

Submission
No 337

**INQUIRY INTO PROPOSAL TO RAISE THE
WARRAGAMBA DAM WALL**

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State Development Committee Inquiry into the Water NSW Amendment (Warragamba Dam) Bill 2018
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I have prepared this submission in response to the proposal by the New South Wales Government to increase the height of the Warragamba Dam wall. My submission also questions the implications of the Water NSW Amendment (Warragamba Dam) Bill 2018 which will limit the National Parks and Wildlife Act (NSW) due to the future periodic inundation of National Park estate in the vicinity of the lands surrounding Lake Burragorang. I object to the proposal. I think that the proposal will cause long-term damage to high conservation-value rivers, streams and associated lands and ecosystems.

My central concern about the proposed Warragamba Dam project is the inevitable environmental damage associated with inundation of high-conservation values lands and waterways within the Greater Blue Mountains World Heritage Area. This includes riparian vegetation and aquatic ecosystems of rivers and streams.

The periodic inundation of the World Heritage Area will damage temperate eucalypt forest and rainforest. The inundation would almost certainly kill many plant species and encourage weed invasion. The proposal threatens the integrity of the World Heritage Area and the internationally recognised values for which it was listed. At least two threatened eucalypts would be affected by the proposal. The Camden White Gum (*Eucalyptus benthamii*) population in the Kedumba Valley is already under threat, and the proposed dam increase will threaten an estimated 40% of the total known remaining population. Slaty Red Gum (*E. glaucina*) along the Wollondilly floodplain is also at risk. In addition, the Wollondilly occurrence of Coastal Grey Box (*E. moluccana*) would be threatened with extinction.

Of the many animal species that are likely to be impacted by the proposal, of particular concern is the Regent Honeyeater, which is currently listed as Critically Endangered (NSW, National & IUCN). The Burragorang Valley floor adjoining the current full storage level (FSL) has been described as the most fertile regional habitat and a key foraging and breeding site for this species. The Regent Honeyeater is a specialist nomad and the regional meta-population relies predominantly on the woodlands of the Capertee, Burragorang flats and Cumberland Plain. IUCN has published (2013) the World Heritage Advice Note: Environmental Assessment.

The proposal will cause the periodic inundation to currently free-flowing rivers and streams will have a negative impact on the ecological integrity of the river health, and the health of riparian and surrounding terrestrial environments. Currently the vegetation and geomorphology of the riparian zones, rivers and streams upstream of Lake Burragorang is shaped by many factors including the hydrology of the waterways, and the regular changes in the flow regime of waters through the many drought – flood cycles. The introduction of new areas of inundation, due to the proposed dam wall increase, will trigger many unnatural processes that will have negative consequences.

In my previous professional roles as a scientist with Sydney Water I was fortunate to visit many areas that have restricted public access in the Warragamba Catchment Special Areas. I worked as a Catchment Protection Officer in 1994 to 1996. My observations during this period of very low water levels in Warragamba Dam included the waterways and surrounding lands of the lower Nattai River, the lower Coxs River, the lower Kowmung River, the lower Wollondilly River, the lower Kedumba River and many smaller tributaries. In such periods of drought I was also fortunate to see first-hand the deposition of sand, silt and other sediment in the upper reaches of waterways feeding Lake Burragorang.



Figure 1: Sampling Coxs River arm of Lake Burragarang in late 1994 (photo by Ian Wright)

See the photo above (Figure 1), taken by myself in late 1994. This was taken when the water level of Lake Burragarang was dropping steeply in the drought of 1994-1996 (see Figure 2 below). This was the first drought in Sydney that triggered the first water restrictions in Sydney (introduced in 1995-1996) since the construction of Warragamba Dam in 1960. The low water levels of 1994-1996 in Warragamba Dam exposed massive expanses of sediment that had been dropped as waters from the catchments of Warragamba Dam deposited their loads into the inundated waters of the upper reaches of Lake Burragarang. This included the Coxs River, the Nattai River, the Wollondilly River. See Figure 1 – in the background is a large exposed series of flood levees comprised of sediment deposited in normally inundated sections of the Coxs River. This included rich organic sediments and weed propagules and the sections of exposed sediment were normally covered by vigorous areas of invasive weeds. It was also obvious that native species were rare in such areas where sediment was deposited.

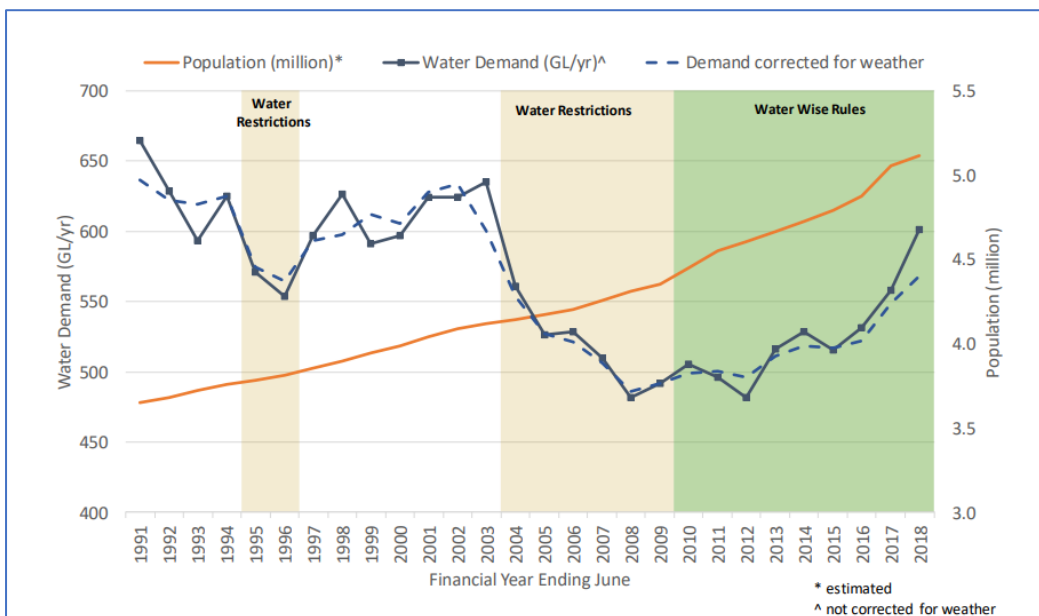


Figure 2: From: Sydney Water 2017-2018 Water Conservation report (Figure 2.1)

Through such first-hand experiences I noted the constant and vigorous weeds growth along the reaches of the catchment rivers that were subject to inundation by Lake Burragorang. Along with the accelerated deposition of sediment, and growth of weeds was the obvious loss of native vegetation species. In addition, the sediments that have been deposited in upper reaches of Lake Burragorang are now exposed. They have modified the in-stream habitats of the feeder rivers and streams, which are now swamped by silt, mud and sand sedimentation. In my opinion it is likely that the lower reaches of the Coxs and Kowmung Rivers will be negatively affected by similar fine sediments. These rivers are relatively steep gradient streams dominated by rocks, boulders and well-shaded by riparian vegetation. This offers a range of stream habitats for aquatic species. The periodic inundation will increase the deposition of sediment and reduce the availability of habitats. One adverse impact is the sedimentation of deeper pools, which are invaluable for the survival of fish, due to cool and well-oxygenated water as vital refuges in periods of hot weather.

It is my professional opinion that the proposed increase in the dam wall will cause the periodic inundation of waterways and surrounding lands in the World Heritage Estate upstream of Lake Burragorang. There will be many forms of environmental damage. These waterways and lands will be subject to several unnatural processes that will adversely impact on the biophysical health of the waterways and surrounding lands and ecosystems:

- There will be enormous increases in the deposition of sediment as the velocity of inflowing flood-flows of major catchment waterways falls and the sediment load is deposited.
- The sediment will contain associated contamination of nutrients and other catchment pollutants and weed propagules from upstream human-disturbed lands.
- Habitats (aquatic and terrestrial) will be damaged due to sedimentation)
- Weed invasion will increase.
- Native species will be killed.
- Many plant and animal species will be adversely impacted.

I object to the proposed raising of the Warragamba Dam wall. It will have inevitable negative environmental and ecological consequences associated with inundation of high-conservation values lands and waterways within the Greater Blue Mountains World Heritage Area. The scale and nature of the environmental damage is uncertain but will be negative and substantial.