

**Client Name:** Drakenstein Prison

**Project Value:** R2 500 000-00 (incl. VAT)

**Project Duration:** December 2019 – October 2021

**Location:** Western Cape, South Africa

**Project Description:** Re-Solve was tasked with optimising Drakenstein Prison's water infrastructure and identifying and developing alternative water supply systems. Re-Solve identified the potential of developing the facility's groundwater resources through the drilling and treatment of boreholes at the facility.

### 1. Pre-Intervention State

Drakenstein Prison's water infrastructure is in disrepair and in need of urgent management and optimisation by Re-Solve to assist them in solving for their excessive municipal water bill. In summary:

- The municipal water bills indicated average consumption of 2 890 kl/day or 86 700 kl/month calculated over a three-year period.
- The municipal water bills charged an average cost of R1 882 257.00 per month of R22 587 084.00 per year, using the 2016 tariff structure.
- Frequent pipe burst and leakages were also occurring due to the high municipal water pressure, which was lowered by advanced pressure management system implemented by Re-Solve.
- New potential high-yield borehole locations were identified through Geohydrologists, two of which were drilled, developed, and treated to supplement municipal water use.

### 2. Proposed Solution

- **Construction and Civil Works** – the construction and development of two borehole locations, 200mm concrete slab to house the Water Treatment Works, 3.2km of new 75mm diameter HDPE pipelines, including all pipeline appurtenances, such as air valves, etc.

- **Package Water Treatment Plant** – the installation of a water treatment plant containing micro filtration, activated carbon filter, pH dosing, chlorinator, 4 x 10 000 litre tanks and all associated piping and plumbing.

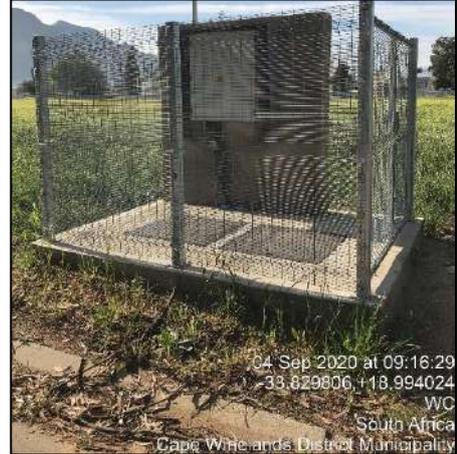
- **Mechanical and Electrical** – the installation of pumps, valves, float switches, electrical wiring, and an electrical board to aid in the automation of the system.

- **Drafting plans and procedures** provided the facility with a comprehensive operations and maintenance manual including troubleshooting scenarios. The maintenance personnel were also provided training for emergency conditions.

- **Plant Operation** – Re-Solve appointed and managed treatment specialists to operate and maintain the treatment works ensuring compliance with regulatory and legislative requirements of being a Water Service Provider

### 3. Post-Intervention State

The proposed solutions have been implemented, and Drakenstein Prison now has a package water treatment plant that they are using for potable drinking purposes. The water from the plant is pumped into the existing elevated reservoir which feeds the facility via a gravitational watermain. The prison has reduced their reliance on municipal water, with an alternative water supply.



*Excavation for the raw water pipeline from the borehole to the Water Treatment Works (WTW)*

*One of the borehole locations including all civil and electrical works*



*Containerised WTW, including pre- and post-treatment water storage tanks*



*Outlet tie-in into the existing elevated reservoir that supplies the facility with water*

#### 4. Savings Achieved

The savings achieved can be summarised as follows:

- A reduction in water wastage and the cost of repairs because of water leakages caused by excessive water pressure.
- The prison's water consumption from the package water treatment plant has been measured to be 350 kl/day or 10 500kl/month.
- The billing of municipal water should reduce to an average of 625kl/month.
- The **estimated current saving** of water on the municipal water bill will be **R2 950 000-00 per month** or R35 400 000-00 per annum.