

Tocal College

CASE STUDY

Property Snapshot

Located in the lower Hunter region, Tocal College (Tocal) has operated as an agricultural teaching facility for the last 50 years. It was bequeathed for rural education purposes by Charles Alexander in 1947. Comprising 2,200 hectares, Tocal runs approximately 300 Holstein milking cows, each producing around 26 litres of milk per day.

Location: Paterson Hunter Region, NSW

Size: 2,200 hectares

Enterprise: Dairy and Teaching College

“The centre pivots now give us a much more efficient way to apply water and much better distribution of water. So we can now grow good quality pastures all year round.”

Matt Brett, Tocal Dairy Manager



Challenge

The land on which Tocal is located has a long and diverse history of use dating from the Indigenous owners through to early European settlement, right up to today where it operates as an accredited agricultural college.

To support production of pasture feed for the dairy herd, a bike shift irrigation system was installed in 1994. This system of irrigation provided poor distribution of water across the irrigated paddocks with the sprinkler head pressure difficult to regulate. The system also utilised a three-phase electric pump located on the Paterson River which required significant energy to operate. Over the past 3 years Tocal has spent an estimated \$10,000 a year on electricity for irrigation, a cost that was very likely to continue to increase along with rising energy costs.

In addition to cost and technical efficiency issues, the bike shift irrigation system presented a significant labour challenge for the dairy operators with staff required to physically move the irrigation equipment on quad bikes which is both costly and a high safety risk.

Tocal has installed a new centre pivot irrigation system which required the removal of 26 isolated paddock trees. Approval was provided through an Equity Code Certificate under the Land Management (Native Vegetation) Code. Tocal was able to utilise credits associated with existing native vegetation and planting on the property to offset the removal of 26 paddock trees. No set aside was required.

Fact file:

- Located on 2,200 hectares of land in Paterson, near Maitland, in the lower Hunter region.
- Tocal has been in operation for 30 years and now produces around 2.5 million litres of milk each year.
- Runs approximately 300 Holstein or milking cows, each producing around 26 litres of milk per day.
- Tocal replaced 37 hectares of bike shift irrigation with a new water and energy efficient centre pivot irrigation system and is planning upgrades to the adjacent milking shed.
- Tocal was able to remove 26 paddock trees under the Land Management Code for this project.
- Reducing the grazing area through efficient pasture production provides more land for the voluntary planting of native vegetation corridors.
- Tocal Dairy is demonstrating best practice for the broader dairy industry and runs regular workshops and field days showcasing dairy innovations.

CASE STUDY



Work undertaken

Tocal has installed a new centre pivot irrigation system which covers around 40 hectares of land and delivers:

- improved pasture growth
- efficiency gains in both water and energy use
- improved safety and working conditions for staff and students.

Further upgrades to the dairy shed are also planned to provide better facilities adjacent to the improved irrigation areas. These facilities will reduce the distance and time required for the herd to travel between pastures and milking.

On-ground achievements

Home grown feed is a key driver of farm profitability and irrigation has delivered a 30% increase in available dry matter in the irrigated paddocks, this can be as high as 70% in drought years. It is anticipated that a further 15% production increase is possible with the new centre pivot irrigation system as a result of better distribution, scheduling and volume of water applied.

In an average year the bike shift system would operate for 100 days requiring 3 hours per day shifting sprays, a further 2 full days for set up and decommissioning and another 3 days for maintenance and repairs. This represents a labour cost in the order of \$23,000 to \$26,000 per year. The new centre pivot irrigation system is expected to deliver significant labour savings. In addition, a reduction in the use of quad bikes and manual movement of irrigation equipment will significantly reduce the risk of injury or accident.

Over the past 50 years there is clear evidence of the planning for and implementation of environmentally sound practices at Tocal. This project seeks to continue this legacy through managing areas on the property primarily for conservation.

Benefits

Social

- The new centre pivot irrigation system provides improved safety for students and farm workers and will reduce WHS risks on farm by limiting use of quad bikes for moving equipment.
- Tocal is a model farm, and the irrigation upgrade project is regularly showcased to the dairy industry as an example of current best practice.

Economic

- Improvements in efficiency of water use is expected to yield a 30% improvement in pasture production.
- It is anticipated that an initial investment of \$950,000 to upgrade the shed and replace the irrigation system will provide net benefits of \$37,500 per year, which is an 8% return on investment. The whole project is estimated to have a payback period of approximately 13 years.

Environmental

- The new centre pivot irrigation system is designed to optimise distribution of the high nutrient water in Tocal's dam, and decrease the amount of water pumped from the river system.
- Tocal continues to invest in management of conservation areas on the property including vegetation corridors surrounding the irrigated paddocks.