

AUTOMATION OF FURROW IRRIGATION

DENIS POZZEBON



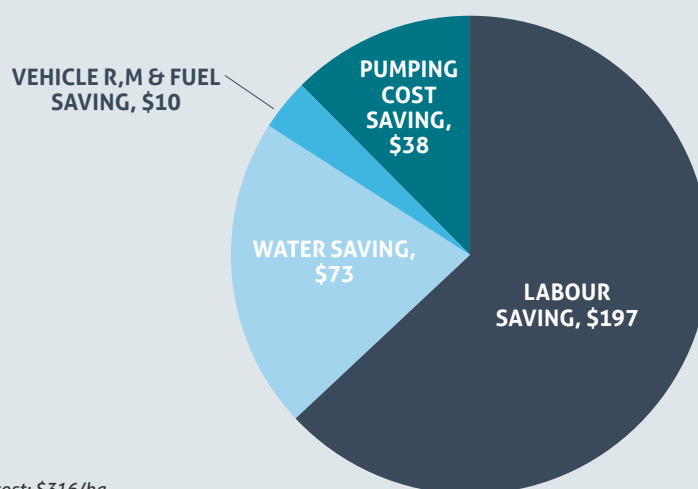
Site details

- **LOCATION:** Sheepstation Creek Road, Airville
- **WATER SOURCE:** Lower Burdekin Water channel, bores, recycling
- Two recycle pits
- Eight irrigation sets automated, covering approximately 27 hectares
- This farm is representative of a typical delta farm. Water is supplied from a number of sources—the Lower Burdekin Water channel, bores and recycle pits. There are several pumps and the underground pipeline is completely interconnected meaning water can be moved around the whole farm.

COST BENEFIT SUMMARY	
Area automated	27 hectares
Total cost	\$ 59,700
Life span (minimum expected)	7 years
ANNUAL COSTS AND BENEFITS (\$/HA)	
System cost	\$ 316
Labour Saving	\$ 197
Electricity tariff saving	\$ 0
Water Saving	\$ 73
Income from Sale of water	\$ 0
Vehicle R, M & fuel saving	\$ 10
Pumping cost saving	\$ 38
Sum of benefits	\$ 318
Benefit - Cost	\$ 2

Costs associated with borrowing money have not been factored into this analysis

ANNUAL PER HECTARE SAVINGS



*Annual cost: \$316/ha
Annual benefit: \$318/ha*

On this farm 8 blocks covering 27 hectares were automated for the project. For Denis the key economic benefits of the automation system have been savings in labour, water, and pumping costs.

Monitoring via the WiSA software has determined that, on average, there are 18 irrigation events per block. Because the automation of the pumps and valves was completed several months before the drain sensors were installed and calibrated it is possible to compare the difference in average cut-off times

before and after the drain sensor installation. This has shown that Denis is now saving about 3 hours per irrigation because he can more closely monitor the progress of the event and change sets or switch off the pumps sooner than he was with visual inspections. This 3 hour saving per irrigation event equates to a pumping saving of 432 hours/year and a water saving of 93 ML/year.

The cost benefit on this farm shows the lowest economic benefits, mostly because it is only a small area (27 ha) with many blocks (8) making the

installation costs (\$/ha) for the area that has been automated quite high. Despite this, Denis has seen benefits from the automation and is expanding the area. As the new areas are larger block sizes that require less infrastructure, the overall cost per hectare will decrease.

For Denis the major benefit of the automation is that the time that he would have taken to inspect each irrigation (178 hours/year) can now be spent on other farming or personal commitments.

BREAKDOWN OF BENEFITS (\$/YEAR):

No of irrigations per year—144

- 8 blocks x 18 events = 144

Vehicle costs—\$276

- 144 events x 2 trips/event x 3 km/trip = 864 km/yr
- R, M & FUEL COST:
864 km @ 32 c/km = \$276

Labour saving—\$5,320

- 144 events x 2 trips/event x 25 min/visit = 120 hr
- 120 hr x \$30/hr = \$3,600
- TRAVEL TIME:
864 km @ 15 km/hr = 57.6 hr
- 57.6 hr x \$30/hr = \$1,728

Pumping cost saving—\$1,011

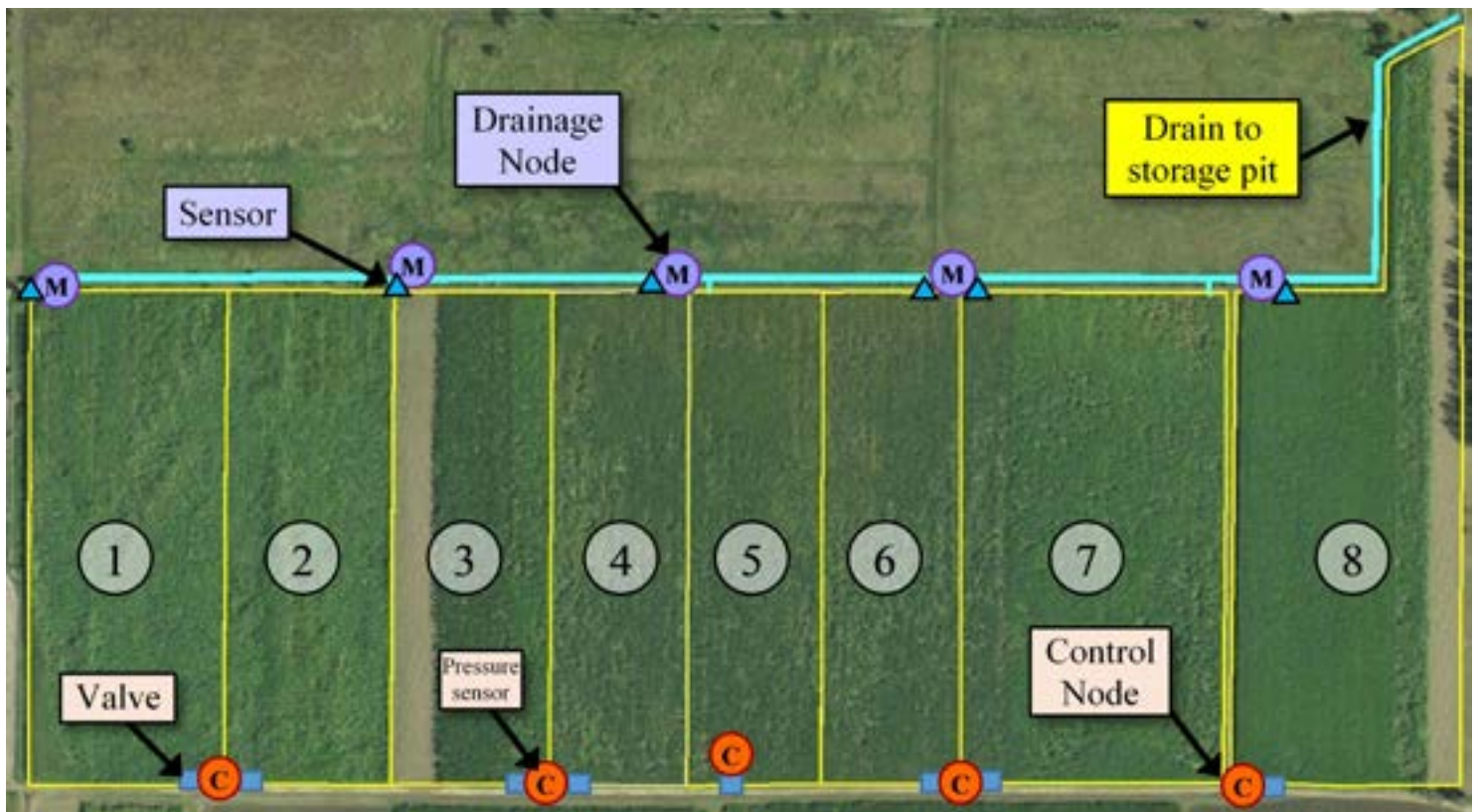
- 144 events x 3 hr/event @ 11 kW on Tariff 66 = \$1,011

Water saving—\$1,992

- 144 events x 3 hr/event @ 60L/s @ \$21.351/ML= \$1,992

INFRASTRUCTURE INSTALLED:

- 1 base station, computer and software
- 1 pump controller, controlling 2 pumps
- 5 actuator control radios, one per cylinder
- 8 actuators and brackets
- 1 pressure transducer
- 5 drainage detection (end of field) radios
- 6 drain sensors



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