CASE STUDY

How All Purpose Pumps Built A Potable Water Treatment Plant In Western Victoria

AT A GLANCE

Challenges

Design an innovative solution to produce a potable water treatment plant in a remote location.

Benefits

100%

potable water will be accessible for students and resident staff for the intake of the 2022 school year

PROJECT OVERVIEW

All Purpose Pumps was approached to design and produce an innovative solution for a remote "off-grid" educational facility located in Western Victoria. As a result of this brief, we have developed an innovative and practical potable water process designed to:

- Capture rainwater for prvocessing for all site water uses.
- Treat and distribute around a vast site the generated potable water
- Localised site treatment facilities from various site installations over a significant area.

SOLUTION

Our team designed a process and control system with reticulated distribution and capture apparatus to ensure that all harvested water is efficiently utilised and effectively distributed. Controls enable exacting delivery to reflect demand.

Operational performance removes:

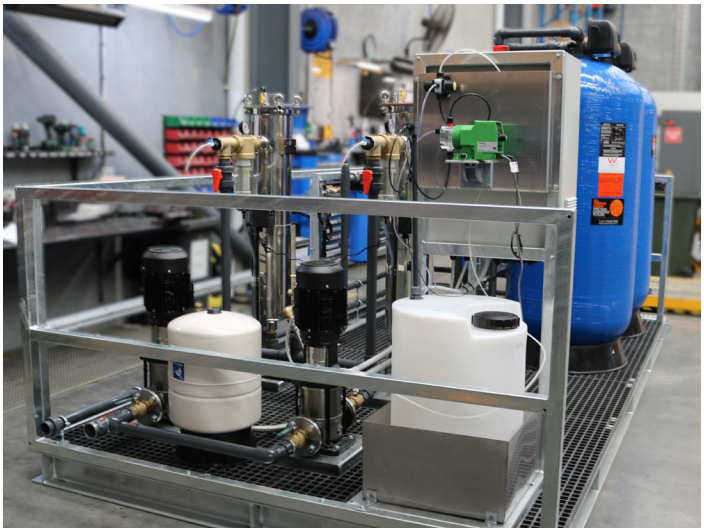
- Suspended solids
- Taste
- Odour
- Colour
- Microbiological contamination and associated viruses
- A small chlorine residual maintains sterility for safe human consumption.

MORE INFORMATION

Process design incorporates:

- Harvesting and resource management in various manifestations
- Pressure application
- Solids reduction
- Activated carbon contact for organic compound absorption
- Fine barrier filtration post-GAC
- Ultraviolet sterilization
- Minimal residual chlorine solution dosing
- Efficient and effective distribution as demand dictates

The system is entirely automatic requiring minimal day-to-day maintenance. System reliability is paramount at this site as the process is solely relied upon for all its potable and other water requirements. Significant rainwater harvesting and raw water storage, along with innovative controls and storage distribution ensure that efficiencies are always realised.



External to the water harvesting – treatment process, the site employs state of the art water use efficiency controls such as low flow faucets, flow controls on showers, lockout time operations and other apparatus. Water-efficient landscaping has been employed throughout Process efficiencies include conservative GAC media bed sizing maximizing backwash cycle intervals. Further works on backwash effluent recovery are planned for consideration to further increase overall recovery.

IN CONCLUSION...

The overall result of the collaborative design across several disciplines is extreme water recovery and efficiencies.

Process controls and practical design allow sufficient flexibility to enable a vast range of operational parameters which, combined with sufficient volume contact volume, allow for treatment across a widely varying set of potential scenarios. Parameter adjustments, when required, are via simple and logical control stages.

The plant is connected to the site BMS and Modbus systems and also has local visual and audible alarms. The plant is ready for the intake of the 2022 year students and resident staff following successful commissioning in late 2021.