



Case Study

Municipal

Boteti Southern and Central Cluster Villages Water Supply Project, Botswana



Botswana



Problem Statement

The region’s borehole water contains high amounts of dissolved salts (i.e. total dissolved solids) making it unsafe for human consumption. Water Utilities Corporation committed to providing a water treatment plant located 4km North West of Mokobaxane Village. The treatment works receives brackish borehole water, approximately 3.4 MLD in phase 1, increasing to approximately 4.5 MLD by phase 2.

Solution

The water treatment utilises a two-stage reverse osmosis (RO) process to desalinate the borehole water. The key treatment processes are:

- 1)Pre-treatment in the form of media filtration
- 2)Reverse osmosis (desalination)
- 3)Post-treatment
- 4)Disinfection
- 5)Evaporation for reject brine



Concentrate losses

- The plant is designed to operate on an 85-90% recovery rate.



Performance Target

- To treat 4500 m3/day of brackish water at a recovery rate of 85-90% and produce potable water of 4000 m3/day.



Process

- Pre-treatment in the form of media filtration followed by reverse osmosis and product water remineralisation with chlorine dioxide disinfection
- Toray membranes (brackish and sea water (BWRO and SWRO) for the second stage.
- Water Utilities Corporation employees received free training on RO membranes and how to operate the plant