

Paradise Dam

Fact Sheet: NCEconomics Future Water Demand Study

April 2021

The information contained in this document is a summary of a Natural Capital Economics' (NCEconomics) presentation made to the Paradise Dam Industry Forum (PDIF) and Community Reference Group (CRG) on 21 April 2021. NCE was engaged to undertake the demand study by the Department of Regional Development, Manufacturing and Water (previously Building Queensland).

Introduction

The Future Water Demand Study is one of many inputs that will inform the Queensland Government in making a decision on the long-term future of Paradise Dam by the end of 2021.

The study assesses how much water is needed, from which customer segments and when, out to 2050 for the Bundaberg Water Supply Scheme (BWSS).

The study is subject to a final peer review.

What was the study area?

The study focussed on the BWSS area serviced by Paradise Dam and adjacent areas with the potential to be serviced by an extension of existing scheme infrastructure. Other demand nodes (for example, Coalstoun Lakes) were outside the study scope.

What are the key considerations and assumptions of the study?

The demand study has considered:

- drivers and constraints of water demand
- agricultural demand – including land use changes over time, projected climate futures, changes to farming practices and additional demand from maturing trees
- urban demand – including population growth and commercial uses
- markets forces including domestic and export market growth, trends and expected market prices, and the competitiveness of the region
- capacity constraints in the BWSS distribution system.

It is important to note that climate change has the potential to impact negatively on yield over the long-term. This impact will be considered in hydrology studies also being conducted for the Detailed Business Case.

Who was involved with the study?

Current and potential water users were encouraged to have their say via a survey to ensure current water use and future intentions were captured. This was particularly important for those who were looking at expanding or changing operations. The survey (available from 8 to 30 October 2020) was completed by 250 people with all data collected remaining confidential.

NCEconomics held meetings and workshops in the region with customers, industry bodies and agribusinesses and a sub-working group of PDIF members was established to consider and provide feedback on:

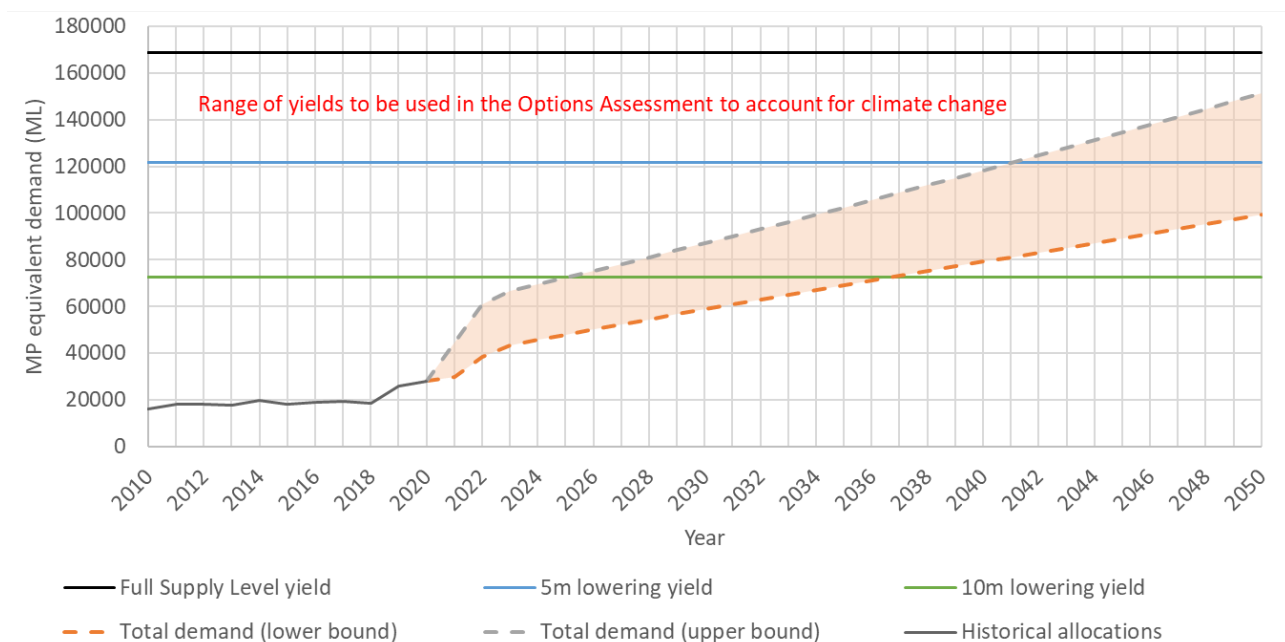
- economic assumptions
- survey questions
- crop type water requirements
- the area of land expected to transition to tree crops.

The PDIF sub-working group members included representatives of the Australian Macadamia Society, Bundaberg Fruit & Vegetable Growers, Bundaberg Regional Irrigators Group, Canegrowers Isis, Bundaberg Regional Council, Adept Economics, Queensland Economic Advocacy Solutions, NCEconomics and Building Queensland. NCEconomics provided regular updates to this sub-working group throughout 2020.

What has the study found?

The economic modelling shows the predicted water demand out to 2050 as a range (shaded area) between a low-end prediction (orange dotted-line) and a high-end prediction (grey dotted-line).

Combined demand vs. current yield estimates (all Medium Priority equivalent)



It is important to note that:

- the dam will be operational beyond 2050 and that demand estimation beyond this 30-year horizon is increasingly inaccurate
- as mentioned above, the impact of climate change on yield has not been considered in this study.

Growth in MP equivalent demand is expected in the short-term, as irrigators have indicated they have recently established perennial tree crops and will need to seek additional water to meet the needs of those trees as they mature.

How do these results compare to earlier studies?

While the broad approach to the analysis is similar to earlier studies, the amount of detailed analysis, consultation and surveying undertaken has been significantly greater for this study. Therefore, materially different projections have resulted, including:

- **Increased demand projections.** The 250 survey responses were used to improve the design and accuracy of the demand projections, providing understanding of the drivers of and constraints to future water demand, market expectations, the importance of climate change and constraints in the distribution system. Several parameters in the modelling were then updated, increasing demand projections.
- **Increased areas of perennial tree crops.** The updated mapping of perennial tree crop establishment has increased the short-term demand projections.
- **Updated land use trends.** In an earlier study, mapping analysis from 2017 found that almost 100 per cent of new high value cropping areas were being established on former sugarcane land. This meant that the water demand only increased by the difference between volumes previously used by sugarcane and those required for the new crops. However, mapping completed in 2020 and the survey of 250 irrigators found that around 30 per cent of high value crops are now being developed on former dryland farming areas, therefore, increasing demand projections. It is also worth noting, that the rate of land use development and future water demand indicated by the survey was similar to the outputs from the modelling informed by the technical analysis and industry consultation.
- **A detailed look into climate change impacts.** Detailed climate change projections were undertaken including analysis of both the impacts on rainfall and peak temperatures. This was combined with statistical analysis of how irrigators had previously updated their practices to respond to changes in rainfall and peak temperatures, to better understand the impacts on long-term demand.

How will the study findings be used?

These findings are one of the many inputs to inform the Queensland Government's decision about the long-term future of Paradise Dam by the end of 2021.

The Queensland Government's first priority is the safety of the downstream community. It is committed to achieving that objective while meeting the demand for water in the region to support livelihoods and grow the economy.

Stakeholder engagement

Sunwater is committed to ongoing engagement with the community to ensure transparency during the works at Paradise Dam. We will continue to share updates as the work progresses with a dedicated CRG and PDIF that include representatives from local government, peak bodies, customers, and downstream residents. Information is also regularly shared on Sunwater's Paradise Dam Facebook page and the project webpages on the Sunwater website.

Questions

Please contact us on 3120 0270 or paradise.dam@sunwater.com.au with any questions.