

# Automation of furrow irrigation

## Information Sheet #2: Aaron Linton

### Site details

- Location: Kirknie Road, Leichhardt
- Water source: river pumping
- Recycle pit (used for drip)
- Eleven irrigation sets automated, covering approximately 53 hectares

### Infrastructure installed

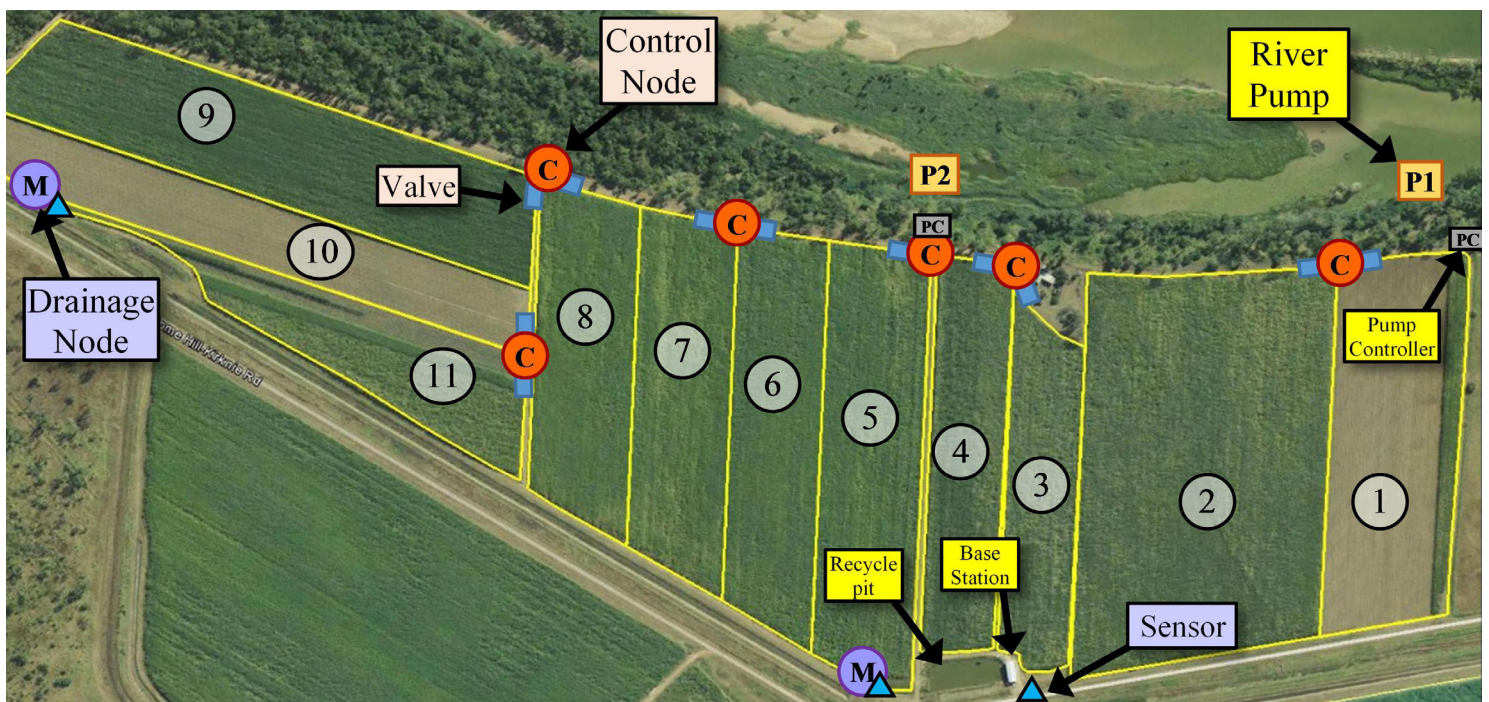
- 2 pump controllers
- 6 actuator control radios, one per cylinder
- 11 actuators and brackets
- 2 pressure transducers, one per pump
- 2 water meters (SunWater)
- 2 drainage detection (end of field) radios
- 3 drain sensors

### System costs (approximate)

Area automated	53 hectares
Total cost	\$68,365
Cost per hectare	\$1,290
Base station, computer & software	\$7,700
Pump controller & installation x 2	\$7,000
Pressure transducer x 2	\$800
Water meter x 2 <sup>1</sup>	\$11,465
Actuator control radios x 6	\$18,000
Actuators x 11	\$5,500
Actuator brackets & fitting x 11	\$4,400
End of field radios x 2	\$6,000
Advance sensors x 3	\$1,500
Advance sensor installation	\$1,000
System commissioning <sup>2</sup>	\$5,000

(1) Included replacement of SunWater flowmeters, would not be required if existing meter was electronic

(2) System commission costs cover installation of base station and field radios and checking that all are working correctly.



# Automation of furrow irrigation

## Information Sheet #2: Aaron Linton (continued)

### Notes

This farm is representative of a BRIA farm with pumping from the Burdekin River and recycling systems. The blocks on the river bank are irrigated via furrow irrigation, another 42 hectares on the other side of Kirknie Road are under drip irrigation. There are two pumps on the river bank and the runoff water is captured in the recycling pit. The recycled water is used for irrigating the drip blocks.

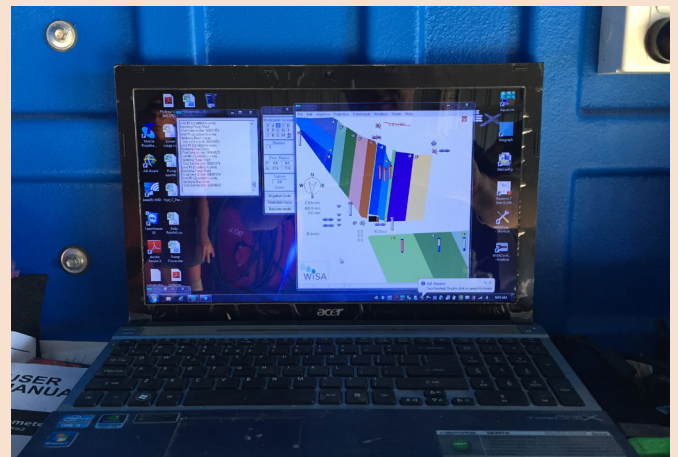
All eleven furrow irrigation blocks have been automated. To do this, pump controllers have been installed on each pump and there are 11 actuators which are controlled by six actuator control radios. The layout of the fields and drainage network allow the system to monitor the runoff from all eleven blocks with three drainage sensors.

Pressure transducers have been installed in the pipelines from the pumps to monitor the height of water and to provide a fail safe should something go wrong. For example, if a valve fails to open and the pressure increases above a calibrated limit, the system will either shut down or will send Aaron an alert. The existing mechanical water meters were replaced with electronic meters that are able to log water usage and are compatible with the WiSA software.

The whole farm is now automated and irrigation can be remotely operated. For Aaron who lives 35km from the farm, this means a big saving in time and fuel because he doesn't have to travel as much.

The automation also allows Aaron to manage his irrigation in ways that would not have been possible if he was manually operating the system. He is now able to run all his irrigation sets overnight and on the weekend and has been able to change to the cheapest irrigation tariff.

He is also experimenting with pulse irrigation on some blocks where there is poor lateral soakage. This involves irrigating one poor soaking set for an hour, changing to a second set for an hour, changing to a third set with better soakage for four hours, and then switching back to the first blocks for another hour each. This appears to be improving the wetting and infiltration on these blocks, something that would have not been possible to do without the automation.



### For more information

#### Marian Davis (BPS)

0428 927 079

mdavis@bps.net.au

#### Steve Attard (AgriTech Solutions)

0418 155 844

steve@agritechsolutions.com.au

#### Malcolm Gillies (NCEA & USQ)

0429 662 802

gilliesm@usq.edu.au

#### Andres Jaramillo (SRA)

0475 973 282

ajaramillo@sugarresearch.com.au