



Irrigation Investment Case Study: **Irrigated Cropping Diversification**

“Mineral Banks” Ringarooma
North East
Tasmania

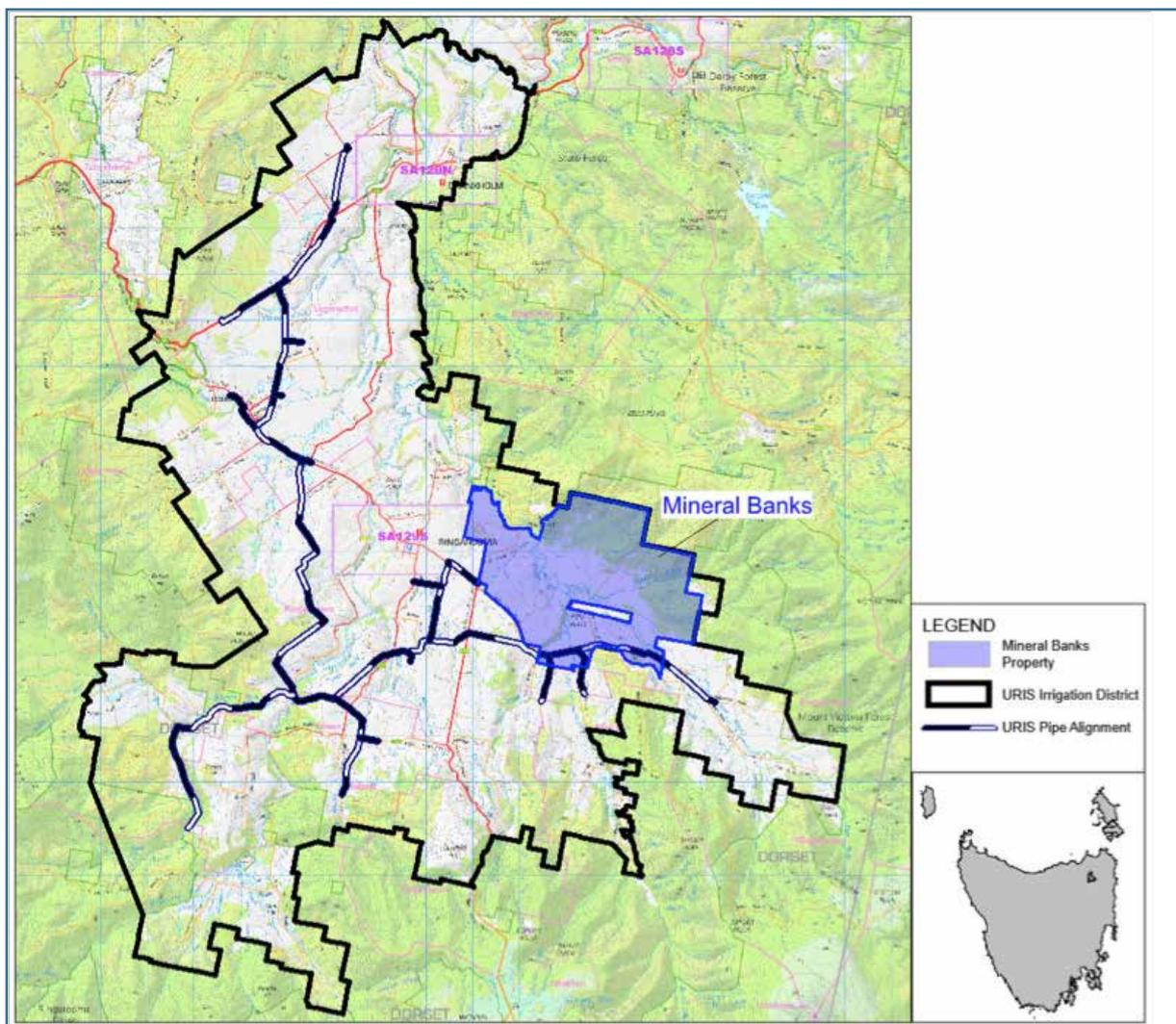
Current Situation

“Mineral Banks” is located just to the east of Ringarooma. It is owned by the Foster family and is managed on a day to day basis by Ron Berwick. The total farm area is around 1,270 hectares (ha).

Currently the property is running 450 beef breeding cows plus 400 or so trading cattle, and 1,200 Romney Merino ewes for prime lamb production. From time to time additional cattle are agisted from the Foster’s midlands property. Around 50 hectares of dryland poppies are being grown this year.

There is currently no irrigation water and no irrigated cropping on the property – apart from 14ha of potatoes grown by an outside party using their own water right pumped from the Dorset River. In 2012 the Fosters had the opportunity of purchasing water from the new Upper Ringarooma Irrigation Scheme (URIS). Given that the Alberton pipeline runs along and through the southern part of the property, the URIS offered a new opportunity to diversify the business into irrigated cropping.

Figure 1: Location of “Mineral Banks”



Irrigation Options

At the present time the Foster Family is considering several options. To help their decision-making, with the aid of a consultant, they first prepared an Irrigation Development Plan. The plan considered the property's climate, land capability, current water sources and infrastructure, as well as their business objectives, the irrigation options, and environmental and economic issues.

An assessment of potential irrigable land determined that approximately 450ha is suited to intensive irrigated cropping or grazing, and another 550ha is suited to irrigated pasture and some limited cropping.

The option then investigated was for a comprehensive on-farm scheme that would maximise the area of irrigation on the property.

This would involve:

1. Developing two areas for centre pivot irrigation with two large pivots installed on a season tow basis, i.e. the pivot can be towed to a new anchor point in the adjoining paddock (as shown in figure 2).
2. Developing another two areas (marked in yellow in figure 2) for irrigation by hard hose irrigators – because of the overall shape of the land and its topography these are not suited to centre pivots.

The main gains would likely come from a 120ha annual irrigation program as follows:

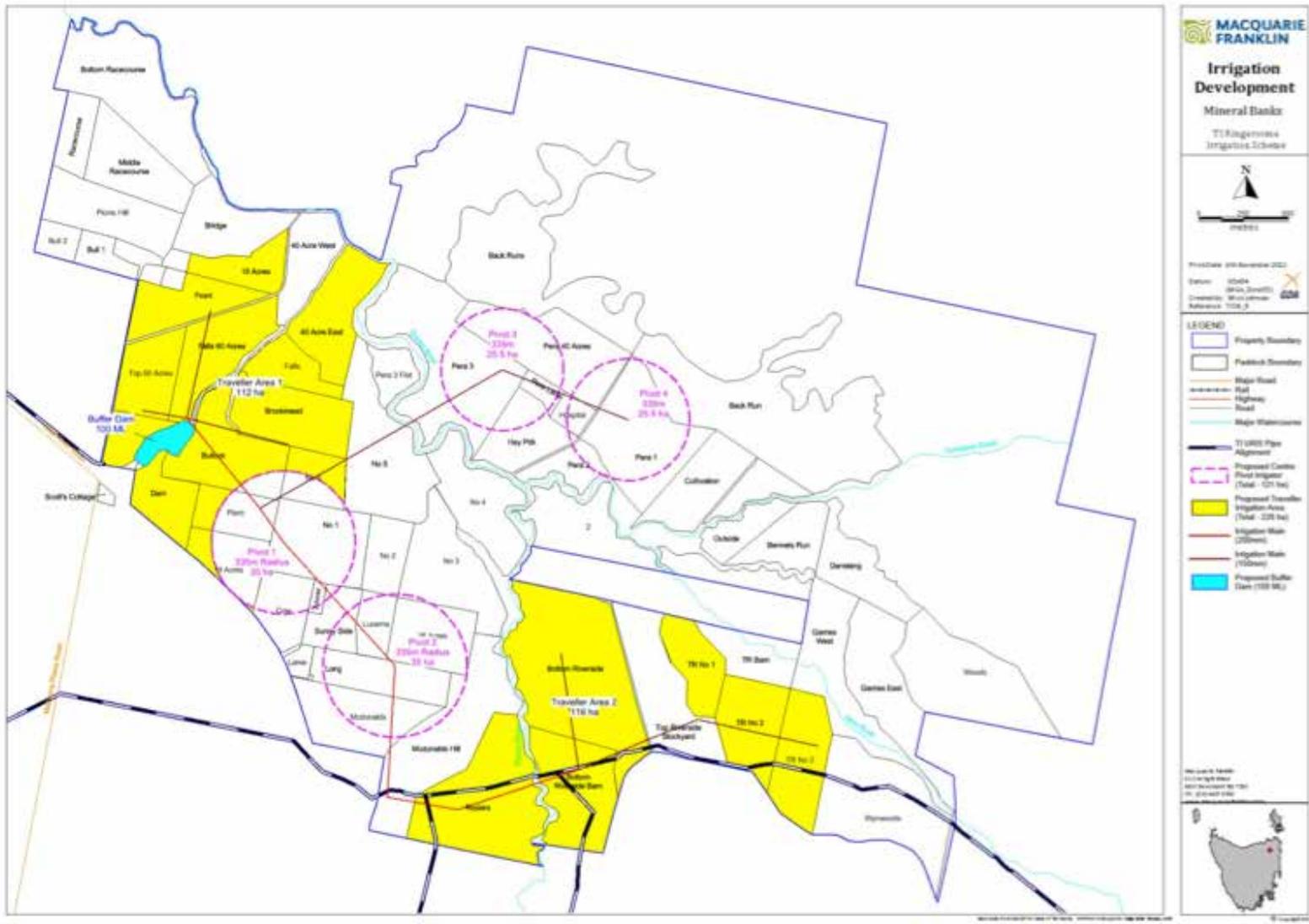
1. Adding another 24 hectares of irrigated potatoes per year in rotation on top of the existing 16ha – on an annual lease basis,
2. Replacing 50 hectares of dryland poppies with 80 hectares of irrigated poppies with roughly double the gross margin per hectare, and
3. Irrigating 80 hectares of new pasture or forage crop post the poppies to ensure good winter feed production for the livestock, and thereby increase winter carrying capacity and growth rates.

To achieve this would require purchase of approximately 400 ML from URIS water for delivery over 120 days within the nominated 150 day irrigation period. This would result in an overall delivery rate of 3.33 ML per day or 38.6 litres per second.

Although not under consideration at the present time the property would also be very suitable for irrigated dairying.



Figure 2: Proposed on-farm irrigation development



Economics

The total capital investment of the proposed scheme has been estimated at \$1.26 million - including \$480,000 of URIS water plus irrigation equipment and a new buffer dam. Obviously this would be a significant investment and Simon Foster is carefully adding-up all the benefits and costs.

The various benefits and costs being assessed are included in the indicative partial budget below. It shows that in an average year the proposed irrigation investment is likely to provide a net benefit of approximately \$21,700 per annum after both operating and ownership costs. Ownership costs were calculated at 7% interest and the infrastructure written off over 15 years.



Farm Manager - Ron Berwick



"Mineral Banks"

One advantage is that the proposed outlet on the Alberton pipeline will have a practical minimum pressure of 77m less outlet losses of 10m. This means that it will be possible for the centre pivots to be operated without any additional pumping cost over and above the URIS delivery cost of \$41.42/ML.

On the other hand, because of the URIS delivery flow rate limitations it will be necessary to build a 100 ML buffer storage dam. Figure 4 shows how this might work. Throughout the season irrigation will be drawn either from the buffer dam or directly under pressure from the URIS pipeline. After an initial fill from the URIS pipeline, the buffer dam is drawn down. The dam is then topped up throughout the season when irrigation is not being undertaken direct from the URIS pipeline. Overall, the indicative calculations show the dam falling to around 35 ML in December before refilling at the end of the season.

6 Table 1. Indicative Partial Budget

\$ per annum

1. Benefits

Extra Farm Gross Margin

1. Extra Potato Lease Income	26ha	\$2,500/ha	65,000
2. Irrigated Poppy Gross Margin	80ha	\$2,000/ha	160,000
less current dryland	50ha	\$1,000/ha	-50,000
3. Less Extra Pasture Sown Down	16ha	\$200/ha	-3,200
4. Extra Livestock Finishing	80ha	\$250/ha	20,000
5. Less Dryland Livestock Margin Lost	56ha	\$500/ha	28,000
Total Benefits			163,800

2. Costs

1. URIS Fixed Costs	400ML	\$66.99/ha	<u>26,796</u>
2. Ownership Costs			
URIS Water Purchase	\$480,000	7%	33,600
Dam For Area 1	\$120,000	7%	8,400
Centre Pivot Area 1 - Season tow	15 yrs \$215,000	7%	23,700
Hard Hose Area 1	15 yrs \$166,000	7%	18,300
Centre Pivot Area 2 - Season tow	15 yrs \$162,000	7%	17,800
Hard Hose Area 2	15 yrs \$173,000	7%	19,000
Less Livestock Capital Salvage	15 yrs -\$112,000	7%	-12,200
Miscellaneous	15 yrs \$61,000	7%	<u>6,700</u>
	\$1,265,000		115,300
3. Other Costs			
Permanent Labour			-
Other			-
Total Costs			142,096

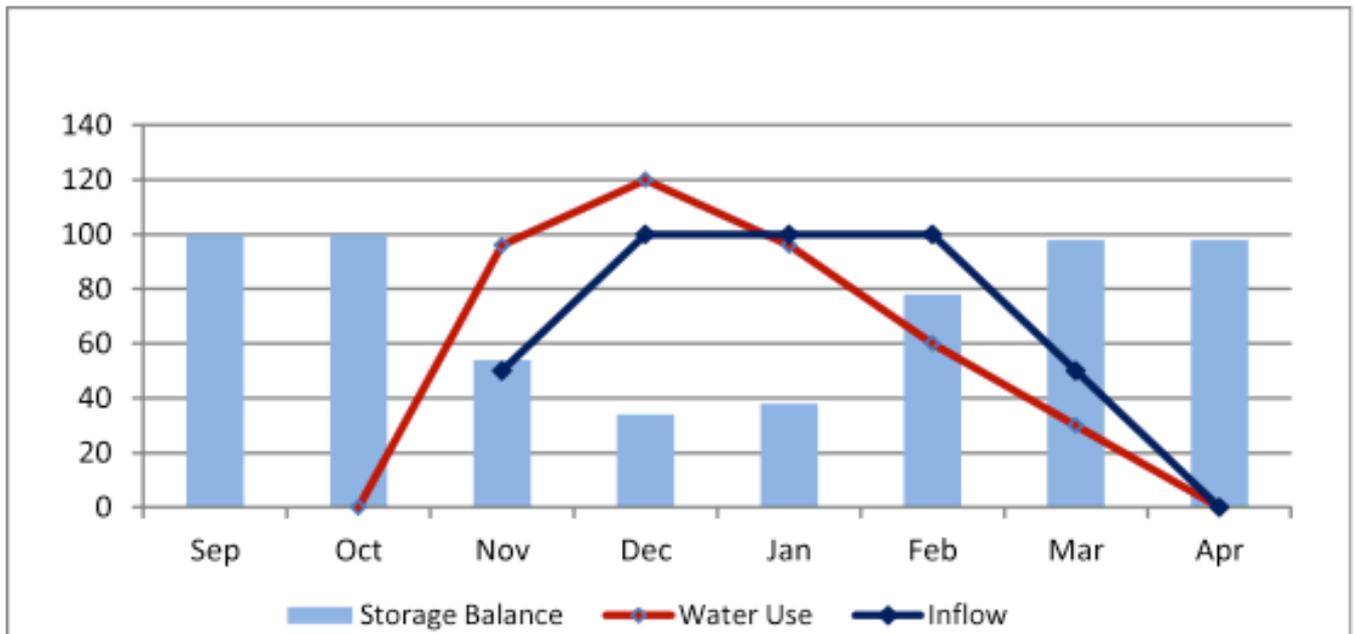
3. Net Benefit Over and above cost of capital 21,700**

* For the longer term use a lower interest rate (net of inflation) - this better reflects the true investment value.
 For the shorter term use a nominal interest rate - say bank interest rates, to better reflect cash flow in the early years.
 ** The net benefit is over and above the specified interest rate or required rate of return used in the calculations.

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.



Figure 4: How the buffer storage might work



In summary

The process that the Foster family went through to consider a potential new investment in irrigation was to:

- Gather information about the Upper Ringarooma Irrigation Scheme and compare this against the other possible sources of water for the property.
- Involve their farm manager, Ron Berwick, throughout the process.
- Look at what adding irrigation could do for their "Mineral Banks" business now and in the future.
- Understand land capability – how much land is actually suitable for sustaining irrigation on an ongoing basis.
- Take advice and use a consultant to do some hard numbers on the various options. This included the possible crops and enterprises, their current and future water requirements, potential capital costs, and an investment analysis to compare the costs and benefits.
- Compare how well the various irrigation options stacked up against their existing dryland operations, including the gross margin they would forego by changing and the added running costs.
- Think about any physical and financial risks.
- Work closely with the consultant to ground-truth the results.
- Talk to their business partners, financiers and other farm advisers.
- Make the decision to invest. They committed to purchasing some water entitlements in the URIS, and whilst it is being constructed, they finalise the plans for their new irrigation enterprise.

Simon Foster

"Any investment needs to give an adequate rate of return in its own right, but it also needs to be at least as good as other options the business may have for investing its funds. In this case the preliminary irrigation proposal looks good but further detailed investigation is required.

"A couple of other "Mineral Banks" irrigation options also need to be fully explored before we make a final decision. One of these is to opt for a smaller centre-pivot only option.

"Another alternative is to look at developing some on-farm storage with winter fill from the Dorset River. While the reliability of the winter fill is likely to be high and the capital cost of the dam may be similar to that for URIS water, there are significant unknowns in relation to the cost of the dam in practice. The time and cost of the approval process is uncertain and engineering costs would need careful consideration. The ongoing costs in dam maintenance and water losses would also need to be taken into account."



The Dorset River - "Mineral Banks"

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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