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Submission - Warragamba Dam Raising Project - SSI-8441

Thank you for the opportunity to submit on the Preferred Infrastructure Report (PIR) for the Warragamba Dam Raising Project (the "Project").

I am strongly opposed to the Project. I am writing as a citizen with grave concerns for the preservation of important national and internationally acclaimed heritage areas in New South Wales and in particular areas which provide significant amenity and enjoyment to tourists and inhabitants of the greater Sydney area.

I accept the Department's submission disclaimer and declaration. I have not made any reportable political donations in the past 2 years.

1. The proposed Offset Strategy is deeply flawed

The EIS acknowledges that the Project will result in significant environmental/ecological damage to the Greater Blue Mountains World Heritage Area ("GBMWHA") and adjoining national park (together, the "Blue Mountains" or "BM") but proposes the Warragamba Offset Strategy to deliver "environmental offset credits" such that it concludes that there will be an overall conservation gain from the Project. In my view this approach and conclusion is deeply flawed and quite frankly, absurd.

The Blue Mountains is an iconic natural asset on the edge of Australia's largest city, as iconic as the Sydney Harbour Bridge or Sydney Opera House. It is a priceless treasure (recognised by its world heritage status) which makes Sydney the envy of the world and a major international and domestic tourist attraction. It's worth cannot possibly be measured in terms of "environmental offset credits".

You simply cannot destroy part of the BM and argue that this can be compensated for by acquiring an equivalent amount of land as a national park elsewhere in the state or by making monetary contributions to a biodiversity fund. This is analogous to saying "its okay to destroy one of the sails on the Sydney Opera House (and leave it in a state of disrepair) because we're going to build a new cultural centre in Broken Hill which will result in a net cultural benefit for the state".
The absurdity of such a proposition in relation to an iconic (world heritage) asset is obvious. Even at a micro level the offset strategy is flawed. For example, the EIS acknowledges that temporary flooding from the Project will have a significant impact on contemporary breeding habitat of the critically endangered Regent Honeyeater, an impact which cannot be avoided or minimised. Given that there are less than 350 known individuals in the wild, and that the habitat is critical for survival, the Project could potentially lead to its extinction. Yet the EIS somehow

suggests that this can be compensated for by offset credits. I cannot see how any amount of offset credits can be said to compensate for the potential extinction of a species

The PIR adopts a "revised offset strategy" to prioritise identification and costing of a series of "on park management actions" which will go beyond "business as usual". Otherwise the offset strategy is in substance the same as in the EIS and continues to be flawed for the reasons stated above. The PIR states that biodiversity offsets are an accepted and adopted method of compensating for the impacts of a development. However in my view they are completely inappropriate in relation to an iconic natural asset like the Blue Mountains.

It is unclear what "on-park management actions" are contemplated by the PIR and how these might reverse the massive environmental/ecological damage that will result from the Project. To continue with the Sydney Opera House analogy in my original comments, it seems to me that the PIR proposal is akin to saying "we plan to put extra work into polishing the handrails to compensate for the destruction of the concert hall".

I note that the PIR suggests in several places that the environmental/ecological damage from the Project might not be as bad as originally assumed for the purposes of the EIS. This seems to be based largely on the results of the Longneck Creek ecology report (Appendix E) and the "upstream plant community type analysis" outlined at section 6.7.3 (but significantly not detailed in any appendix to the PIR - because it was not a detailed analysis and would not stand up to scientific scrutiny). In this respect I note that the Longneck Creek study was conducted 44km downstream of the dam wall and concluded that the areas subject to temporary inundation exhibited lower native species richness and vegetation cover and increased exotic weeds and debris - hardly consistent with the conclusion of lesser environmental/ecological damage.
Moreover the so-called "upstream plant community analysis" was based entirely on a single plot of each of two vegetation types in the upstream inundation area, and as such was so lacking in scientific rigour that it is laughable to even describe it as an "analysis".

2. The approach taken to identify the "upstream impact area" from the Project is also flawed.

The Project will result in an increase in the heights of the central and auxiliary spillway crests of 12 and 14 metres above FSL respectively. However, the modelling used to determine the "upstream impact area" attempts to measure that area by reference only to an increase of 7.5 metres, being the difference between a "likely inundation level" of 10.3 metres above FSL for the raised dam wall and 2.8 metres for the existing dam wall. This approach erroneously limits the impact area to around 1400 hectares, whereas the area that would actually be affected by a probable maximum flood (PMF) would be likely to be substantially in excess of 5000 hectares (and in excess of 3000 hectares for a 1 in a 100 year flood).

The "likely inundation level" appears to have been derived from an averaging approach which I think is invalid because you only need one flood in excess of the average to give rise to environmental damage over a much larger area. Furthermore the idea that you only have to consider the net incremental inundation area, above what is already inundated with the existing dam, is also clearly invalid because the higher dam wall would mean that existing areas would be inundated for much longer periods and to a greater depth and would therefore suffer more damage.

The concept of the "upstream impact area" is central to much of the analysis of the impacts of the Project in the EIS. Once it is accepted that the concept is invalid and understates the affected area, virtually all of the conclusions on the environmental, cultural and visual impacts of the Project are equally invalid

The PIR (at section 6.3.4) continues to try to justify the concept of a limited project upstream impact area. I think the reasoning underlying this continues to be invalid for the reasons set out above. I simply cannot understand why, for example, you would ignore the existing upstream impact area, when the duration and depth of inundation in this area will clearly be greater as a result of the Project. How can you possibly conclude there will be no additional impacts in this area?

3. The period of upstream inundation referred to in the EIS is potentially significantly understated.

The period of upstream inundation will largely be the product of two factors: the size of the flood event and the rate at which water is released from the dam. The EIS says that the maximum period of temporary inundation will be an additional 10 days and a total period of less than 14 days. This is based on the flood mitigation zone storing up to 1000 gigalitres of water in a flood event and a downstream water release rate of 100 gigalitres per day (increased to 230 gigalitres per day in the case of short term "piggyback discharges").

The downstream water release rate does not appear to be mandated by any design feature of the dam and in fact has not yet been determined. Rather it will depend on a detailed operational protocol for the raised dam which is yet to be developed, and which, when it is developed, could potentially be subject to change in the future. In the meantime the EIS, and in particular the Flooding and Hydrology Assessment Report in Appendix H1, has been prepared entirely on the basis of a preliminary operating protocol determined by Water NSW which specifies the 100/230 gigalitres per day rate of discharge.

This contrasts with the Preliminary Environmental Assessment ("PEA") released by Water NSW in December 2016 which indicated a possible lower release rate of 40 gigalitres a day. The PEA explained that the benefit of this lower release rate was a reduction in the extent of downstream flooding, especially around Windsor, Richmond, Cattai, Wilberforce and McGrath's Hill. If this lower release rate were to be adopted, the period of upstream inundation would be significantly longer than 14 days.

Ultimately the rate of water release will depend on operational decisions to be made well into the future. However, faced with a major flood event (potentially made worse by catchments such as the Grose and Nepean Rivers) it is easy to imagine that the rate of water release may be reduced to the lower end of the scale, thereby extending the period of upstream inundation.

As such, the time periods referred to in the EIS are potentially misleading. To provide some balance, I think that the depth-duration and flood frequency analysis in Appendix H1 should be extended to also show the effects of a lower water release rate like 40 gigalitres a day and the rest of the EIS should be amended to show a range of potential upstream inundation periods. The likely upstream inundation period is a critical factor as it directly impacts on matters like upstream environmental impacts and visual amenity.

I note that the PIR continues to use the 100/230 gigalitres per day release rate and that the Submissions Report states that should the Project be approved this release rate would form part of the approval for the Project and therefore I presume that Water NSW would be bound to use this rate. This is despite the fact that Water NSW will require a new Operating Licence, and that the terms of that licence have not yet been set. I assume that the DPE will satisfy itself as to this.

4. The EIS significantly understates the impact on visual amenity arising from the Project

The following comments are made in relation to the Blue Mountains upstream of the raised dam wall. I have not considered the impacts at the project site or downstream.

In Chapter 25, and in the Executive Summary, the EIS concludes that the visual impact of the Project when considered from various viewpoints in the Blue Mountains such as Echo Point lookout will be negligible. This conclusion is repeated without analysis in other parts of the EIS, for example in the Biodiversity Assessment Report in Appendix F1.This conclusion is plainly wrong, and is inconsistent with the report "Landscape Character and Visual Impact Assessment" in Appendix P prepared by external consultants SCAPE Design.

In Appendix P the report concludes that the visual impact of the Project at Echo Point of a PMF event would be "High" - the highest rating available (see Table 5-9). It also states that the impact would be "High" under existing conditions. However in does not state that the difference pre and post-Project would be negligible.

To the contrary, Figure 5-16 in Appendix P shows that the area in the Kedumba Valley that would be affected by a PMF event post-Project would be significantly larger than the area that would be affected pre-Project. It is interesting that whilst much of Appendix P is repeated in Chapter 25 (including the somewhat distortionary "oblique aerial view" figures), Figure 5-16 is omitted from Chapter 25.

The area of the Kedumba Valley that would be inundated in a PMF event as a result of the Project is very large indeed, almost twice the land area of Mt Solitary, which is the most prominent landmark in the Jamison/Kedumba Valleys. As shown in Figure 5-16, it extends north of the Kedumba campground and spreads out over the relatively flat areas around the Kedumba River to the south. Inundation, even for only a very short period, would result in the depositing of silt, the proliferation of weeds and the slumping of riparian banks. Inundation for a longer period would inevitably result in the death of vegetation including large trees, potentially including one of the last known stands of the vulnerable Camden White Gum (E. Benthamii). The result would be a loss of habitat for wildlife and an ugly scar on the landscape.

In concluding that the impact on visual amenity will be "Negligible" in Chapter 25 and in the Executive Summary, the principal authors of the EIS seem to have simply applied an equation:

"High" minus "High" equals "Negligible"

With due respect, this approach is either extremely sloppy or disingenuous, and raises questions for me as to what other conclusions in the report are based on such superficial reasoning and methodology.

The impact of scarring in the BM from temporary flooding should not be underestimated. It would not be temporary and would be very ugly. The scarred area in the Kedumba Valley would not be in the immediate foreground, but it would still be clearly visible from popular tourist lookouts between Wentworth Falls and Katoomba (being approx. 6.5km south of Sublime Point, compared to Mt Solitary which is 5.5km south of Echo Point). In short, tourists could look out on a massive scarred area to the left of Mt Solitary where virtually the only living vegetation would be weeds.
The potential impact on Blue Mountains tourism could be severe, especially given that views of the Jamison/Kedumba Valleys from lookouts are critical to the Blue Mountains' "brand".

It is particularly worth noting that the scarring will become increasingly evident from lookouts to the east of Echo Point where the viewshed is not obscured by Mt Solitary as is the case with Echo Point. I appreciate the reasons why Echo Point was chosen as a viewpoint, but had the EIS also included another more easterly lookout like the popular Sublime Point in Leura it would have given a much more balanced perspective on the loss of visual amenity from the Project.

I note too that the Flooding and Hydrology Assessment Report in App H1 does not include a flood depth-duration analysis for the Kedumba River, despite undertaking this analysis for 15 upstream locations including at the Nattai, Wollondilly, Kowmung and Cox's Rivers. This seems to be a most unfortunate omission, especially given the very large area that will be inundated in the Kedumba Valley.

A possible explanation for this omission is that part of the Kedumba Valley lies outside the GBMWHA. If so, this is not a valid reason. The reason that part of the Kedumba Valley lies outside the GBMWHA is simply that it is in the Special Area, which was originally not included in the national park at the time application was made for world heritage status, but was added later. It cannot be asserted that the Special Area is somehow ecologically inferior to the remainder of the national park or that it does not contain the same world heritage values. Even if this were the case it is critically important to the integrity of the adjoining GBMWHA (for example, to prevent the spread of weeds).

At section 6.8 the PIR states that, based on the so called "upstream plant community type analysis" in the upstream impact area outlined at section 6.7.3, significant upstream visual impacts as a consequence of temporary inundation are unlikely. In my view this conclusion is clearly flawed and reflects the same type of superficial analysis and reasoning as in the EIS.

The conclusion is, as stated, based on the vegetation analysis at section 6.7.3. However, as discussed above, in so far as it might be relevant to the impacts in the Kedumba Valley, that analysis used only one test plot of woodland vegetation community to arrive at its conclusions.
Whether it is possible at all to draw any conclusions from such a superficial analysis is debatable but at least the discussion at 6.7.3 states that "some caution is warranted in interpreting the results for the upstream impact area in view of there being only one survey plot in the area of existing temporary inundation." Subject to this caveat, it states that the results suggest that the woodland vegetation community "has some degree of resilience to temporary inundation" such that "there is a possibility that temporary inundation may not have a significant impact" on such vegetation. In short, a tentative caveated conclusion based on a superficial analysis totally lacking in scientific rigour.

But at section 6.8, there is no such caution and the possibility becomes a reality in arriving at the conclusion that significant visual impacts are unlikely. Moreover, section 6.8 seems to only equate "significant visual impacts" with a "total" loss of vegetation, which is patently wrong.

5. Temporary inundation does not equate to temporary environmental damage

I think it is worth re-iterating that temporary upstream inundation arising from the Project will in many instances result in long term and even permanent damage to the environment, with long term impacts. There are numerous instances in the EIS where the authors seem to imply that temporary inundation will produce only temporary impacts. For example, in discussing the viewpoint selection process for assessing the visual impact of the Project the authors state (Chapter 25 section 25.3.5 page 25-11):

> "Also considered were the limited number of campers, hikers and visitors during periods Of heavy rainfall when the potential temporary impacts would be experienced."

Such failures of the authors to recognise, or at least acknowledge the long term impacts of the Project go to the very integrity of the EIS.

As discussed above, the PIR tries to suggest that temporary inundation might not have a significant or long term impact on vegetation. But to come to this conclusion, the PIR needs far more rigorous testing and analysis than a comparative vegetation analysis based on a single test plot of each of two vegetation types. That so superficial an analysis has even been included in the PIR suggests an unseemly desperation to arrive at a predetermined conclusion.

Even worse, the PIR uses this superficial analysis as the basis for other conclusions on the environmental/ecological impacts of the Project such as suggesting that the impacts on the Regent Honeyeater might be less than as stated in the EIS.

6. There will be a significant negative impact on Aboriginal cultural heritage

I am very concerned that the Project will result in irreversible damage to Aboriginal cultural heritage and destroy much of the remaining link that the traditional owners have to country. The Project will destroy significant cultural heritage sites of the Gundungarra people including rock art, scar trees and culturally significant water holes. The Gundungarra people lost many such sites when the dam was filled in the late 1950's, it is simply terrible that we should be contemplating the destruction of those that remain, especially when as a society we now claim to have greater empathy and cultural awareness.

The EIS does not appear to properly address these issues and does not offer any real solutions - because there are none if the Project proceeds. It makes recommendations to improve "the understanding and the approach to management of Aboriginal cultural heritage values", but in reality these are mere words. For example, once aboriginal rock art is destroyed by inundation, no matter how temporary that inundation, it is lost forever and no amount of soothing words will bring it back. The situation feels very like the recent destruction of the Juukan Gorge aboriginal cultural site by Rio Tinto, except this time the perpetrator would be Water NSW.

I am also concerned that the surveying of cultural sites was inadequate and covered less than a third of the area that would be inundated under a PMF event as a result of the Project. I understand that the Commonwealth Government has estimated that at least 1500 indigenous cultural sites would be inundated, yet the surveying undertaken for the EIS has failed to assess, or even identify, many of these sites.

Nothing in the PIR suggests that the concerns of the traditional owners have been properly addressed and in fact the PIR confirms there are no changes to the "mitigation and management measures" originally proposed. I find it ironic that the PIR begins with an Acknowledgement of Country then proceeds to justify a proposal that will trash aboriginal culture. It is hypocritical and shameful.

7. The period for consultation has been inadequate

I consider that the period allowed to the public for consultation on the EIS has been woefully inadequate. The EIS, including the various appendices, is a very substantial document of several thousand pages which has taken over 4 years to produce. It is completely unreasonable to expect that the public can properly review and provide meaningful comments on all of the EIS in a period of 8 weeks. Many people are likely to simply read the Executive Summary, but as discussed above in this submission, it contains significant errors and is misleading. In such a short time frame and in all the circumstances, I consider that the consultation process is a sham. If Water NSW truely wants to consult the public, the consultation period should be extended for a further 6 months.

Once again I consider that the period for consultation on the PIR has been totally inadequate. This is more so because the PIR has received very little publicity and most people would be completely unaware of its existence. I only found out about it a week or so ago and have not had a reasonable opportunity to read all of the 1700+ pages comprising the PIR and Submissions Report. Common courtesy would at least suggest that the original 2,500+ submitters on the EIS could have been contacted when the PIR was released.

Thank you for considering this submission.

Yours sincerely,

Vincent Gulia