

Case Study

Iron Removal Media Filtration followed by Reverse Osmosis

Background

Brown's were approached to provide a water treatment package for a new poultry and egg producing farm. Several bore sources were required to be treated for the site as the source water contained iron and magnesium.

Solution

Aeration at the source of the wells was implemented for each site. Aeration nozzles were placed into a 10,000-litre tank where the bore pumps were connected. The 10,000-litre gravity fed tank led into 100,000 litre ring tanks where water was transferred to a 1 Meg ring tank that combined the water sources. The injection of air to the water started the oxidation process of the iron allowing it to be filtered out. Having several tanks gave an extended time interval more than than 30 minutes for the iron to come out of solution with the assistance of the aeration process.

Glass Media Filtration was implemented to filter out suspended and colloidal particles from the combined well waters post the aeration and settling process. A coagulant was initially used to assist in filtering out the iron but was later disconnected as the filtration was adequate with the assistance of the coagulant. An Silt Density Index (SDI) of SDI 4.2 was achieved post Glass Media Filtration. Following this process were two specialised Glass Media Filters where further fine filtration was applied. An SDI of SDI 2.5 was achieved at this point.

Filtrate from the media filtration process was stored in two, one megalitre tanks where distribution was implemented to the site services. The filtrate water was utilised for the final process where reverse osmosis was implemented. The brackish water was treated with a custom designed and manufactured transportable reverse osmosis plant. The reverse osmosis plant was



fitted with blending facility to adjust the output product (permeate) of the reverse osmosis plant to the client's requirements.

The plant was fully automated with instrumentation for pressure, flow, analysers and level control. An HMI was implemented for operator interface for maintenance and operational purposes. Specifically, alarms are texted by SMS with remote access via VPN for maintenance, fault diagnosis, managing water storage and production.

Results

Browns Aqua Systems and Brown Electrical were able to offer the complete turnkey solution within an 8-month period.

Filtered Water Use

- Cool Pads
- Service Water
- Cleaning & Washdown Water

Reverse Osmosis Permeate Use

- Drinking water for poultry
- Cool Pads