

Paradise Dam

Capacity, yield, and allocation sales information

May 2021

This document contains information about the yield and capacity of Paradise Dam and the allocations sold to date. It has been prepared in response to customer questions about how much water could be for sale from Paradise Dam under the different spillway height options under consideration.

This fact sheet presents information about the original condition of Paradise Dam and allocations sold including:

- how, Essential Works to reduce the risk of a dam failure while the longer-term dam remediation is planned, changed the dam's storage capacity; and
- information about the dam under the original spillway height and both a ten and five-metre lowering scenario.

The five-metre lowering scenario is the reference point used in studies. Even if the spillway height was not changed further, a new ogee-style crest would need to be constructed as a minimum and this would raise the crest to a level five metres below the original height.

It is important to note that a decision has not yet been made on the final dam spillway height. The Detailed Business Case is considering options including returning the dam to its original height, permanently lowering it by five metres or permanently lowering it by ten metres. The Queensland Government is expected to make a decision about the long-term future of the dam by the end of 2021. The Paradise Dam Improvement Project (DIP) will then take a number of years to plan and implement.

Definitions

The following definitions will assist with reading this document:

- **Yield** is the available resource that can be sustainably extracted from a catchment without impacting on other water users or the environment. For the Bundaberg Water Supply Scheme (WSS), the Water Plan (Burnett Basin) 2014 specifies the Department of Regional Development, Manufacturing and Water's (DRDMW) Integrated Quality and Quantity Model (IQQM) computer program's simulation for a period between 1890 to 2008 is to be used to assess consistency with environmental flow objectives and water allocation security objectives.

Yield can be described in terms of different water products to meet different customer requirements, including:

- Medium Priority (MP) water allocations (lower reliability – typically for irrigation / agricultural use)
- High Priority (HP) (highest reliability – typically urban water supply and industrial use).
- **Total yield** is a combination of maximum allocations (volume) of water that can theoretically be supplied per year for each water product (medium and high priority). This is determined by the IQQM program to achieve the minimum reliability required as specified in the Water Plan. These are the maximum allocations (volume of water per year) that can be sold.
- **Storage capacity** or **Full Supply Volume** is the amount of water able to be held in a dam or weir. 100% equals the volume when water either spills or is required to be released. This is different to yield. Typically, you need to be able to store more water to supply a lesser amount of yield.

Water allocations sold to date

The current volume of water allocations sold is updated regularly and published online [here](#).

The Bundaberg WSS is required to supply a total of 44,372 ML of HP and 331,457 ML of MP across the Burnett River and Kolan sub-schemes. This includes additional yield (water allocations) made available by the construction of Paradise Dam in 2005.

Included in this volume is the Burnett Water allocations (83,360 ML MP and 17,151 ML of HP) currently quarantined, i.e. unsold allocations in the Burnett sub-scheme. An amendment to water-sharing rules was approved in March 2020 to enable Sunwater to maximise announced allocations in the Burnett River sub-scheme commencing 1 July 2020. As a result, Sunwater's unsold Burnett water allocations (high and medium priority) were quarantined and removed from the announced allocation calculations whilst works are underway at the dam.

The table following outlines how much additional allocations (yield) Paradise Dam provided to the Bundaberg WSS and how much of that is sold and unsold. Apart from the water allocations unsold in the Burnett sub-scheme from the construction of Paradise Dam, and 17,000 ML MP of Burnett Water Pty Ltd allocation unsold in the Kolan sub-scheme, there are no other unsold water allocations in the Bundaberg WSS.

In summary, from an overall Bundaberg WSS perspective, a total of approximately 27,000 ML of HP and 231,000 ML of MP water allocations have been sold or committed (including allowances for losses), leaving approximately 17,000 ML of HP available for future sale (in the Burnett sub-scheme) and 100,000 ML of MP available (of which 83,000 ML is in the Burnett and 17,000 ML in the Kolan sub-schemes). As identified above, the majority of the remaining water allocations available for future sale is in the Burnett sub-scheme, attributed to the additional yield made available by the construction of Paradise Dam.

Water available for sale if dam is lowered by ten metres

If Paradise Dam's primary spillway is lowered by ten metres on completion of the DIP works, there would be:

- 42,000 ML of MP equivalent for sale
- Comprised of 17,000 ML of HP allocation, and 4,000 ML of MP allocation.

Water available for sale if dam stays lowered by five metres

If Paradise Dam's primary spillway remains lowered by five metres on completion of the DIP works, there would be:

- 90,900 ML of MP equivalent for sale

Comprised of 17,000 ML of HP allocation, and 53,000 ML of MP allocation.

Water available for sale if Paradise Dam is returned to the original height

If Paradise Dam is rebuilt back to its original height, all quarantined water will be reinstated and there would be the following water available on completion of the DIP works:

- 137,900 ML of MP equivalent for sale
- Comprised of 17,000 ML of HP allocation, and 100,000 ML of MP allocation.

When will water be available for sale again from Paradise Dam?

Sunwater has quarantined unsold allocations in order to maximise allocations to existing customers whilst the works are underway at Paradise Dam. Once a decision on the future of Paradise Dam is known, Sunwater will be in a position to confirm the volumes available for future sale. Sunwater will not be able to sell permanent water until the DIP works are complete. It is expected that the temporary transfer (TT) market will be very active until permanent water is again available for sale.

Condition	Primary Spillway Crest Level Elevated Level Australian Height Datum	Storage Volume to Crest	Full Supply Level (* Temporary)	Full Supply Volume - Storage Capacity (* Temporary)	Capacity Compared to Original Crest	Paradise Dam Yield (known as Burnett Water Pty Ltd Allocation) ²	Allocations Sold from the Burnett Water Pty Ltd in Paradise Dam ²	Allocations Unsold from the Burnett Water Pty Ltd in Paradise Dam ^{2, 3}
Original dam condition	67.6 m	300,600 ML	67.6 m	300,600 ML	100%	124,000 ML MP yield created 20,000 ML HP yield created 168,600 Total MP equivalent created	24,000 ML MP sold to date 3,000 ML HP sold to date 30,700 Total MP equivalent sold to date	100,000 ML MP unsold 17,000 ML HP unsold 137,900 Total MP equivalent unsold
Essential Works September 2019 – May 2020	67.6 m	300,600 ML	58.7 m ¹	126,300 ML [*]	42%			
Essential Works level 5.8 m below original - current	61.8 m	170,400 ML	61.8 m	170,400 ML	57%			
5 m lowering (compared to original dam and crest level)¹	62.6 m	184,000 ML	62.6 m	184,000 ML	61%	77,000 ML MP yield created 20,000 ML HP yield created 122,000 Total MP equivalent created	As above	53,000 ML MP unsold 17,000 ML HP unsold 90,900 Total MP equivalent unsold
10 m lowering (compared to original dam and crest level)	57.6 m	114,000 ML	57.6 m	114,000 ML	38%	28,000 ML MP yield created 20,000 ML HP yield created 73,000 Total MP equivalent created	As above	4,000 ML MP unsold 17,000 ML HP unsold 42,000 Total MP equivalent unsold

Footnotes

The above table should be read with the following footnotes:

Footnote	
1	Reference point used in studies (as even with no further changes to the spillway height a new ogee-style crest would be constructed as a minimum, raising the crest slightly, for a 5m lowered level than the original).
2	Conversion rate of 2.23. HP allocations can be converted to MP allocations, Sunwater has allowed for a conversion factor of 1:2.23 – i.e. 1 ML of HP is equivalent to 2.23 ML of MP allocation. This is used for simplicity, to explain total yield (allocations) available, versus allocations sold and remaining, in terms of total “equivalent” MP water allocation (rather than separating into HP and MP numbers).
3	The Burnett Water Pty Ltd allocation is allowed (pending trading zone restrictions) to be moved around the Bundaberg WSS. Currently there is approximately 83,000 ML MP and 17,000 ML HP in the Burnett River sub-scheme of unsold allocations which is quarantined. There is also approximately 17,000 ML MP of Burnett Water Pty Ltd allocation unsold in the Kolan sub-scheme which at this point in time is unable to be sold as it will impact on existing customers in the Burnett sub-scheme.