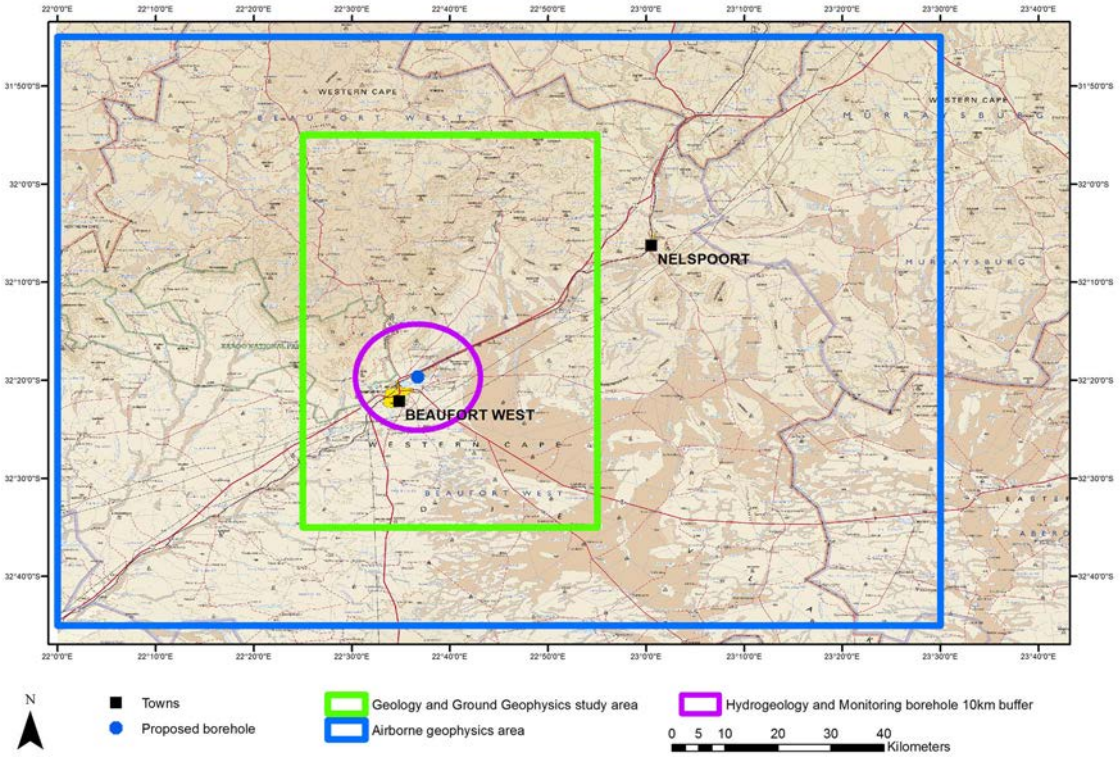

Figure 2 : Private lands to be visited or overflown during the base line study

REQUEST FOR COMMENTS

Interested and affected persons and members of the public are called upon to submit their comments regarding the research initiative to:

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