



Australian Institute of
Landscape Architects

17/12/2021

To: Warragamba Dam Assessment Team

Planning and Assessment Department of Planning, Industry and Environment

Locked Bag 5022 Parramatta NSW 2124

Warragamba.DamEIS@dpie.nsw.gov.au

link: <https://www.planningportal.nsw.gov.au/major-projects/project/10571>.

(Further info: Contact Warragamba.DamEIS@dpie.nsw.gov.au)

**Submission: Objection to Warragamba Dam Wall Raising Post-EIS – SSI-8441; by the
Australian Institute of Landscape Architects (AILA) NSW Chapter**

PREFACE

The Australian Institute of Landscape Architects (AILA) is the peak national body for the Landscape Architecture. AILA champions quality design for public open spaces, stronger communities, and greater environmental stewardship. We provide our members with training, recognition, and a community of practice, to share knowledge, ideas and action. With our members, we anticipate and develop a leading position on issues of concern in landscape architecture. Alongside government and allied professions, we work to improve the design and planning of the natural and built environment.

In operation since 1966, AILA represents over 3,500 landscape architects and promotes excellence in planning, design and management for life outdoors. Committed to designing and creating better spaces in Australia, landscape architects have the skills and expertise to improve the nation's liveability through a unique approach to planning issues via innovative integrated solutions. In doing so, landscape architects contribute towards better environmental, social and economic outcomes for all Australians.

The Australian Institute of Landscape Architects (AILA) does not support the proposal to raise the wall height at Warragamba Dam. Our members are concerned that;

1. **Insufficient time on exhibition.**

The period nominated for responses and to absorb and disseminate the vast amount of information on exhibition is unrealistic and is **inadequate time** for proper consideration of the EIS documents, even with the extension that was provided. For such an important and significant proposal, the time allowed is most unsatisfactory for a considered and professional assessment that this proposal requires.

2. **Raising the Dam wall will not prevent flooding impacts.**

The fundamental premise of raising the dam wall to prevent flooding appears flawed. Dwellings will be flooded, regardless of the raising of the wall to 14m to increase to 500mL. It is questionable if this proposal will solve a flooding problem given Cumberland Plain is flooded by multiple sources. In March 2021, 50% came from Warragamba Dam and 50% from other sources.¹ There are concerns that;

- a. Even if 50% is reduced by the proposal, flood events may be exacerbated by flows from the Upper Nepean, Colo, McDonald and Grose River catchments, meaning that this proposal disingenuously gives existing and future floodplain residents a false sense of security and leaves them unable to secure insurance².
- b. **Pinch points** down near Sackville cannot be solved by raising the dam wall.
- c. The January floods from 2021 would have used up the extra capacity in a mere 2 days with flooding as bad as it was in 2020.³
- d. **Total effects including predicted prolonged downstream flooding** from the raised dam were not considered in the EIS. The 2011 Brisbane Flood inquiry found controls at Wivenhoe Dam could not overcome the contributing factors; event intensity and flows from the Lockyer catchment. In terms of flood peak, it is misleading to not consider total effects. The impacts will depend on how much, and the rate, that precipitation falls at any particular time and extended periods of rain mean the plain could still experience flooding.

¹Multiple references in EIS incl. Appendix J

² pers.comm. Dr Stuart Khan

³ https://www.linkedin.com/posts/martin-o-dea-11983154_dangerous-floods-are-inevitable-so-stop-activity-6779524156443762688-mang/

3. Risk of losing World Heritage Status

The *Outstanding Universal Value (OUV)* affording Greater Blue Mountains World Heritage Area (GBMWHa) status, may be lost due to the impacts of this development over 304 ha within its boundary. In 2019 the World Heritage committee considered that *'the construction of dams with large reservoirs within the boundaries of World Heritage properties is incompatible with their World Heritage status'*⁴. This was not included in the cost-benefit analysis of the proposal⁵. The EIS states that the total loss of biodiversity values, the erosion and sediment deposition and potential dieback of vegetation, is predicted with 'substantial uncertainty' and 'dependant on a large number of independent variables' and that **these impacts will diminish the OUV, within the 34 ha of GBMWHa⁶. This is unacceptable**, and a recent warning of 'in danger' listing of the Great Barrier Reef⁷ demonstrates that the risk of losing World Heritage status is tangible and the delisting of 'in danger' World Heritage Areas a real possibility.

4. Interim measures must be taken to acknowledge failing processes.

Gaps in listing and protecting landscape heritage beyond buildings and artefacts are acknowledged and identified in a recent Government funded report⁸ and legislative review⁹ of the Heritage Act 1977 with a commitment to *'reflect more varied understandings of state significant heritage including landscape and intangible heritage'*. Remedial measures such as proactive listings are not yet in place despite the promised establishment of a SHR Committee Working Group¹⁰. The definition of landscape items in the Warragamba Dam Wall Raising EIS - Non-Aboriginal Heritage Report is limited¹¹ and ignores that the whole Burratorang Valley is a landscape of heritage significance, yet be assessed in an integrated way. **Interim measures must be applied to decisions which impact on landscape heritage of very high significance as identified in the EIS - Aboriginal Cultural Heritage Assessment¹². Where protection is not offered by State**

⁴Decision 43 COM 7B.2 para. 4 in World Heritage Centre - Greater Blue Mountains Area <https://whc.unesco.org/en/decisions/7430>

⁵Pittock, J. 'Managing flood risk in the Hawkesbury Nepean Valley, a report on the alternative flood management measures to raising Warragamba Dam wall', Australian National University, September 2018

⁶ Warragamba Dam Wall Raising EIS (WDWR EIS) Chapter 20 : Protected and sensitive land, including World Heritage Properties and Appendix J : World heritage assessment report

⁷ 44 COM 7B.90 4. Notes with the utmost concern and regret the conclusions of the 2019 Great Barrier Reef Outlook Report <https://whc.unesco.org/en/decisions/7807>

⁸AILA Landscape Heritage Report 2018 supported by Heritage NSW

⁹Government response to the Standing Committee report for the Review of the Heritage Act 1977

¹⁰ Letter to AILA NSW President from Mr Tim Smith OAM, Director, Heritage Operations, Heritage NSW, Dept. Premier & Cabinet 20 May 2020

¹¹ WDWR EIS 17.5.2.3

¹² WDWR EIS 8.5 - statement of significance & para. 8.5.3 in Warragamba Dam Wall Raising Aboriginal Cultural Heritage Assessment by Niche Environment and Heritage Historic Significance

Governments, the Federal [Minister for the Environment concedes that it is to be considered at Federal level¹³.](#)

5. **Secondary Impacts caused by development permitted.**

Developments permitted by the proposed prevention of flooding will **further impact the landscape of the Cumberland Plain**, including;

- a. the Critically Endangered Ecological Community - Cumberland Plain Woodland¹⁴ and
- b. Colonial cultural landscape heritage¹⁵.

6. **Ignores international obligations on the Rights of Indigenous Peoples**

This proposal contradicts the purposes of the UN Convention on the Rights of Indigenous Peoples, the First Nations Cultural Protection Alliance¹⁶ and NSW Government Connection with Country policies and guidelines, developed by the Government Architect - Indigenous, by proposing the further destruction of Aboriginal heritage including;

- a. likely irreversible harmful impacts on 43 identified sites,
- b. consisting of potential loss of 28 sites and
- c. an unknown quantity of unrecorded irreplaceable Aboriginal cultural heritage sites upstream of the wall¹⁷ and
- d. the integrity and intangible heritage of the whole Burratorang Valley floor, slopes, cliffs, waters, vegetation, soil, fauna, birdlife, air and sky as a sacred place,
- e. and noting constraints associated with assessing impacts,
- f. In addition to harmful impacts stated in the EIS, these points must be considered;
 - i. The **determination of the Gazettal as an Aboriginal Place** by the Gundangurra Aboriginal Heritage Association Incorporated must precede any decision on the Dam wall raising. This sharing of secret sacred knowledge by Aboriginal Knowledge Holders is a national treasure of world

¹³ Minister Ley press conference - First Nations Heritage Protections Alliance, 29 November 2021 <https://minister.awe.gov.au/ley/speeches-and-transcripts/minister-ley-press-conference-first-nations-heritage-protections-alliance>

¹⁴ NSW Scientific Committee Final Determination - Cumberland Plain Woodland <https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/nsw-threatened-species-scientific-committee/determinations/final-determinations/2008-2010/cumberland-plain-woodland-critically-endangered-ecological-community-listing>

¹⁵ Morris and Britton 2001, Colonial Cultural Landscapes of the Cumberland Plain and Camden, National Trust Australia

¹⁶ Co-chair Anne Dennis in Minister Ley press conference - First Nations Heritage Protections Alliance, 29 November 2021 <https://minister.awe.gov.au/ley/speeches-and-transcripts/minister-ley-press-conference-first-nations-heritage-protections-alliance>

¹⁷ WDWREIS Appendix J: World Heritage Assessment 6.1.8

significance. This nomination must be genuinely respected and effectively protected in order to uphold self-determination and the rights of Indigenous People.

- ii. **Potentially underestimated harmful impacts** include; changes in erosion and deposition of sediments on the integrity and intangible heritage of the sites, such as access¹⁸. **Compounding from this, potential dieback**, partially considered under ecological impacts¹⁹, assessed as high impact with unknown long term effects in terms, character and views²⁰ **may further harm the integrity of the sites in terms of cultural values**. Aboriginal cultural plantings are not assessed in the EIS and manipulated trees (including scarred trees) are predicted to be subject to more frequent flooding but are not recorded. Views assessed are limited to 2 existing lookouts upstream and are not comprehensive in terms of future Natural Resource use by a diverse range of visitors. **The impacts must be assessed in an integrated way including balancing of values, in terms needs and threats, that does not racially discriminate.**
- iii. The Burragorang Valley landscape, with secret, unrecorded and only recently shared significance, as fundamental Aboriginal cultural heritage of the Wiradjuri, D'Harawal, Gundangurra and other nations, is barely known by the broader community. The landscape as a whole and sites within it; rock shelters, art galleries, dramatic gorges and natural pools and river banks are increasingly understood and enjoyed by international, national and regional tourists and residents of Greater Sydney, Southern Highlands and the Central West for 'recreational activities and sight seeing' **and also for Connection with Country. To continue destroying such heritage is unacceptable.**
- iv. The Jukkan Gorge incident and First Nations Cultural Heritage Protection Alliance (FNCHPA) findings are a salient reminder that **current approval processes in Australia may be unable to deliver justice in terms of First Nations cultural heritage,**

'The (UN)Committee (on the Elimination of Racial Discrimination) noted that it had previously made observations to Australia (CERD/C/AUS/CO/18-20 [22]) to

¹⁸ WDWR EIS Appendix J: World Heritage Assessment 6.1.8 Table 6-1

¹⁹ WDWR EIS Appendix F1: Biodiversity Assessment Report - Upstream

²⁰ WDWR EIS Appendix P: Landscape Character and visual Impact Assessment Report, Table 5.2

ensure that free, prior and informed consent is incorporated into pertinent legislation and fully implemented in practice. Further, the Committee recommended Australia 'respect and apply the principles enshrined' in the UN Declaration on the Rights of Indigenous Peoples'.²¹

This view is substantiated in a press release by Co-chair, FNCHPA Anne Dennis and response by Minister Sussan Ley to the immediate call for interim measures, on 29 November 2021²², and subsequent comments of dissatisfaction on behalf of FNCHPA to media by Warren Entsch, Co-Chair, FNCHPA on 14 December 2021²³

7. **Substantial carbon footprint**

- a. This proposal is incompatible with the NSW Government target of Net Zero by 2050.
- b. 700,000m³ of concrete is 1,680,000 tonnes of concrete.
- c. Will depend on strength of concrete but if the project uses say, a 40MPa mix, the carbon footprint will be substantial. This amounts to approximately 300kg/m³ = 210,000,000kg Co₂-e or 210,000 tonnes Co₂-e

8. **Construction Impacts**

Construction impacts immediately around the dam are going to be severe. Substantial areas will be cleared, for construction work zone equipment, concrete batching plants. etc. leaving a visual eyesore for an unknown length of time.

9. **Visualisations are misleading**



²¹ Environmental Defenders Office : UN Raises concern over WA Cultural Heritage Protection Bill <https://www.edo.org.au/2021/12/14/un-raises-concerns-over-wa-cultural-heritage-bill/>

²² Minister Ley press conference - First Nations Heritage Protections Alliance, 29 November 2021 <https://minister.awe.gov.au/ley/speeches-and-transcripts/minister-ley-press-conference-first-nations-heritage-protections-alliance>

²³ Juukan Gorge inquiry chair Warren Entsch slams WA's proposed Aboriginal heritage protection laws', Dominic Giannini, AAP, Tue, 14 December 2021 8:46AM and related ABC interview by C van Extel 'Controversial Aboriginal cultural heritage Bill to pass today' <https://www.abc.net.au/radionational/programs/breakfast/controversial-aboriginal-cultural-heritage-bill-to-pass-today/13675904>

- a. **'Room for the River'**, the Netherlands : to protect 4million people from flooding, rivers are given more space in a series of measures– by relocating dykes, lowering floodplains and groins, creating separate channels and polders and providing temporary water storage²⁶.
- b. **'Sponge City' concept** implemented since 2015 on a vast scale in China, defined as *'using natural landscapes to catch, store and clean water, but the concept has roots that run far back through the history of human adaptation to climate challenges, particularly in the monsoon world'* ²⁷- Kongjian Yu, Landscape Architect. Recent studies²⁸ examine the benefits and improvements to this experimental work implemented at scale, as data comes to light on its effectiveness to mitigate complex urban flooding problems.
- c. **Managed aquifer recharge/ groundwater replenishment schemes** may increase the capacity to store water, allowing the existing dam water levels to be set lower, and reduce flood risk²⁹. **Adelaide's MAR**³⁰ has 65 years meeting increasing demand for the water resource including the Millennial drought and stormwater diversion harvesting to 1000ML/y. Australian first full scale **Groundwater Replenishment Scheme at Craigie, WA** ³¹ can sustain water supply to 100,000 Perth households into the future.
- d. Australian leadership in innovative water run-off management is now widely adopted. Known as **'Natural Sequence Farming'**³² this principle of reinitiating natural processes was championed at Tarwyn Park, Bylong Valley NSW since 1980's and tested at catchment scale at The Mulloon Institute, Braidwood, in partnership with 6 Universities and research units and 6 agricultural science organisations to develop technical expertise in **'banking water in the**

²⁶ <https://www.dutchwatersector.com/news/room-for-the-river-programme;>

<https://www.dutchwatersector.com/news/room-for-the-river-explained>

²⁷ Yu,Kongjian, 2021 'The Sponge City: Planning, design and political design', in *Design Studio 2021 Volume 1 : Everything Needs to Change*, 1st ed. RIBA Publishing

²⁸Chan, F.K.S., Chen, W.Y., Gu, X. *et al.* 'Transformation towards resilient sponge cities in China', in *Nature: Nat Rev Earth Environ* (2021). <https://doi.org/10.1038/s43017-021-00251-y> Published 09 December 2021

²⁹ Sarfaraz Alam, Anesh Borthakur, Sujith Ravi, Mekonnen Gebremichael, Sanjay K. Mohanty, Managed aquifer recharge implementation criteria to achieve water sustainability, *Science of The Total Environment*, Volume 768, 2021, <https://www.sciencedirect.com/science/article/abs/pii/S0048969721000589>

³⁰

https://www.waterconnect.sa.gov.au/Content/Publications/DEW/Managed%20Aquifer%20Recharge%20Schemes%20in%20Adelaide_Final.pdf

³¹ <https://www.watercorporation.com.au/Our-water/Groundwater/Groundwater-replenishment>

³² Peter Andrews, conceptualiser of Natural Sequence Farming and author of Back from the Brink and Beyond the Brink. <https://www.nsfarming.com/andrews.htm>

floodplain - under, not on the land...creating landscapes more resilient to floods, fire and drought'.³³ At the headwaters of the Nattai, Wollondilly and Wingecarribee Rivers, a not-for-profit, RegenAction, is also testing nature-based solutions to land and water management: landscape regeneration that, with research and development, is highly adaptable to the various landscape patterns and processes of the Cumberland floodplain and deep valleys incised by all of the Hawkesbury-Nepean tributaries within the entire catchment.

RECOMMENDATIONS

The exhibition period must be extended significantly for adequate public consultation and the consideration of the Gazettal of the Burragorang Valley as an Aboriginal Place must be prioritised and implemented prior to consideration of this proposal.

Interim measures for genuinely reformed processes of effectively and respectfully working with the First Nations peoples must be taken. One achievable example is to reject the proposal at State level due to the likely impacts on the integrity, intangible heritage, loss and harmful impacts on known and unrecorded sites and cultural plantings within a valley landscape of very high cultural significance to First Nations people and the world. Failing this, another measure is to consider at Federal level the heritage reforms currently co-designed by First Nations Cultural Heritage Protection Alliance in relation to this proposal, in the absence of adequate State level protection.

Alternative flood management measures must be comprehensively analysed, and transparently considered, before a decision is to be made. Expert knowledge and experience designing nature-based solutions to water supply and inundation can also build fire resilience, drought tolerance, without salinity and dieback. AILA welcomes further opportunity to coordinate landscape architectural input on cross sector consultations (Government- authorities- utilities- industries- communities) to research and develop alternative strategies for Sydney's flood mitigation. This is a critical step in the provision of alternative and viable solutions using professional methodologies that assess all impacts and potentially are more cost effective than the current proposal to raise the dam wall.

AILA welcomes further discussion of the issues raised and extends an open invitation to engage in progressing the State and National efforts to 'reflect more varied understandings of state significant heritage including landscape and intangible heritage'. This nuanced understanding, combined with landscape-led multidisciplinary

³³ The Mulloon Institute, created by the late Tony Coote <https://themullooninstitute.org/what-we-do>

research and development of innovative nature-based solutions, will have multiple highly significant benefits. It will ensure landscape heritage protection and future-proof development are compatible, at a metropolitan and regional scale. Most importantly, it will uphold outstanding universal values and human rights of Australia's Aboriginal peoples to self-determination, free, prior and informed consent.

A handwritten signature in black ink, reading "Tanya Wood". The signature is fluid and cursive, with a large initial 'T' and 'W'.

Tanya Wood,
AILA NSW President