# Submission on Warragamba Dam Raising Project - SSI-8441

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**Submitted by:**

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**Please publish only my name and suburb**

**I declare I have made no reportable political donations**

I wish to register my objection to this project.

While there are many criticisms that can be made about this proposal and the processes leading to the EIS which I consider should disqualify this project for approval, I will, however, focus on just one aspect of the project but a fundamental one: it doesn't solve the problem it is designed to solve: dangerous flooding in the Hawkesbury-Nepean valley.

One major problem that any extension of the dam wall will never affect is that not all the flooding on the floodplains flows from the Warragamba catchment. The EIS acknowledges that but seemingly tries to minimise the flooding effects originating elsewhere. The EIS states "Floodwaters flowing into the Hawkesbury-Nepean Valley come from several different river catchments .... The largest of these is the Warragamba River catchment, which drains into Lake Burragorang and represents approximately 80 percent of the catchment at Penrith and 70 percent of the catchment at Windsor."[1]

However, the Nepean and Grose Rivers can produce large floods without any water flowing into the Warragamba catchment and over the Warragamba dam.

Dr Chas Keys, former Deputy Director General of the S.E.S. told a Legislative Council Select Committee enquiry that 'we are going to get floods periodically in which the serious contributions will be unaffected by whatever happens at Warragamba Dam because the water will come down the Nepean, the Grose, the South and Eastern creeks, et cetera..'[2]

Indeed during the 2021 flood event it would seem the contribution of the Warragamba catchment to the flooding in the Hawkesbury-Nepean was significantly less than that claimed in the EIS. In evidence to the same Select Committee Enquiry Simon Draper, Chief Executive Officer, Infrastructure NSW stated that "In the March 2021 flood the Warragamba catchment contributed nearly 60 per cent of the floodwaters to Windsor, with other catchments contributing around 40 per cent. This ratio is consistent with historical records as well as the contemporary hydrological modelling."[3]

1 Environmental Impact Statement, Flooding and Hydrology, September 2021, 15-35
2 Keys, C., Evidence at Legislative Council Select Committee Enquiry on the Proposal to Raise the Warragamba Dam Wall, Interim Report, October 2021, p.15
3 Draper, S., Evidence at ibid, P.15

An Infrastructure NSW table presented to the Enquiry highlighted the contributions of various catchments to moderate and major flooding in the Hawkesbury-Nepean since 1961. It showed that of the eight events, the contribution of the Warragamba catchment was between 42% and 69%. However, it was less than 60% on five occasions.[4]

Environmental Scientist Professor James Pittock cites a 2015 NSW SES study which produced similar results. Since the dam's construction in 1960, the contribution of the Warragamba catchment to major flooding events has ranged from 75% to 42%. An average of 45% of floodwaters originate from catchments that are not upstream of the Warragamba Dam.[5] During the 2021 floods the Warragamba catchment contributed 59% to the flooding.[6] So there will always be a lot of floodwater a raised Warragamba dam wall simply won't affect and it would appear it is a lot greater than claimed in the EIS.

It must also be understood that run-off from paved areas on floodplains where housing developments currently exist have contributed to the non-Warragamba catchment contribution and further development with increase this contribution over time.

The other major problem with relying on the dam for flood mitigation is that during major rain events, a raised dam wall will delay flooding in some areas but not prevent it. During the 2021 flood a 14 m. raised wall would have merely delayed flooding by around 2 days in the Hawkesbury-Nepean. People's houses would still be flooded and possessions lost.

Dr Chas Keys claimed that "the raising of the dam wall will reduce the threat of flooding for the lesser, more frequent floods in these areas but will according to the government's own investigations achieve little mitigation in the bigger events." He warned of the "Levee Paradox" whereby flood mitigation efforts can drive a push for development on floodplains and thus increase overall risk. This he said was demonstrated in Brisbane following the upgrade of the Wivenhoe Dam as a flood mitigation dam following the flood of 1974. The increased dam height prevented more water inundating the area during the 2011 flood event but there was additional damage done compared to the earlier flood because there had been more development in the area between the two floods.[7]

4 Infrastructure NSW, Flood event Hawkesbury Nepean Valley, 7 June 2021, in ibid, p. 15
5 Pittock, J. Managing flood risk in the Hawkesbury-Nepean Valley, September 2018, p. 8
6 Legislative Council Select Committee Enquiry on the Proposal to Raise the Warragamba Dam Wall, Interim Report, October 2021, p. 12
7 Ibid, p.13

Professor Pittock makes the point that "flood mitigation dams tend to 'control' only small and medium sized floods from upstream catchments."[8]

Dr. Keys sums up the current situation with the Warragamba dam extension question:

"The raising of the (Warragamba) dam is beguiling. It makes a kind of popular sense but it is not necessarily highly productive of mitigation, especially in rare genuinely big floods which will be the most consequential. The pressing need, I think, is to stop the problem of community flood vulnerability from getting worse."[9]

All evidence points to the fact that the raising of the Warragamba Dam wall not solve the problem it purports to and, if more development occurs, it could make matters worse. The people living on the flood plains will still be at risk of floods and will still need solutions. The dam extension will likely just delay any other solutions being instituted.

Researchers from the University of Technology Sydney concluded that lowering the full storage level of the dam, coupled with the use of current and new desalination plants, could be more cost effective than raising the dam wall.[10]

If offset costs for the environmental damage flooding of the Buragorang Valley caused by the dam extension is accurately calculated, those plus the construction costs of the dam will come to nearly $3 billion. That money would go a long way towards providing adequate evacuation measures. Professor Pittock noted that a programme considered by the government to upgrade roads to allow evacuation at higher flood levels which was later replaced by the dam proposal would have cost only $950 million and would dramatically increase the safety of residents in the Hawkesbury-Nepean Valley.[11]

Ultimately, however, if the government is genuinely aiming to ensure the safety of the residents of the Hawkesbury-Nepean, a gradual buy-back of houses on the floodplain, starting with the areas most regularly flooded should be a major part of a flood mitigation plan. The floodplains can then be repurposed for any number of community-friendly and/or productive uses, e.g. parklands and community gardens.

In conclusion, I would suggest the cost in terms of environmental damage and government spending is extremely bad value when the problem of flooding on the Hawkesbury-Nepean floodplain will not be solved by the current dam extension proposal and would strobngly recommend it proceeds no further.

8 Pittock, J., op cit, p. 6.
9 Keys, C. Evidence at Legislative Council Select Committee Enquiry, op cit, p. 13
10 Cited in Pittock, J., op cit , p. 7
11 Pittock, J., ibid, p. 8