

Marsden Jacob report on  
Regional water value functions  
Valuing different hydrological outcomes  
under Regional Water Strategies –  
Revised Draft dated [REDACTED]

[REDACTED]



**CENTRAL NSW  
JOINT ORGANISATION**

- Bathurst
- Blayney
- Cabonne
- Cowra
- Forbes
- Lachlan
- Oberon
- Orange
- Parkes
- Weddin



While appreciating the challenges for the model developed by Marsden Jacobs, that it does not recognise the economic impacts of higher-level restrictions and “day zero” is seen by this region as under representing the value of urban water. It is understood that there may be opportunities for this type of economic impact to be recognised later in the optioneering process, however this region is not party to the methodology going forward and the concern is that projects that will protect regional communities from “day zero” may be excluded from further consideration. It is for this reason we recommend the methodology be road tested using the Macquarie Regional Water Strategy given the challenges for its urban communities.

This region welcomed acknowledgement by NSW Treasury of previous advocacy by this region on the funding framework for critical water infrastructure reflected in a risk-based approach to funding in the Safe and Secure Water Program version 2. This approach recognised that Benefit Cost Ratio is a blunt instrument and “lived scenarios” a critical component to any assessment that values hydrological outcomes for urban water needs.

In the case of the Restart NSW Safe and Secure Water program, the NSW Department of Industry recognised that the strict criteria the funding source has had around the cost benefit ratio means that they could not always fund water infrastructure projects with high community value, especially those that benefited small communities.<sup>1</sup> The funding mechanism was changed in version 2 of the program so that funding is no longer contingent on restrictive Cost-Benefit Ratios allowing projects to be funded based on risk assessments.<sup>2</sup>

The methodology in the Marsden Jacobs Report based on a willingness to pay approach without recognising the impacts of industry closure and “day zero”, in our view, is a retrograde step where the challenge for the BCA approach is to factor into analysis local scenario modelling, particularly the social and economic impact on local communities of long-term water restrictions and “day zero” scenarios.

Finally, we welcome the passing commentary on the value of street trees and suggest that further work needs to be done in this area.

## Summary of Consultants Findings

The following summarises key points from our consultant’s review of the revised Draft Marsden Jacobs Report (the Report). Detailed advice is provided in consultant reports provided as appendices.

### Western Research Institute

- The Report assumes that in a region experiencing water shortage, water restrictions would last 12 months before an alternative supply option would be put in place. Water restrictions can last longer than 12 months as evidenced in the most recent drought responses across NSW councils. Some communities have existing levels of water restrictions in place in an ongoing attempt to conserve consumption.
- The willingness to pay model for businesses in the Report suggests that the impact of water restrictions on businesses would be similar to that for households. This differs to research

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<sup>1</sup> NSW Government Safe and Secure Water Program - Fact Sheet- PUB18/674 issued October 2018

<sup>2</sup> ibid

undertaken by WRI. WRI conducted interviews with businesses in Bathurst asking them what impact water restrictions which would limit the amount of water they had for industrial and commercial purposes would have on their output, employment and planned investment. The general theme of these interviews was that any reduction in available water would have a corresponding reduction in output, i.e. a 50% reduction in water available would lead to a 50% reduction in business output.

- The Report lists water carting as an alternative supply option for towns with less than 1,000 population but measures only the economic costs of water carting not the financial costs. Future modelling of regional impacts should contemplate the financial implications of water carting given that the costs of water are so critical to local water utilities who are forced from a legislative position to manage the service on a cost recovery basis.
- The Report assumes that water carting for towns may be sourced from a nearby catchment, but in periods of drought this may not necessarily be an option as neighbouring regions may be experiencing water shortages simultaneously.
- It would be beneficial for a wider range of alternative supply options be considered and for the options to be analysed in greater, region specific detail. The report identifies that the regional issues will be contemplated at the benefit cost or business case phase. As this analysis could be a critical issue in determining the merit of capital water infrastructure funding, the Water Strategies must be properly informed by all the relevant local issues to ensure the allocation of priority rankings for projects is equitable and meets the community's needs.
- The valuation of output per ML of water in the Report has been calculated using profit margins and mining royalties. WRI has estimated the value of water based on the output from industry sectors to enable a ranking of how the value of water can be differently interpreted. This information should be considered in the BCA/business case analysis to fully understand the value of water would impact on heavily water reliant sectors, particularly manufacturing.
- The Report does not consider the event of a total water supply failure leading to total industry shut down and evacuation of towns in a region. WRI assumes that this analysis would be undertaken in the benefit cost analysis phase of assessment.
- The impact of water shortages on a region's future growth, economic development, and reputation are also not considered by the Report. WRI therefore expects that these considerations would be components of the benefit cost analysis and business case phases of assessment.

#### Chris Devitt Consulting

- The estimated range of costs for development of alternative/additional water supplies, i.e. between \$8000-\$16,000/ML, should be included in section 1.3.1 of the Report. This would provide the full range of estimated costs associated with long term provision of urban water, particularly recognising how the value of urban water increases significantly over an extended drought period, when much greater levels of intervention beyond imposition of water restrictions, are needed to sustain town water supplies over 2-3 years of drought.
- The methodology used in the report for valuing water carting does not fully reflect the actual impacts during drought. The cost of water carting is very much influenced by location, and so any

assessment of the valuation of water carting needs to adequately address this, clearly identifying the alternative source of water and its level of reliability.

- The costs utilised in the Report are regarded as a reasonable estimate of the cost of providing emergency water supplies for regional water utilities. However, the specific circumstances and costs associated with each option must be fully identified and recognised in evaluating their value.
- The process of valuing town water during drought needs to give proper consideration to the extended time period over which the impacts of water shortages are felt by communities. The costs associated with water restrictions cannot realistically be confined to a 12-month period, particularly because it cannot be assumed that alternative water supplies will be implemented within 12 months.
- While it is acknowledged that the Report seeks to provide a very general approach to valuing water across NSW and that every individual case will be different, when specific projects identified in the Regional Water Strategies are being evaluated the different circumstances relevant to the water utilities involved must be properly recognised and accounted for in the whole-of-life costings of these projects.
- The definition of economic costs does not include the cost of water, as this is seen as a transfer between 2 parties in NSW and therefore no net cost at a State level. This seems to infer that the value of water is equal between the two parties. This fails to recognise that Local Water Utilities (LWUs) operate as independent authorities, required by the NSW Government to operate under a full cost recovery model as part of Best Practice Principles.
- Water security is often used as a point of difference between LGAs to promote and attract economic development and population growth. LWUs which invest heavily in their long term water security, or who work hard with their community to drive down per capita water usage, place a much higher value on water per kl compared to communities who are relatively relaxed about water use, or where water usage is heavily subsidised via general rates.
- The individual circumstance of each LWU varies significantly with regard to the cost of water. In some instances, water can simply be pumped out of shallow wells close to town and disinfected to make it suitable for potable use, a very inexpensive system in terms of water storage and treatment. By comparison other centres have to capture and store water in large Council-owned water supply dams, then pump this water long distances prior to extensive water treatment before distribution to urban users, resulting in a much more expensive water supply system from an asset value as well as daily operational cost perspective.
- In times of water shortage there are limitations on the capacity of LWUs to both purchase and provide water. In addition to the physical distance, the willingness or capacity of an adjacent LWU to supply water is driven by many factors including the production cost of water, issues associated with equity of supply and scarcity concerns from the community, who argue that a higher price should be imposed to act as a deterrent to excessive demand from struggling LWUs

- With respect to the McNair Ward Willingness to Pay Report:
  - The overall findings of this report are that there is little value placed on the impact of level 1 and 2 water restrictions and so a lack of willingness to pay for the outcomes these restrictions deliver.
  - The impact of more stringent water restrictions should be shared by all residents. The option of allowing residents to pay a higher price to face fewer water restrictions is not generally supported within the community. Water is regarded as an essential service which should be equally available to everyone, so actual or perceived waste by an individual, impacts on the entire community.
  - There is much greater willingness to pay to avoid higher level water restrictions. The imposition of water restrictions at and above level 3 creates a much higher level of awareness across the community of the value of water conservation. It also begins to impact beyond the residential level and at a broader economic level as water restrictions are placed on businesses which in turn further impacts on individuals. There is also a heightened sense of urgency to avoid more stringent restrictions, and so a greater willingness to pay to avoid these.

## Recommendations

- Given that the Regional Water Strategies are yet to go on public exhibition, there is an opportunity to road test the methodology as outlined by Marsden Jacobs for valuing water infrastructure. This region recommends this be undertaken on just one catchment – the Macquarie.
- Consideration should be given to the impacts of water shortages on communities and how these impacts can be measured as a component of the valuation of water functions.
- The willingness to pay for communities may be higher than has been modelled when water availability becomes critical and residents and businesses contemplate worsening conditions and/or an emergency scenario where regions run out of water altogether. These are real experiences for Regional NSW and were evident in the latest drought. This has not been considered nor is it a factor in the currently modelled willingness to pay methodology. As such, if the willingness to pay model is the primary method by which community impacts are measured, it needs to be revised to account for the effects of long-term drought on regions and the possibility of a total water supply failure.
- Further work be undertaken on the value of street trees and green spaces in communities.
- The willingness to pay to avoid water shortages of residents and businesses is not static and would be expected to increase as shortages become more critical and community members become more aware of the issues surrounding water security in times of long-term drought. A limitation to modelling impacts over 12 months of water restrictions does not reflect the reality of experiences in Regional areas nor does it reflect the changing levels of willingness to pay as water related issues progress to higher levels of restrictions and/or long term economic impacts on communities and businesses relating to drought and climate change impacts.

- The duration of droughts needs to be considered, especially in regard to the length of water restrictions. A 12-month timeframe as indicated in the report may not be reasonable.
- Consideration needs to be given to the time lag in developing water infrastructure which can take a long time in actuality to achieve planning approval and for the completion of construction, prolonging water shortages and the need for water restrictions or other water supply solutions to be employed.
- There needs to be consideration of the cost of an emergency response to a complete water supply failure event in the valuation of water functions to adequately capture the value of water.
- The estimated range of costs for development of alternative/additional water supplies, i.e. between \$8000-\$16,000/ML, should be included in section 1.3.1 of the Report.
- The cost of water carting is very much influenced by location, and so any assessment of the valuation of water carting needs to adequately address this, clearly identifying the alternative source of water and its level of reliability.
- When specific projects identified in the Regional Water Strategies are being evaluated the different circumstances relevant to the water utilities involved must be properly recognised and accounted for in the whole-of-life costings of these projects.
- Where the individual circumstance of each LWU varies significantly with regard to the cost of water, the definition of economic costs should include the cost of water.

#### Recommendations on Issues for future modelling

- A more detailed consideration of the impacts on communities will be needed in the benefit case analysis phase and in the business case phase of assessment, particularly around the impacts on regional reputation and growth, and will also need to include the possibility of an emergency day zero even that would lead to a total industry shutdown and evacuation of region.
- Greater detail of alternative supply options and costing must be made in the benefit cost analysis phase of assessment. This can be done in scenario options as part of the assessment of the best value approach in each project.
- With regards to avoided costs of water restrictions, further clarity will be needed as to whether this will be treated as a one off or annualised cost, given that water supply infrastructure would be expected to prevent water restrictions not only for a single year but for the whole of the asset life.
- The methodology be road tested using the Macquarie Regional Water Strategy given the challenges for its urban communities with input from CNSWJO members, Orange, Bathurst and Oberon of the lived experiences from the most recent drought.

- A better understanding of the value the community places on street trees and green spaces. Where currently there is little if no data on this, the CNSWJO is interested in working with DPIE on a project to determine this.
- Following the threat of “day-zero” in many inland communities and recent rainfalls that have boosted supplies, there is an opportunity to survey businesses and communities in regional NSW to determine what they would be willing to pay to ensure their businesses don’t fail.

In conclusion, again this region would like to thank the DPIE for the opportunity to provide this advice. Water and its scarcity are top of mind in Central NSW. It is imperative that ongoing collaboration continues between Councils and those State agencies with responsibility in the water space. Ideally this would be enabled by better time frames and governance arrangements that offer all levels of government confidence when making investment and other decisions.

The Central NSW Joint Organisation Board are eager to work with DPIE to road test the methodology with the Macquarie Regional Water Strategy using the lived experiences from the most recent drought. This would provide a level of confidence for all levels of Government and the Minister in the application of this methodology across the state.

In addition, we would be keen to work with DPIE on a project that identifies the value of street trees and green spaces in determining the willingness of people to pay to ensure these survive in times of prolonged drought.

Many of our communities are not out of the woods yet in terms of water security and as urban water managers our members are heavily invested in ensuring that the methodology and policy settings are right.

We welcome the opportunity to continue the conversation about how water is valued for our urban communities and to add rigor and confidence to the great work that has been done in this space so far.

For further advice or to discuss any matters raised in this response please do not hesitate to contact me on [REDACTED]

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