CHAPTER 17

AFFORDABILITY ANALYSIS

Nullinga Dam and Other Options Preliminary Business Case

CONTENTS

TABLES

17 AFFORDABILITY

CHAPTER SUMMARY AND CONCLUSIONS

- This chapter outlines affordability considerations for shortlisted Options 2 to 4.
- The affordability assessment is limited by the assumptions and uncertainties that underpin the estimated costs and projected revenue, in particular, forecast demand for new water allocations.

Option 2: Improve MDWSS rules and operation

- As a reform option, Option 2 costs are comprised of operational costs of government wages and consultancy costs, with no capital expenditure.
- The relative affordability of Option 2 is considered high, subject to the budgetary and resourcing constraints of DNRM and SunWater.

Option 3: Modernise MDWSS and convert losses

- Option 3 costs comprise capital costs and operational costs.
- The capital costs of the modernisation works, volume of new water allocations available from conversion of losses, and sale price of new water allocations is critical to the affordability of Option 3.
- The relative affordability of Option 3 is considered medium to high, subject to further detailed assessment.
- Further detailed engineering, hydrological and costing analysis is required to better understand affordability considerations and the portion of capital costs able to be recovered from customers.
- Operational expenditure is generally funded by customers via annual charges, but further detailed assessment will assist to understand affordability considerations.

Option 4: Nullinga Dam for agricultural use

- Option 4 costs comprise capital costs and operational costs.
- The capital cost of the dam, volume of new water allocations available and the sale price of new water allocations is critical to the affordability of Option 4.
- The relative affordability of Option 4 is considered low to medium, and is subject to further detailed assessment.
- Affordability considerations and the portion of capital costs able to be recovered by customers will depend on a variety of factors, including the dam yield being revised to match the credible demand profile, and revised capital expenditure and operational expenditure.
- Operational expenditure is expected to be fully funded by customers via annual charges, but further detailed analysis will assist to understand affordability considerations.

17.1 Purpose

This chapter outlines affordability considerations for each shortlisted option.

17.2 Method

The assessment of affordability is based on a comparison of the estimated capital expenditure and price of new water allocations (revenue) associated with each option.

This assessment provides a partial indicator of affordability and is limited by the assumptions and uncertainties that underpin the estimated costs and revenue. The shortfall presented is based on a straight recovery of capital costs from customers only. Movements in the forecast demand for new water allocations will have implications for estimates of the capital costs shortfall. Further details of the estimated costs and revenues for the shortlisted options are provided in Chapter 16.

17.3 Option 2: Improve MDWSS Rules and Operation

Option 2 involves reform of MDWSS water instruments to increase the performance of the scheme and reduce current non-physical constraints. No new water allocations are created.

Costs consist of operational costs of government wages and consultancy costs of $1 million over two years to implement reform measures. Option 2 involves no capital expenditure.

The affordability to the State of Option 2 is considered high, subject to the budgetary and resourcing constraints of the respective government agencies.

17.4 Option 3: Modernise MDWSS and Convert Losses

17.4.1 Summary of Estimated Costs

Option 3 involves infrastructure improvements to the MDWSS and the conversion of current loss allocations to new medium priority water allocations for sale to customers. Table 1 shows the low, central and high costs for Option 3 and assumed yield from the conversion of losses. Further information on these costs is provided in Chapter 16.

Table 1 Option 3—Estimated Capital and Ongoing Costs and Assumed Yield

SCENARIO	CAPITAL COSTS ($2017M)	ONGOING COSTS ($2017M PER ANNUM)	ASSUMED YIELD (ML PER ANNUM)
Low	29.7	0.56	8,300
Central	39.7	0.65	12,900
High	50.8	0.75	15,000

17.4.2 Critical Variables

The volume of losses able to be converted and the costs of the modernisation works are critical components to determining affordability. The potential yield from Option 3 is considered uncertain due to the preliminary nature of works undertaken for this option at this time. For example, at the low end it may be possible for the works to permanently reduce 20 to 75 per cent of actual losses within the particular areas of the MDWSS where the works are conducted, or at the high end 50 to 85 per cent.

Further hydrological and engineering assessments are required in to confirm the amount of loss savings that may be able to be made from modernisation works, and the capital costs of the works to achieve those

savings. Such a process would ensure that most cost-effective works for acceptable risk are pursued to enable the maximum loss savings.

17.4.3 Estimated Revenue and Shortfall

17.4.3.1 Estimated Capital Costs

Table 2 shows the cost per ML of new medium priority water allocations with full customer funding of capital expenditure for the low, central and high capital expenditure scenarios.

Table 2 Option 3—Estimated Price for New Water Allocations

CAPEX SCENARIO ($2017)	LOW	CENTRAL	HIGH
Capex ($2017)	29,709,429	39,360,771	50,841,869
Total new medium priority water allocations (ML)	8,300	12,900	15,000
Medium priority water allocation price ($ per ML)	3,579	3,058	3,389

Table 3 shows the breakdown of potential customer funding of capital expenditure with the adopted benchmark of $2,500 payable for new water allocations (see Chapter 16 for further details) and the shortfall.

The low capex scenario should be treated with caution due to the preliminary nature of work undertaken on Option 3. The central case and high capex scenario is considered more likely based on the work undertaken to date.

Table 3 Option 3—Breakdown of Estimated Capital Expenditure and Customer Revenue

SCENARIO ($2017)	LOW	CENTRAL	HIGH
Capex ($)	29,709,429	39,360,771	50,841,869
Total new medium priority water allocations (ML)	8,300	12,900	15,000
One-off price paid for medium priority water allocations by customers ($ per ML)	2,500	2,500	2,500
Total customer contributions ($)	20,747,500	32,176,250	37,497,500
Portion of capex funded by customers (%)	70	82	74
Capex funding shortfall (%)	30	18	26
Capex funding shortfall ($)	8,958,429	7,181,021	13,340,869

17.4.3.2 Estimated Operational Costs

It is assumed operation and maintenance costs will be funded by revenue from water customers through annual charges.

17.5 Option 4: Nullinga Dam for Agricultural Use

17.5.1 Summary of Estimated Costs

Option 4 involves the construction and operation of Nullinga Dam and the sale of new water allocations to customers. Table 4 shows the low, central and high costs for Option 4. Further information on these costs is provided in Chapter 16.

Table 4 Option 4—Estimated Capital and Ongoing Costs and Assumed Yield

SCENARIO	CAPITAL COSTS ($2017M)	ONGOING COSTS ($2017M PER ANNUM)	ASSUMED YIELD (ML PER ANNUM)
Low	227	2.8	55,400
Central	323	3.6	55,400
High	397	5.4	55,400

17.5.2 Estimated Revenue and Shortfall

17.5.2.1 Estimated Capital Costs

Table 5 shows the cost per ML of new high priority and medium priority water allocations with full customer funding for the low, central and high capital expenditure scenarios.

Table 5 Option 4—Estimated Price for New Water Allocations

CAPEX SCENARIO ($2017)	LOW	CENTRAL	HIGH
Capex ($2017M)	227	323	397
High priority water allocation price ($ per ML) – 35 ML	6,346	9,016	11,089
Medium priority water allocation price ($ per ML) – 55,400 ML	4,309	6,123	7,531

Table 6 shows the breakdown of potential customer funding of capital expenditure with the adopted benchmark of $2,500 payable for new water allocations (see Chapter 16 for further details) and the shortfall.

Table 6 Option 4—Breakdown of Estimated Capital Expenditure and Customer Revenue

SCENARIO ($2017)	LOW	CENTRAL	HIGH
Capex ($M)	227	232	397
Total new water allocations (ML)	55,400	55,400	55,400
One-off price paid for medium priority water allocations by customers ($ per ML)	2,500	2,500	2,500
Total customer contributions ($M)	132	132	132
Portion of capex funded by customers (%)	58	41	33
Capex funding shortfall (%)	42	59	67
Capex funding shortfall ($M)	95	191	265

17.5.2.2 Estimated Operational Costs

It is assumed operation and maintenance costs will be funded by revenue from water customers through annual charges.

17.6 Conclusion

The following conclusions are drawn from the above analysis.

17.6.1.1 Option 2

- As a reform option, Option 2 costs are comprised of operational costs of government wages and consultancy costs, with no capital expenditure.

- The relative affordability of Option 2 is considered high, subject to the budgetary and resourcing constraints of DNRM and SunWater.

17.6.1.2 Option 3

- Option 3 costs comprise capital costs and operational costs.
- The capital costs of the modernisation works, volume of new water allocations available from the conversion of losses, and sale price of new water allocations is critical to the affordability of Option 3.
- The relative affordability of Option 3 is considered medium to high, subject to further detailed assessment.
- Further detailed engineering, hydrological and costing analysis is required to better understand affordability considerations and the portion of capital costs able to be recovered from customers.
- Operational expenditure is generally funded by customers via annual charges, but further detailed assessment will assist to understand affordability considerations.

17.6.1.3 Option 4

- Option 4 costs comprise capital costs and operational costs.
- The capital cost of the dam, volume of new water allocations available and the sale price of new water allocations is critical to the affordability of Option 4.
- The relative affordability of this Option 4 is considered low to medium, and is subject to further detailed assessment.
- Affordability considerations and the portion of capital costs able to be recovered by customers will depend on a variety of factors, including the dam yield being revised to match the credible demand profile, and revised capital expenditure and operational expenditure.
- Operational expenditure is expected to be fully funded by customers via annual charges, but further detailed analysis will assist to understand affordability considerations.