# 18 FINANCIAL AND COMMERCIAL ANALYSIS

CHAPTER SUMMARY AND CONCLUSIONS:

In summary, the financial and commercial analysis found:

- All full cost recovery models, while consistent with government policy regarding pricing and cost recovery approaches for new water infrastructure, would result in commercially untenable prices for both MP and HP customers
- For the central case scenario, it has therefore been assumed that water pricing is based on:
  - upfront payments of $2,000 for MP and $3,000 for HP customers
  - ongoing charges set to recover O&M costs only.
- All Reference Projects return a negative FNPV.
- The large dam options (Reference Project 2A, 2B and 2C) produce larger negative FNPVs than the smaller dam options (Reference Projects 1A and 1B). Large capital costs are the main driver of this negative FNPV result.
- Operating conjunctive schemes (Reference Projects 1B, 2B and 2C) marginally improves the FNPV by removing the cost of the additional pipes, including CRC and A3 Walsh River pipelines, under Reference Projects 1A and 2A. However, there are no identified yield/revenue benefits from operating schemes conjunctively.
- Evaluation of the Reference Projects over 50 years did not produce materially different results, including in terms of the key findings outlined above.
- Sensitivity analysis was conducted on key project drivers, with capital costs a major factor. Sensitivities conducted on revenues are shown to have measurable impacts on FNPV, however the capacity for upside benefits may be less realistic (e.g. more water made available for recurring sales or increases in pricing without attendant increases in costs or restraint recommended by the pricing regulator) than downside revenue risks.

The below table summarises the risk-adjusted financial impact of the Reference Projects, in real, nominal and NPV terms (excluding terminal values).

| 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 |
| **Real $M** | | | | | |
| Revenue | 247.1 | 198.1 | 315.2 | 256.9 | 251.0 |
| Costs | 879.3 | 770.8 | 1,220.0 | 1,094.6 | 1,062.7 |
| **Net Financial Impact** | (632.2) | (572.8) | (904.7) | (837.8) | (811.7) |
| **Nominal $M** | | | | | |
| **Net Financial Impact** | (857.1) | (762.5) | (1,213.2) | (1,105.9) | (1,067.4) |
| **NPVs $M** | | | | | |
| **Net Financial Impact** | (425.3) | (394.9) | (578.1) | (545.7) | (531.3) |

## 18.1 Purpose

The purpose of this Chapter is to present the findings from the financial analysis completed for the NDMIP DBC, including an assessment of:

- inputs and assumptions for the financial modelling of the Reference Projects
- whole of life financial analysis based on the estimated risk-adjusted net financial cost/benefit to the State of delivering any of the Reference Projects using the State's preferred delivery model
- sensitivity analysis of the estimated risk-adjusted net financial cost/benefit
- scenario analysis of the risk-adjusted net financial cost/benefit of delivering the identified Reference Projects.

Additional work conducted in relation to the financial and commercial analysis included an analysis of the affordability of the Reference Project/s on a holistic and whole-of-life basis, which involves assessing both capital and recurrent budget requirement to understand the anticipated funding gap and sources of funds. Chapter 19, Affordability addresses this in greater detail.

## 18.2 Financial model input and assumptions

### 18.2.1 Reference Project assumptions

A financial model was developed to determine the risk-adjusted net financial cost of delivering the Reference Project using a Competitive Alliance delivery model (refer Section 13.7). Key inputs and assumptions for the central case scenario include:

- project timings (refer Section 18.2.2)
- raw capital cost estimates (refer Section 18.2.3)
- operations and maintenance cost estimates (refer Section 18.2.4)
- implementation cost estimates (refer Section 18.2.5)
- P90 cost contingency estimates for project risk (refer Section 18.2.6)
- price escalation – costs (refer Section 18.2.7)
- water demand estimates (refer Section 18.2.8)
- water pricing (refer Section 18.2.9)
- project revenues and risks (refer Section 18.2.10)
- discount rate (refer Section 18.2.11).

All references to real dollars are as of FY18/19, the nominated Base Year. Further, all NPV and NPC figures are discounted to the start of FY20 (1 July 2019). In cases where revenues and costs are included in the analysis, NPVs are presented. Conversely, when only costs are included (e.g. when calculating the traditional delivery cost using the proposed Competitive Alliance delivery model), NPC values are presented.

### 18.2.2 Timing assumptions

The design, construction and operations periods adopted for the Reference Projects are set out In Table 18-1 and Table 18-2. The evaluation period is assumed to commence from 1 July 2019 and includes the planning and design period and 30 years of operations.

Table 18-1 Project Timings

| | START DATE | END DATE | LENGTH |
|---|---|---|---|
| REFERENCE PROJECT 1 | | | |
| Planning and design period | Jul 2020 | Jul 2027 | 7 years |
| Construction period<br>*Overlapping construction terms for dam and pipeline construction* | Jun 2027 | Jun 2030 | 3 years |
| Operations period<br>*Includes 5-year ramp-up period for dam to fill to operational capacity.* | Jul 2030 | Jun 2060 | 30 years |
| Water sales | Jul 2034 | Jun 2060 | 26 years |
| REFERENCE PROJECT 2 | | | |
| Planning and design period | Jul 2020 | Jun 2027 | 6 Years, 11 Months |
| Construction period<br>*Overlapping construction terms for dam and pipeline construction* | Jun 2027 | Dec 2030 | 3 Years, 6 Months |
| Operations period<br>Includes 5-year ramp-up period for dam to fill to operational capacity. | Jan 2031 | Dec 2060 | 30 years |
| Water Sales | Jan 2035 | Dec 2060 | 26 years |

### 18.2.3 Raw capital cost estimates

Raw capital cost estimates (excluding risk contingency and escalation) for each of the Reference Projects are summarised in Table 18-2 in undiscounted terms. These cost estimates have been prepared by the proponent based on information provided by the technical and cost advisors.

Table 18-2 Raw capital costs, excluding contingency (Real $M)

| ESTIMATE | REFERENCE PROJECT $M | | | | |
|---|---|---|---|---|---|
| | 1A<br>Standalone<br>58,000 ML/a | 1B<br>Conjunctive<br>58,000 ML/a | 2A<br>Standalone<br>74,000 ML/a | 2B<br>Part. Conjunctive<br>74,000 ML/a | 2C<br>Full. Conjunctive<br>74,000 ML/a |
| Raw Capital Cost | 522.208 | 500.593 | 748.269 | 724.766 | 711.783 |

Cost items included in the capital cost estimates include:

- preliminaries and overheads
- clearing and earthworks
- dam structure and construction
- drainage structures and culverts
- pipes and pump equipment
- reinstatement and finishing works.

Preliminaries and overheads make up over 40 per cent of the capital costs, with dam structure and construction making up a further 40 per cent.

### 18.2.4 Operations and maintenance cost estimates

Estimated annual operations and maintenance (O&M) costs in real terms are summarised in Table 18-3.

Table 18-3 Annual Average O&M Costs (Real $M)

| ESTIMATE | REFERENCE PROJECT $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 |
| Annual O&M | 3.496 | 1.609 | 4.276 | 2.032 | 1.808 |

For financial modelling purposes, annual cashflow profiles for O&M costs exclude amounts for periodic maintenance and refurbishment/upgrades. These costs have been modelled as capital for pricing purposes, consistent with the Sunwater modelling of these types of costs. Refurbishment and upgrade costs are summarised below.

Table 18-4 Refurbishment and upgrade costs (Real $M)

| ESTIMATE | REFERENCE PROJECT $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 |
| Refurbishment costs | 18.7 | 8.9 | 26.0 | 12.1 | 10.4 |

### 18.2.5 Implementation cost estimates

Implementation cost estimates are summarised in Table 18-5.

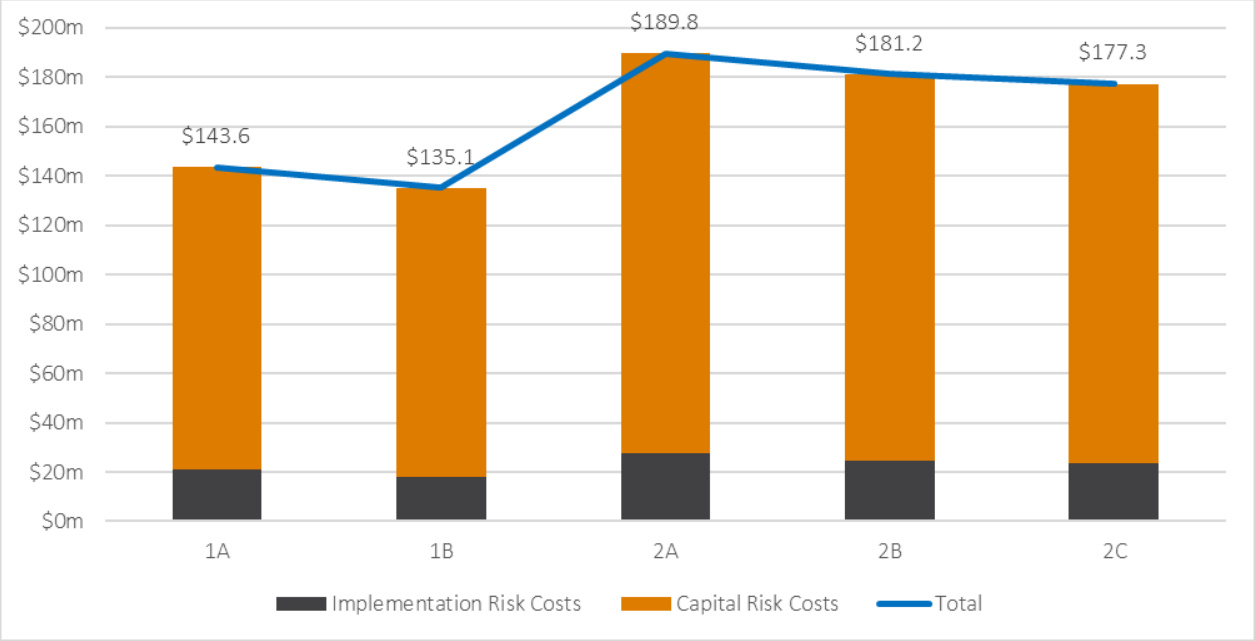
Table 18-5 Implementation Cost Estimates (Real $M)

| ESTIMATE | REFERENCE PROJECT $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 |
| Land and cultural heritage | 0.200 | 0.200 | 0.200 | 0.200 | 0.200 |
| Approvals and environment (e.g. offsets) | 17.547 | 15.997 | 21.169 | 19.450 | 18.851 |
| Property impacts | 17.599 | 16.920 | 32.638 | 32.440 | 32.331 |
| Project development | 15.199 | 15.199 | 21.655 | 21.655 | 21.655 |
| Design | 24.157 | 21.718 | 28.564 | 25.759 | 24.260 |
| Construction attendance | 15.288 | 7.971 | 25.693 | 17.278 | 12.779 |
| Total | 89.990 | 78.005 | 129.920 | 116.832 | 110.076 |

### 18.2.6 P90 Cost Contingency Estimates for Project Risk

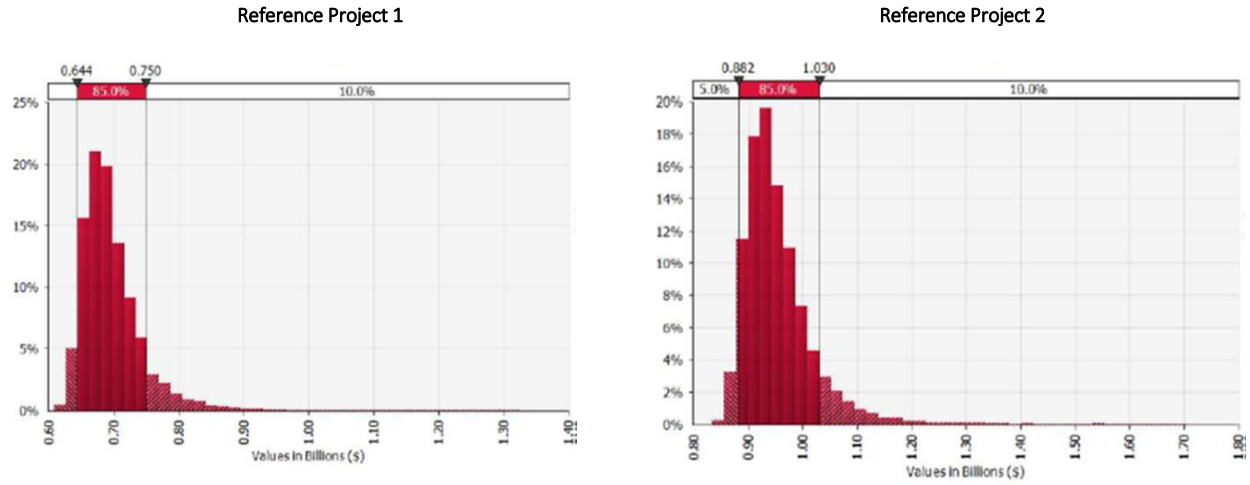
Cost contingency estimates for project risk (at P90 confidence levels) for both capital and implementation costs were calculated for all Reference Projects. These risk estimates are shown in Figure 18-1.

Figure 18-1 P90 Cost Contingency Estimates




P90 estimates were derived probabilistically using Monte Carlo simulations. Monte Carlo output summaries for construction costs for both the small Nullinga Dam (545m AHD) and large Nullinga Dam (556m AHD) are shown in Figure 18-2. Probability distributions used for the Monte Carlo modelling included Lognormal, Bernoulli and Poisson distributions.

Figure 18-2 P90 Monte Carlo Output, Construction Costs




The following costs lines were included in the Monte Carlo simulation used to develop the probabilistic cost estimates:

- suitable quarry location available on site adjacent or within a close vicinity to the dam wall
- sand, gravel and clay supply
- delays in obtaining planning and/or environmental approvals
- stakeholder management issues

- diversion and care of River
- foundation excavation and preparation
- construction of structures.

### 18.2.7 Price escalation - Costs

Using information provided by the Cost Advisors, the following nominal and real escalation rates for the implementation (i.e. preconstruction), construction, and operational phases were used in the financial modelling.

Table 18-6 Price Escalation (Costs) – Nominal and Real Rates

| PROJECT PHASE | NOMINAL (P.A.) | RBA INFLATION ESTIMATE | REAL (P.A.) |
|---|---|---|---|
| Implementation | 2.35% | 2.00% | 0.50% |
| Capital | 6.95% | 2.50% | 4.45% |
| O&M | 2.50% | 2.50% | 0.00% |

Using project phases was considered the best approach for inflation estimates to reflect the long implementation lead times before the construction and operational phases.

For inflation estimates to adjust nominal rates to real rates, the RBA has indicated[130]

- short-term inflation expectations are around 2 per cent
- longer-run inflation expectations (survey-based) measures remain around 2.50 per cent.

Given the long lead times from the implementation phase to the construction phase, capital costs from the base year have been indexed using 2.35 per cent annually until the construction period, where the cost advisor's estimate of 6.95 percent has been applied[131]. Post the construction term the escalation rate reverts to RBA's longer-run inflation expectations of 2.5 per cent.

While operating phase estimate of real escalation is zero over the evaluation period this impact is dealt with separately in the pricing arrangements for deriving revenue estimates.

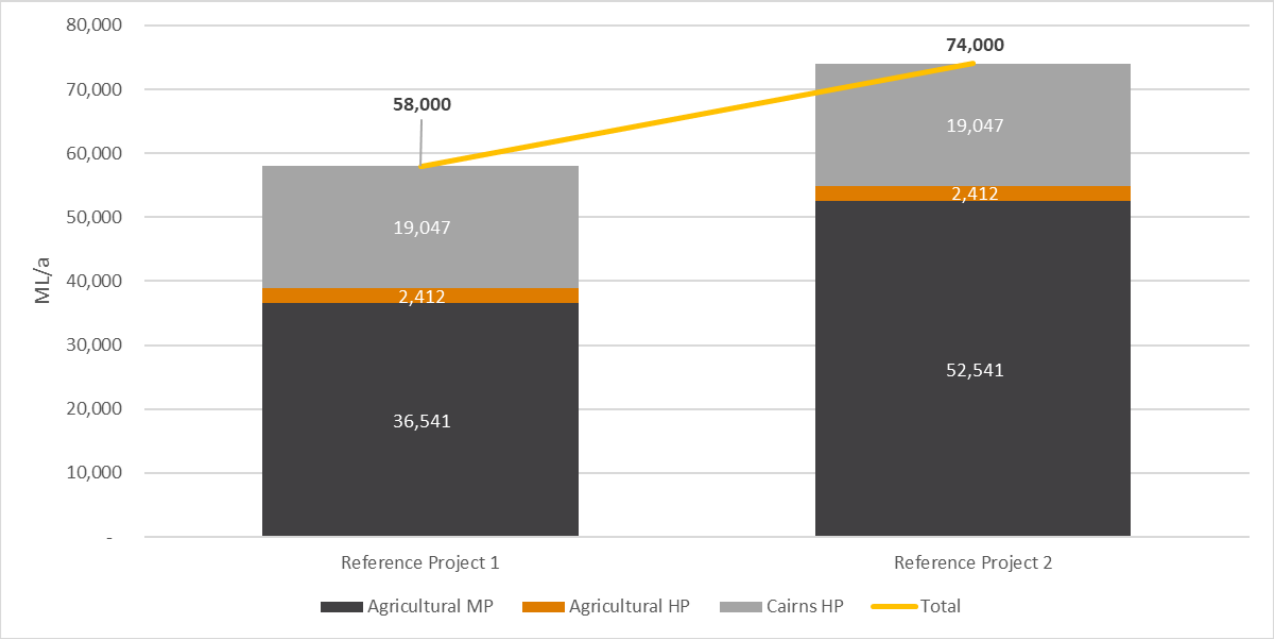
This is explained in more detail in Section 18.2.9.

[130] November 2018 Statement of Monetary Policy, RBA
[131] Bellwether (Feb 2019)

### 18.2.8 Water demand estimates

Central case estimates for water demand (with supply capacity) for the Reference Project/s are summarised in Figure 18-3.

Figure 18-3 Central Case – Demand Estimates[132]




Where there is combination of HP and MP water allocations, the following prioritisation was used to apportion demand estimates between customer groups:

- first allocation given to CRC (on a HP basis)[133]
- second allocations then made to Agricultural customers (on a HP basis)
- remaining allocations then made to other Agricultural customers (on a MP basis).

### 18.2.9 Water pricing

The National Water Initiative (refer Section 6.2.2) expresses a preference for rural water prices to target and move towards upper bound pricing (i.e. full cost recovery of supply costs, including capital costs).

Currently, most existing Queensland irrigation schemes:

- target lower bound pricing or, in some cases, are already at price levels above lower bound, but beneath Upper Bound price levels
- subject to prices set by the Queensland Government based on analysis and advice of its economic regulator QCA.

Targeting a full cost recovery pricing regime, particularly for new rural water projects, is an issue because of the often-large capital costs associated with the infrastructure that provides bulk and/or distribution water supply services. This was certainly found to be the case for the considered Reference Projects for the NDMIP.

[132] HP water demand has been converted to its MP equivalent for this chart

[133] 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.

Section 18.2.9.1 outlines the pricing under full cost recovery models. Section 18.2.9.2 outlines the adopted pricing for the central case demand scenario, which is based on upfront payment of stated prices and recovery of O&M costs through ongoing charges.

### 18.2.9.1 Full cost recovery pricing

The modelling undertaken for an upper bound pricing approach is theoretical in nature only. No existing, or known customer, are willing or able to pay the water prices generated in under any considered 'full cost recovery scenario'. In effect, the adoption of a full cost recovery approach would result in the same FPNV's presented under a 'free water' scenario. Though under this approach, there would be no agricultural uses, as no customer would pay or receive allocations from the new dam and no economic benefits would be obtained by any of the Reference Projects.

Table 18-7 identifies the prices for HP and MP customers under a full cost recovery approach, where HP customers are responsible for up to 75 per cent of the capital costs for the small dam and 65 per cent for the larger dam.

Table 18-7 Estimated upfront water charges, HP and MP users under full cost recovery

| | UPFRONT CAPITAL CHARGE ($/ML) | |
|---|---|---|
| REFERENCE PROJECT | MP | HP |
| Reference Project 1A | 5,400 | 36,800 |
| Reference Project 1B | 5,100 | 46,000 |
| Reference Project 2A | 7,100 | 43,800 |
| Reference Project 2B | 6,800 | 42,800 |
| Reference Project 2C | 6,600 | 39,200 |

Under this approach, the HP water prices are extremely high, and are 10 to 13 times higher than current HP prices in the MDWSS.

An alternative approach is where 100 per cent of the costs are allocated to MP. Table 18-8 presents these prices, which indicates upfront payments of 4 to 7 times greater than the willingness or capacity of known customers to pay.

Table 18-8 Estimated Upfront Capital Charges, 100% MP users

| REFERENCE PROJECT | MP |
|---|---|
| Reference Project 1A | 13,600 |
| Reference Project 1B | 12,800 |
| Reference Project 2A | 14,400 |
| Reference Project 2B | 13,700 |
| Reference Project 2C | 13,400 |

### 18.2.9.2 Central case pricing

As identified above, under any full cost recovery model, the pricing would be commercially unviable for any of the known customers, being higher than both the willingness to pay, and then would be reasonable to pay, based on an assessment on the net margins for the known crop types.

For the central case demand, it has therefore been assumed that water pricing is based on:

- upfront payments of $2,000 for MP and $3,000 for HP customers
- ongoing charges to cover (largely) the O&M costs associated with the asset.

This analysis is presented for illustrative purposes only – i.e. to highlight the impact on FNPV of different pricing approaches – rather than to suggest any particular pricing approach for these Reference Projects and should be read in the context of the practicalities of upper bound pricing discussed in Chapter 19.

## 18.2.10 Project Revenues

Project revenues have been calculated using demand estimates (refer Section 18.2.8) and the assumed pricing approach for the central case scenario (refer Section 18.2.9.2). In addition to these variables, project revenues are impacted by:

- timing of the commencement of water sales (assumed to be in the fifth year after the end of construction)
- the proportion of water allocations used each year (assumed to be 80 percent).

Changes in revenue assumptions are included in the sensitivity analysis of FNVP results. While a P50 cost scenario has been considered (refer Section 18.5), as the pricing is based on willingness and capacity to pay principles, not cost recovery principals, no P50 revenue assessment has been undertaken. Table 18-9 summarises the forecast revenue under the central case, in real dollars.

Table 18-9 Reference Project revenues (Real $M)

| ESTIMATE | REFERENCE PROJECT $M | | | | |
|---|---|---|---|---|---|
| | 1A<br>Standalone<br>58,000 ML/a | 1B<br>Conjunctive<br>58,000 ML/a | 2A<br>Standalone<br>74,000 ML/a | 2B<br>Part. Conjunctive<br>74,000 ML/a | 2C<br>Full. Conjunctive<br>74,000 ML/a |
| Upfront | 155.0 | 155.0 | 203.0 | 203.0 | 203.0 |
| Ongoing | 92.2 | 43.1 | 112.2 | 53.9 | 48.1 |
| **Total Revenue** | **247.1** | **198.1** | **315.2** | **256.9** | **251.0** |

## 18.2.11 Discount rates – financial analysis and regulatory pricing

For the FNPV analysis, Sunwater's pre-tax WACC was used evaluate the revenue and cost cashflows (also on a pre-tax basis). Table 18-10 provides a summary of the key parameters used in the WACC calculation.

Table 18-10 Key Parameters – Financial Evaluation WACC

| KEY PARAMETERS | VALUE |
|---|---|
| Debt to Equity Ratio | 50/50 |
| Risk Free Rate (20-day average of 10-year Commonwealth bond) | 2.715% |

| KEY PARAMETERS | VALUE |
|---|---|
| Credit margin over risk-free rate | 1.785% |
| Inflation | 2.50% |
| Asset Beta | 0.469 |
| Equity Beta | 0.797 |
| Cost of equity | 8.72% |
| Cost of debt | 4.50% |
| Pre-Tax, Nominal WACC | 8.48% |

For pricing, the WACC proposed by Sunwater in their submission to the QCA's Irrigation Price Review 2020-24 was used. While this WACC is subject to review by the QCA it has been developed with a methodology consistent with that agreed by the QCA in its 2017 decision on irrigation prices.

Table 18-11 Key Parameters – Regulatory Evaluation WACC

| KEY PARAMETERS | VALUE |
|---|---|
| Debt to Equity Ratio | 60/40 |
| Cost of debt | 4.67% |
| Cost of equity | 7.62% |
| Gamma | 41% |
| Pre-Tax, Nominal WACC | 6.50% |

The regulatory WACC is approximately 2 percentage points less than the financial WACC and, as a result, the financial analysis results in a negative FNPV even when prices are set at upper bound which are set to recover the full 'regulatory' cost of the Reference Project/s.

## 18.3 Whole of Life Financial Analysis

This section outlines the findings from the financial analysis for the central case scenario, and adoption of the pricing approach outlined in Section 18.2.9.2.

### 18.3.1 Real and Nominal Cashflows

Table 18-12 provides a breakdown of the real costs and revenues over the assessment period, excluding terminal values (refer Section 18.3.2).

Table 18-12 Reference Projects, Whole of Life Costs, Real P90

| ESTIMATE | REFERENCE PROJECT, REAL $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 |
| Upfront | 155.0 | 155.0 | 203.0 | 203.0 | 203.0 |
| Ongoing | 92.2 | 43.1 | 112.2 | 53.9 | 48.1 |
| **Total Revenue** | **247.1** | **198.1** | **315.2** | **256.9** | **251.0** |
| Capital Expenditure | 540.9 | 509.5 | 774.3 | 736.9 | 722.2 |
| Implementation Costs | 90.0 | 78.0 | 129.9 | 116.8 | 110.1 |
| O&M Costs | 104.9 | 48.3 | 125.9 | 59.7 | 53.1 |
| Total Planned Costs | 735.7 | 635.7 | 1,030.2 | 913.4 | 885.4 |
| Unplanned Risks | 113.4 | 105.0 | 157.9 | 149.3 | 145.3 |
| Program Risks | 30.1 | 30.1 | 31.9 | 31.9 | 31.9 |
| Total Risk Adjustments | 143.6 | 135.1 | 189.8 | 181.2 | 177.3 |
| **Total Costs** | **879.3** | **770.8** | **1,220.0** | **1,094.6** | **1,062.7** |
| **Net Financial Impacts** | | | | | |
| **Total (excl. WDV)** | (632.2) | (572.8) | (904.7) | (837.8) | (811.7) |

In real terms, the larger dam standalone solution (2A) would generate the highest overall revenue over the assessment period, of approximately $315.2m, though would still result in the largest negative financial impact overall, of approximately $904.7m, as a result of the large capital costs for this solution. Reference Project 1B would have the lowest negative financial impact, though it also has the lowest overall revenue.

In nominal terms, as see in Table 18-13, these result remains unchanged:

- Reference Project 2A has the worse financial impact, though the highest revenue,
- Reference Project 1B has the best financial impact, though the lowest revenue.

These findings being driven by the high capital costs associated with the large dam solutions, and that the smaller dam solution in a conjunctive scheme, would be the cheapest option to deliver.

Table 18-13 Reference Projects, Whole of Life Costs, Nominal P90

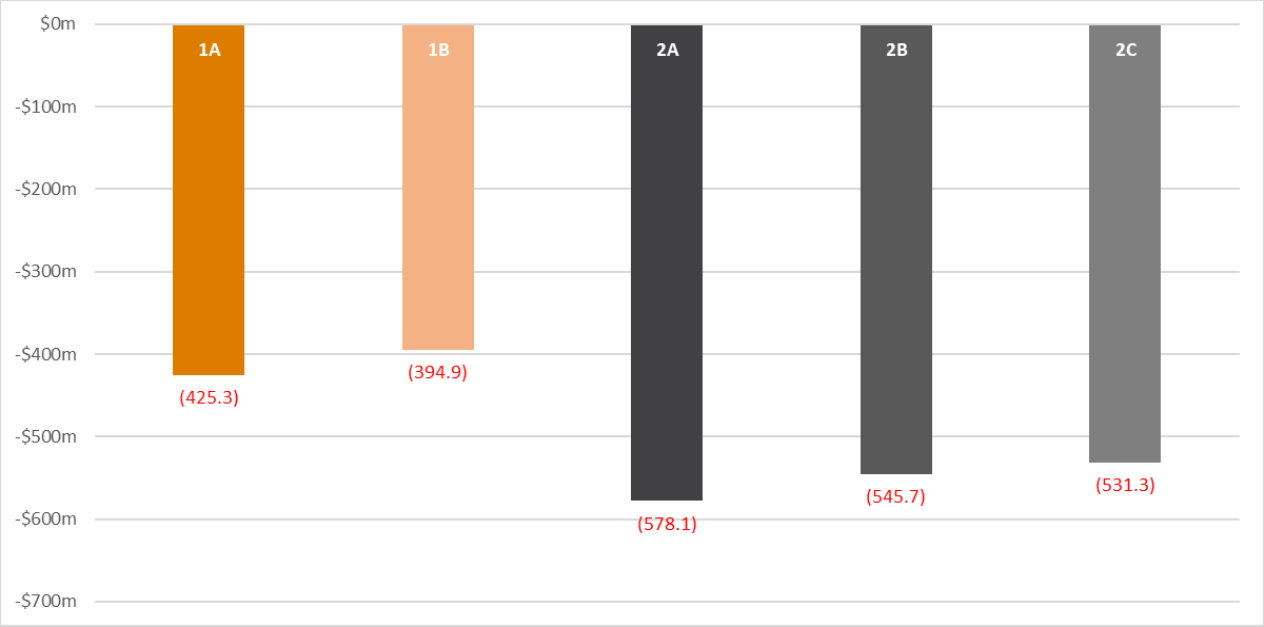
| ESTIMATE | REFERENCE PROJECT, NOMINAL $M | | | | |
|---|---|---|---|---|---|
| | 1A Standalone 58,000 ML/a | 1B Conjunctive 58,000 ML/a | 2A Standalone 74,000 ML/a | 2B Part. Conjunctive 74,000 ML/a | 2C Full. Conjunctive 74,000 ML/a |
| Upfront | 272.7 | 272.7 | 357.1 | 357.1 | 357.1 |
| Ongoing | 189.7 | 88.9 | 231.0 | 111.1 | 99.1 |
| **Total Revenue** | **462.4** | **361.5** | **588.1** | **468.2** | **456.2** |
| Capital Expenditure | 802.6 | 746.2 | 1,132.1 | 1,064.7 | 1,041.6 |
| Implementation Costs | 106.1 | 90.7 | 153.7 | 136.9 | 128.2 |
| O&M Costs | 207.5 | 96.1 | 250.2 | 119.3 | 106.2 |
| Total Planned Costs | 1,116.1 | 932.9 | 1,536.0 | 1,320.8 | 1,276.0 |
| Unplanned Risks | 160.7 | 148.4 | 220.7 | 208.6 | 203.0 |
| Program Risks | 42.7 | 42.6 | 44.6 | 44.6 | 44.6 |
| Total Risk Adjustments | 203.4 | 191.0 | 265.3 | 253.2 | 247.6 |
| **Total Costs** | **1,319.5** | **1,124.0** | **1,801.3** | **1,574.1** | **1,523.6** |
| **Net Financial Impacts** | | | | | |
| **Total (excl. WDV)** | **(857.1)** | **(762.5)** | **(1,213.2)** | **(1,105.9)** | **(1,067.4)** |

To properly compare the financial position of the Reference Projects the NPVs of the above cashflows need to be considered. These results are presented below.

### 18.3.2 FNPV Results

Figure 18-4 summarises the net financial impact (in FNPV terms using P90 costs) to the state of delivering the Reference Projects over a 30-year evaluation period.

Figure 18-4 FNPV Summary of P90 Financial Analysis of the Reference Projects



Reference Project 1B has the lowest negative FNPV of the considered solutions, at -$394.9m followed by Reference Project 1A at -$425.3m. All Reference Projects have a negative FNPV. This is due to the following factors:

- 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.

The standalone Reference Projects all perform worse that conjunctive scheme alternatives. This is due in large part to the cheaper capital costs involved in delivery augmented distribution infrastructure in which customers could be provide allocations from either Nullinga Dam and/or Tinaroo Falls Dam. The costs associated with distribution infrastructure under a standalone approach is consistently higher.

Table 18-14 presents the present values of the cashflows and the overall FPNV for the Reference Projects.

Table 18-14 Reference Projects, Whole of Life Costs, FNPV P90

| ESTIMATE | REFERENCE PROJECT, NPV $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 |
| Upfront | 74.1 | 74.1 | 97.1 | 97.1 | 97.1 |
| Ongoing | 19.9 | 9.3 | 24.3 | 11.6 | 10.4 |
| **Total Revenue** | **94.1** | **83.4** | **121.4** | **108.7** | **107.5** |
| Capital Expenditure | 340.1 | 324.6 | 464.4 | 447.7 | 439.5 |
| Implementation Costs | 60.3 | 53.9 | 86.4 | 79.4 | 75.8 |
| O&M Costs | 25.9 | 11.7 | 30.6 | 14.3 | 12.7 |
| Total Planned Costs | 426.3 | 390.3 | 581.4 | 541.4 | 528.0 |
| Unplanned Risks | 73.6 | 68.4 | 98.2 | 93.1 | 90.8 |
| Program Risks | 19.5 | 19.6 | 19.9 | 19.9 | 19.9 |
| Total Risk Adjustments | 93.1 | 88.0 | 118.0 | 113.0 | 110.7 |
| **Total Costs** | **519.4** | **478.3** | **699.5** | **654.4** | **638.7** |
| **Net Financial Impacts** | | | | | |
| **Total (excl. WDV)** | **(425.3)** | **(394.9)** | **(578.1)** | **(545.7)** | **(531.3)** |

Where terminal value is taken into consideration, and utilising the written-down value of the asset, as shown in Table 18-15, the overall ranking of the Reference Projects, in financial terms, remains unchanged.

Table 18-15 Reference Projects, P90 FNPVs with and without terminal values

| ESTIMATE | REFERENCE PROJECT, NPV $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 |
| **Net Financial Impacts** | | | | | |
| **Total (excl. WDV)** | (425.3) | (394.9) | (578.1) | (545.7) | (531.3) |
| Terminal Value (WDV) | 28.3 | 26.8 | 38.0 | 36.2 | 35.6 |
| **Total (incl. WDV)** | (397.0) | (368.1) | (540.1) | (509.5) | (495.6) |

## 18.4 Sensitivity Analysis

Sensitivity analysis have been performed on the central case assumptions and key data inputs to provide further insight on the potential impact of movements in key variables on the FNPV results of the Reference Projects. Table 18-16 summarises the assumptions that have been adjusted for the purposes of completing the sensitivity analysis on the FNPV of the Reference Project.

Table 18-16 Reference Projects Sensitivities

| ASSUMPTION/KEY DATA INPUTS | DESCRIPTION |
|---|---|
| Water demand/pricing | Percentage variations ± 10/20% |
| Capital expenditure | Percentage variations ± 10/20% |
| Implementation expenditure | Percentage variations ± 10/20% |
| Operations and maintenance costs | Percentage variations ± 10/20% |
| Escalation | Absolute variations ± 1/2% |

A summary of the outputs of the sensitivity analysis on the NPV of the central case results for the Reference Project 1 (A and B) and Reference Project 2 (A, B and C) is shown in Figure 18-5and Figure 18-6 respectively. This analysis is based on the central case scenarios, with upfront payment of $2,000 and $3,000 per ML for MP and HP and ongoing charges set to recover only O&M costs only.

This sensitivity analysis shows the Reference Projects are most sensitive to changes in capital expenditure, discount rates and escalation rates utilised for construction costs during the construction period.

Figure 18-5 Sensitivity analysis for Reference Project 1A and 1B

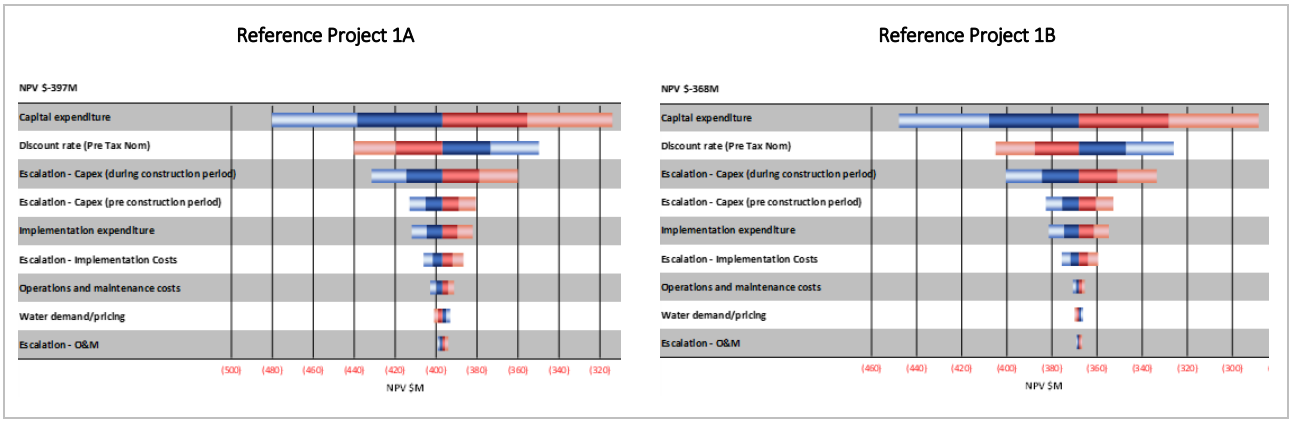
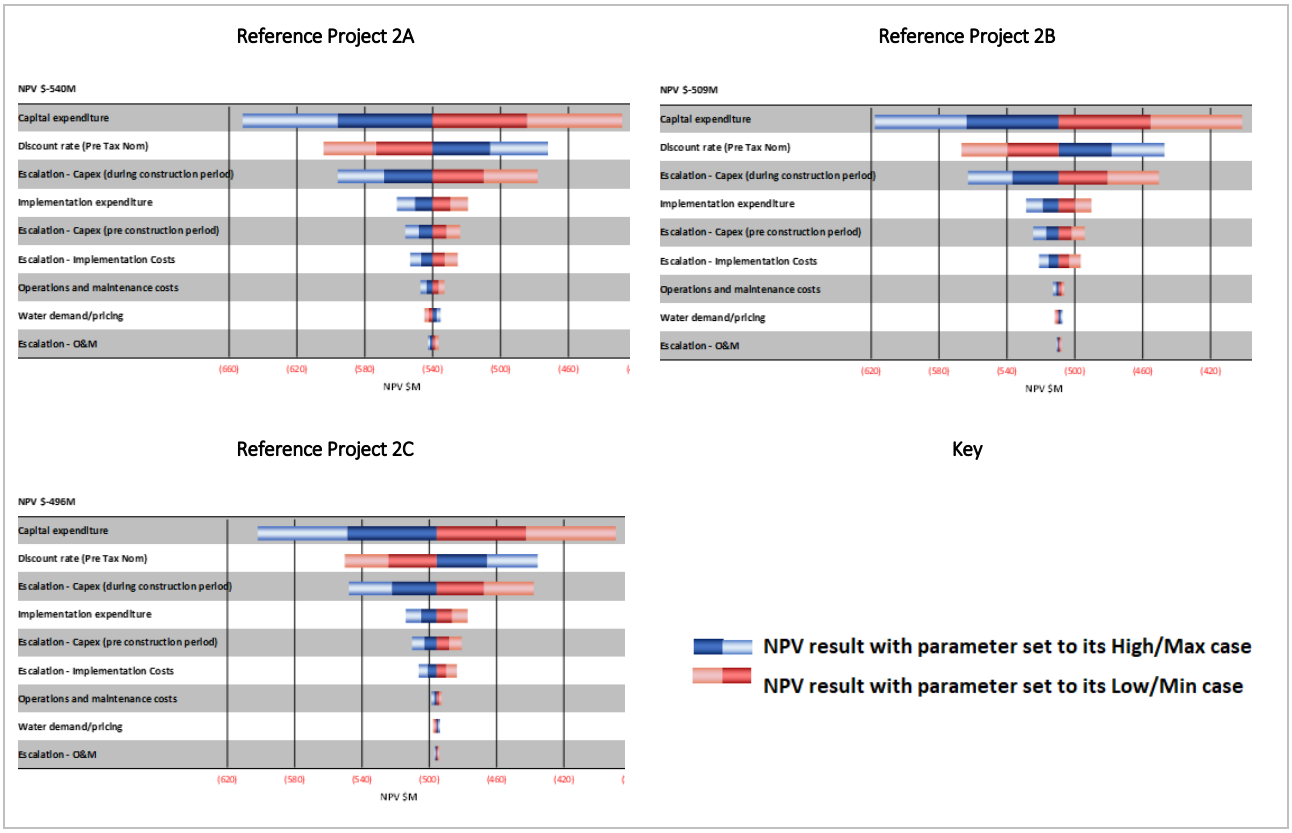



Figure 18-6 Sensitivity analysis for Reference Project 2A, 2B and 2C




## 18.5 Scenario Analysis

Several alternative scenarios to the central case assumptions were modelled, including:

- P50 costs (with central case pricing, i.e. no change to revenue)
- No expansion of local commercial operations
- 50-year evaluation period.

These results, excluding terminal values, are presented below.

Table 18-17 Reference Projects FNPVs, central case v scenarios

| ESTIMATE | REFERENCE PROJECT, NPV $M | | | | |
|---|---|---|---|---|---|
| | 1A Standalone 58,000 ML/a | 1B Conjunctive 58,000 ML/a | 2A Standalone 74,000 ML/a | 2B Part. Conjunctive 58,000 ML/a | 2C Full. Conjunctive 58,000 ML/a |
| **FNPVs central case P90** | | | | | |
| Total Revenues | 94.1 | 83.4 | 121.4 | 108.7 | 107.5 |
| Total Costs (incl. Risks) | 519.4 | 478.3 | 699.5 | 654.4 | 638.7 |
| **Net Financial Impact** | (425.3) | (394.9) | (578.1) | (545.7) | (531.3) |
| **FNPVs central case P50 costs only** | | | | | |
| Total Revenues | 94.1 | 83.4 | 121.4 | 108.7 | 107.5 |
| Total Costs (incl. Risks) | 478.4 | 437.3 | 646.4 | 601.4 | 585.7 |
| **Net Financial Impact** | (384.3) | (353.9) | (525.1) | (492.7) | (478.2) |
| **FNPV no expansion of local commercial operations P90** | | | | | |
| Total Revenues | 94.1 | 83.4 | **121.4** | **108.7** | **107.5** |
| Total Costs (incl. Risks) | 519.4 | 478.3 | **699.5** | **654.4** | **638.7** |
| **Net Financial Impact** | (425.3) | (394.9) | (602.3) | (569.9) | (555.5) |
| **FNPVs central case P90, longer evaluation period (50 years of operations v 30 years)** | | | | | |
| Total Revenues | 98.1 | 85.3 | 126.3 | 111.1 | 109.6 |
| Total Costs (incl. Risks) | 524.0 | 480.6 | 705.2 | 657.3 | 641.3 |
| **Net Financial Impact** | (425.9) | (395.2) | (578.8) | (546.2) | (531.7) |

The findings from the scenario analysis include:

- all Reference Projects result in negative FNPVs under all scenarios
- FNPVs improve under a P50 cost scenario, noting that the revenues remain unchanged (based on central case pricing) and that the costs are incurred earlier than the revenue stream
- there is no net change to the FNPVs for Reference Project 1A and 1B with the removal of local operator demand, as the smaller dam solution does cannot cater for this demand even under the central case
- the FNPVs are marginally worse (within $1m of central case results).