



20 CONCLUSIONS

CHAPTER SUMMARY AND CONCLUSIONS:

- This Chapter summarises the findings from the economic and financial analysis, and clearly states the conclusions, having regard to the net funding gap under the scenarios. It also summarises the key findings from the wider DBC report.

Based on the detailed analysis, it is acknowledged that:

- Full cost recovery models, which align with pricing principles of both Queensland and Commonwealth Government policies, cannot be adopted for a Nullinga Dam, as the upfront payment would be between 4 and 9 times higher than customers willingness and capacity to pay for the majority of the known crop types.
- Under the central case scenario, while not aligned with current Queensland or Commonwealth Government policies for water pricing principles, it is assumed that:
 - customers will pay \$2,000 for MP to \$3,000 for HP upfront for new allocations and ongoing fees set to recover O&M costs only
 - CRC will pay for HP allocation upon availability of water from a new Nullinga Dam and would trade this allocation for agricultural uses until required (most likely in the 2060's).
- Under the central case scenario
 - approximately 10 cents of benefits will be accrued for every dollar spent on a Nullinga Dam
 - Reference Project 1B delivers the least worse economic result (marginally), though even this Reference Project, with all the known uncertainties, has a less than 1 per cent chance of achieving a BCR of 0.39 or higher
 - all Reference Projects have a negative FNPV result under the central case scenario, due to the capital costs relative to the estimated dam yields (58,000 ML/a for Reference Project 1 and 74,000 ML/a for Reference Project 2)
 - the standalone Reference Projects all perform worse than conjunctive scheme alternatives

The primary conclusions of the DBC are:

- there is an opportunity to support expanded agricultural production in the Study Area, but only at a price that is substantially lower than the actual cost per ML of delivering additional water under any of the considered Reference Projects
- Cairns water supply needs are not urgent, with CRC having adopted a program of supply augmentations and demand management initiatives which will meet address water needs over the next 30 years
- all considered Nullinga Dam solutions would result in poor economic returns and poor financial outcomes.

20.1 Purpose

This Chapter summarises the findings from the economic and financial analysis, and clearly states the conclusions, having regard to the net funding gap and the risks associated with the Reference Projects.



20.2 The Analysis

The economic, financial and affordability analysis (refer Chapter 15, 18 and 19, respectively) considered the Reference Project with a central case ‘best estimate’ demand scenario, at a price reflective of stated willingness and capacity to pay of the known customers and for the known crop types, and close to existing MDWSS pricing.

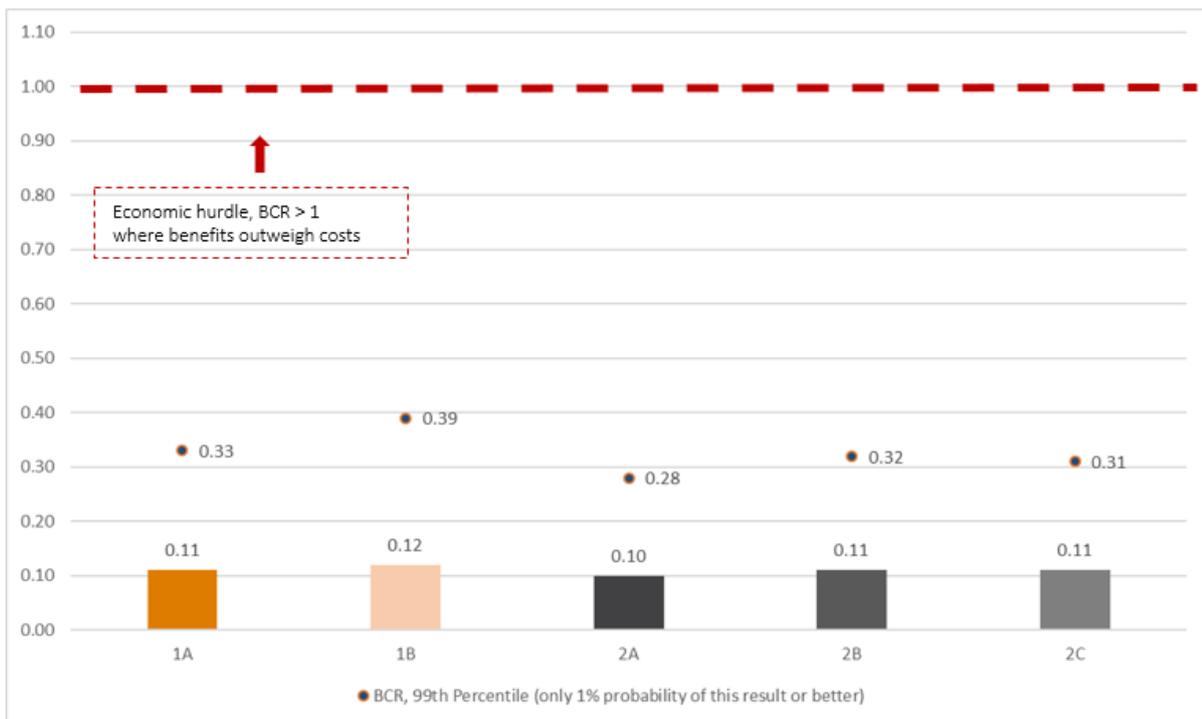
Full cost recovery models, which are consistent with current Queensland and Commonwealth Government water pricing policies, cannot be adopted for a Nullinga Dam, as the upfront payment would be between 4 and 9 times higher than customers willingness and capacity to pay for the majority of the known crop types.

Under the central case scenario, it is therefore assumed that:

- customers will pay:
 - \$2,000 for MP to \$3,000 for HP upfront for new allocations
 - Lower bound ongoing fees
- CRC:
 - will pay for HP allocation upon availability of water from a new Nullinga Dam¹³⁴
 - would trade this allocation for agricultural uses until required (most likely in the 2060’s).

Figure 20-1 presents the findings from the CBA undertaken for the central case scenario. It identifies the economic hurdle of BCR = 1, where the benefits obtained from an investment is greater than the costs. In addition to showing the BCR’s for each Reference Project, it also identifies the 99th percentile BCR. Using probabilistic modelling for all known variables, including capital and operating costs, water demand and crop types, the likelihood of achieving better or worse economic results can be calculated.

Figure 20-1 BCRs of the Reference Projects



¹³⁴ As previously identified in Section 5.3.1, CRC has confirmed their commitment to paying for the HP allocation from the first-year water is available from a new regional dam, with their preference for trading this water to agricultural users until it is required.



CONCLUSIONS

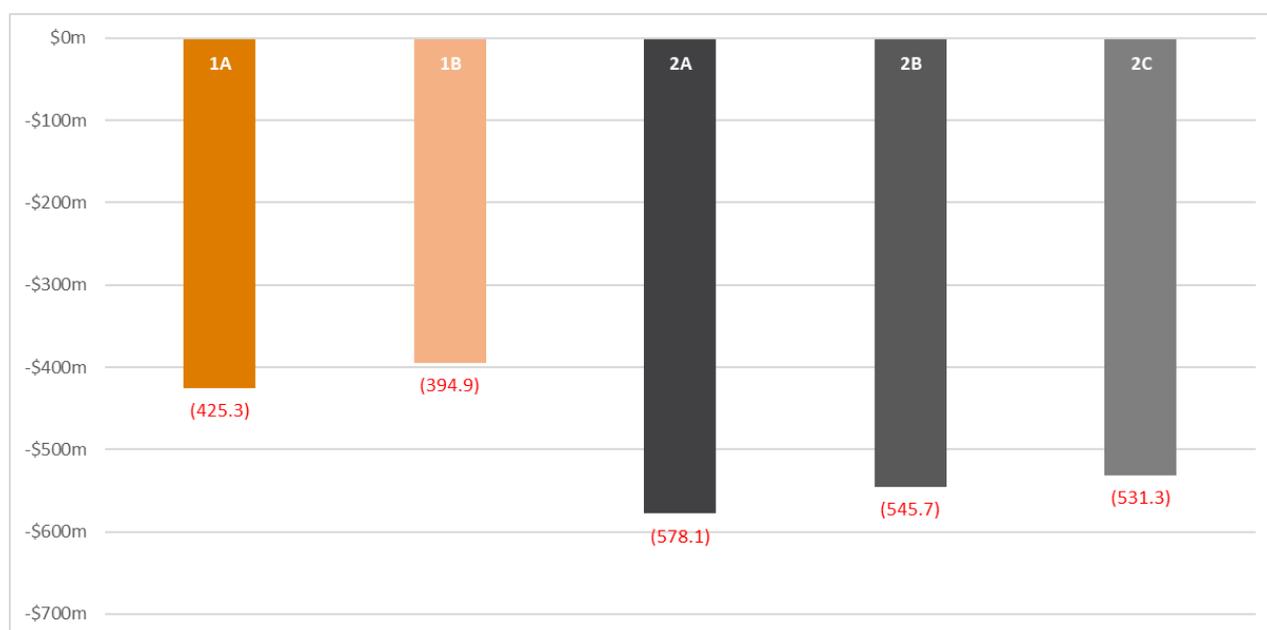
Under the central case scenario, it is reasonable anticipated that less than 10 cents of benefits will be accrued for every dollar spent on a Nullinga Dam. The modelling suggests that Reference Project 1B delivers the least worst economic result (marginally), though even this Reference Project, with all the known uncertainties, has a less than 1 per cent chance of achieving a BCR of 0.39 or higher.

The financial analysis found that all Reference Projects have a negative FNPV result in under the central case scenario, due to:

- the very large capital costs associated, relative to the dams' yields, for the small and large dam options
- the long time period before first water (and revenues) commences.

It was further noted that the standalone Reference Projects all perform worse than conjunctive scheme alternatives. Figure 20-2 summarises the P90 FNPVs over the evaluation period.

Figure 20-2 FNPV Summary of P90 Financial Analysis of the Reference Projects



As previously mentioned, the adopted central case pricing approach aligns closely with stated willingness and capacity of the customers to pay for the known agricultural outputs. This results in a small present value of revenues when compared to present value of costs.



The funding gap varies across the Reference Projects. If customers only contributed their nominated willingness to pay, the total funding gap across the Reference Projects is between \$0.8 billion and \$1.2 billion in nominal terms, as presented in Table 20-1.

Table 20-1 Project cashflows and net funding gap (Nominal \$M)

ESTIMATE	REFERENCE PROJECT, NOMINAL \$M				
	1A Standalone 58,000 ML/a	1B Conjunctive 58,000 ML/a	2A Standalone 74,000 ML/a	2B Part. Conjunctive 74,000 ML/a	2C Full. Conjunctive 74,000 ML/a
Project Cashflows					
Revenues	462.4	361.5	588.1	468.2	456.2
Costs	1,319.5	1,124.0	1,801.3	1,574.1	1,523.6
Net funding gap	(857.1)	(762.5)	(1,213.2)	(1,105.9)	(1,067.4)

While the central case demand scenario is currently considered the most likely outcome, it is acknowledged that until commercial contracts are signed, demand risk remains with the project sponsor/s, and the net funding gap may be greater or less than presented above. It is further acknowledged that the costs are based on a Class 3 cost estimate¹³⁵, and is subject to change if any of the Reference Projects are further developed.

20.3 Key findings

In addition to the key findings from the economic and financial appraisal, Table 20-2 provides a summary of key findings from the assessment of demand, options considered, the Reference Projects and the analytical findings.

Table 20-2 Summary of DBC findings

Area	Key finding
Demand	<ol style="list-style-type: none"> 1) There is no immediate need for additional urban water supply for Cairns, as CRC has strategies to meet supply requirements over the next 40 years 2) There is an opportunity to support expanded agricultural activities in the MDWSS through access to additional allocations, at a stated price of \$2,000 to \$3,000 per ML 3) There is little capacity for customers to pay more than the stated price of \$2,000 to 3,000 per ML where sugarcane is the predominant crop type (as it currently is for the NDMIP central case demand)

¹³⁵ AACE Cost Estimate Classification System (2016)



Area	Key finding
Considered options	4) Based on an assessment of the identified non-infrastructure options, with the adoption principle of exploring and converting MP to HP where there are customers able and willing to pay, it is acknowledged that as part of ongoing water plan review activities, <ol style="list-style-type: none"> a. DNRME should consider changing the water year to three months later than current stated in the water plan b. Sunwater should continue to strengthen water ordering processes and consider potential opportunities for continuous sharing arrangements 5) The remaining unfunded modernisation works identified in the PBC, and outside the current MDWSS Efficiency Improvement Project, will not result in a positive socio-economic return on investment 6) Two proposed Nullinga Dam options are the identified Reference Projects for the DBC, along with sub-options that consider both standalone and conjunctive scheme approaches.
Reference Project	7) Reference Project 1 would cater for 58,000 ML/a 8) Reference Project 2 would cater for 74,000 ML/a
Economic Analysis	9) None of the Reference Projects considered will result in a positive socioeconomic return. With no BCR greater than 0.12, the cost of each Reference Project exceeds the expected benefits. 10) The least worst Nullinga Dam option (Reference Project 1B) has less than 1 per cent chance of achieving a BCR of 0.39 or higher, based on applied probabilities of all considered cost and benefit variables
Financial Analysis	11) Any full cost recovery pricing model, which would align with current Queensland and Commonwealth Government water pricing policies, are commercially unviable, with a cost recovery approach resulting in: <ol style="list-style-type: none"> a. customers paying \$15,900 per ML for MP (and MP equivalent) water allocations b. an upfront payment of between 4 and 9 times higher than customers willingness and capacity to pay for the majority of the known crop types 12) Adoption of the stated price of \$2,000 for MP and \$3,000 for HP, and recovery of O&M costs only through ongoing charges, for the central case demand scenario, will result in all Reference Projects return a negative FNPV 13) All Reference Projects would result in a funding gap equal to 90% (or greater) of upfront capital costs. This funding requirement would need to be met to support a water price of \$2,000 to \$3,000 per ML.

20.4 Summary of Conclusions

Based on the findings summarised in Section 20.3, the following conclusions can be made:

- there is an opportunity to support expanded agricultural production in the Study Area, but only at a price that is substantially lower than the actual cost per ML of delivering additional water under any of the considered Reference Projects
- Cairns water supply needs are not urgent, with CRC having adopted a program of supply augmentations and demand management initiatives which will meet address water needs over the next 40 years
- all considered Nullinga Dam solutions would result in poor economic returns and poor financial outcomes.