

INNOVATION PROFILE



BUSINESS SNAPSHOT

OWNERS

David and Genevieve Counsell

PROPERTY NAME

Dunblane

PROPERTY LOCATION

Barcaldine, QLD

SIZE OF PROPERTY

15,000 hectares

BRIEF ENTERPRISE DESCRIPTION

Wool production, some sheep agistment and/or cattle trading.

NUMBER OF PEOPLE WORKING IN THE BUSINESS

2 people working in the business (1 full time equivalent)

AVERAGE ANNUAL RAINFALL

495mm

WHY THIS IS A PASTORAL ZONE INNOVATION

Frequently checking water is essential in the pastoral zone but water runs can be time consuming. Water telemetry reduces labour and operating costs of checking multiple water points over large distances.



Monitoring Water Levels Using Telemetry System

At Dunblane, the water run takes about half a day to complete and is approximately an 80km round trip. This is undertaken two or three times a week.

The property has very little surface water; therefore, water for livestock is piped from five separate artesian bores. The water is delivered to 23 tanks that feed water to 36 troughs. Whilst the majority of the water system is in good working condition, problems do occur.

This innovation profiles a telemetry system, which is based on technology that allows people to remotely and efficiently monitor levels in water tanks and give early warnings of system breakdowns.



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Figure 1: The telemetry system setup on a water tank on Dunblane.

WHAT WAS THE MOTIVATION TO CHANGE?

Water is necessary for the survival of livestock and when water systems break down, small problems can rapidly escalate to crises if livestock are without water for even a short period of time.

In summer, consecutive days over 40°C places huge pressure on the property's watering systems. This business often agists cattle. A key risk to be managed is water system breakdowns. It is important that the stock owner has confidence in the water systems and that issues will be detected in a timely manner. David says that they have had "several other close calls" when it comes to their watering.

David and Genevieve recognised they needed a system to provide early warnings of a water system breakdown.

HOW DOES THE INNOVATION WORK?

David installed a "Smart Water" telemetry system. There are two parts of this water checking technology:

1. A small electronic depth probe is installed into each water tank. This is connected to a small tank sender, shown in Figure 2, which is screwed into the top of the tank. This device has an antenna and a small solar panel on the top.
2. The tank sender transmits a signal to the house receiver every hour. This is typically installed in a convenient central location such as the kitchen, office or workshop. The LCD screen on the receiver displays the current water level of each tank.

Whilst the technology doesn't show if the stock are getting a drink, it can provide indications. In most cases if tank levels are fluctuating, and the history graph shows water is going into and out of the tank, then it's safe to assume stock are accessing water, or at the very least, until the next water run.

KEY FEATURES

The key features of this system:

- The screen of the house receiver displays the water levels of up to nine tanks.
- The house receiver can display the water levels of each tank for the last 30 days by hourly increments.
- An electric pump controller can be purchased and installed to remotely turn on or off pumps from the LCD screen of the receiver.
- The pump controller can be set to automatically turn on and off, according to water levels of a particular tank.
- Up to nine tanks can be monitored from the one system.
- The system can be used to monitor other liquids, such as urea and molasses.

WHAT ARE THE KEY BENEFITS OF THE INNOVATION, AND THE IMPACT IT HAS MADE?

The key benefits of this innovation are:

- It is a cost effective way to gather quality, up-to-date information on tank water levels.
- It provides early warning that a watering point has failed in-between water runs. This knowledge gives the Counsellors the ability to fix the problem before it becomes a crisis.
- David and Genevieve feel more confident to go on holidays and leave their property with caretakers. The system is easy to understand and reduces the role of the caretaker.

KEY MATERIAL REQUIRED FOR THE INNOVATION

David recommends buying and trialling one or two telemetry devices initially. If a business is satisfied with the technology, they can add more telemetry devices to the system.

Figure 2: The tank sender is located on top of the tank and transmits a signal to the receiver.



POTENTIAL CAUTION AND RISK

Whilst the initial set up is simple, there can be tricks to making it easier. David recommends noting the serial number on the device during set up if it does not work.

The Wi-Fi signal works by approximate line of sight and may not be effective in hilly or heavily forested country.

Also, most devices only include a basic pencil aerial which may only have a Wi-Fi signal reach of 3-5km. On David and Genevieve's property, the furthest tank is 10km away. To ensure the signal reaches the house, "Yagi antennas" have been installed to the devices on top of the tanks.

LOOKING FORWARD

On Dunblane, David would like to install the devices on two or three more tanks which will help to ensure that no major water issues go undetected.

Following the installation of the devices on Dunblane, quite a few other businesses in the district have also installed them.

RESOURCES

Once the devices are purchased, installation of the equipment was straight-forward and easy to set-up. Installation equipment included a ladder, cordless drill and hacksaw for putting a probe into the tank. Poles may be required if extension antennas need to be installed.

For more information go to Smart Water <http://www.smartwatertech.co.nz/>

COST BENEFIT ANALYSIS

The cost of the innovation for a "Smart Water" 4-tank system without aerials will cost approximately \$1,000. David incurred additional costs of \$800 for 5 "Yagi antennas" for the tanks (\$175 each) to extend the signals through to the house receiver, and an additional dipole antenna (\$220) on the house antenna pole.

This is compared to the cost it would have taken in fuel and David's time to previously check the water levels.

There are many benefits and David says "we probably reduced the number of water runs but we have had three breakdowns which we fixed in a timely manner."

Figure 3: Dunblane property.



THE FINAL WORD

David says, "It's cheap and it works. Checking nine tanks before breakfast is a real time saver." He also mentioned that "when you find a break-down, you know you have time to respond and that livestock are not going to get really thirsty before you can fix the problem."

Bestprac acknowledges the contribution of David and Genevieve Counsell in the development of this innovation profile.

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