

**Client Name:** Bryneven Primary School

**Project Value:** R670 000-00 (incl. VAT)

**Project Duration:** February 2020 – September 2021

**Location:** Gauteng, South Africa

**Project Description:** Re-Solve was appointed by Bryneven Primary School to develop an alternative water supply system. Re-solve identified the need to install a package water treatment plant that would treat their borehole water for potable water use.

### 1. Pre-Intervention State

The management at Bryneven Primary School approached Re-Solve to assist them in solving for their excessive municipal water bill and their high-water pressure that was causing leakages within the school's water network. In summary:

- The municipal water bills indicated average consumption of 30 kl/day or 900 kl/month.
- The municipal water bills charged an average cost of R54 250 per month of R675 000 per year for water and sewage.
- The municipal water pressure was on average 9.18Bar (918 kPa).
- Frequent pipe burst and leakages were occurring due to the high-water pressure.
- Borehole water was not treated and was used only for irrigating the sports field.

### 2. Proposed Solution

- **Construction and Civil Works** – the construction of two retaining walls, 200mm concrete slab, a pitched steel roof and brick walls, which were all required to house the water purification plant.
- **Package Water Treatment Plant** – the plant contained a sand filter, activated carbon filter, nitrate remover, chlorinator, UV lamp, 6 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** for the operation and maintenance of the plant and ensuring compliance with regulatory and legislative requirements of being a Water Service Provider.
- **Plant Operation** – the Re-Solve staff operated and maintained the plant (which included daily water quality testing) for the first 3 months, and thereafter we trained the Bryneven staff for a further 3 months until we fully handed over the plant in September 2021.

### 3. Post-Intervention State

The proposed solutions have been implemented, and Bryneven Primary School has a package water treatment plant that they are using for portable drinking purposes. The water from the plant is pumped at approximately 3Bar as opposed to the 9Bar municipal water pressure, thus reducing leakages. The school has greatly reduced their reliance on municipal water, with this alternative water supply.



*Newly constructed retaining walls and concrete slab to house the plant*



*Positioning of plant filters and water storage tanks following their delivery*



*Installation of the plant filters and piping*



*The solenoid valve and electrical cabling for plant automation*

#### 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 school's water consumption from the package water treatment plant has been measured to be 25 kl/day or 750kl/month.
- The billing of municipal water should reduce to an average of 300kl/month.
- The **estimated saving** of water and sewage on the municipal water bill will be **R31 844-00 per month** or R382 128-00 per annum.