



## CHAPTER 9

### MARKET CONSIDERATIONS

Nullinga Dam and Other Options Preliminary Business Case



## CONTENTS

<b>9</b>	<b>MARKET CONSIDERATIONS .....</b>	<b>2</b>
9.1	Purpose	3
9.2	Market Sounding	3
9.3	Market Feedback	3
9.4	Conclusion	8

## TABLES

Table 1	Market Feedback on Potential Options for Water Supply .....	5
Table 2	Marsden Jacob Associates – Evaluation of Options Based on Market Feedback .....	6



## 9 MARKET CONSIDERATIONS

### CHAPTER SUMMARY AND CONCLUSIONS

- Market sounding was undertaken as part of the demand assessment and Stakeholder Reference Group via industry representatives. The market sounding process assisted to understand the key demand drivers, level of interest in making an additional volume of water available to the market, market feedback on potential options for water supply and willingness to pay for additional water.
- The key demand drivers for agriculture are dry conditions and water security, changes in crop profile and industry growth, in particular, MSF Sugar's expansion plans. Demand is impacted by a number of matters, including, water costs, electricity costs, capacity constraints in the distribution infrastructure, crop selection and maturity, different irrigation practices and biosecurity threats.
- Market feedback indicated that interest in additional water allocations is expressly subject to price.
- Market feedback indicated the options analysis should consider the interrelationship of components within the entire system rather than individual options in isolation. Specific comments included:
  - Option 1: Do minimum (Base Case): Water trading and efficient water use methods are already happening and should be prioritised ahead of Nullinga Dam or another bulk water source.
  - Option 2: Improve MDWSS rules and operation: Large commercial irrigators were supportive of this option but expressed proper modelling and consideration of implications of each sub-option is important and the potential for Local Management Arrangements in scheme and resulting impacts should be considered.
  - Option 3: Modernise MDWSS and convert losses: There was general support for this option. Interest for new water allocations will be based on price – particularly for lower value crops. More needs to be done to prove up the concept, options, price and market the water e.g. sale or lease of allocations, pay-back period for investment. This is a cheaper option for new water allocations than Nullinga Dam.
  - Option 4: Nullinga Dam for agricultural use: Demand for water allocations from this option will depend on where water can be delivered to, the cost of developing land for irrigation and prevailing water and commodity market conditions at the time. A river delivery dam option (no distribution system) makes sense, but the design should consider future connection to MDWSS.
- Advance Cairns, the peak regional advocacy and economic development agency in Tropical North Queensland, submitted to the Stakeholder Reference Group that Cairns urban water supply should have been considered in the Nullinga Dam option. This is inconsistent with CRC's Cairns Water Supply Strategy.
- Willingness to pay surveys indicated a price range of \$1,500 to \$4,000 per ML for new water allocations. This price was dependent on crop type and location, with sugarcane at the lower end.



## 9.1 Purpose

This chapter summarises market considerations related to the service need and shortlisted options.

A separate market sounding process was undertaken to inform the proposed procurement strategy. The approach and outcomes of this process are documented in Chapter 17.

## 9.2 Market Sounding

### 9.2.1 Objectives

A market sounding process was undertaken with key regional stakeholders to assist in understanding:

- the key demand drivers in the region
- the level of interest in making an additional volume of water available to the market
- market feedback on potential options for water supply
- the willingness to pay for additional water.

### 9.2.2 Approach

Market sounding was undertaken as part of the demand assessment by MJA and Jacobs. Market information was also obtained through the Stakeholder Reference Group process.

The MJA market sounding exercise assessed demand for additional water in the region and potential options to meet the identified demand. MJA carried out the market sounding in a two-stage process over the period October 2016 to November 2016 as follows:

- Stage 1—Consultation with a range of stakeholders to understand demand drivers in the region and potential supply options to address that demand.
- Stage 2—One-on-one interviews with key stakeholders to consider specific water supply options and their willingness to pay for additional water.

Following the MJA assessment, Jacobs peer reviewed the MJA assessment. This involved consultation with a range of irrigators in the MDWSS over the period January and February 2017.

The Stakeholder Reference Group contained representatives from a wide variety of local government, industry and economic development groups in the region. Some Stakeholder Reference Group members also participated in the market sounding process. Market sounding was undertaken via the Stakeholder Reference Group to test the following issues:

- the water supply problem and opportunities in the region
- preliminary findings on water demand and a range of potential water supply options.

Organisations that participated in the market sounding process included representatives from local government, industry and economic development groups, and large scale commercial irrigators.

## 9.3 Market Feedback

### 9.3.1 Key Demand Drivers for Agricultural Water

The market feedback indicated there are three key agricultural demand drivers in the region:

- Dry conditions and water security—Persistent low rainfall since 2012–13 has resulted in higher than average level of water utilisation and emerging water security concerns by irrigators. Recent dry



conditions mean that the current system utilisation exceeds 80 per cent, which is above the water security buffer generally desired by irrigators.

- Crop profile—Changes in crop profile in the region to higher value permanent plantings, e.g. avocados and bananas. These crops require high water security and increasing amounts of water, especially as plantings mature, so their demand for water allocations will continue to grow.
- Industry growth—In particular, MSF Sugar, an integrated grower, processor, marketer and exporter of raw sugar with potential for expansion.

The demand for water is, however, impacted by a number of matters, including:

- the cost of water (if it is too expensive it will not benefit anyone)
- the cost of electricity (e.g. pumping) for both the distribution system customers, and irrigators' own on-farm costs
- capacity constraints in the distribution infrastructure
- crop selection and maturity (water use increases for maturing perennial crops)
- different types of irrigation practices (e.g. drip)
- biosecurity threats (e.g. disease in bananas).

The majority of industry representatives expressed an expectation that utilisation of water allocations would increase and were confident there is room for agricultural expansion in the region by moving to higher value crops.

### 9.3.2 Interest in Additional Water Available to Market

MSF Sugar was considered to be the major driver behind any significant growth in demand for additional water. Other large scale commercial irrigators also indicated a potential demand for new water allocations, if they eventuate. Overall, a short-term water demand for 14,000 ML was identified and, should a series of conditions eventuate, a potential future demand of 72,000 ML was identified.

The interest in new additional water allocations is expressly subject to price.

### 9.3.3 Market Feedback on Potential Options for Water Supply

Market sounding participants generally expressed the following outcomes would be achieved from a new water supply in the region:

- Water security for users
- Certainty for future investment
- Growth in domestic and international markets for the regional economy.

Feedback on the different options presented as part of market sounding is summarised in Table 1.



Table 1 Market Feedback on Potential Options for Water Supply

OPTION	MARKET FEEDBACK
General	<ul style="list-style-type: none"> <li>▪ Must consider the interrelationship of components within the entire system rather than individual options in isolation</li> </ul>
Do minimum	<ul style="list-style-type: none"> <li>▪ Water trading is already happening</li> <li>▪ The majority of irrigators in the region have already adopted efficient water use methods</li> <li>▪ Savings to date have been taken up by production growth and increases in water intensive, high-value crops</li> <li>▪ These measures should be prioritised ahead of Nullinga Dam or another bulk water source</li> </ul>
Improve MDWSS rules and operation	<ul style="list-style-type: none"> <li>▪ Large commercial irrigators were supportive of this option</li> <li>▪ Proper modelling and consideration of implications of each sub-option is important and to test the cumulative impact of changes</li> <li>▪ Crop mix and the potential for full utilisation should be considered</li> <li>▪ Considering hydrology, rainfall and farming patterns of the region, amending the water year to start in the first 1–5 months of the calendar year should be looked at</li> <li>▪ Water ordering can be improved</li> <li>▪ Support for review of current carryover provisions to enable greater flexibility and use of this water</li> <li>▪ In practice, the scheme still operates as though water is attached to land and to access peak flow rights (ML per day entitlements) large commercial irrigators are still purchasing land with which such rights are associated</li> <li>▪ Consideration of this option should include potential for Local Management Arrangements in scheme and impacts</li> </ul>
Modernise MDWSS and convert losses	<ul style="list-style-type: none"> <li>▪ General support for option from all participants</li> <li>▪ Interest in new water allocations for this option will be based on price – particularly for lower value crops compared with higher value crops</li> <li>▪ More needs to be done to prove up the concept, options, price and market the water e.g. sale or lease of allocations, pay-back period for investment</li> <li>▪ Release of additional water allocations onto the market may drive price down</li> <li>▪ Likely to be progressive take up as infrastructure works are completed and losses are converted</li> <li>▪ Cheaper option for new water allocations than Nullinga Dam because it can be progressively implemented—most efficient use of available resources</li> </ul>
Nullinga Dam for agricultural use	<ul style="list-style-type: none"> <li>▪ Demand for water allocations from this option will depend on:                             <ul style="list-style-type: none"> <li>– where water can be delivered to</li> <li>– the cost of developing land further for irrigation</li> <li>– prevailing water and commodity market conditions at the time</li> </ul> </li> <li>▪ Whether dam is economically viable will depend on costs and benefits of different sizes. Bigger dam can lead to more water for more users</li> <li>▪ Water quality is a concern. Walsh River catchment is different to the Barron catchment</li> <li>▪ Efficiency of river delivery needs to be considered. Not the same system as current delivery in MDWSS, the yield of Nullinga Dam may be affected by losses incurred through river delivery.</li> <li>▪ ‘Bulk only’ option without distribution system makes sense, but design should consider future connection to MDWSS. Water will only be accessible to river frontage land unless private infrastructure is developed. There are potential conflicts in private distribution systems as opposed to delivery infrastructure owned and operated by the water service provider</li> <li>▪ Given comparative yield to Tinaroo Falls Dam, the Nullinga Dam option may not be the ‘silver bullet’</li> </ul>



In addition to the above, Advance Cairns submitted to the Stakeholder Reference Group that Cairns urban water supply should have been considered in the Nullinga Dam option. In making this submission, Advance Cairns suggested that there should have been a comparative analysis of Cairns Water Security Strategy medium-term initiatives and Nullinga Dam and that these are not mutually exclusive options. Advance Cairns also suggested the Nullinga Dam option in this form does not provide a long-term solution for Cairns urban water supply.

As indicated in Chapter 4, there are considerable complexities in Nullinga Dam providing an additional water supply for Cairns. Furthermore, the progression of Council owned and operated options identified in the Cairns Water Security Strategy is considered to be a matter for CRC and not a matter for consideration in this PBC.

### 9.3.4 Willingness to Pay for Additional Water and Cost-Effectiveness

Differing results were reported from market sounding about the willingness to pay for additional water allocations.

#### 9.3.4.1 Marsden Jacobs Associates

MJA’s consultation on willingness to pay made the following findings:

- Anecdotal evidence suggests the price of additional water allocations is currently about \$2,700 per ML for permanent transfers, which is the implied willingness to pay for new water allocations.
- Sugarcane growers in general would have the lowest willingness to contribute towards the cost of new water supply options, likely around \$1,500 per ML for additional water allocations,<sup>1</sup> although larger operations could potentially afford to pay a higher price.
- Growers of higher value crops such as avocados and bananas may be willing to pay about \$2,500 to \$2,700 per ML for additional water allocations, and potentially more for high priority water entitlements.

MJA’s conclusions from this analysis are set out in Table 2.

**Table 2 Marsden Jacob Associates—Evaluation of Options Based on Market Feedback**

OPTION	COST EFFECTIVENESS	CAPACITY TO MEET FUTURE DEMAND	LEVEL OF USER FUNDING TOWARDS TOTAL COST	COMMENTS	NEXT STEPS
Water trading	High	Low	High	Does not provide additional water supply and is rated low in relation to capacity to meet future demand However, permanent transfers of water can support expansion of higher value crops and temporary transfers of water can provide short term water security	Consider improvement in transparency and ease of trading

<sup>1</sup> Based on information provided by DAF, the gross margin for cane growers range from \$1,500 to \$2,500 per hectare, which is about \$150 to \$250 per ML of water.



OPTION	COST EFFECTIVENESS	CAPACITY TO MEET FUTURE DEMAND	LEVEL OF USER FUNDING TOWARDS TOTAL COST	COMMENTS	NEXT STEPS
On-farm water use efficiency measures	Low	Low	Medium	<p>Does not rate highly on any criteria</p> <p>Majority of irrigators in the region have already adopted water efficient methods – limiting the volume of water to be gained</p> <p>Greater proportion of SunWater’s water charges are fixed rather than variable and irrigators may have less incentive to invest in water efficiency technologies<sup>2</sup>.</p> <p>Irrigators may require some incentives to invest in more efficient technologies as the potential cost of \$4,000 per ML exceeds the implied willingness to pay</p>	Not recommended
System loss conversion	High	Medium	High	<p>Cost-effective option to address water security concerns</p> <p>Irrigators would likely be able to fund the total cost of the project at a cost of \$2,000 to \$3,500 per ML</p>	Proceed to next stage analysis – engineering and hydrology study including cost estimates
Nullinga Dam	Low	High	Low	<p>Without a firm commitment from industry about expansion plans and government demonstrating that a subsidy would support the achievement of net economic public benefits, Nullinga Dam is not justified at this time</p> <p>Expensive option and a substantial government contribution would be required</p>	Proceed to next stage analysis only if industry provides firm commitment on expansion plans

Source: Marsden Jacob Associates

#### 9.3.4.2 Jacobs

Jacobs’s consultation on the willingness to pay for new water allocations indicated:

- At current scheme annual charges, generally stakeholders agreed that the new going rate was \$2,500 per ML including for sugarcane.
- Some sugarcane growers indicated a willingness to pay of \$2,000 to \$3,000 per ML for MP allocations.

<sup>2</sup> Mareeba Dimbulah Water Supply Scheme [http://www.sunwater.com.au/\\_data/assets/pdf\\_file/0018/19053/Fees\\_-And-Charges\\_Schedule\\_-\\_Mareeba\\_2016-17.pdf](http://www.sunwater.com.au/_data/assets/pdf_file/0018/19053/Fees_-And-Charges_Schedule_-_Mareeba_2016-17.pdf)





- Horticulture/tree crop business indicated that water was worth \$3,000 to 4,000 per ML in general terms particularly on existing irrigation areas with highly productive soils and in particular in areas where MDWSS delivery capacity is constrained (e.g. East Barron channel).

These values are higher than those reported to MJA. This may be due to the fact MJA consultation was undertaken in October-November 2016 and Jacobs's consultation was undertaken in early 2017.

## 9.4 Conclusion

The market sounding has indicated that there is demand for new MP water allocations within the region, but that it is significantly price sensitive. The market feedback also expressed the source and release of any new water allocations needs to be considered in combination with the current system.

Based on the feedback received, there is general support for Option 2 and Option 3, and Option 3 appears to be cost-effective and affordable for irrigators.

In comparison, the market sounding indicates that the ability to deliver the Nullinga Dam option will require some level of government subsidy in order to be affordable to irrigators in the region.