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An Investigation of Possible Augmentation of Water from Groundwater Resources to Mangaung

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AIM AND OBJECTIVES



AIM

An investigation of the groundwater resource potential within the Mangaung Municipality as an augmentation source for potable water.

OBJECTIVES

- Locating intrusive geological structures within the municipal boundaries through geophysical surveys.
- Conducting a hydrocensus to obtain information on existing boreholes.
- Drilling investigative and production boreholes at positions as determined from the geophysical surveys.
- Conducting pumping tests on new and existing boreholes to determine the hydrological parameters of the aquifer systems.
- Calculating sustainable abstraction rates for the production boreholes.
- Groundwater sampling and chemical analyses to determine the suitability of the groundwater for human consumption



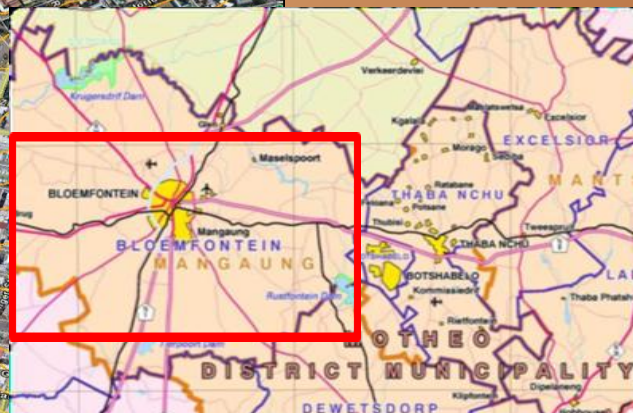
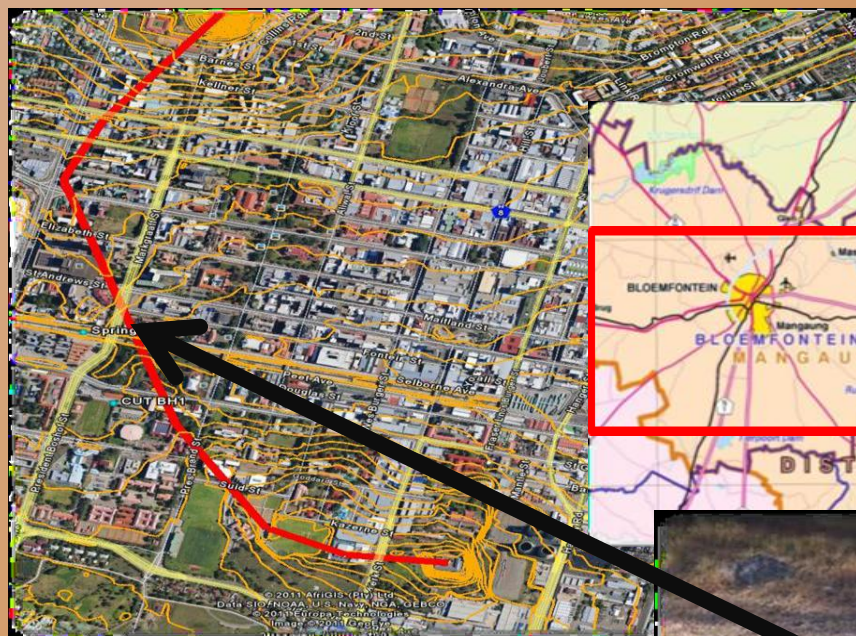
INTRODUCTION



- The study area is located in the Mangaung Metro Municipality, Free State Province
- Water shortages are often experienced in the municipality.
- The provincial government spends large amounts of money to buy water from Lesotho.
- The current study focuses on the possible augmentation of the municipal water supply from aquifers associated with ring dykes and other intrusive dolerite structures



STUDY AREA



The study area, enclosed in red

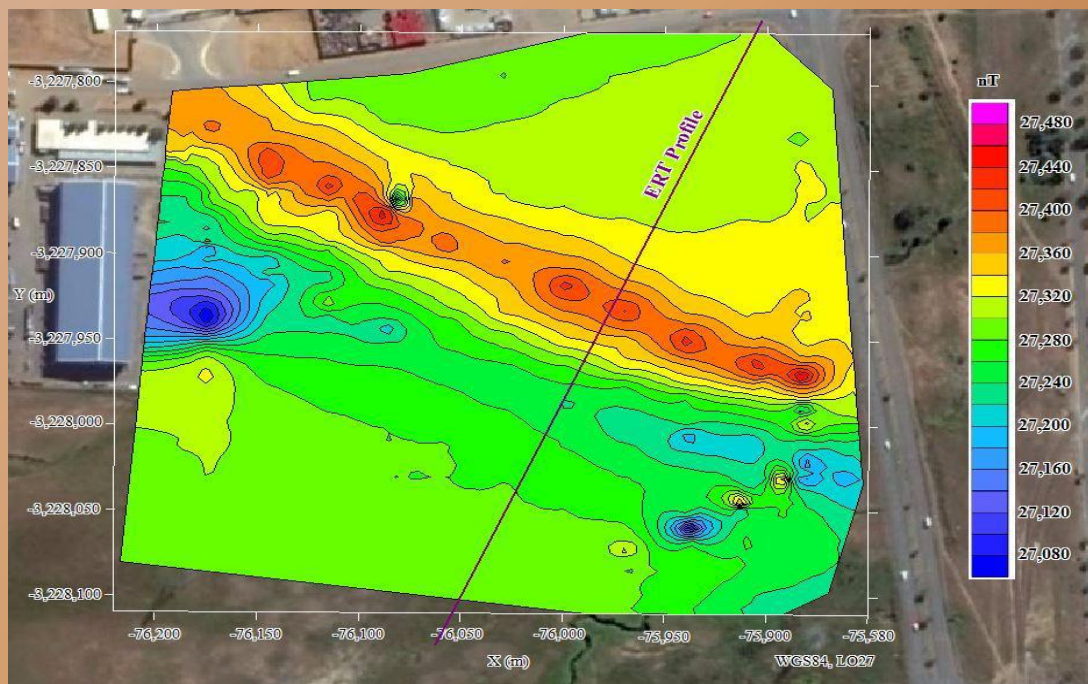
Approximate position of a ring dyke in the study area



A dolerite outcrop within the study area



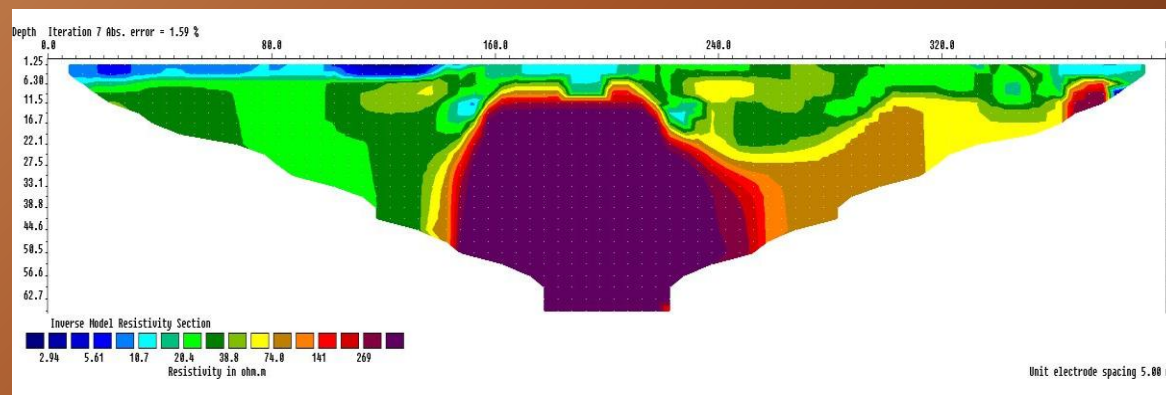
PRELIMINARY RESULTS



Contour map of the total magnetic field recorded across the edge of a suspected ring-dyke.

Also shown are the position and orientation of an Electrical Resistivity Tomography (ERT) profile across the linear magnetic anomaly

Modelled resistivity section along profile across the prominent magnetic anomaly showing broad resistive structure thought to be the edge of a ring-dyke





CONCLUSIONS



- Hydrocensus data from existing boreholes reflect a high yield of groundwater associated with intrusive dolerite structures.
- The ERT profile and magnetic data indicate the presence of intrusive structures that will be further investigated to determine their groundwater potential.

THANK YOU