ALTERNATIVE WATER SUPPLY:
NGOBI PRIMARY
Case Study

Client Name: Phatwe Consulting Engineers

Project Value: R173 439-55 (incl. VAT)

Project Duration: July 2020 – November 2021

Location: North West Province, South Africa

Project Description: Re-Solve was appointed by Phatwe Consulting Engineers to conduct a refurbishment on an alternative water supply system at Ngobi Primary School. Following the initial site visit, the scope of work was revised to comprise of drilling a new borehole, sleeving and development of the new borehole, and conducting yield and Water Quality Tests.

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1. Pre-Intervention State

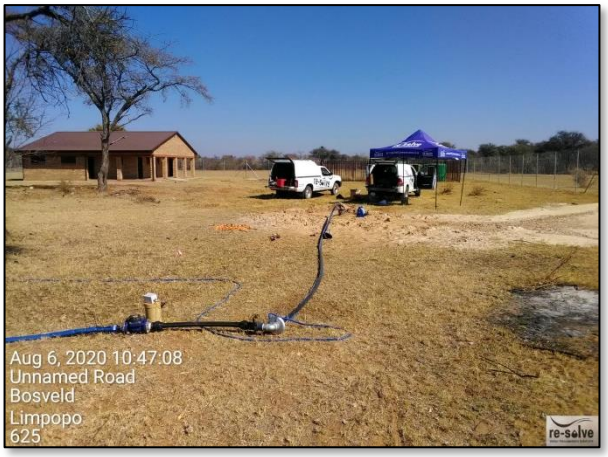
Phatwe Consulting Engineers approached Re-Solve to assist them with rehabilitating and extending an existing borehole at Ngobi Primary School. Upon inspection, it was noted that:

- There was a 5kL JoJo tank and newly installed 12kL steel elevated reservoir tank.
- Water stored in the 5kL JoJo tank feeds a stand tap located in front of the school building, and water from the 12kL steel reservoir is supplied to the school's ablution block.
- An attempt to rehabilitate the borehole had already taken place.
- A 140mm borehole sleeve had already been installed.

2. Proposed Solution

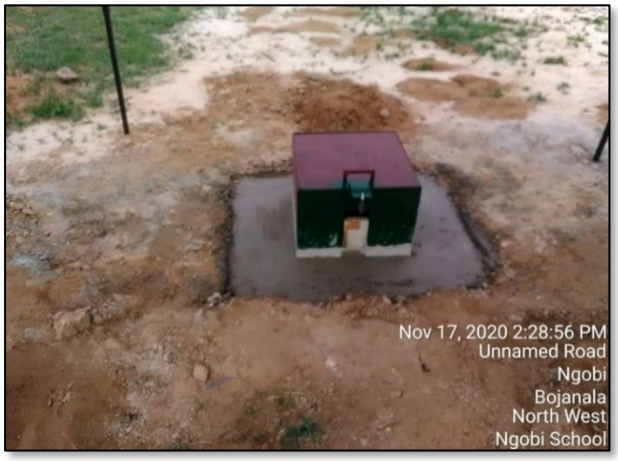
- **Drilling for a new borehole** – A new 70m deep borehole was drilled and it is located 50m from the 12kL steel reservoir, and 45m from the electrical supply point.
- **Sleeving and Development of the new borehole** – Sleeving for the proposed borehole was to be installed for the full 70m depth and the bottom 40m of the proposed sleeving was perforated to allow water to flow through.
- **Yield Test** – To establish borehole characteristics i.e., the average yield (flow) that the borehole can be pumped at, and the recovery rate at which the borehole fills up.
- **Water Quality Test** – A sample of the borehole water was taken to a water testing laboratory to determine microbial, physical, chemical and aesthetic determinants of the water extracted from the borehole.
- **Installation of water pipes and electrical cables** – Laying electrical cables from the power supply source to the pump, and installing a 50mm HDPE pipe from the pump to the steel reservoir.

Drilling of new borehole at Ngobi Primary School



Borehole Yield Test

Installation of the 50mm HDPE pipe and electrical cables



Borehole pump case post installation

3. Post-Intervention State

The borehole pump installation at Ngobi Primary School was a success, and the installation process was completed in accordance with SANS specifications. The pump was installed at a depth of 65m below natural ground level, and the borehole yield was determined to be 2.485 kl/h. The Water Quality Test results revealed that the borehole water cannot be used for drinking water purposes at the school. Re-Solve recommended a fully equipped water treatment operation, with reverse osmosis being recommended as the most suitable water treatment method.

4. Outcomes Achieved

The following key outcomes were achieved:

- Drilling of a new borehole.
- Installation of a new borehole sleeve and a new automated borehole pump with a float switch, together with electrical cables from the power supply point.
- Installation of a new 50mm HDPE pipe from the borehole pump to the 12kL steel reservoir.
- Yield Test performed on the borehole to determine average flow and recovery rate.
- Water Quality Test performed on a water sample extracted from the borehole.