NSW SUSTAINING THE BASIN *Irrigated farm modernisation*

Case study: The Estens family, Moree

May 2012

Location

'Beela', 'Tarcoola North' and 'Glen Prairie" are ten kilometres (km) north of Moree and separated by the Moree/Mungindi road.

'Beela' is situated on the junction of Carole Creek and the Gwydir River, while 'Tarcoola North' and 'Glen Prairie' are located just downstream on the Gwydir River.

Water Sources

Bores, high security and general security licences and farm run-off.

Soil type and topography

Alluvial river soils ranging from light loams to shallow gravel loams to light black soil loams. All have high transmission losses compared to the black soil clay plains of Moree.

Enterprises

Irrigated cotton, wheat and citrus.

Irrigation system

Furrow irrigation and surface drip.

Area irrigated

'Beela' consists of 1212 ha with 890 ha developed for furrow irrigation. In 2009/10, 'Beela' grew 487 ha of cotton, 319 ha of wheat and 115 ha of citrus, which has now expanded to 165 ha

'GlenPrairie' and 'Tarcoola North' are adjoining properties with 900 ha of furrow irrigation, with 100 ha developed for drip irrigated citrus.

Dick Estens in the newly established citrus orchard. Image: J. Montgomery

Background

The Estens have opted to trade surface water entitlement for infrastructure modernisation funding as a result of a 45% reduction in their groundwater entitlement, a decline driven by the implementation of their local groundwater sharing plan. This reduction in water availability affected the viability of cotton production and they quickly realised they needed to become more water use efficient and produce a higher value, lower risk commodity.

After researching a number of options they decided that citrus posed the least risk and had the highest return per megalitre on investment, provided they could secure an ongoing contract with a juice company. In 2008, the Estens purchased a 50% share in the 'Grove Juice Company' based in Brisbane. They are now in the process of planting 110 ha of Valencia oranges to supply a proportion of the factory's production and export markets.

The funding was very timely for the Estens family because they had done much of the investigation and planning for the development of their on-farm infrastructure modifications.

Consequently, they were in a position to fast track their business plan by capitalising on the financial incentives being offered.

Description of the Project

The Estens project consisted of three separate Tenders that were integrated as one project.

Tender 1 'Glen Prairie' & 'Tarcoola North'

A new drip irrigation system for two fields that included the following infrastructure:

- double drip lines
- flushing mains and fittings
- new pump and filters
- automated fertigation system
- soil moisture probes
- pipeline to transfer effluent water from sewerage treatment works to 'Tarcoola North' storage
- 7.6 km of pipeline to transfer bore water around the farm

Dick Estens with the 'brain' of the drip irrigation system. Image: J. Montgomery

Tender 2 'Beela'

Contractors installed sub-mains for a drip system for one field and a second drip line on another. Three new pumps were purchased and installed along with 6.5 km of pipeline to transfer bore water to the pump shed and on-farm storages.

Part of the 10 km pipeline installed as part of the project. Image: J. Montgomery

Tender 3 'Beela

This part of the project involved:

- expanding the citrus orchard including:
  - » de-commissioning and re-developing an unused leaky storage for permanent citrus production
  - » re-lasering a field adjacent to the storage for permanent citrus production
- laying pipelines from the existing drip pump shed to new citrus development
- installing a drip irrigation system on the new citrus development
- converting a diesel bore to electricity to increase water supply to the citrus.

Heath Estens at the new bore and filtration site for the new citrus development. Image: J. Montgomery

Planting the new citrus development.
Image: J. Montgomery

The Benefits

The following benefits are expected from these projects.

- Total water savings for the entire project were 1150 ML with 639 ML transferred to the Australian Government.
- An expected saving of 15% or 75 ML from piping effluent water from Moree sewerage treatment works.
- Transmission and evaporation losses reduced by 30% or 150 ML by piping bore water directly to the citrus rather than delivering water through open channels from “Glen Prairie” bores and storages.
- An expected saving of 2 ML per ha providing an additional saving of 180 ML by changing from flood irrigated cotton to drip irrigated citrus.
- Returns increased from $150 to $250 per ML before interest and overheads for cotton to around $1000 per ML for citrus.
- Significantly reduced transmission and evaporation losses with total water savings estimated to be 500 ML per year.

Landholders experience

The Estens have mapped the water losses on “Beela” for several years. Each week they monitor the amount of water they pump and the amount remaining in storages to calculate their annual losses. On average they lost a third of their bore water from evaporation and transmission losses through their open channel system and above ground storages. Some of the alluvial soils also experience excessive water losses.

In the past five years they produced 490 ha of cotton with losses of around 1.3 ML per ha.

These projects will significantly reduce their water losses by pumping bore water directly into their drip irrigation system for their citrus and their on-farm storages for continued cotton production.

What aspect of the project proved most challenging

Heath Estens said the most challenging part of the project was the scale of it.

“Overseeing the systems to make sure all the components were integrated and worked well together before installing was difficult.”

“Making sure the six bore sites and the network of pipes were designed so they met the outputs required was also challenging”, he said.

What advice would you give other irrigators

The Estens would advise other irrigators to make sure they talk to the right people, get good advice and don’t take short cuts.

What are your thoughts on the Border Rivers-Gwydir project?

Dick Estens said overall it has been a good project.

“It is keeping water in the valley, enabling irrigators to improve productivity and local economies will benefit from that.”

“The time line was a bit short because you need to have long term planning to ensure success with getting your water organised to meet crop demand,” he said.

The Australian Government is providing $83 million to this project through its *Water for the Future* initiative.

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