INQUIRY INTO PROPOSAL TO RAISE THE WARRAGAMBA DAM WALL

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Partially Confidential

The Raising of The Warragamba Dam Wall By Lotte Lilian Weber, Year 10 (school major project from March 2019)

★ Please note that this is a copy of my year 10 major project from March 2019 and I acknowledge that since this report was written, some facts may have changed. However, my position on this issue remains the same.

Description of The Issue:

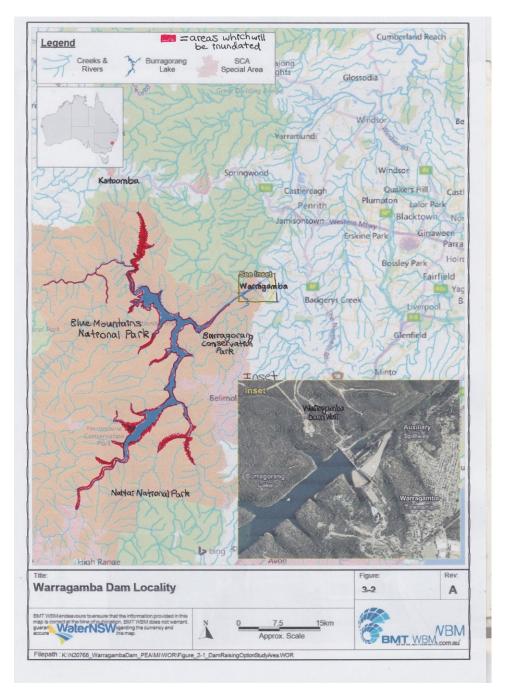
The Warragamba dam is Sydney's main water supply, providing 80% of the city's water. Built from 1948 to 1960, a 142-metre-high concrete wall on Warragamba river holds vast quantities of water, forming Lake Burragorang, which holds approximately four times more water than Sydney Harbour. With a total area of 75 square kilometres, at its fullest, Lake Burragorang can accommodate up to 2,027,000 megalitres of water. It is one of the largest domestic water supplies in the world. Many wild rivers and tributaries upstream feed in to Warragamba Dam, amounting to a total catchment area of nearly 9051 square kilometres.

Situated on the floodplains downstream from the Warragamba dam is the Hawkesbury – Nepean Valley, a site of urban sprawl radiating out from a very over-populated Western Sydney. Many believe that residents in these areas are at serious risk of flooding and so a matter of great controversy has arisen; a proposal to raise the Warragamba dam wall by 14 metres, supposedly for flood mitigation to protect the homes of those in the Hawkesbury – Nepean areas.

Many oppose this proposal, seeing as even WaterNSW have admitted that raising the dam wall to hold back an increased amount of water during a flood or high rainfall event instead of releasing it downstream in gradual pre-flood measures would result in water backing-up on riverbanks, wild rivers and other tributaries upstream, flooding them for temporary periods of a few weeks. This means that raising the Warragamba dam wall by 14 metres puts thousands of hectares of World Heritage listed national parks, wild rivers and sacred Aboriginal sites upstream in the Blue Mountains at risk of temporary inundation periods which could destroy those environments forever, gradually washing away invaluable environmental and cultural history. Areas which would be flooded include approximately 300 Aboriginal sites, the habitat of NSW's rarest bird, the critically endangered Regent Honeyeater, and endangered Camden White Gums. UNESCO have also advised that due to the destruction occurring if the dam wall is raised, the World Heritage listing of the Blue Mountains may be taken away.

Some stakeholders suspect the raising of the dam wall to merely be a developer-driven scheme, intended to cover the safety guidelines of insurance standards so that large companies can build on Western Sydney floodplains. Contrary to the government's insistence that the raising of the dam wall is only to protect existing houses at risk from floods and will not encourage future development in the area, the Hawkesbury Nepean Flood Risk Management Strategy

forecasts a doubling of the population in the Hawkesbury-Nepean Valley over the next 30 years, equal to an additional 134,000 people.



-Map of Lake Burragorang, (areas which will be inundated in red)-

Impacts on The Environment and Community:

The Greater Blue Mountains World Heritage Area is home to 48 threatened plant and animal species, hundreds of Aboriginal cultural sites, and rare dry rainforests. In 2000, it was added to the World Heritage List for its unique natural values.

While so far NSW Government has ultimately been siding with Infrastructure NSW to support the raising of the dam wall, one of their documents states, "The impact of increased flood water levels within the dam is likely to have extensive and significant impacts on listed threatened species and communities and world and national heritage values of the Greater Blue Mountains World Heritage Area."

According to GIVE A DAM, a campaign opposing the raising of the Warragamba Dam wall which is run by the Colong Foundation for Wilderness, "The proposal to raise it's wall would increase the dam's capacity by fifty per cent, placing 65 kilometres of wilderness streams and rivers within the World Heritage site under direct threat from dam water inundation." It is also predicted that raising the wall of the dam could flood and destroy approximately 4700 hectares of World Heritage listed national park upstream from Warragamba in the Blue Mountains area. When interviewed, the campaign's CEO, Harry Burkitt said he believes that the raising of the dam wall is a developer-driven scheme intended to allow them to build even more houses on flood-prone land and is primarily a money-making sham at the expense of some of the most magnificent environmental sites in the world.

Tributary rivers at risk of inundation, should the dam wall be raised, include the Kowmung River, the Cox's River, the Kedumba River, the Little River and the Wollondilly River. According to the NSW Government Office of Environment and Heritage, wild rivers are recognised and protected under the National Parks and Wildlife Act 1974. The Kowmung River is a declared wild river, but as the Water NSW Amendment (Warragamba Dam) Bill 2018 has been passed, like all the other rivers it too will be inundated.

Justin Field, an independent member of parliament in the NSW Upper House, says that "Even though they're talking about temporary flooding, if that happens once or twice in these areas, the biodiversity value is totally lost. All the weeds come in, you start to have the die-back of certain types of trees which animals rely on." This highlights yet another risk which will be brought with raising of the Warragamba Dam wall. If wild rivers and environment upstream is inundated with dam water from downstream, a lot of foreign matter will be carried into the area. This includes sediment and weeds, as well as water of different properties, all of which will impact the delicate balance of the area and make it much more difficult for some plant species to survive.

Areas upstream which will be flooded are home to unique species of flora. This inundation will decrease the area's biodiversity and alter the ecological value dramatically. For example, down

in the lower Kedumba River Valley are Camden White Gums (eucalyptus benthamii) which are nationally listed as 'vulnerable'. Kowmung Hakea (Hakea dohertyi) which is listed as 'endangered' also inhabits areas which will be flooded. Additionally, these environments contain very unique mixed forests consisting of Cypress Pine and Iron Bark. Vast numbers of old growth trees dwell in banks upstream from Warragamba and will be flooded too.





- Camden White Gum -

- Kowmung Hakea -

In a submission to the NSW Legislative Council's inquiry into the Water NSW Amendment (Warragamba Dam) Bill 2018, ecologist Ross Cates wrote of the destruction of habitat raising the dam wall would cause for the Regent Honeyeater. Cates believes that "The Burragorang Valley is a key breeding site for the Regent Honeyeater", which is listed as Critically Endangered under the Commonwealth Environmental Protection and Biodiversity Conservation Act 1999. He estimated that in 2017, 5-10% of the estimated Global population of the bird resided in the Burragorang Valley alone. If the Burragorang Valley is flooded, there will be a considerable decrease in the Regent Honeyeater population.



- Regent Honeyeater -

The proposed raising of the Warragamba Dam wall is also predicted to inundate and destroy the 300 Aboriginal sites in upstream areas, 50 of which are archeological. The traditional custodians of the Southern Blue Mountains area are the Gundungurra people and land in this

area represents one of the most intact dreamtime stories left, the story of Mirrigan and Gurrangatch which tells of the creation of the 15 water holes in surrounding areas all connected by wild rivers. When interviewed over the phone, Kazan Brown, a Gundungurra women who lives in Warragamba said these Aboriginal sites were "invaluable". She said the Aboriginal sites "include burials, camp sites, scarred trees, ceremonial ground, where they made tools" and that "in some places it's like they just got up and left yesterday." The significance of these Aboriginal sites is immense and if destroyed, much of a songline will be destroyed too. When Warragamba Dam was built in 1960 it resulted in the flooding of a large proportion of the Gundungurra cultural heritage. If the dam wall is raised, remaining sites of dreamtime stories including creation waterholes and cave art will be destroyed.

Positive and Negative Outcomes of Raising The Warragamba Dam Wall:

Pros of Raising The Warragamba Dam Wall by 14m	Cons of Raising The Warragamba Dam Wall by 14m
 Raising the Warragamba Dam wall will decrease, though not eliminate, the risk of flooding in the Hawkesbury - Nepean Valley. As raising the wall would have decreased the risk of flooding in the area it will be safer so development companies can build more houses in the area. Increased development on the Hawkesbury - Nepean floodplains will allow more space which will benefit the Hawkesbury - Nepean Valley as it is already bursting at the seams. Both the construction involved in raising the wall itself and the housing development of Western Sydney floodplains will result in lots of employment opportunities. 	 Areas in the Greater Blue Mountains World Heritage Area upstream from the Warragamba Dam will be inundated for temporary periods of a few weeks at a time in extreme rainfall events. This will erode much of the land as well as causing substantial physical damage to plants. Floodwater will carry a lot of sediment into upstream areas and unbalance their delicate ecosystems. Floodwater will also carry unfamiliar plant species and weeds into the area, introducing competition for the native species. Upsetting plants upstream will also filter out to effect the many animals that rely on those plants for food and shelter and consequently the predators which eat the first order consumers. Raising the dam wall is expected to flood 65 km of wild rivers. If the Warragamba Dam wall is raised

 it is also expected flood 4,700 hectares of World Heritage listed National Parks in the Blue Mountains Area, which may result in the World Heritage listing being withdrawn. if the Blue Mountain's World Heritage listing is withdrawn, not only will a lot of the conservation regulations that protect the Blue Mountains wilderness be gone, but tourism in the area may decrease which will have significant financial effects. 50 archaeological Aboriginal sites and 300 Aboriginal cultural sites in total will be flooded and much of the culture destroyed. The Hawkesbury - Nepean Valley will still be at risk of flooding even if the dam wall is raised, as half of all floodwaters originate from catchment areas that do not link to Warragamba Dam, so residents in Western Sydney could still be at significant risk of flooding. if Western Sydney was not so overpopulated, people would not be forced to live on floodplains and no one would be at risk, but falsely imitating safety standards by raising the dam wall will mean housing developers can put 134,000 new people into areas which will remain unsafe and at risk from flooding from other water catchments. This will also add to the issue of overpopulation in Western Sydney. The cost of raising the dam wall is estimated to be huege and with many possible alternative flood mitigation strategies which would be cheaper ared wild which went per period on mitigation
and would not harm upstream

Views of Different Stakeholders and Interest Groups Affected:

Relevant stakeholders affected by or involved in the battle of the proposed raising of the Warragamba Dam wall include the traditional custodians of the land which will be inundated upstream (the Gundungurra people), developers in Western Sydney, local community representatives and council members, activist campaign groups opposing the raising of the dam wall, and environmental conservation organisations.

Kazan Brown:

Traditional custodian, Kazan Brown, a Gundungurra woman who lives in Warragamba, is horrified by the significance and number of Aboriginal cultural sites the government, Water NSW and Infrastructure NSW are prepared to inundate and destroy. While she thinks flood mitigation "is a good thing to look into" she says she also knows "there's alternatives to raising the dam wall and that they should be looked into rather than raising the wall." A sceptic of the true motivations behind raising the wall, she says, "I mean it's good to say it's flood mitigation but then you can't put 130,000 new people on the floodplain and try and tell me it's for safety.

Infrastructure NSW:

Infrastructure NSW supports the raising of the Warragamba Dam wall. In the Hawkesbury-Nepean Valley Flood Risk Management Strategy they write that "Warragamba Dam is on the Warragamba River - one of the major tributaries to the Hawkesbury-Nepean River. Flows from the large Warragamba Catchment are involved in all major regional floods that pose the greatest risk to life and property." They believe that "raising the dam wall by around 14 metres is the infrastructure option with the highest benefit – significantly reducing the risk to life downstream, and reducing flood damages by around 75% on average while balancing the impacts on the upstream environment." They state that raising the dam wall "would significantly reduce the risk to life and property, including the worst floods on record, and increase the certainty of time for people to evacuate."

Water NSW:

In Water NSW's Warragamba Dam Raising Preliminary Environmental Assessment Date: December 2016, they write that "the Hawkesbury-Nepean Valley Flood Risk Management Strategy's objective is to reduce flood risk to life, property and social amenity from floods in the Hawkesbury-Nepean Valley now and into the future."

Trish Doyle:

Trish Doyle, Blue Mountains MP and Labour Candidate, determinedly opposes the proposed raising of the Warragamba Dam wall, saying she believes "the impact this proposal will have on our World Heritage listed National Park will be devastating." She states that "not only will the proposal result in the destruction of important heritage sites, both Indigenous cultural and environmental, but it will not even provide protection to new development on the flood plain," voicing the fact that raising the dam wall will not eliminate the risk of flooding in the region as over 45% of flooding in the Hawkesbury- Nepean Valley occurs on river systems that do not

feed into the Warragamba Dam at all. Another to criticise where the proposal is coming from Doyall says, "The true motivation for the current government in raising this proposal is to provide such a protection to property developers and even that is entirely illusory."

Mark Greenhill:

Mark Greenhill, the Blue Mountains Mayor, believes if the dam wall is built 14 metres higher it "will harm the world heritage area and diminish aboriginal cultural values." He says that Blue Mountains Council "have written to the state government and told them of our opposition" and that he has "also discussed the matter with other mayors... seeking an alliance... to fight against this proposal."

Susan Templeman:

When interviewed via email, Susan Templeman (federal member for Macquarie) responded to my question on if protection of Hawkesbury or the Blue Mountains was more important, saying, "It shouldn't be an either/or proposition. We need to find a combination of steps that respect the World Heritage Area – because we have pledged to do that – and the Aboriginal sites, as well as improve the safety and evacuation routes for the Hawkesbury. The water from Warragamba Dam in some floods has counted for as little as 42 per cent of the floodwaters in the Hawkesbury, because there are another five rivers that flow into the Hawkesbury River. So I'd like to see a much more thorough look at options that satisfy all the things we have responsibility for."

Gabrielle Upton:

NSW Minister for Environment, Gabrielle Upton fully supports the proposed raising of the Warragamba Dam wall. In a Sydney Morning Herald article from October 2018, on her behalf a spokesman reported that to ignore the "huge risk" of flooding would be "simply irresponsible". The spokesman stated that "the raising of the Warragamba Dam wall is not going to permanently increase water levels, therefore, any impact on the environment is expected to be minimal and short lived."

Harry Burkitt:

Harry Burkitt, CEO of the GIVE A DAM campaign believes the raising of the dam wall will do irreparable damage to upstream wild rivers and hundreds of aboriginal sites within the area.

Blue Mountains Conservation Society:

Blue Mountains Conservation Society oppose the proposed raising of the dam as they say that "If the dam wall is raised, 1,800 hectares of declared Wilderness Areas will be forever scarred from sedimentation, erosion and invasion of exotic plants."

Managers Responsible For Making Decisions:

With the Environmental Impact Statement (EIS) being released mid 2019, official government approval and construction on the Warragamba dam wall is predicted to take place by 2020. With the Greater Blue Mountains World Heritage Area being of significant environmental and Aboriginal cultural value, to legally raise the dam wall many of the guidelines ensuring the protection and conservation of World Heritage listed sites such as the National Parks and Wildlife Act 1974 had to be adjusted. The attempt to change some regulations of the National Parks and Wildlife Act 1974 to allow the raising of the Warragamba Dam wall were inquired into by the legislative council and legislative assembly at NSW Parliament from September to October in 2018, an adjustment referred to as the *Water NSW Amendment (Warragamba Dam) Bill 2018*. This included amending laws which stated areas must only be temporarily inundated for periods of a few days to laws which allow World Heritage Areas to be temporarily inundated for periods of several weeks, as this is the expected timeframe of flooding occuring from raising the Warragamba Dam wall by 14 metres. Because the *Water NSW Amendment (Warragamba Dam) Bill 2018* seeked to alter national guidelines it had to be approved by federal government, and in October last year, it was indeed passed.

According to the EIS being released this year, state and federal government will make a decision as to passing the project of raising the Warragamba Dam wall by 14m. According to the federal member for the Macquarie electorate, Susan Templeman, the raising of the dam wall will by "considered under State law, and then Federal. If Labor wins the upcoming election, the Federal laws may well have been changed by the time it comes up for consideration. Labor has committed to an overhaul of environmental law, to bring it into the 21st Century."

Primary Research:

Primary research undertaken included interviews both in person, on the phone and via email with stakeholders and interest groups affected by the issue, field observations at Warragamba Dam with original photo documentation of the site, attending screenings of the GIVE A DAM campaign's documentary film and Q and A session, and becoming involved with the GIVE A DAM campaign to plan ways to spread awareness of the issue, such as a screening of the documentary at Katoomba High School.

Interview Transcripts:

Kazan Brown (a local Gundungurra woman who lives in Warragamba - interviewed over phone) Lotte: What is your opinion on the raising of the Warragamba dam wall? Kazan: My opinion is it shouldn't go ahead, because most of our cultural sites were lost when the first wall (dam) went up and basically now we're going to lose the rest of it. That's what we're fighting for is to stop them destroying everything that we've got left.

Lotte: How long have your ancestors lived in the area?

Kazan: My family were the last Aboriginal family to move out before the dam was flooded in the 1960s. So we were there probably up until, my mum was still a kid, so it would have been maybe 1958. My mum lived there, I wasn't old enough, but my mum is, my mum lived down there.

Lotte: Could you explain the value and significance of the Aboriginal sites which are going to be inundated?

Kazan: They're invaluable. They're significant because that's all we have left and once that's gone, you can't get it back, it's gone forever.

Lotte: How many Aboriginal sites are there in the area?

Kazan: So far the EIS has recorded 300 new sites. Those sites include burials, camp sites, scarred trees, ceremonial ground, where they made tools, you name it, it's there. In some places it's like they just got up and left yesterday.

Lotte: The dreamtime story of Mirrigan and Gurrangatch tells of the forming of the waterholes in our area. Where are those waterholes and how many are there?

Kazan: They start near Wombeyan caves, then they come all the way down to the dam wall than back up the Cox's river to Jenolan caves and then over the mountains, the last ones over the mountains.

Lotte: Where do you live?

Kazan: I live at Warragamba.

Lotte: Do you think that flood mitigation is necessary to protect the houses in the Hawkesbury-Nepean Valley?

Kazan: I think that it's a good thing to look into. I also know that there's alternatives to raising the dam wall and they should be looked into rather than raising the wall. I mean it's good to say it's flood mitigation but then you can't put 130,000 new people on the floodplain and try and tell me it's for safety.

Lotte: What would some alternative strategies be?

Kazan: One of them was to drop the full level of the dam wall that we have now so we've got air space and then use the desalination plant full time, better evacuation roots of course, not putting anyone else in floodplains and there were other alternatives about how they were going to divert the floodwaters like Penrith Lakes used to.

Kazan also shared some photos with me of Aboriginal cultural sites in her area which will be inundated.



- Gungarlook -





- Kerswell Hill Art Site -

<u>Mark Greenhill (Blue Mountains Mayor - interviewed via email):</u> Lotte: What are council's and your personal opinions on the raising of the dam wall?

Mark: Recently council decided to oppose the raising of the dam wall.

Lotte: What will the extent of the damage to areas upstream be if the dam wall is raised?

Mark: We believe it will harm the world heritage area and diminish aboriginal cultural values.

Lotte: Who are is responsible for deciding if the raising will go ahead?

Mark: We have written to the state government and told them of our opposition. I have also discussed the matter with other mayors. I am seeking an alliance of mayors and councils to fight against this proposal.

Susan Templeman (Federal Member for Macquarie - interviewed over the phone):

Lotte: What can be done to minimise the impacts on the environment upstream if the raising of the Warragamba Dam wall goes ahead?

Susan: I fear that there is no real way to minimise impacts, although the NSW Government's Environmental Impact Statement will make recommendations about this.

Lotte: Can you explain the significance of the Water NSW Amendment (Warragamba Dam) Bill 2018 being passed?

Susan: This is a State Government piece of legislation, and it might be best explained by Trish Doyle, Member for Blue Mountains. My understanding is that the NSW government legislation permits flooding of the national park through a "controlled release", and opens the way for the dam wall to be raised so that it can temporarily hold more water.

Lotte: Do you think the World Heritage listing of the Blue Mountains National Park will be withdrawn?

Susan: UNESCO, which decides whether or not you get Listing, is certainly concerned about the impacts of water inundating the World Heritage Area. We should take their concerns seriously. A UNESCO advisory body has warned that raising the wall could result in the Blue Mountains being placed on a list of sites "in danger". So that would be a precursor to some parts of the World Heritage Area being withdrawn from the Listing or the Listing lost altogether.

Lotte: Do you believe alternative flood mitigation strategies could be just as effective in protecting the Hawkesbury-Nepean Valley?

Susan: From what I have read and discussed with experts, there are a range of strategies that could be as effective, or even more effective, in protecting lives in the Hawkesbury-Nepean Valley. The problem with the NSW Government's approach is it is only exploring one option, rather than considering a variety of options or a combination of options. There really should have been a much more transparent process and a public discussion of the options – something the NSW Government fails to do repeatedly.

Lotte: I understand the proposal to raise the dam wall must be approved by both state and federal government, is that true? Who will the final decision rest with?

Susan: It will be considered under State law, and then Federal. If Labor wins the upcoming election, the Federal laws may well have been changed by the time it comes up for consideration. Labor has committed to an overhaul of environmental law, to bring it into the 21st Century.

Lotte: Is it more important to protect those houses at risk of flooding downstream in the Hawkesbury-Nepean Valley or the World Heritage listed environment and sacred Aboriginal sites upstream?

Susan: It shouldn't be an either/or proposition. We need to find a combination of steps that respect the World Heritage Area – because we have pledged to do that – and the Aboriginal sites, as well as improve the safety and evacuation routes for the Hawkesbury. The water from Warragamba Dam in some floods has counted for as little as 42 per cent of the floodwaters in the Hawkesbury, because there are another five rivers that flow into the Hawkesbury River. So I'd like to see a much more thorough look at options that satisfy all the things we have responsibility for.

Lotte: Does the raising of the wall allow for/influence development in the Hawkesbury-Nepean valley, how so?

Susan: Comments by the NSW Government Minister, Stuart Ayers, indicate that they do intend to use it as a way of developing more land. And the Premier has talked about the Dam providing additional water storage. It does feel to me that the claim this is about flood mitigation and protection of people is a way of scaring people into accepting something whose real purpose is quite different.

Trish Doyle (Blue Mountains State MP - interviewed via email):

Lotte: What is your opinion on the raising of the Warragamba Dam wall?

Trish: It is indeed an incredibly important topic and I believe the impact this proposal will have on our World Heritage listed National Park will be devastating. Labor is committed to preserving our environment and the Indigenous cultural heritage threatened by any expansion of Warragamba Dam. Accordingly, we absolutely oppose the ill-conceived and counterproductive proposal to raise the wall. Labor has not changed its position on this matter since 1995 when Bob Carr as Premier and Bob Debus as Minister for Environment and Emergency Services decided against the proposal.

Lotte: What do you see as being the negative impacts on the Blue Mountains?

Trish: As you are most likely aware, not only will the proposal result in the destruction of important heritage sites, both Indigenous cultural and environmental, but it will not even provide protection to new development on the flood plain.

Lotte: Do you believe the intentions behind the raising of the dam wall proposal are pure?

Trish: The true motivation for the current government in raising this proposal is to provide such a protection to property developers and even that is entirely illusory.

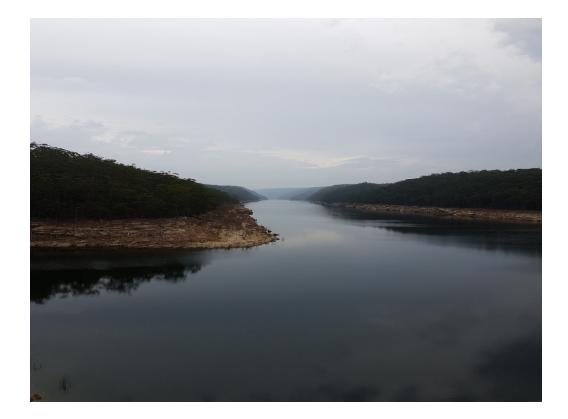
Harry Burkitt (director of GIVE A DAM - meeting in person):

Points discussed:

- Impacts raising the Warragamba Dam wall will have on the Blue Mountains environment and Aboriginal cultural sites
- Importance of raising awareness of the issue in the community and how this can be done
- Planning details of holding a screening of the documentary at Katoomba High School

Field Observations Onsite:

To get a better perspective of exactly where Warragamba Dam is in relation to the Blue Mountains, I went down to look at the dam and talk to the staff. I documented this with photos.



Suggestions for Management Action:

The base problem is over-development. With no more room left to build in the inner city, people have no choice but to look to the outskirts like Western Sydney floodplains, creating urban sprawl. The problem is, we are building out when we should be building up and coming up with smarter ways of adapting to an overpopulated world to consolidate space. Seeing this migration of people moving to the outskirts of Western Sydney as a business opportunity, development companies, represented by Infrastructure NSW, have eagerly encouraged the raising of the Warragamba Dam wall to cover minimum safety standards for the sake of more housing development. The smartest solution would be to discontinue any further housing development in flood prone areas and improve evacuation plans for those already living in the area. While practicing flood mitigation on Warragamba Dam will certainly not eliminate the risk of flooding downstream, seeing as other rivers also pose a threat, Water NSW could look at lowering the average water level of the dam by 5 metres to provide extra air space and capacity to hold the water in a flood, without raising waters upstream and therefore decreasing the chance of inundation in the Blue Mountains area.

Conclusion:

After months of research into this issue, numerous interviews with stakeholders (politicians, activist groups, Aboriginal custodians and general public) I have come to the conclusion that there would be nothing more detrimental to the Blue Mountains than to continue forward with the raising of the Warragamba Dam. Considering the consequences it will have on the wild rivers, world heritage listed national parks, endangered species and Aboriginal sites, raising the dam wall is simply not worth it.

Thank you for your consideration and taking the time to read my submission.

Lotte Weber