

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

**Name:** Ms Elizabeth Dudley-Bestow

**Date Received:** 9 September 2019

---

## **Submission to the Inquiry on Raising Warragamba Dam Wall**

Thank you for the opportunity to comment on the proposal to raise the wall of Warragamba Dam. Overall my point is that if the findings are that the benefits outweigh the costs, then the costs have been underestimated and the benefits over estimated.

### **Plans for future property development on flood prone land on the Hawkesbury Nepean Floodplain**

I am a landuse planner and can confidently state that:

- Property development on flood prone land is bad Landuse Planning, especially where flood heights are particularly high and evacuation routes as yet poorly developed.
- Alienation of arable peri-urban land is bad planning; agriculture in the Sydney basin is highly desirable.

The facts and figures in the following paragraphs are derived from the article – Peri-urban farmland: not just suburbs in waiting by Laura Wynne, Dr Dana Cordell and Dr Brent Jacobs from the Institute for Sustainable Futures, UTS - in the Journal of the New South Wales planning profession. The article notes that, “ *Agriculture and food processing are labour intensive, providing significant local job opportunities. Agriculture also provides ecosystems services, supporting biodiversity and helping make urban areas more liveable*” The article further noted that Sydney’s agriculture contributes upwards of \$4.5 billion to the economy, accounting for multiplier effects.

Arable land is a limited resource and it has special a contribution to offer the region. Local food production is becoming ever more frequently mentioned as of value to the community. It provides genuinely fresh foods, buffers against fuel price shocks, and bolsters food security. Modelling showed that agriculture in the Sydney Basin in 2011 only provided 20% of its demand for fresh food. Even without loss of agricultural land this proportion will go down with time as the population and demand for fresh food rises.

The arable land in the Hawkesbury Nepean Valley is of particular value because is it not fragmented. Arable land is of greater value where it is in larger areas because of efficiency of production and also because it minimises the immediate interface with residential developments. While agriculture in the region is considered desirable, conflicts arise about odours, machinery noise and sprays, at the residential/farm interface.

It would be irresponsible landuse planning, against principles of sustainability and resilience, to alienate this land from potential food production and job creation through residential development.

## **Adequacy of the EIA**

As the EIA is not available to assess for adequacy, below I raise some points which I consider of particular importance.

### **Flooding concerns – prolonged flood times**

Flooding is a natural process, and obviously natural environments have developed some resilience to it. However floods, by their nature, are short lived. The resilience of the natural environment to prolonged flooding is less evident; in fact prolonged flooding appears particularly deleterious. When Warragamba Dam levels drop, the exposed edges clearly demonstrate the effects of prolonged inundation, with bare earth, dead trees and eutrophic effects. Throughout Sydney where there are changed water regimes due to urban development, StreamWatch data consistently shows lowered water quality and serious impacts on aquatic life and riparian vegetation. The impact can be particularly bad on any wetlands which have an especially important role in overall environmental health.

Holding back floods by raising Warragamba Dam Wall will increase inundation times upstream, and then by letting out the water over an extended period will increase inundation times downstream. These environmental impacts need to be taken into account.

### **Flood Management in a social context**

Flood mitigation dams have failed elsewhere because of, among other things, the pressure to prevent any flood at all. Pressure is placed on the dam managers to hold back even small to medium floods which then deprives them of the capacity to hold back major floods. For the Warragamba Dam to work to hold back major floods there will be times when water must be released at rates which will inundate houses. Those times will be when the catchment is saturated, because once a catchment is saturated, runoff rates are 100% and floods arise especially fast. A catchment is saturated after major rainfall events, so the dam may already be at or near flood-holding capacity and flooding may already be underway downstream from the other rivers flowing onto the floodplain.

As it is documented that there is only 15 hours notice on a major flood, there will be a need to discharge water at a rapid rate in these circumstances. The pressure on the dam managers to keep the discharge flow rate low, below a level where any houses are affected, when there are large populations at risk will be immense. Legal and political pressures may be expected to re-inforce such pressure. I have no confidence that, in these circumstances that the dam will be able to actually release enough water to mitigate a major flood.

### **Economic Impact - Tourism in the Blue Mountains**

Blue Mountains is one of the major tourism destinations of NSW. In this way it contributes to the economy of the whole state. Tourism is also the major industry of the Blue Mountains; the Mountains are dependant on it for ongoing employment. The scenic views south over the Burratorang Valley are an important part of the Blue Mountains' tourism assets. The value of these views is not just a local's preference. Echo Point is the major NSW destination outside Sydney. It is the place we take important visitors, including the Queen and later Prince William and Kate, when they visit Australia.

It is into this view that we are risking serious visual impact. It is acknowledged that waterbodies are considered scenic, but the dead tree and bare earth scarring from prolonged inundation is not. Currently the scarring is not seen, or is at such a distance that it is not noticeable. If Warragamba Dam wall is raised and there are periods of prolonged flooding, the scarring will be close and obvious from a number of the major lookouts. The loss in scenic value, especially to the iconic views already well known through years of displayed photographs and promotions, will be major.

The listing of the area within the Greater Blue Mountains World Heritage area is an important part of the promotion of the Blue Mountains. The loss would be compounded if the World Heritage listing of the Blue Mountains is lost. The combination of the proposed adjacent airport, fracking underneath, and raising of the wall make de-listing a very real possibility. The impact on tourism is difficult to assess but is expected to be significant.

### **Cultural Loss - Aboriginal**

While it was not possible to view the documents on the impacts on Aboriginal Culture, at a meeting held in Faulconbridge in August, the Gundungurra Aboriginal traditional owners of the land expressed some concerns about early findings that sounded entirely legitimate.

The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance, 2013 is the guide for best practise for protecting *“all types of places of cultural significance including natural, Indigenous and historic **places** with cultural values.”* (my emphasis) The first principle in article 2 states that *“**Places** of cultural significance should be conserved”*.

Apparently many Aboriginal artefacts were found during the study for the EIA, each being noted as not significant. The implication from this being that there is not a high level of cultural significance overall. This is an absolute failure to recognise that the artefacts, paintings etc are simply attributes of a **place**. It is the setting, the whole landscape that is of cultural significance. This is entirely in line with the Gundungurra concept of Ngurra - otherwise called ‘Country’. As Article 3 of the Burra Charter states; *‘Conservation is based on a respect for the existing fabric, use, associations and meanings.’* Fabric, use, associations and meanings all apply to the area for inundation; it is far more than an accumulation of artefacts. Once the valley is viewed as an Aboriginal **place** it becomes clear that it is a place of high cultural significance.

### **Cultural Loss - Non-Aboriginal**

The wilderness area that includes and encloses much of the area for inundation is of cultural significance to the non-Aboriginal population of Australia also. However vexed and flawed the concept and definition of wilderness is, having the Warragamba Dam catchment area as a close-to-Sydney wilderness area to view from the edges, to bushwalk in or simply to “know its there” gives spiritual meaning and rejuvenation to many people’s lives. The number of people who are actually physically within the site at any one time does not reflect the amount of value that people place on knowing that there is a beautiful place; not a built environment; where plants and animals can complete normal life cycles; where sites of the first peoples are still intact and where rare and endangered creatures can continue to survive. Many consider such rocky and eucalypt dominated bushland landscapes to be intrinsically Australian, representing who we are. It gives balance and meaning to stressed lives.

The Greater Blue Mountains World Heritage area is also of particular importance to the environment movement through its association with the vision and activism of Myles Dunphy, and his cohort. Wikipedia notes of Myles Dunphy that he started his wilderness publicity work in 1910 and campaigned throughout his life for wilderness areas throughout New South Wales. He compiled detailed maps, in particular of the Cocks River and Kowmung River catchments that are still available today and cover areas of proposed inundation. His interest in bushwalking led to the foundation of the Mountains Trails Club of New South Wales, and was influential in the formation of the Sydney Bushwalkers and the Confederation of Bushwalking Clubs in 1932. He also formed the National Parks and Primitive Areas Council, and took steps to establish a professional parks service. He was appointed an Officer of the Order of the British Empire in 1976 in recognition of service to conservation, and was awarded an IUCN Packer Award for Long Merit in National Parks. In summary, Miles Dunphy started the environmental activism movement on the east coast of Australia, and leaves a significant and ongoing legacy.

The cultural value of the area is expressed in a number of ways. One strong demonstration is through its listing as a place of outstanding universal values through World Heritage Listing.

To inundate portions of this would to create significant cultural impact.

### **Significance of the cultural values**

To further support the claim that the area for inundation is of high significance to both Aboriginal and non-Aboriginal peoples, I offer up the following observations against the criteria against which an item will be considered to be of State heritage significance. These criteria were gazetted following amendments to the Heritage Act which came into force in April 1999.

*Criterion (a) An item is important in the course, or pattern, of NSW's cultural or natural history*

*Criterion (b) An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history; the area has a document strong and special association with the Gundungurra peoples, whose history is strongly interwoven with the pre-history and early history of the the Sydney region.*

Also the area has a special association with the environment movement in Australia as noted above. The environment movement has resulted in around 8% of New South Wales' area being protected, which clearly represents both a environmental and cultural significant element of NSW's natural history.

*Criterion (d) An item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons; the strong association between the area of inundation and the Gundungurra for cultural and spiritual reasons is well documented.*

Also the area has a special association with the environment movement in Australia as noted above. The environment movement has resulted in around 8% of New South Wales' area being protected, which clearly represents both a environmental and cultural significant element in NSW's natural history.

*Criterion (e) An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history;* the extent of new archaeological sites discovered within the short period and limited area of investigation for the EIA indicates that there is definitely potential to yield more sites and more information to build greater understanding of the cultural history of the region.

*Criterion (f) An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history;* The Warragamba Dam exclusion area, and the rough and remote nature of the the broader catchment mean that the physical traces of the Gundungurra in the inundation area are particularly intact and, as such, are a rare (of not the only) such collection of in situ Aboriginal artefacts in NSW, certainly on the east coast.

I will rely on the submissions of others to detail the broad range of rare and endangered species, representing natural history, that are threatened by the proposed inundations.

The above, while only a summary, demonstrates that the significance of the values under threat is not just a local minor significance, raising Warragamba Dam wall would create impacts of State Significance.

**Nature and extent of the examination of alternative options for flood management that formed the basis of the the Cost Benefit Analysis of the project and the 'Resilient Valley, Resilient Communities' Strategy.**

I have read the study and commend the authors on a thorough approach particularly the recommendation 'Evacuating people away from flood affected areas is the primary method of reducing the risk to life during a flood.' However there appears to be some options not fully explored. The primary option omitted is to **not** to expand residential dwellings further on the floodplain.

Government does have an obligation to protect human life and putting huge numbers of extra people on a flood plain, even with the flood mitigation capacity of a raised wall, is increasing the risk to human life. The flood risk is not fully mitigated. As the Resilient Valley, Resilient Communities document notes, floods will still occur. The dam wall is likely to increase complacency, already noted as a significant contributing factor to the risk. Single dwellings spread across the landscape, as I understand the proposed developments to be, is the least effective layout for rapid evacuation. This further exacerbates the risk.

Changing the planning framework was not explored at all within the document. Besides the obligation to protect human life, the Government also has an obligation to follow sound planning principles. It is fundamentally bad landscape planning to alienate good peri-urban arable land with housing. Especially with high risk housing. Some blame for the poor planning is cast on the limited recommendations of the current Environmental Planning and Assessment Act. Given that the government has already acknowledged that the Hawkesbury Nepean Valley is particularly flood prone, the State Government has the capacity to address this through a Regional Environmental Plan. Food production as a land use is less susceptible to damage than built structures and would introduce much fewer people into the flood zone.

Major flooding risks may be lessened by the Warragamba proposal but the study does not appear to take into account the exacerbation of medium floods through increased run-off rate that is generated by urban environments. Nor does it refer to the increased flood complacency that the proposed wall may foster.

Another option not fully explored to reduce the risk to existing residents is increased flood warning times. This is mentioned as something that can be marginally improved by use of current technology. However the option of significant research and development into data collection, computing rates and weather modelling does not appear to have been explored. Data collection methods and computing rates are currently rapidly expanding fields of knowledge. While the time frame for research outcomes can never be fully predicted, if some targeted funding were provided, improvements could be expected. An increase from a 15 hour warning time to a 20 hour warning, if generated, would create a significant decrease in risk for the existing residents.

**To sum up,**

I repeat my initial assertion, that if the findings are that the benefits of raising Warragamba Dam wall outweigh the costs, then the costs have been underestimated and the benefits over estimated.