

## March 2015 Assessment Brief

<b>Recommended rating:</b>	<b>Real Potential</b>
<b>Current rating:</b>	<b>Real Potential</b>
Initiative Name:	Just add water... (An Innovation Strategy for Tasmania: Focus on Food Bowl Concept) Tranche Two Irrigation Scheme Funding Submission
Geography:	Tasmania – statewide
Proponent:	Tasmanian Irrigation Pty Ltd and Tasmanian Government
<b>Project description:</b>	
<p>The ‘Just add water...’ initiative aims to develop five new irrigation schemes across Tasmania. Following Commonwealth (\$140 million) and Tasmanian Government (\$80 million) funding for Tranche One, the proponent is now seeking further public investment for Tranche Two.</p> <p><b>Objective:</b> The proposal aims to substantially increase the production of high-value agriculture and aquaculture food products by investing in rural water infrastructure across Tasmania. The objective of Tasmanian Irrigation Pty Ltd and the Tasmanian Government is to develop a statewide system of irrigation schemes that will increase the output of Tasmania’s agricultural sector and deliver flow-on effects to regional communities.</p> <p><b>Problem:</b> Inadequate water capture and storage infrastructure across Tasmania’s agricultural areas and an unreliable seasonal supply of water is stated as limiting the current value and potential for growth of the Tasmanian agricultural sector.</p> <p><b>Solution:</b> Tasmania Irrigation’s proposed solution is to invest in rural water storage and delivery infrastructure to enable large-scale, multi-user irrigation schemes, with an undertaking to provide 95 per cent reliability of water supply to farmers. The Tasmanian Government has charged state-owned company Tasmanian Irrigation Pty Ltd with delivering the schemes. The 10 schemes detailed in Tranche One are underway, with six completed, one in commissioning and three under construction. Under this Tranche Two proposal, Tasmanian Irrigation Pty Ltd is seeking \$140 million of public funding to develop an additional five irrigation schemes. The five schemes are:</p> <ul style="list-style-type: none"> <li>• Circular Head (\$60.06 million): works include the construction of an off-river storage and pump.</li> <li>• North Esk (\$17.3 million): works include the construction of a dam and pipeline.</li> <li>• Scottsdale (\$46.08 million): works include the construction of a dam and pipeline.</li> <li>• Southern Highlands (\$28.06 million): works include the construction of a dam and pipeline.</li> <li>• Swan Valley (\$16.6 million): works include the construction of a dam and pipe network.</li> </ul> <p>In addition, \$12 million in project management costs and \$12.75 million in project financing costs have been requested as a public funding contribution. The Tasmanian Government has announced changes to the scope of the program. Infrastructure Australia is clarifying the project’s scope with the Tasmanian Government.</p>	
Proponent’s capital cost estimate (\$M, nominal):	\$193 million
Commonwealth contribution sought by Proponent including requests for project development funding (\$M):	\$110 million

Other funding (\$M, nominal)	\$30 million - Tasmanian Government \$53 million – Sale of water entitlements
Project timing Start/Completion by Proponent (month/year):	2014/15 – 2019
BCR stated by proponent:	1.6 (at a 6% discount rate over 40 years). Approximately 1.5 at a discount rate of 7%.

## Strategic alignment summary

### Alignment with Infrastructure Australia’s strategic objectives:

The proposed water storage and delivery infrastructure aims to address the problem of unreliable water supplies and is therefore aligned with Infrastructure Australia’s theme of ‘adaptable and secure water supplies’. The objective to increase the value of Tasmanian agricultural production and deliver flow on effects to regions is aligned with Infrastructure Australia’s strategic priorities to ‘expand Australia’s productive capacity’ and ‘develop our regions’.

### Alignment with state strategies:

The project is aligned with Tasmanian state strategies and plans. In addition, the project’s goals support the Tasmanian Infrastructure Strategy.

The Tasmanian Infrastructure Strategy emphasises the importance of the proposed irrigation schemes, noting that ‘secure water is the single biggest factor affecting growth of the primary production sector’. In 2014, the Tasmanian Government linked its allocation of \$30 million towards the development of new irrigation schemes to its plan to grow the value of the agricultural sector in Tasmania tenfold to \$10 billion per year by 2050.

It is also noted that the current Commonwealth Water Infrastructure Options Paper lists the five Tranche Two schemes in the category of projects “likely to be sufficiently developed to allow consideration of possible capital investment within the next 12 months”. The list of projects identified in the Options Paper was also included in the Commonwealth Agricultural Competiveness Green Paper published on 20 October 2014.

## Problem identification and assessment summary

In the submission the proponent has clearly identified the problem of rainfall and run-off being wasted across areas of Tasmania due to inadequate irrigation infrastructure, which is said to have adverse impacts on agricultural productivity in the state. The submission references academic research which suggests that the cost to the Tasmanian economy of not improving water irrigation infrastructure in the state could be as high as \$5 billion per annum.

The required investment in infrastructure to realise future opportunities is said to be beyond the scope of the private sector. However, the evidence base for this is limited and it is not clear how Commonwealth Government funding contribution addresses a market failure which cannot be addressed by the proponents, private sector or Tasmanian Government. It is recommended that more work could be undertaken by the proponent to test the problem and case for public investment.

## Solution identification and assessment summary

The submission includes five irrigation projects that consist of a suite of infrastructure works to capture, store and transport water for use in high-value agriculture production. The submission points to an extensive options assessment undertaken by Tasmanian Irrigation prior to confirmation of the five schemes or layouts chosen for inclusion in this submission. However, some important issues remain in relation to the assessment of the proposed solution.

## **Cost estimates**

The cost estimates included in the proposal appear to be reasonable, taking into consideration the experience and credentials of the proponent in delivering Tranche One. The capital cost estimates typically include a 10 per cent contingency in addition to the best available estimate. However, probabilistic costing has not been undertaken. The capital costs should be estimated at the P50 and P90 level, with the P90 estimates included in the submission, in accordance with Infrastructure Australia's project information template.

Since the project was discussed by Infrastructure Australia in December 2014, the Tasmanian Government has provided Infrastructure Australia with additional submission information which provides greater confidence in the capital cost estimates presented at the P90 level. Infrastructure Australia is reviewing this additional information in detail.

## **Differences in the economics of the five schemes**

Each of the irrigation schemes has been evaluated using a methodology developed by Marsden Jacob Associates. No evidence has been found to dispute the appropriateness of the methodology adopted in the report titled 'Methodology for socio-economic assessments of proposed water infrastructure schemes in Tasmania'. However, the base economic cost-benefit analysis is undertaken at a 6 per cent discount rate over 40 years, with sensitivity at 5 per cent and 7 per cent.

The economic appraisal is more advanced for four of the schemes. As shown in Table 1 (below), these are the schemes with lower BCRs. For three of the schemes (Southern Highlands, North Esk and Scottsdale), the BCR is less than 1.3. When undertaken at a 7 per cent discount rate, the BCR decreases to 1.1 to 1.2. There is therefore only limited confidence that the actual BCR will be greater than 1 for these schemes. For example, the North Esk scheme has a BCR of 1.13 at a 7 per cent discount rate.

Factors that adversely affect the confidence in the results for these three schemes are:

- Adding a share of project management may make these three schemes unviable. Sensitivity analysis undertaken demonstrates that small negative changes in key parameters do not reduce the BCR below 1; however, increases in capital costs combined with low rates of uptake and net enterprise margin may jeopardise the economic viability.
- The most important factor is uncertainty in the average enterprise net margin. This is heavily influenced by the proportion of water use on high value crops and the assumed milk price. Independent consultants were engaged to develop these estimates for Tasmanian Irrigation. Of note, a milk price of \$6 per kilogram of milk solids is used. While current prices are at or above this level, historical prices are lower than this figure and there is some uncertainty regarding future milk prices. Importantly, no independent analysis of the actual improvements in net margins in any of the Tranche One schemes was provided, following Infrastructure Australia's request.
- Capital cost estimates are not presented as P90 estimates. As noted above, additional information on the projects' capital costs is being reviewed.

On the other hand, it is noted that Tasmanian Irrigation has stated that a conservative approach has been adopted based on assuming limited changes in crop types to higher valued production. There is also solid evidence of uptake of the Tranche One schemes and thresholds in entitlement sales prior to construction also help limit the potential for demand risk to have a significant impact on the outcomes. The key question is that it is unclear how beneficial the additional water supply will be in terms of net economic benefits in production.

Overall, if these three schemes (Southern Highlands, North Esk and Scottsdale) were reassessed using Infrastructure Australia's parameters (and an appropriate apportionment of management costs) there is some chance that the BCRs would be less than 1. Further assessment of the robustness of the economic results to changes in the net enterprise margin and uptake should be provided. In particular, breakeven analysis should be undertaken to demonstrate what levels of reductions in economic benefits could be withstood before each of the projects has a BCR of less than 1.

**Table 1: Summary of the economic assessment results for each of the schemes**

Scheme	Level of assessment	Capital cost (\$m)	BCR (Base at 6% over 40 years)	BCR (Base at 7% over 40 years)	NPV (at 7%) (\$m)	Average enterprise net margin (\$ per ML)	Direct employment
Southern highlands	Business case	\$28.1	1.2	1.1	4.9	\$545	26
Scottsdale	Business case	\$46.1	1.3	1.2	10.6	\$610	30
North Esk	Feasibility assessment	\$17.3	1.3	1.1	2.2	\$424	14
Circular Head	Feasibility assessment	\$60.6	1.7	1.6	41.2	\$535	72
Swan Valley	Early feasibility only	\$16.6	2.7	2.4	27.2	\$2,034	16

Based on the results presented above, there is a greater level of confidence that the Circular Head scheme will have a BCR greater than 1 – including in response to marginal cost increases and reduced margins (the base BCR is 1.6 at a 7 per cent discount rate). However, the results of this scheme are subject to further development of a business case.

Similarly, while the BCR for the Swan Valley project is significantly higher than the other schemes (due to assumptions of a higher value enterprise mix), this assessment is in its early stages. The economic analysis of the Swan Valley project is much less certain. Importantly, the much higher BCR of this project tends to distort the overall results for the Tranche Two projects as a whole. There is a risk that if this project does not proceed or its net benefits are overstated in this early stage, then the confidence in the overall BCR result for the program of projects is reduced.

### **Argument for government funding**

As shown in Table 2 below, the proposed government contribution to the five irrigation schemes proposed ranges from 57 to 82 per cent of capital cost. Tasmanian Irrigation argues that government funding is required to provide critical mass to develop schemes which are considered to be of efficient scale and which could not be developed if left to the private sector (irrigators) alone, despite acknowledging that the schemes provide direct benefits to irrigators.

The question here is one of striking a balance between, on the one hand, potential strategic development benefits for Tasmania as a state (and, indirectly, the nation as a whole) and, on the other, the argument that projects that provide significant private benefits would normally be funded on a commercial basis. The potentially marginal economics and commercial uncertainties associated with the schemes could explain the absence of a fully privately funded option, and whether it is therefore appropriate for government to be contributing funding. In view of the projects' possible long-term strategic benefits, the balance of any government funding between the Commonwealth and Tasmanian Governments is a matter for the two governments. The terms on which any government funding might be provided is worthy of further consideration, e.g. possible arrangements for funds to be returned to government over time should the projects prove commercially successful.

**Table 2: Tasmanian Irrigation Tranche Two Public vs Private Contribution to Capital Cost**

Scheme	ML	Capital cost (\$m)	Public capital contribution	Private capital contribution to the scheme	Water entitlement price (\$/ML)
Southern highlands	6,500	\$28.1	72%	28%	\$1,200
Scottsdale	8,600	\$46.1	74%	26%	\$1,400
North Esk	2,850	\$17.3	75%	25%	\$1,500
Circular Head	21,442	\$60.6	57%	43%	\$1,200
Swan Valley	2,000	\$16.6	82%	18%	\$1,500

## BCR appraisal conclusion

BCRs have been estimated for the five proposed schemes using the method developed by Marsden Jacob & Associates. As discussed in detail above, results range from 1.2 to 2.7 (at a 6 per cent discount rate over 40 years). However, if Southern Highlands, North Esk and Scottsdale were reassessed using IA's parameters (and an appropriate apportionment of project finance and management costs), there is some chance that the BCRs would be less than 1.

[The Tasmanian Government has recently provided Infrastructure Australia with additional information (including analysis using a 7 per cent discount rate) which provides some additional confidence in the net economic benefits of these schemes. Infrastructure Australia is reviewing this additional information in detail.]

The projects are also at varying levels of readiness. While most need further technical and planning work as part of the approvals process, others need to proceed further to a full business case stage (with additional confidence required around demand and net enterprise benefits per ML). The variability in the BCRs for the individual irrigation schemes, and differing levels of readiness point, to the need to prioritise those with high BCRs over those that do not.

## Infrastructure Australia Priority List Recommendation

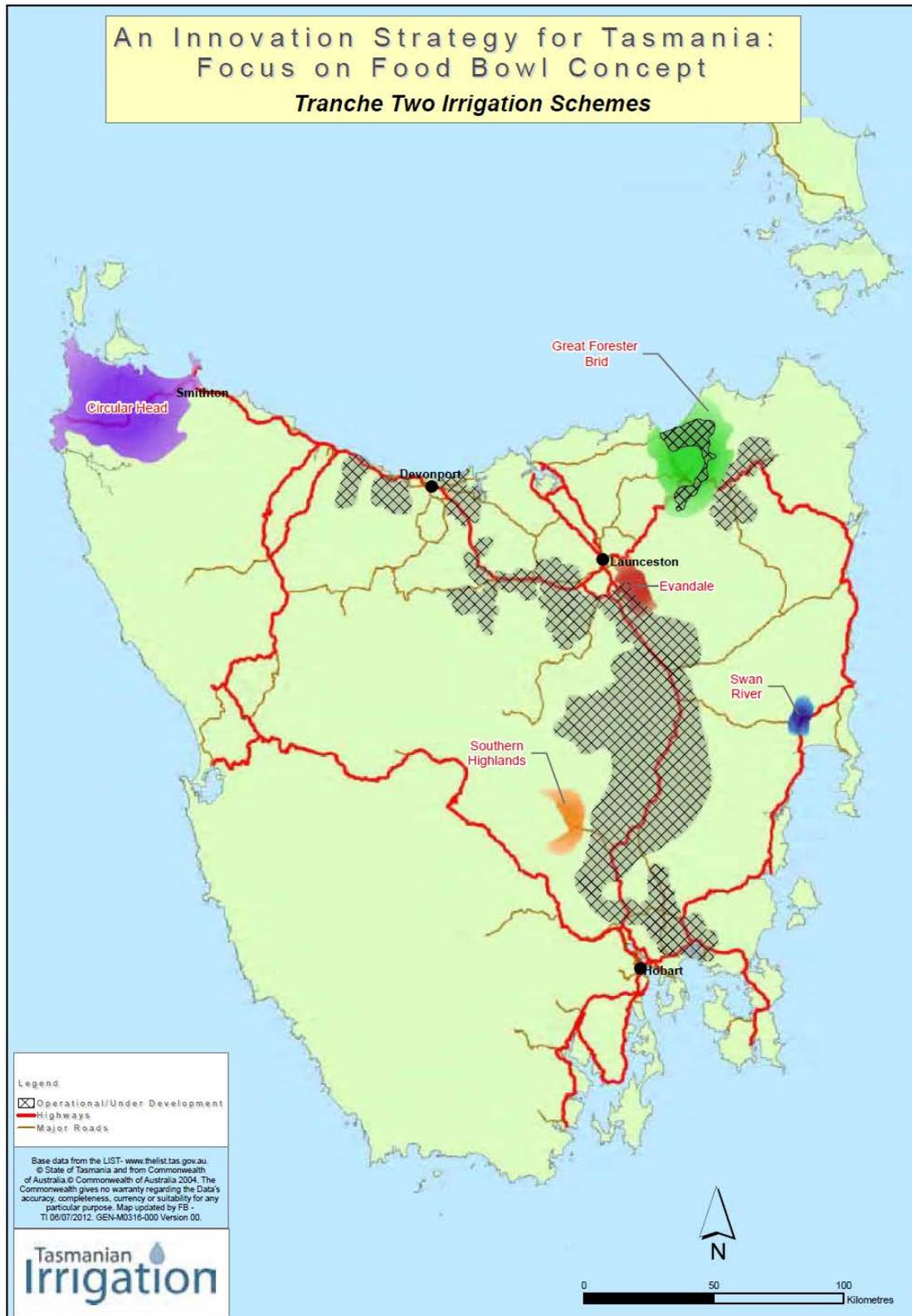
A shift towards high-value agriculture production that builds a more profitable Tasmanian economy is highly desirable. The proponent has demonstrated the ability to deliver Tranche One of the project on time and on budget. The criteria for a project to be categorised as Threshold requires Infrastructure Australia to have confidence that a project's BCR will be greater than 1:1. This project requires clarification of some important issues before that confidence could be assumed. Recently received information goes some way towards providing that confidence, although the information needs to be reviewed in more detail. Infrastructure Australia will work with the Tasmanian Government on these matters.

It is recommended that:

- The project remains on the Priority List at **Real Potential**, pending detailed consideration of further information received from the Tasmanian Government.
- Infrastructure Australia continues to believe this is a nationally significant project.
- The proponent should provide further evidence of the robustness of the economic results to changes in the net enterprise margin and uptake. Breakeven analysis could demonstrate what levels of reductions in economic benefits could be withstood before each of the projects has a BCR of less than 1:1. [Since this brief was prepared, the Tasmanian Government has provided Infrastructure Australia with additional submission information which provides greater confidence in the net economic benefits of the project. Infrastructure Australia is reviewing this additional information in detail.]
- Infrastructure Australia works closely with the proponents and relevant Australian Government departments to identify approaches to procurement, e.g. a capital contribution to a pilot project or a financial contribution to the enterprise margin.

## Attachments

Figure 1: Tranche two projects



Note: Great Forester Brid now referred to as Scottsdale and Evandale now referred to as North Esk