SUBMISSION TO THE ENVIRONMENTAL IMPACT STATEMENT FOR THE WARRAGAMBA DAM WALL RAISING PROPOSAL

October 25, 2021

Thank you for the opportunity to make a submission regarding the EIS for the Warragamba Dam wall raising proposal.

My interest in this proposal is varied and multifaceted.

I have spent decades bushwalking in the Greater Blue Mountains World Heritage Area, including along the periphery of the Special Area. For example, I have hiked from Mittagong to Katoomba through Mount Cloudmaker, Rack, Roar and Rumble and through the Wild Dogs country.

I have participated in volunteering in natural area restoration activities, including with Gundungurra Traditional Owners on their homelands near the Wollondilly River, restoring habitat for koalas.

I have also worked in the Hawkesbury-Nepean Valley. This has been in two different capacities. Firstly, as a health professional visiting families in their homes and children at their schools. Secondly, as a bush regenerator carrying out natural area restoration work along the Nepean River, including after flooding events.

I also participated in an interagency natural disaster recovery committee while working for what was at the time the NSW Department of Community Services.

Due to resource constraints, I have chosen to focus my submission on a number of issues of particular interest to me rather than trying to cover all aspects covered in the EIS.

Therefore, I request that the Minister consider the issues and facts that I have listed below when making his decision about whether or not to proceed with the Warragamba Dam wall raising proposal.

1. **Credibility of the EIS process**

The first issue to be noted is the poor reputation and track record of the consultants commissioned to complete the EIS. The company (SMEC Engineering) who completed the environmental and cultural assessments for the EIS have established practices that abuse the rights of First Nations people and are black listed from the World Bank.

The independence of the EIS process is being questioned by many in the community. This includes questions about whether heavy, selective editing of original assessment reports providing evidence about the proposal's impacts favours the proponent's interests. For example, ecologists' reports about the serious threats to endangered species in the World Heritage area were disregarded. Ecologists involved in the assessment process claim that the consultants overruled their use of terminology and tried to force them to reinterpret evidence for the adverse impacts of the proposal. One ecologist was even forced to resign rather than sign off on the EIS report. It has also become apparent that insufficient funds were allocated to obtain expert studies and reports into the adverse impacts of the proposed project.

This constitutes a fundamental flaw in the EIS process.

2. Limited support for stated benefits of raising the dam wall

Raising the dam wall is described as the preferred infrastructure solution (Hawkesbury-Nepean Valley Flood Strategy, Outcome 2) but it is only one of the outcomes listed in the Flood Strategy. There is no modelling included to support the description and explanation of the stated flood and economic benefits of raising the dam wall. It is unlikely to achieve its stated benefits.

The Warragamba Dam catchment is not the only source of flooding for the Hawkesbury-Nepean Valley. The most vulnerable parts of the flood plain are downstream from the Grose River.

The contribution from the Warragamba catchment is being overstated; the Warragamba Dam catchment does not make such a major contribution to large floods as is being claimed. This river system has other catchments. On average, 45% of floodwaters originate from areas outside of the upstream Warragamba Dam catchment. The Grose River catchment is also enormous and was the original preferred option for damming to provide Sydney's water

supply, but was abandoned due to cost. As stated, floods occur without contribution from the Warragamba catchment.

The most vulnerable parts of the flood plain are downstream from the Grose River. With its large watershed and catchment, the Grose River impacts the lower Hawkesbury area.

So, regardless of how high the dam wall is built, it will not be able to prevent flooding in the Hawkesbury-Nepean Valley downstream.

Overspilling of the dam wall at its current height makes a contribution to severe flooding as does water originating from other parts of the Hawkesbury-Nepean catchment and rainfall, and this is a management issue as discussed further below.

As stated, the dam was constructed for water supply not flood mitigation. It has also previously been raised. It should also be noted that just because other dams have been raised in other countries, does not mean that such projects are popular with communities.

3. Hawkesbury-Nepean floodplain

The recorded history of flooding in the Hawkesbury-Nepean valley illustrates that this is a natural floodplain. In fact, it has been a floodplain for hundreds of millions of years. Floodplain ecosystems are dependent on periodic flooding. There are canopy species that are rarely found anywhere else, such as Blue Box (*Eucalyptus baueriana*) found almost exclusively on the river flats around Richmond, and the Broad-leaved Apple (Angophora subvelutina) that exists most commonly in the Hawkesbury-Nepean floodplain.

Flood risk exposure in the Nepean-Hawkesbury floodplain is by definition a problem of urban development in the floodplain. Therefore, addressing urban development in the floodplain needs to be the focus of management. Mapping (that has already commenced) of the maximum possible flood area should be used to create a new flood zoning for the floodplain. Consequently, no further urban development would then be undertaken in this Hawkesbury-Nepean floodplain zone.

No one wants to see loss of life or damage to property from flooding for people living in the floodplain. If more extreme heavy rainfall events are expected with climate change, then this is all the more reason to abandon development in the floodplain.

This is the common-sense approach to flood risk exposure in the Hawkesbury-Nepean floodplain. It is the most effective way to minimise downstream environmental, social and economic impacts of flooding. There is no evidence supporting the achievement of the stated project objective of minimising downstream environmental, social and economic impacts from changes in water releases from the dam.

Raising the dam wall will substantially increase risk of flood exposure downstream and cause irreparable degradation of the floodplain, because of enablement of the associated expanded urban development. Increase in impermeable surfaces downstream will substantially amplify the damage caused by water through greatly accelerated rate and channelling of flow. These changes in hydrology will vastly increase damage to the natural environment through erosion and sedimentation.

The limited understanding of potential impacts to the Hawkesbury-Nepean floodplain from changes to downstream hydrology and environmental flows indicates that more research is required into this unique environment. At the very least the project should be delayed to allow more time and resources to be put into a deeper understanding of the natural environment of the Hawkesbury-Nepean floodplain. That the downstream impacts from the proposed project have not been quantified is not an excuse to ignore them.

4. The flood mitigation zone

The proposed *flood mitigation zone,* as included in the EIS report, is a vague, confusing and misleading concept. One could be forgiven for wondering how water can be stored in an 'airspace'.
The description of this zone as an 'airspace' drastically underplays the volume of water involved and the impact its storage will have on the upstream environment. This 'airspace' would be able to hold 1, 000 Gigalitres which

represents an additional 50% water volume to the dams existing capacity. This is a huge amount of extra stored water. This volume is underrepresented in the illustrations included in the EIS report.
The *Flood Mitigation Zone* presents a fundamental paradox. Its proposed function as a temporary storage of inflows is deeply concerning, raising the crucial of question how 'temporary' this storage will be. Once a dam is built it banks up water behind it. If this volume of water still needs to be released into the floodplain, then it is very difficult to see how the claimed benefits can be quantified and how this project can be justified, particularly the estimated project cost of $1.6 billion. Temporary storage as described in the EIS will nevertheless cause significant unnecessary and unacceptable damages upstream. Many in the community, however suspect and fear that the proposed project is being designed simply to hold more water, with no intention for it to be a temporary storage. If water stored in the Flood Mitigation Zone is not released, then the upstream environmental impacts will be truly devastating.

5. **Upstream Environmental impacts**

The EIS report does not adequately refer to the significance of the area upstream from the proposed project. Upstream from the Warragamba Dam wall is the Blue Mountains World Heritage area. This is not only a world class National Park, but has been UNESCO World Heritage listed since 2000. This is in recognition of its Outstanding Universal Value for all humanity, including future generations.

Raising the Warragamba Dam wall would inundate this precious upstream area with up to half again a volume of water that the dam is currently capable of holding and for three times as long as at present, assuming temporary storage only. This amounts to substantially increased damage to the World Heritage Area. Whilst reading the EIS report, the question arose: "what happens if the dam wall is raised as proposed and it still spills over; will the proponent attempt to continue to raise the wall until the entire Kedumba valley is effectively dammed?"

In the EIS report it is stated that significant negative environmental impacts are likely, but even these have been grossly under reported and under estimated. This is because of: underestimated impact area; inadequate survey areas or extent; excluding important areas for threatened species habitat; diluting or

ignoring findings; and not including other expert reports for shortfalls in the scale of assessment.

Beginning with the extent of area that would be impacted by inundation: the assessment reported in the EIS has been based on identifying an 'impact area'. This area has been defined by estimating that the inundation level is likely to increase by at least 8 metres with the dam wall raising, and would last longer than when inflows currently cause the dam wall to spill. Based on this definition, it is estimated in the EIS that this impact area is about 1, 400 ha in size. Other sources, however, estimate that an area of up to 6, 000 ha of National Parks would be inundated. This includes 1, 300 ha of the Greater Blue Mountains World Heritage Area.

This area of inundation includes an estimated 64 kilometres of wilderness rivers. The conclusion made in the EIS that the Kowmung River and other wild rivers would not be significantly impacted is a gross underestimation and must be refuted. It must be noted that the Kowmung River is a declared 'Wild River' protected for its pristine condition under the National Parks and Wildlife Act 1974.

This area of inundation also includes: unique eucalyptus species diversity, such as the Camden White Gum, recognised as having Outstanding Universal Value under the World Heritage listing of the area; several Threatened Ecological Communities, in particular Grassy Box Woodland; and habitat for up to 76 threatened plant species and 16 species of threatened native animals. This includes endangered and critically endangered species such as the Critically Endangered Regent Honeyeater and Sydney's last Emu population. The Camden White Gum (*Eucalyptus benthamii*) is endangered and rare. It is found almost exclusively around Lake Burragorang and Kedumba, but it is a species of upland waterways and not floodplains. It is not meant to be inundated.

The draft EIS grossly minimises the loss of native vegetation, degradation of ecosystems not evolved to flood and consequent impacts on native animals of the proposed project. It is based on inadequate surveys of threatened species. A major area of 0-2.78 metres and 10.25-14 metres above the current maximum flood level was excluded from the assessment, representing a huge area of already mapped important Critically Endangered Regent Honeyeater habitat. Research findings conducted by ecologists involved in the assessment process regarding the Critically Endangered Regent Honeyeater were either

diluted or totally ignored. In fact, fewer than 350 Regent Honeyeaters are left in the wild with the majority being in the Blue Mountains region. In only 20% of the proposed impact area, surveys found a minimum of 21 birds and 7 nests. Field surveys reported in the EIS were of a scope substantially less than guideline requirements for such surveys. Further, it was not sought to augment these with other expert reports as would be expected.

A major flaw of the EIS is the lack of up to date/relevant surveys. Field surveys have not been completed following the devastating bush fires of the summer of 2019/2020 that burnt 81% of the Blue Mountains World Heritage Area. The EIS does not take into consideration the extensive impact of these bushfires to the World Heritage Area. Wildlife habitat and vegetation recovery is crucial for the species diversity and threatened species listed above. Further loss and damage to the area should be avoided to allow both refuge (habitat and food sources) for wildlife as well as recovery periods for vegetation.

Personally, the most unacceptable aspect of this proposal is the upstream impacts to the National Parks and World Heritage Area resulting from the banking of water behind the raised dam wall.

I do not believe that it is possible to achieve the stated project objective of minimising upstream environmental, cultural and social impacts from increased temporary inundation within the catchment of Lake Burragorang.

It is stated in the EIS report that 100% of environmental values would be lost in the (grossly underestimated) impact area. Loss of environmental values of any extent or area of the National Parks and Blue Mountains World Heritage Area is unacceptable. This is **protected land and 'protected' means 'protected'. No activity that risks damage or loss to any part of it should go ahead.**

Raising the Warragamba dam wall and consequent damage to natural and cultural values of the upstream area would be a clear breach of the Outstanding Universal Value undertakings and Australia's obligations under the World Heritage Convention.

6. Upstream Aboriginal Cultural Heritage impacts

In addition to universally significant environmental values, upstream from the Warragamba Dam there are also significant Aboriginal Cultural Heritage sites.

Only 27% of the impact area, however, was assessed for Aboriginal Cultural Heritage, and so these values are grossly underrepresented in the EIS report.

In fact, over 1541 identified cultural heritage sites would be inundated by the Dam wall raising proposal.

Loss of any Aboriginal material and spiritual cultural heritage values is unacceptable. The Gundungurra Traditional Owners of the Burragorang Valley have been repeatedly displaced and dispossessed. Further destruction of their homelands is simply unacceptable to the community in the present day. The comment made in the EIS that the proposed project would cause: "a further accumulation of impacts to Aboriginal cultural heritage that has previously been affected by the original construction of Warragamba Dam and associated permanent upstream inundation from water storage" (p36) in fact understates the gravity of loss that would ensue.

The Aboriginal Cultural Heritage Assessment Report has been consistently and comprehensively criticised by both the Australian Department of Environment and the International Council on Monuments and Sites (ICOMOS). Criticisms have emphasized the inappropriate assessment of cultural heritage and the lack of meaningful consultation with Gundungurra community members.

I know that the Gundungurra Traditional Owners oppose this proposal and that they have not been meaningfully consulted. Their custodianship of the land is being ignored. No ethical consultation with the Traditional Owners of the area, that is treated with respect, would allow this project to go ahead.

7 Warragamba Offset Strategy

The gross under estimations of impacts on upstream environmental values (as outlined above) are used as the basis for calculating offset in the EIS. This means that the offset proposed is grossly inadequate.

Experts state that calculations based on the estimate of an impact area of up to 6, 000ha would result in $2 billion in offset costs. This means that offsets as stated in the EIS would not be able to achieve what they are meant to, including for endangered plants.

Offsets are a poor compensation and do not replace the complexity and functioning of these ecosystems, especially when we are talking about the

Outstanding Universal Values of the protected lands and the World Heritage-listed area. Recent impacts from the 2019-2020 bushfires make protection of this area even more essential with the added need for further resources to study bushfire impacts and recovery. Further impacts are clearly to be avoided.

Compensation is therefore not an appropriate concept and offset should not be used towards any form of justification for loss of existing World Heritage Listed areas. The offset strategy would not required if impacts are avoided by the project not going ahead on lands that are protected; following Principle 1 of the offset policy. It should also be noted that Principle 2 has not been met by this EIS process, invalidating use of offset policy.

Instead, additional area should be annexed to the reserve estate to provide corridors and connectivity that provide refugia for species impacted by the 2019-2020 bushfires. This would provide support for revegetation and habitat and food source recovery for threatened species. This land could, but does not necessarily have to, equate to an area that would otherwise have been considered under offsets.

8. Flood risk management and the assumptions of the proposal

As stated in the EIS report, the only purpose of this proposal is to provide flood mitigation for downstream communities. There is no evidence to support that the stated project objective of reducing peak flood heights or rate at which peak flood heights are reached, can be achieved.

The stated major benefits of the proposal: making some degree of difference when there are large floods; buying some time for emergency services to conduct evacuations; and reducing peak height by 4 metres in the Richmond/Windsor floodplain are vague and not supported by modelling. As the Flood Mitigation Zone airspace is stated to be for temporary storage, it is also stated that all this water will still need to be released.

Underlying the stated benefits of the proposal are assumptions based on the number of properties flooded and overall flood damage costs. This includes concerns about risk of flood exposure and the need to evacuate lots of vulnerable people. The fundamental problem, however, with the assumptions underlying the stated benefits is that obviously the proponent expects that in

2041 there will be far more people living in the floodplain “with currently permissible growth”, and so even with the dam wall raised, there would still be approximately the same number of people to evacuate, approximately the same number of homes impacted and a similar amount of damages to those of the present day without the dam wall raised. So, the other stated key benefit of raising the dam wall; that the number of people needing to be evacuated would be reduced would, even by the figures displayed in the EIS, not in reality be achieved.

It therefore appears that the sole purpose of this proposal is actually to give the green light to substantially expanded urban development of the flood plain. This is turn will in fact increase the flood risk exposure for new residents moving into the flood plain. Raising the dam wall will in effect give a *false sense of security* to people living and working in the floodplain. As the Flood Mitigation Zone airspace is stated to be for temporary storage, it is also stated that all this water will still need to be released. If, however, the huge volume of additional water stored in the flood mitigation zone was to burst the dam wall, there would be a disaster in the downstream floodplain of catastrophic proportions.

The first, most responsible and best practice solution to flood risk exposure in the Hawkesbury-Nepean floodplain is to cease further urban development in the area.

There are many alternative options to the Warragamba Dam wall raising proposal that would protect existing communities in the floodplain. An integrated approach of multiple options has been recommended in the Hawkesbury-Nepean Valley Flood Strategy as the most cost-effective means of flood risk mitigation. All of these other Outcomes in the Flood Strategy are to be commended and should be adopted in combination.

In particular, further research and consideration should be given to different management protocols for the existing dam wall to develop better ways to monitor and manage the dam to release water (in conjunction with flood plain restoration works). More closely monitored and timed controlled releases should be being undertaken with the dam wall at its present height. ‘Normal operations’ of environmental flow releases should be reviewed to prevent the volume exceeding full supply when this is required. This involves the

development and implementation of methodologies to release environmental flows in anticipation of increased inflows. This would mean using forecasting to plan environmental flow release, rather than waiting for the wall to spill over in an uncontrolled manner. This effectively means releasing water that would be held in the proposed 'flood mitigation zone' before it flows in. This would occur through working closely with the forecasting services, in line with Outcome 6 of the flood strategy, as part of the information that is provided to the community in the lead up to heavy rainfall events in Warragamba catchment.

Integrated approaches to protecting downstream communities will emphasise:

– working closely in conjunction with better forecasting and prediction technologies;
– improved evacuation procedures as outlined in the Flood Strategy, as well as evacuating sooner in anticipation of increased environmental flow releases;
– community preparedness and behaviour change, including evacuating before roads and bridges are inundated or expecting to not be able to use roads and bridges for evacuation but instead using more boats
These approaches reflect many of the same principles being discussed in community workshops in bushfire prone areas designed to build more resilient communities.

If the Richmond/Windsor floodplain area is considered to be particularly vulnerable, then it should be the first/priority focus for implementation of such an integrated approach.

These and other alternative options were not comprehensively assessed in the EIS. Initial cost of implementation of an integrated strategy would be offset by economic, social and environmental benefits.

Position Statement

In light of the above issues, I oppose the Warragamba Dam wall raising proposal.

Many more people oppose this project than perhaps the Minister realises. In the process of working on this submission, I have been speaking to people in my personal and professional circles, many of whom are unable to write their

own submissions. I have unashamedly included their views in my own submission.

I oppose this proposal for the following reasons.

- The goal of reducing flooding extent or frequency is not realistic or achievable. The proposal cannot be justified on the basis of dubious benefits for downstream communities.
- The proposed project would increase flood exposure risk through its association with substantial expansion of urban development in the floodplain, and the *false sense of security effect* for new residents moving into the area. The Taskforce's conclusion is based on the assumption of continued urban development in the floodplain, and so no longer applies when this assumption is addressed.
- The Greater Blue Mountains World Heritage Area must be protected. The proposed project will cause loss of a unique and irreplaceable natural environment, including Endangered Ecological Communities and Threatened Species. This is unacceptable and cannot be justified.
- The proposed project will destroy Material and Spiritual Cultural Heritage of the Gundungurra Traditional Owners. This is unacceptable and cannot be justified.
- The proposed project would give the green light to continued urban development in the floodplain. The ancient floodplain of the Hawkesbury-Nepean Valley must be respected for the natural phenomenon that it is, and needs to be restored rather than being over developed. For social, environmental and economic reasons, continued urban development in the floodplain is inappropriate.
- There are alternative options that would protect existing downstream communities. These approaches will be more transparent and efficacious than a so-called infrastructure solution in building community resilience and disaster preparedness, while continuing to protect upstream environmental and Aboriginal Cultural Heritage values and allowing for the restoration of the floodplain.

It is clear that key issues identified throughout the consultation period and consistently emphasised by the community cannot be adequately managed or offset, particularly: impacts from inundation on the environment and

Aboriginal Cultural Heritage of upstream areas, including on threatened species; protection of the Greater Blue Mountains World Heritage Area; and concerns about inappropriate development in the floodplain.

Further, fundamental flaws and problems with the EIS process undermine the credibility of the environmental and cultural assessment, resulting in it being inappropriate and unacceptable as a basis for making further decisions by the Minister for Planning. It is my belief that no environmental assessment process with integrity or credibility would enable this proposed project to go ahead.

Recommendations

1. The proposal to raise the Warragamba Dam wall should not proceed,
2. The other recommended outcomes in the Flood Strategy should be adopted and implemented for existing downstream communities. This should be accompanied by adequate resourcing for long term implementation and review.
3. Mapping of the maximum possible flood should be completed to create a floodplain zone that will be subject to:
    - cessation of further urban development. (This is the best deal for the community, rather than the so-called preferred infrastructure solution that would in fact increase the problem whilst worsening impacts upstream);
    - a buy back scheme for properties over a long-term period;
    - flood zone retrofitting design for existing properties to minimise damage, including to personal belongings. This should be accompanied by a fund to support residents to undertake retrofitting;
    - modern/updated/upgraded evacuation procedures and methodologies that focus on water vehicles and less reliance on roads and bridges. All residents should have an evacuation plan and expect to have to evacuate in such a large to severe flood. They should also have a water vehicle or neighbourhood/community-based fleets of water vehicles;
    - a natural area/ floodplain restoration plan for the whole of floodplain. Flood risk exposure will be significantly reduced by restoring the floodplain. Outcome 3 of the Flood Strategy could be expanded to encompass: natural area floodplain restoration works

around existing buildings; to include more weirs and retention ponds/basins; and weed management and revegetation projects that as part of an integrated design would better accommodate the flow of water across the floodplain; and
- a new rating for insurance for existing properties in the floodplain zone.

A restored floodplain would be an incredible asset and major tourist attraction as restoration works and design could allow for people to enjoy the area. Restoration of the floodplain affords opportunities for Western Sydney to have truly world class, best practice blue and green spaces for the rapidly growing populations of the Western Sydney Parkland City. This is especially needed given the likely adverse heat impacts facing this area in coming decades.

4. Review and implement new operational procedures for the existing dam wall to better manage water levels by carrying out slow environmental flow releases prior to forecast heavy rainfall events in the Warragamba catchment. Additional infrastructure for environmental flows could be added to the existing dam wall to facilitate this management process.
5. The National Parks and Greater Blue Mountains World Heritage Area must continue to be protected. The Government must maintain its obligations under the World Heritage Convention.
6. An additional area should be annexed to the reserve estate to provide corridors and connectivity that provide refugia for species impacted by the 2019-2020 bushfires. This would provide support for revegetation and habitat and food source recovery for threatened species.

Thank you for your consideration of the issues raised, and recommendations made in this submission.

Yours sincerely,

Dr Tania De Bortoli