

INNOVATION PROFILE



BUSINESS SNAPSHOT

OWNERS

James and Kerrie Robertson

PROPERTY NAME

Chowilla Station

PROPERTY LOCATION

North of Renmark, SA

SIZE OF PROPERTY

130,000 hectares

BRIEF ENTERPRISE DESCRIPTION

Self-replacing merino flock for wool and meat production

NUMBER OF PEOPLE WORKING IN THE BUSINESS

4 full time equivalents

AVERAGE ANNUAL RAINFALL

212mm

WHY THIS IS A PASTORAL ZONE INNOVATION

Accurately measuring elevation across the property can ensure that moving water across large tracts of land can be done in the most efficient and cost effective manner through utilising natural water movements and siphoning.



Water point relocation using map grade altimeter

Chowilla Station, located in South Australia's Riverland, is run by James and Kerrie Robertson. The station has been in the Robertson family since 1864. Their objective is to run the property on a sustainable basis whilst conserving its natural, historic and cultural values.

Chowilla Station mostly consists of undulating pastoral country with some areas of river flats. Many of the water storage tanks originally installed on the property were located either on the side of the hill (or lower). This has not allowed for easy transfer of water around the property and required the use of booster pumps in some instances.

James recognised that if they could relocate many of the trough and storage tanks using an accurate altimeter they could set up the watering system to more efficiently move water. This innovation profile describes how James has used his altimeter to exploit the natural movement of water via siphoning and reduced the need for as many pumps.

WHAT WAS THE MOTIVATION TO CHANGE?

The Robertsons felt that their water system was not as efficient as it could be and that they were spending more time than necessary managing water distribution across the property. Additionally, many of the water troughs were located next to fence lines. James recognised that through relocating these troughs further into the paddock they could increase the area grazed by stock.

Figure 1: James Robertson using his map grade altimeter to determine elevation.



HOW DOES THE INNOVATION WORK?

Using a cartography or map-grade altimeter enables accurate measurements of elevation across a paddock. This information enables watering points and storage tanks to be positioned for the most efficient movement of water. The altimeter is used to determine the exact difference in elevation between two points. This allows for a decision to be made regarding the optimal location for troughs and tanks.

WHAT ARE THE KEY BENEFITS?

The key benefits the Robertson's have realised through using this innovation are:

- Reduced time and labour costs associated with controlling and monitoring pumping stations.
- Reduced operating costs of water distribution across the property through more reliance on siphoning to move water.
- Increased confidence in locating water points.

Additionally, the Robertson's have taken the opportunity when relocating water points to move them away from fence lines to increase the area of land that is grazed. James estimated that up to 40% of their land was ungrazed for the majority of the year; relocating their watering points has helped to significantly reduce this.

KEY RESOURCES REQUIRED FOR THE INNOVATION

The key item required for this innovation is an accurate altimeter and the knowledge of how to use it. An accurate altimeter, such as a barometric or aneroid barometer, is critical to ensure that measurements are precise. James also uses a GPS to accurately determine and record the position of water points.

All other materials for the construction of the water system such as poly pipe and storage tanks are the same.

KEY MATERIAL REQUIRED FOR THE INNOVATION

The key item required for this innovation is an accurate altimeter and the knowledge of how to use it. An accurate altimeter, such as a barometric or aneroid barometer, is critical to ensure that measurements are precise. James also uses a GPS to accurately determine and record the position of water points.

All other materials for the construction of the water system such as poly pipe and storage tanks are the same.



POTENTIAL CAUTION

James has learnt a significant amount of information about water hydraulics and friction. James cautions that flow can be significantly affected by friction that is created in longer pipelines. Just because you have fall between two points may not mean that water will naturally flow. He says where longer pipelines are concerned, a higher level of head between two points is required to ensure this friction loss is overcome.

It is important to use an accurate altimeter. The altimeter James purchased uses barometric pressure to determine height above sea level. When James compared the readings his unit took compared to those typically found on many GPS units or his phone, he observed significant differences.

As barometric altimeters use pressure to determine elevation, it is important to take measurements on days with relatively stable weather to ensure changes in atmospheric pressure do not influence the readings. It is also important to ensure that readings are not taken inside an air conditioned vehicle, as the pressure inside the cabin can alter the reading.

LOOKING FORWARD

With improvements still to be made to the existing water system at Chowilla Station, James plans to use the altimeter at every opportunity.

FURTHER RESOURCES

Altimeters are available commercially and James purchased his second-hand unit from eBay for \$120.

COST BENEFIT ANALYSIS

Implementation of this innovation has been relatively cheap. The costs involved were:

- Altimeter; \$120 from eBay.
- Time associated with taking measurements to more accurately determine ideal water point locations.

All other costs of installing the water system, such as pipe, tanks and fittings, are the same.

The benefits of implementing this innovation have been as follows:

- Reduced pumping costs as siphoning is used more to move water.
- Reduced time and labour costs of controlling and monitoring pumping stations.
- Improved knowledge and confidence in locating water points accurately for efficient water movement.
- Improved grazing of land as water points have been relocated to increase the effective grazing area of the property.



THE FINAL WORD

This is a simple innovation that James recommends to anyone as an easy and cheap way to ensure that all watering points are ideally located. James no longer installs any watering points or tanks without using it.

Bestprac acknowledges the contribution of James Robertson and Hamish Dickson (AgriPartner Consulting) in the development of this innovation profile.

To view more innovation profiles, business cases and videos of innovations in the pastoral zone, visit the Bestprac website www.bestprac.info

Figure 2: Common placement of storage tanks at Chowilla Station before relocation efforts, halfway up a hill.

Figure 3: Reading from barometric altimeter at Chowilla Station showing elevation fall of 9 metres between two points.