



Telemetry - taking back time

A Mitchell based family business using telemetry to manage stock water stops driving up greenhouse gas emissions.

Mitchell local, Kent Morris owns and operates the family grazing operations “Booringa Downs West” and “Kandimulla”, outside of Mitchell in conjunction with his mother, Lainie Morris. He was conscious that travel up to four times a week from Mitchell to the properties to check stock water was sometimes unnecessary and costing time and money.

An interest in understanding his greenhouse gas (GHG) emissions lead to an idea to implement telemetry to attack one of his biggest sources of business expense and emissions — diesel fuel.

Calculating emissions using GreenGauge

A QMDC project officer worked with Kent, using the whole of farm emissions calculator *GreenGauge* to audit average annual GHGs levels from the Morris Family grazing enterprise operations.

“Undertaking the *GreenGauge* audit made me think, how can I reduce my total carbon footprint by 5% without adversely impacting on my business?” Kent said. “I started to look at where the emissions came from in my business and found that about 30t CO₂^e/yr came from using diesel fuel. I pondered this before I had an epiphany: if I could reduce my annual diesel fuel usage by 5% (555L/year), I would reduce my carbon emissions by 1.5 t CO₂^e/yr and reduce my ongoing costs. Now I was really interested and

Morris Family Partnership snapshot

- “Booringa Downs West” was purchased by the Morris family in 2006.
- “Booringa Downs West” is 1,563ha, running 160 head/yr of beef cattle; breeding and selling weaners through Roma saleyards.
- “Booringa Downs West” is in a 550mm annual rainfall zone.
- Kent has been involved with Mitchell and District Landcare and Queensland Murray-Darling Committee (QMDC) for over 15 years.



needed to work out how to do this. I looked at my fuel usage closely and found that a third of my fuel use was travel and pumping water (table 1).”

Activity	Diesel Fuel (L/yr)	GHG (kg CO ₂ ^e /yr)
property improvement	6,168	16,654
livestock transport	500	1,350
water pumping	1,872	5,054
travel	2,565	6,926
TOTAL	11,105	29,984

Table 1

Travel out to monitor the waters at “Booringa Downs West” was sometimes daily and ideally, Kent wanted to reduce this to weekly or less if possible. It was also not practical to do a return trip in time to turn the pump off, so water was being pumped unnecessarily as the pump stopped only when it ran out of fuel — further waste. Evaporative and seepage losses from the earth tank were also of a concern to Kent. The Mitchell area records on average evaporation of 5mm/day, or the entire capacity of the earth dam in evaporation in 10 months, about 68 hours of pumping/yr or 183kg CO₂^e/yr in evaporative losses. Seepage from the earth tank only adding to these losses.

Energy and emissions savings using GreenGauge

Opportunity for change

The Morris Family Partnership successfully applied to QMDC for support to implement a Telemetry Project on "Booringa Downs West" as part of the Caring for Our Country, Landcare Sustainable Practices "Energy and greenhouse savings for QMDC farmers using the GreenGauge Tool" project.

The savings in fuel from reduced pumping and travel will be tallied up for the year and estimates of how many tonnes of GHGs saved will be able to be estimated using QMDC's whole emissions' calculator 'GreenGauge'. Initial calculations are that this project will save 6t CO₂^e/yr.



Kent Morris demonstrating the Observant Telemetry System in the paddock.

Telemetry installation

- Install *Observant* telemetry system to communicate rainfall, water pumping flow rates and water storage level from bore and three water points to base station in Mitchell.
- Automatic pump start triggered by low water level.
- Automatic pump stop triggered by high water storage level minimising unnecessary pumping.
- Estimates based on previous diesel use for travel to monitor and manually starting the bore pump, the Morris' will potentially reduce travel by more than 15,600km/yr thus vehicle fuel use by 2,000L/yr. This could be in excess of 5.4t CO₂^e/yr or 3.5 times Kent's 5% reduction target.

Future goals

The Morris family hopes to continue to make steps towards their 5% reduction target in GHGs for their whole enterprise and make further improvements in their bottom line at the same time which they have already started to experience through implementing this project. "Carbon emission reduction and input cost reduction need not be mutually exclusive, the thinking farmer can reduce his emissions and save himself money at the same time through a little lateral thinking," Kent said. "Do not be afraid to embrace change, especially when it can work for you."

Moving forward

"To say I am excited about the possibilities from this project is an understatement. This whole process has me thinking of other ways I can reduce my carbon footprint without negatively impacting on my profitability." Future project ideas:

- use of biodiesel instead of diesel
- use of solar to replace the diesel genset or connection to the mains power grid to allow for the purchase of renewable electricity
- use of herbicides instead of bulldozers in property improvement.
- use of alternate methods for property management and monitoring.

"To hit on a project that can achieve a step towards my targeted reduction in total carbon emissions and save me time and money in one go is a revelation, I'm glad I implemented it," Kent concluded.

Water Use Efficiency gains

- Installing 2 x 22,000L tanks for water storage replacing earth tank water storage which had evaporative and seepage losses of approximately 50% of annual pumped water.
- Expected reduction in pumping costs due to improved water use efficiency of an additional saving in GHGs.
- Reduction in unnecessary fuel consumption for pumping wasted water of 200 L/yr or more or an additional 0.5t CO₂^e/yr.

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