



Irrigation Investment Case Study: **Dairy Expansion**

“Riversdale” Ringarooma
North East
Tasmania

Current Situation

“Riversdale” is a dairy business operated by Martin and Jo Nailer on properties owned by Martin’s parents and a neighbouring leased block. They also own a dryland run-off block “Poplar Bend” in their own name. The total area under Martin’s management is 169 hectares (ha) with 250 cows milked and 60 replacements being grown out annually.

The main dairying properties are located just upstream of the Ringarooma River Bridge. Currently around 81ha is irrigated via long lateral sprinklers using direct take water from the Ringarooma River and a 6.75 megalitre (ML) on-farm dam. The Nailers consider that their water supply has been adequate for their current irrigation infrastructure.

In 2012 Martin and Jo had the opportunity to purchase water from the new Upper Ringarooma Irrigation Scheme (URIS). They could access URIS water from either the Legerwood Pipeline (under pressure) or directly from the Ringarooma River. This offered the opportunity to expand the existing dairy operation.



Martin Nailer

Irrigation Options

With the aid of a consultant, Martin and Jo prepared an Irrigation Development Plan for their combined properties. The plan considered the climate, land capability, current water sources and infrastructure, as well as their business objectives, the irrigation options, and environmental and economic issues.

As a result, their preferred option is to:

- 1) Expand the area of long lateral irrigation on the dairy area from 81 to 100ha; and
- 2) Introduce 8.8ha of travelling irrigators on the Poplar Bend dryland block. This block is used to grow out young stock and produce hay and silage for the milkers.

They worked out that the extra irrigated pasture would, depending on the season, result in production of an extra 127 to 156 tonnes of dry matter.

This would enable them to:

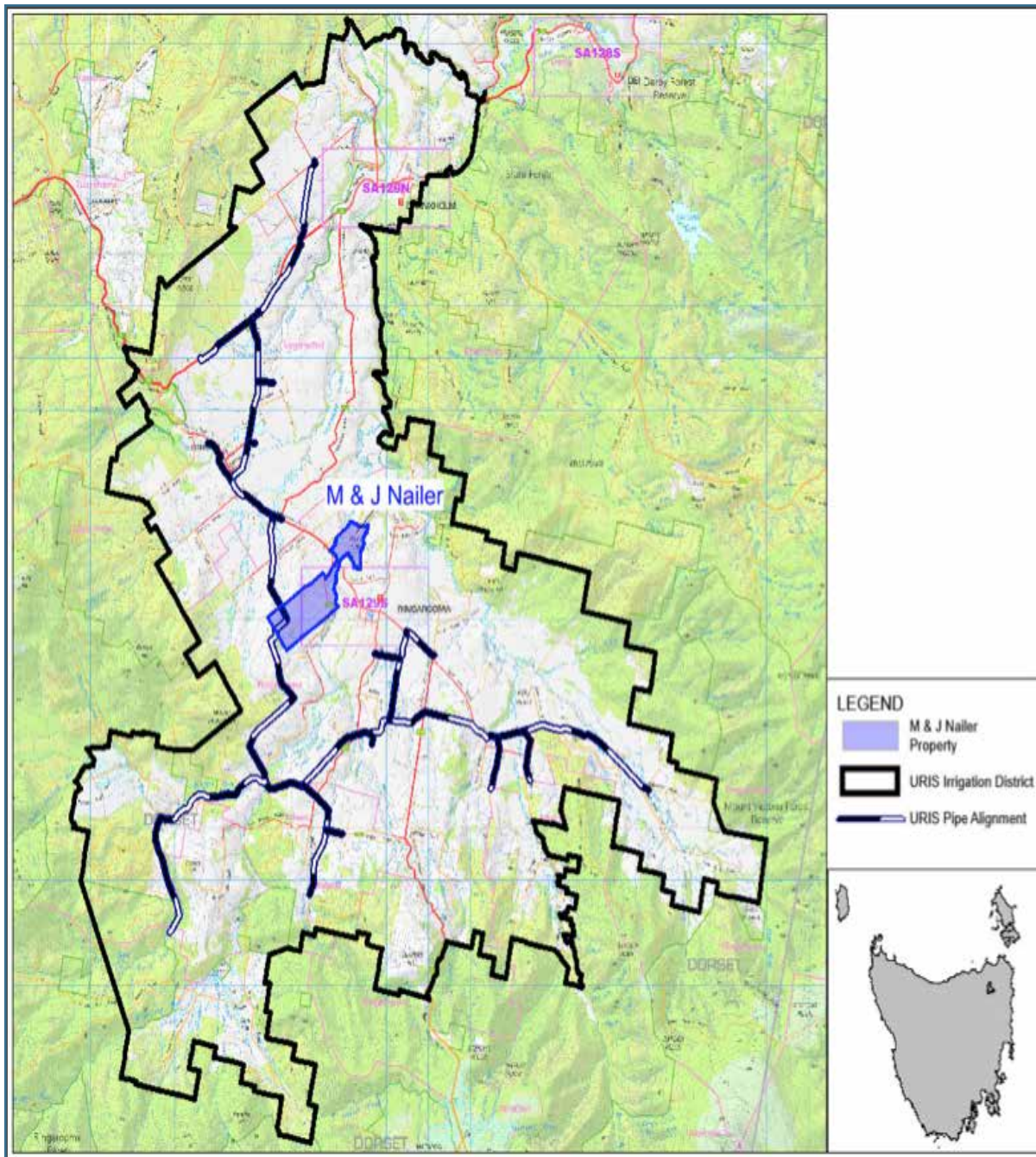
- 1) Milk another 15 cows (plus replacements),
- 2) Produce more milk from the current herd, particularly in drier years, and
- 3) Cut back somewhat on grain purchases – currently around 0.75 tonnes per cow per annum.

Overall, extra milk production was estimated at between 6,000 and 12,000 kilograms of milk solids depending on the season – approximately a 6-12% increase. Importantly their existing dairy shed, vats and milking times could accommodate this increase in production, without the need for major changes or additional capital investment on farm, beyond the purchase of the new irrigation equipment required.

To fully irrigate pasture in the manner proposed, it is likely that they will need 4.5 - 5.5 ML of irrigation water per hectare per year, depending on the season. This means they will require an additional 130 - 160 ML per annum. Hence the Nailers investigated the economics of purchasing 150 ML from URIS.



Figure 1: Location of "Riversdale"



Proposed Irrigation Development

The next step in the planning process was to undertake an indicative design and economic analysis.

1. Long lateral expansion

The long lateral expansion proposal in the south west corner of the property straddles land owned by both Martin's parents and land leased from a neighbour. The total cost of the 19.5ha expansion is expected to be around \$35,000 or \$1,700 per ha. There is sufficient static head in the URIS supply line so that no additional pumping would be required over and above the \$34.87/ML URIS delivery cost for the Legerwood supply line. To supply the extra 19.5 ha of irrigable area with sufficient water approximately 100ML would need to be purchased from URIS.

The water which is delivered through the URIS pipeline is delivered at a constant flow rate over a 24 hour period. The on farm irrigation system has been designed to operate on a 12 hours per day basis. For this to succeed the Nailers would need to work in conjunction with a neighbour and share the flow rate. In practice this means the Nailers irrigate for 12 hours using both theirs and the neighbour's flow rates. The neighbour would then irrigate for the other 12 hrs using both flow rates. This arrangement will give the landholders access to sufficient flow rate to irrigate directly from the supply pipeline whilst not having to incur additional pumping expenses. An alternative would be for the Nailers to build a buffer storage dam which would receive their flow rate over 24 hrs. The water would then require additional pumping to supply sufficient pressure to operate the on-farm equipment.

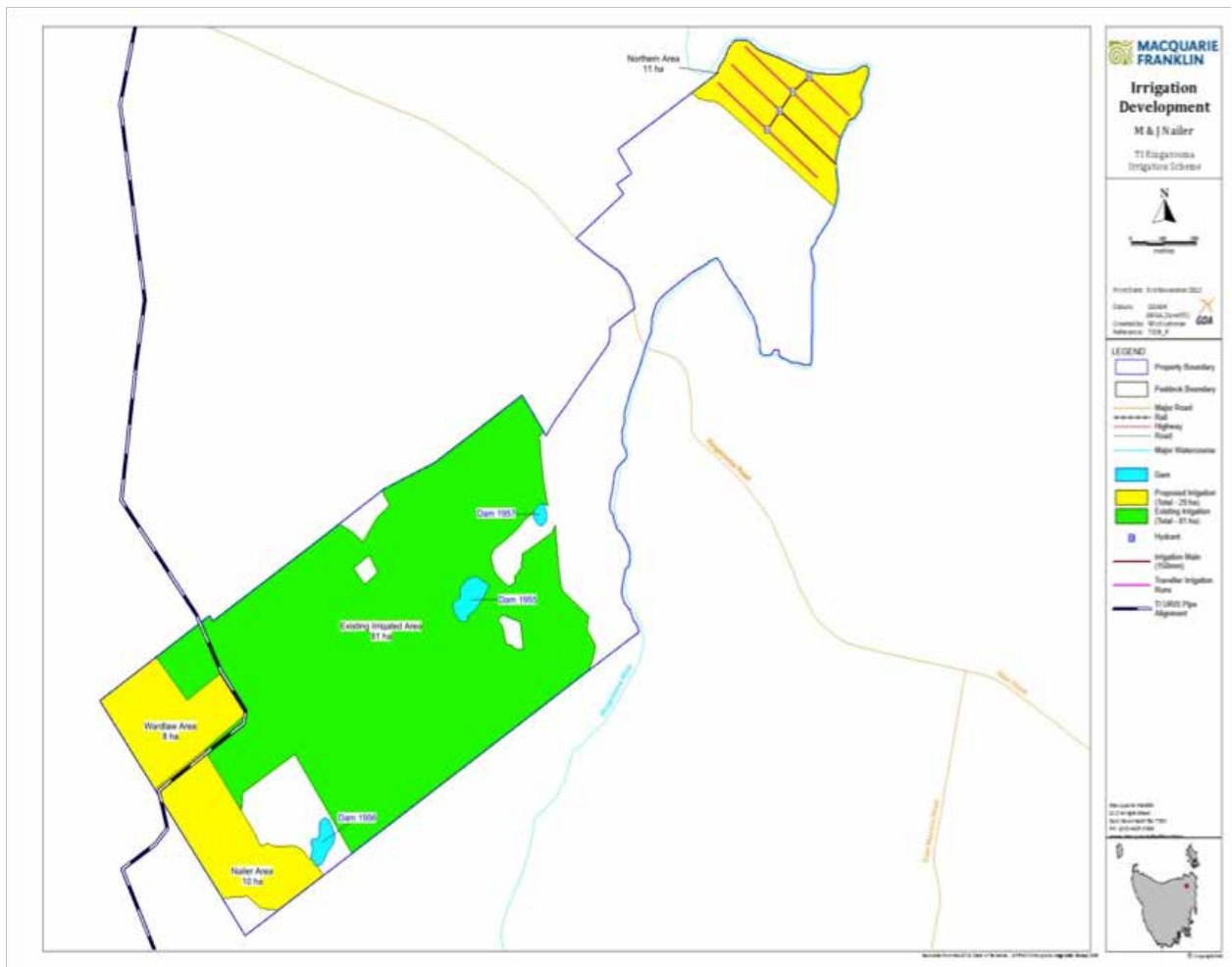
2. Travelling irrigator system

The proposal here is to provide around 50 ML of water for 8.8 ha in the north east of the property - to be irrigated directly from the river. The URIS delivery cost is \$3.50/ML and the system would require the installation of a pump station on the river with an associated pumping cost of \$69/ML, giving a total pumping cost of \$72.50/ML. The capital cost of a new soft hose irrigator and associated pumps and piping is \$59,000 or \$6,700 per ha. This system would be operated on a 12 hour per day basis but with the scheme supplying water into the river on a 24 hour basis. In this case the river effectively provides the buffer storage and there would be no need to share flow rates with another user.



"Riversdale"

Figure 2: Layout of the proposed on-farm irrigation development



Economics

The total capital investment for the proposed development is estimated at \$300,000: including \$180,000 of URIS water plus irrigation equipment and extra cows and replacements. As can be seen from the indicative partial budget below, in an average year the proposed irrigation investment is likely to provide a net benefit of approximately \$18,500 per annum after both operating and ownership costs. Ownership costs were calculated at 7% interest and the infrastructure written off over 15 years. The range of returns on the investment in a wet season and a dry season are estimated to be between \$4,000 and \$35,000 per annum.

Table 1: Indicative partial budget

Benefits	Season	Wet \$	Average \$	Dry \$
Extra Milk (\$6/kg/MS)		36,000	51,000	73,500
Extra Cull Sales (\$500/hd)		1,130	1,130	1,130
Agistment Saved		0	0	0
Purchased Feed Saved (\$440/t)		16,500	16,500	11,000
Total Benefits		53,630	68,630	85,630
Costs				
1. Operating Costs				
Extra Shed & Cow Costs (\$150/cow)		2,250	2,250	2,250
Extra Fertiliser (\$150/ha)		4,250	4,250	4,250
Extra Hay & Silage Costs (\$100/ha)		880	880	880
URIS Fixed & Transfer Cost 150ML (\$66.99)		10,060	10,060	10,060
URIS Deliver Cost - Pipeline (\$34.87)		3,060	3,400	3,740
URIS Deliver Cost - River (\$3.50)		140	160	170
Irrigation Pumping - Long Laterals		0	0	0
Irrigation Pumping - Travellers (\$69/ML)		2,740	3,040	3,040
Irrigation Repairs (\$10/ML)		1,280	1,420	1,560
Extra Wages		0	0	0
Other		0	0	0
Total Operating Costs		24,660	25,460	26,250
2. Ownership Costs (Water right, irrigation equipment, stock)				
Depreciation & Interest *(7%, 15 years)		24,640	24,640	24,640
Total Costs		49,300	50,100	50,890
Net Benefit - over & above 7% cost of capital		4,330	18,530	34,740

* or principal & interest

Note: This indicative partial budget provides a general guide only to the main issues when considering an investment in an on-farm irrigation development. It is based on a fairly conservative range of assumptions that only apply to the example described in this particular case-study. The partial budget is not exhaustive and actual results may differ.



In summary:

The process that the Nailers went through to consider a new investment in irrigation was to:

- Gather information about the Upper Ringarooma Irrigation Scheme.
- Look at what the scheme could potentially deliver for their dairy business, now and in the future.
- Take advice and use a consultant to do some hard numbers. This included determining current and future water requirements, potential capital costs, extra pasture production and utilisation, an investment analysis and a budget.
- Think about any physical and financial risks.
- Work closely with consultant to ground-truth the results.
- Talk to their business partners, neighbours and financiers.
- Make the decision to invest. They committed to purchasing some water entitlements in the URIS, and once it is constructed, they will develop their on-farm irrigation system over time.

Martin Nailer

"This scheme is certainly worth considering from our point of view. We will be discussing it with our neighbours in the near future with a view to jointly investing in the long lateral expansion. While it may be difficult in the short term from a cash flow point of view, I believe the long-term financial benefits from increasing our milk production and saving on grain will be worth the initial pain.

"There is more than just the economics involved in us making a decision. One feature of the URIS that is important to us is the water's high level of reliability.

"While our direct-take water from the Ringarooma River has been very reliable in the past we have some concerns about the implementation of the new Ringarooma River Water Management Plan. Whilst the volume of our surety 5 licences will be unchanged, historical take over and above the licence amount is likely to be allocated as a Surety 6 licence. A surety 6 licence is obviously less secure than the surety 5 licence but it should be sufficient to maintain our current irrigation in most years, assuming the access rules are similar to now.

"However, with a 95% reliability of supply, the new URIS water can provide additional security and gives us the confidence to expand our operations too."



"Riversdale"

Further information on the Upper Ringarooma Irrigation Scheme (URIS) is available from the Tasmanian Irrigation website www.tasmanianirrigation.com.au

Easy to use tools are available on-line to guide farmers and investors who are considering investing in irrigation. These include gross margin and irrigation investment analysis tools, enterprise suitability, market research and irrigation management fact sheets. These tools are available from the Department of Primary Industries, Parks, Water and Environment webpage: www.dpipwe.tas.gov.au/wealthfromwater

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