



15 September 5015

Committee Secretary
House of Representatives Standing Committee on Agriculture and Industry
PO Box 6021
Parliament House
Canberra ACT 2600

Via email: AgInd.reps@aph.gov.au

Dear Sir/Madam,

Submission to House of Representatives Standing Committee on Agriculture and Industry

The National Centre of Excellence in Desalination Australia was established as a collaboration between 13 Australian universities and CSIRO, with \$20m of funding provided by the Australian Government/s Water for the Future Program. For further information, go to our website www.desalination.edu.au

The NCEDA's research program involved 50 projects, 400 researchers here and overseas and 100 Australian and international project industry partners. While a diverse array of fundamental and research projects was undertaken, one which may be of interest to your Committee is a low cost solar powered farm reverse osmosis desalination plant.

Design work has been completed and agreement to proceed with manufacture of a full scale demonstration trailer mounted solar powered reverse osmosis desalination plant designed for brackish water (5,000 mg/L TDS - total dissolved solids). The unit has been designed to be robust and to be operated and maintained by the farmer.

Water is sourced from a bore which is pumped with solar pumping equipment to a storage tank. The desalination plant comprises around 1 kW of photovoltaic panels mounted on the trailer above the plant, truck batteries, 24 DC motor, vane pump, cartridge filter, two 4" reverse osmosis pressure vessels, brine control valve and a 200L permeate tank.

It operates by allowing the batteries to fully charge from the PV system, then a desalination run (using water drawn under gravity from the storage tank) is automatically instigated with provision for flushing with permeate (fresh water) at the end of each run. Each run goes for around 9 hours and will produce about 1.5 kL.

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The permeate flows under gravity to the farmers storage tank for gravity feed to stock troughs. The unit is designed to run at very low recovery (10-20%) which means there is almost no risk of scaling or fouling the reverse osmosis membranes, not need for antiscalant chemical dosing or periodic chemical cleans. The concentrate which is slightly elevated in salinity will be returned to the groundwater via a recharge bore some 100 m distant.

This particular unit will produce 500 kL per full year, with more production in summer when the sunlight hours are longer (which is when more water is needed). An agreement has been reached with a farmer in South Australia and a unit will be built and commissioned by the end of November 2015.

The unit is priced at around \$16,000 including all PV panels, batteries, desalination equipment and permeate tank.

The benefit to the farmer is that the sheep will drink fresh water (around 100 mg/L TDS) instead of brackish water (around 5,000 mg/L TDS). The sheep will be healthier, grow faster and there is reduced risk of death in very hot weather. The fresh water will also eliminate calcification of pipework and valves, reducing maintenance and replacement costs.

The unit will be manufactured in South Australia.

Please don't hesitate to contact me

Yours sincerely,

Neil Palmer
Chief Executive Officer