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## AUSTRALIAN INSTITUTE OF LANDSCAPE ARCHITECTS (AILA)

### SUBMISSION OPPOSED TO

**Warragamba Dam Wall Raising SSI-8441**

**State Significant Infrastructure (SSI) and Critical State Significant Infrastructure (CSSI)  
Response to Submissions Report (SR) and Preferred Infrastructure Report (PIR)**

### PREFACE

The Australian Institute of Landscape Architects (AILA) pays respect to, the Gundungurra People, traditional owners of the land to which this proposal relates. AILA extends respect to the Dharug, Dharawal, Darkinjung and all First Nations People.

AILA is the peak national body for Landscape Architecture and leads a dynamic and respected profession: **creating great places to support healthy communities and a sustainable planet.**

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, planning and management of the natural and built environment.

AILA supports development initiatives that demonstrate best practice in sustainable development with embedded resilient strategies that will deliver a liveable and climate positive outcome.

AILA believes this requires tangible delivery of a strong green infrastructure framework so essential for human health, liveability and the success of sustainability initiatives. We advocate



that engaging with, learning from, and building relationships with the local Traditional Custodians of 'Country' becomes standard practice including by supporting methods for appropriate engagement with Aboriginal and Torres Strait Islander communities and design techniques that enable their cultural knowledge, values and spirituality to be embedded within landscape projects in a way that is both respectful and meaningful.

AILA supports research and education to help government, land developers, and built environment professionals broaden their understanding of Aboriginal and Torres Strait Islander cultures, histories and connected landscape systems.

As currently exhibited the Warragamba Dam Wall Raising Project has some significant flaws and cannot be supported.

## BACKGROUND

These flaws include the issues we raised previously (SE 33809028 submitted by ID S- 33809027 on 17.12.2021) as identified by Water NSW; in B2, B4, C1, D, E2, , G1, G5, H1,2,3 and 4, K1, N2, N4, O2.

Noting the Response to Submissions Report (SR) and Preferred Infrastructure Report (PIR) currently exhibited, *The Australian Institute of Landscape Architects (AILA)* holds its previously stated position and **does not support the proposal to raise the wall height at Warragamba Dam**. Our members' concerns were outlined in our submission of 17/12/2021 (Appendix A) and key Issues raised are still relevant to this revised proposal and are as follows:

1. Insufficient time on exhibition
2. Raising the dam wall will not prevent flood impacts
3. Risk of losing World Heritage Status
4. Interim measures must be taken to acknowledge failing processes
5. Secondary Impacts caused by development permitted
6. Ignoring international obligations on the rights of indigenous peoples
7. Substantial carbon footprint
8. Construction impacts
9. Visualisations are misleading
10. Alternative methods of mitigating harmful effects of climate change are ignored.

In addition to these previously raised items, we identify further items from the current reports.

These are:

- Alternative strategies have not been seriously investigated
- Biodiversity cannot be offset



- The project is in conflict with World Heritage landscape integrity which relies on cultural associations
- Biodiversity loss is unacceptable
- The climate emissions impacts of the dam wall are at odds with the NSW Net Zero strategy by 2050 and a 50% reduction target by 2030.
- Impacts of the Wall have not been accurately identified and articulated to the public.
- The CSSI declaration is problematic and appears to be a political decision to grant approval authority to the Minister to bypass normal statutory requirements.

### **Alternative strategies have not been seriously investigated**

*The raised dam strategy is fundamentally flawed and would have been overtopped in about three days in both 2020 and the 2022 rainfall events in Sydney that saw about 500GL/day entering the dam catchment. It makes very little difference to the PMF, and only a minor difference to the 1%AEP event. Alternative strategies exist and substantial funds would be better spent buying out the most vulnerable people in the flood plain.*

It is imperative that NSW research and develop flood resilient development models that do not destroy irreplaceable world heritage. For example, world leading landscape architectural projects in the Netherlands, China, Perth WA and Braidwood NSW are refining adaptive models for development in flood prone areas, in an innovative move away from traditional dam infrastructure failing to solve complex flooding problems.

AILA reiterates the need to question the initial decision. The 2014 The Hawkesbury Nepean Valley Flood Management Taskforce recommendation to increase the height of the wall by 14 metres was made prior to Climate Emergency declarations and during the period of Climate Change denialism. Hawkesbury – Nepean Valley Flood Risk Management Strategy 2017 and 2019 assessment of options pre-date the recent flood events. And now, while Federal Government

AILA concurs with ICOMOS in supporting Recommendation 9 of the Interim Report of the NSW Legislative Council Select Committee on the Proposal to Raise the Warragamba Dam Wall;

*that the NSW Government:*

- *Not proceed with the Warragamba Dam wall raising project, if the proposal cannot maintain or improve the current and future integrity of the Greater Blue Mountains World Heritage Area, and*
- *Pursue alternative floodplain management strategies instead.*

Now uninsurable, floodplain development of 'affordable' housing perpetuates socio-economic hardship and inequality. Submissions in response to the EIS and further investigations have



demonstrated that wall raising does not mitigate the flooding contributed by other waterways and, in many places in the downstream channel, doubles the harmful erosional effects of releases from the current dam. Alternative floodplain strategies are urgently required.

### **Biodiversity cannot be offset**

*You cannot offset biodiversity. This is a fundamentally flawed idea. Biodiversity relies on a multitude of natural systems interactions that are hard to replicate elsewhere. Protecting one area while destroying another area is a net loss not an offset.*

We note that the action in response to the most significant issue identified in submission responses, Biodiversity, is to deliver an offset strategy.

AILA understands that Biodiversity Offset Schemes are a means to resolve the conundrum of how to deliver development that is ecologically sustainable, however this scheme is based on multiple flawed assumptions.

1. To conserve biodiversity values a systems network approach needs to be adopted, clear objectives for protecting biodiversity across all facets of the system need to be set. Critically these objectives need to address the holistic ecological system including water quality, salinity and soil quality.
2. The assumption that ecological values associated with areas of natural environment can be translated into dollar values and bought and sold in a market system, is a myth.
3. The assumption is made that ecological systems can be destroyed in one area and then recreated somewhere else to match the complexity and functions of the cleared natural vegetation community. It is however widely accepted by ecologists, based on their research findings, that offsets planting, or restoration programs do not provide environmental values equivalent to that of natural vegetation communities that are conserved *in situ*.

The view that nature can be a monetised commodity rather than fundamental for our wellbeing and prosperity needs to be challenged. Focus of human impact on natural systems has reached a tipping point where it is no longer about isolated threatened species and communities but rather wholesale environmental destruction. Clearing of native vegetation, loss of topsoil and habitat modification are the greatest threats to our continued survival.

As a priority location for the new national Threatened Species Action Plan, the Greater Blue Mountains area cannot be regarded as expendable and open to offset trading.

### **The project is in conflict with World Heritage landscape integrity which relies on cultural associations**

Raising the dam wall is in direct contravention of the United Nations Declaration on the Rights of Indigenous Peoples.



*In the global context, Australia needs to step up in terms of respect for Indigenous rights. A recent scientific paper dedicated to Indigenous water rights outlines the recent developments, a movement slowly gaining pace since three rivers, the Ganges and Yamuna Rivers in India and the Whanganui River in New Zealand were given the legal status of persons. According to Associate Professor Bradley Moggridge in a recently published scientific journal dedicated to the subject, protections in Victoria enshrined in the Yarra River Protection (Wilip-Gin Birrarung Murrumbidgee) Act 2017, 'represent a real change in the way that society perceives and interacts with nature' (Moggridge 2022). The role of law in the concept of river as 'ancestor' is being further explored in Victoria. (Pelizzon, O'Donnell & Poelina, 2021; Martuwarra RiverOfLife & others 2022)*

AILA finds unconscionable the Water NSW response to IUCN & ICOMOS' objections. These objections are in alignment with AILA's earlier position with respect to the Greater Blue Mountains World Heritage Area (GBMWH);

*(IUCN:) Based on the information provided in the EIS and discussed above, it appears that the project, as proposed, would directly degrade OUV, through its impacts to attributes that are explicitly mentioned in the statutory Statement of OUV adopted by the World Heritage Committee, including cultural associations directly linked to the integrity component of OUV. In this regard, IUCN considers that **proceeding further with the implementation of the project appears to be inappropriate in relation to the requirements of the World Heritage Convention.***

*(ICOMOS):The dam proposal is inconsistent with Australia's obligations under the World Heritage Convention (WHC) with respect to the GBMWH and neither the dam proposal itself, nor the EIS comply with specific Decisions of the World Heritage Committee.... The GBMWH is inscribed on the World Heritage List and loss of attributes which support its OUV, including by periodic inundation, **cannot be offset by purchasing alternate land.***

Response (WaterNSW) :

*The Project is being assessed under the NSW EP&A Act with matters falling under the Commonwealth EPBC Act being assessed through the bilateral assessment agreement between the Commonwealth and NSW governments. Neither process requires compliance with specific Decisions of the World Heritage Committee.*

AILA concurs with IUCN and ICOMOS and finds proposals to offset World Heritage Values unacceptable. Furthermore, AILA rejects any attempt to avoid honouring obligations under World Heritage Convention such as by redefining boundaries. A concerning precedent was the 2018 legislative change to the National Parks and Wildlife Act to ensure that temporary flooding of land upstream of Warragamba Dam was a permissible activity within a National Park.



OUV, and that the Project is not considered to be inconsistent with the management obligation and principles for World Heritage Properties (refer Section 13.8 in Chapter 13 of the EIS).

### 6.7.2 National parks

The Project would impact an estimated 5,700 hectares of national parks, 1,300 hectares of which is within the Greater Blue Mountains World Heritage Area.

#### Response

Table 6-3 and Table 6-4 present the areas of protected lands affected by the existing dam and the additional areas that would be affected by the Project for the PMF event and the 1 in 100 chance in a year event respectively. These areas were derived through a GIS analysis. The tables also identify the percentages of affected land for the total area of the national park and conservation area. It should be noted that the potentially affected part of the GBMWHA sits within the three national parks identified in the tables.

Table 6-3. Potential increase in flood extent of protected and sensitive lands due to the Project PMF

Protected area	Area of temporary inundation (ha & percent of total area)				Change in area (ha & % of total area)	
	Existing		With Project			
Blue Mountains National Park	1,519	0.56%	2,729	1.01%	1,210	0.45%
Nattai National Park	867	1.70%	1,319	2.59%	453	0.89%
Kanangra-Boyd National Park	7	0.01%	7	0.01%	0	0%
Subtotal: national parks	2,393		4,055		1,663	
Burratorang State Conservation Area	404	2.28%	664	3.75%	261	1.47%
Nattai State Conservation Area	107	3.28%	190	5.81%	83	2.53%
Yerranderie State Conservation Area	665	5.35%	1,123	9.04%	458	3.69%
Subtotal: conservation areas	1,176		1,977		802	
<b>Total</b>	<b>3,569</b>		<b>6,032</b>		<b>2,465</b>	
Greater Blue Mountains World Heritage Area	1,085	0.10%	1,675	0.16%	590	0.06%

## Declaration of an Aboriginal Place stalled

The stalling of the 2018 nomination to declare the Burratorang Valley an Aboriginal Place, gazetted by Sharyn Hall, Gundungurra Aboriginal Heritage Association Inc., is also concerning. We know that values shared, such as the interconnection of people to critically special places including Eel Hole at the confluence of the rivers, through the Gurangatch - Mirrigan Dreaming, and held since time immemorial, are potentially impacted by this Wall Raising Project.

The NSW Government justification of the Project in the media as "putting people before plants" (Rose, 5 Oct 2022) could be interpreted as a statement of *Terra Nullius*. It ignores the unbroken spiritual, historical and cultural significance of the Songline of the Burratorang Valley to the Gundungurra, Dharawal, Darkinjung, Dharug, Wiradjuri, all First Nations people and all people of the World. Further additional consultation and survey will be unlikely to diminish the values, nor equate proportionally to the potential impact.

## Cultural heritage protection measures are not in place

Until the new Indigenous Cultural Heritage mechanisms and instruments, established to prevent any possible repeat of the failure of heritage protection process at Jukkan Gorge, are in place, the Project must not proceed. It is no longer credible to continue to destroy gazetted outstanding universal values and later argue it was not understood at the time or that the process has failed.

The current paucity of understanding, and incomplete cultural mapping are further reasons to cancel the Wall Raising Project. The beginning of a Counter-mapping project in Western Sydney administered by Deadly Djurimin attempts to digitise and facilitate First Nations sharing of knowledge in a culturally respectful way. It highlights the fact that cultural planting by aboriginal



and non-Aboriginal people is often overlooked in ecological surveys in Australia and is not separately assessed in the EIS, Submissions Report or PIR.

### **Cultural heritage offsets are not acceptable**

Cultural landscape heritage offsets are not acceptable. This was demonstrated by the case of Jukkun Gorge. Emerging structures to address the atrocities must be respected and engaged with, to avoid repetition. The Final Report of the Aboriginal Cultural Heritage Council and the purpose of the new framework for recognising, protecting and conserving Aboriginal Cultural heritage and its importance to Aboriginal people, the Aboriginal Cultural Heritage (Culture is Identity) Bill 2022, published 8 November 2022. In addition, consideration of the cultural heritage reforms that the NSW Government and Aboriginal Affairs is working on must be reflected in the decision making process. AILA holds the view that offset measures do not maintain and enhance values that must be protected in the specific, unique place. On-park management cannot be considered as offsetting lost values.

#### ***WATER NSW Submissions Report : C4.3.8 Indigenous custodial relationships:***

*The Aboriginal cultural heritage assessment for the EIS identified the potential for the Project to affect cultural heritage values. Additional assessment carried out for the Submissions Report and PIR has provided further clarification on the nature of potential impacts of the Project.*

*The EIS identified the potential for diminishment of Aboriginal cultural heritage values through an increased risk of temporary inundation of identified and potential archaeological sites from the Project. The additional assessment for the Submissions Report and PIR does not change this conclusion.*

*The revised offset strategy (refer Section C6) provides for the funding of on-park management for the protected lands values offset. This would support maintenance and potential enhancement of Aboriginal cultural heritage values. This would also be consistent with **Article 16 of the Burra Charter**.*

For reference, Article 16, ICOMOS Burra Charter states:

*The contributions of all periods to the place must be respected. If a place includes the fabric of different periods, revealing the fabric of one period at the expense of another can only be justified when what is removed is of slight cultural significance and the fabric which is to be revealed is of much greater cultural significance.*

The use of Article 16 is incorrect and misleading. No significant fabric will be revealed by the Project - all layers of human interaction will be negatively impacted.

### **Biodiversity loss is unacceptable**

*We are in a biodiversity emergency and the continued loss of species impacts us all.*



In the public interest, assessment of likely extinctions is yet to be fully explained, inconsistent with the Environment Protection and Biodiversity Conservation Act 1999 (Cth) and the Commonwealth and NSW bilateral assessment agreement. Potential regional or outright extinctions e.g: critically endangered *Callistemon megalongensis*, *Rhodamnia rubescens*, Scrub Turpentine, vulnerable *Eucalyptus benthamii*, *Eu glaucoma*, and endangered *Pomaderris brunnea*, *Hakea dohertyi* and the endangered Gondawanian *Pherosphaera fitgeraldii* Dwarf Mountain Pine etc. are merely listed as requiring further consideration. The difficulty or even impossibility of 'sourcing' viable offsets in terms of scale and quality must be communicated fully.

It is concerning that uncertainty remains about the survival of more than 16 threatened species and plant communities if the Project goes ahead, due to the limited surveys conducted.

**The climate emissions impacts of the dam wall are at odds with the NSW Net Zero strategy by 2050 and a 50% reduction target by 2030.**

*The climate Impacts of this project will be significant, are difficult to offset 50% by 2030, and be met by 2050, and contradicts the Governments policy objectives on climate.*

The climate impacts of this project will be significant, and all of the emissions will be embodied up front by the day the project is completed. It is one of the single largest pours of concrete in the State. This will make it very difficult for the project to meet the NSW Governments objective to be net zero by 2050, and a 50% emissions reduction by 2030. There are at least 250million Kg CO<sub>2e</sub> emissions embodied in 620,000 m<sup>3</sup> of concrete and 11,000 tonnes of steel and formwork alone. Offsetting such a large up front emission has fundamental problems in the time it will take to reach any "net Zero" amount. It would need thousands of Ha of new forest to even remotely offset the emissions. There will be further significant climate impacts in embodied carbon, in enabling future development in the flood plain that should otherwise not occur.

**Impacts of the Wall have not been accurately identified and articulated to the public.**

*A report of over 800 pages is hard enough to assess by the general public in any instance. The actual impacts of the dam wall raising do not portray the true impact to the public. Even rendered images show it in a tree filled setting that will be destroyed by construction.*

For example, erosion will likely double (BECA Geomorphology Technical Notes 09.09.2022) , particularly in submerged areas and outsides of bends, scouring undermining, and threatening the stability of the riverbank as a whole, on Quaternary alluvium sediments and where riparian vegetation is not presently adequate to stabilise the bank.

Places where *increased erosion may occur 'with Project'* include North Richmond to Windsor, Thornham Park, Windsor to Cattai Creek, Freereach, at Cattai Creek and downstream of Cattai Creek (Table 3, BECA, 2022). The claim that planting specified by Docker & Hubble 2009 may reduce scour and undermining does not state the time lag for maturity of in-situ root systems





required to stabilise the bank and therefore cannot be considered a valid argument for reducing risk of bank slumping, scouring or undermining (Figure 4, BECA, 2022). No site-specific information has been added in this stage of the investigations.

The recommendation to further refine the staging of reduction of water levels to mimic the river and thus reduce pore pressure induced slumping and piping erosion or consideration of other factors, such as whole of government factors or risk to life and property, indicate that the Project's claimed capability to achieve its aims are flawed (Figure 3, BECA 2022).

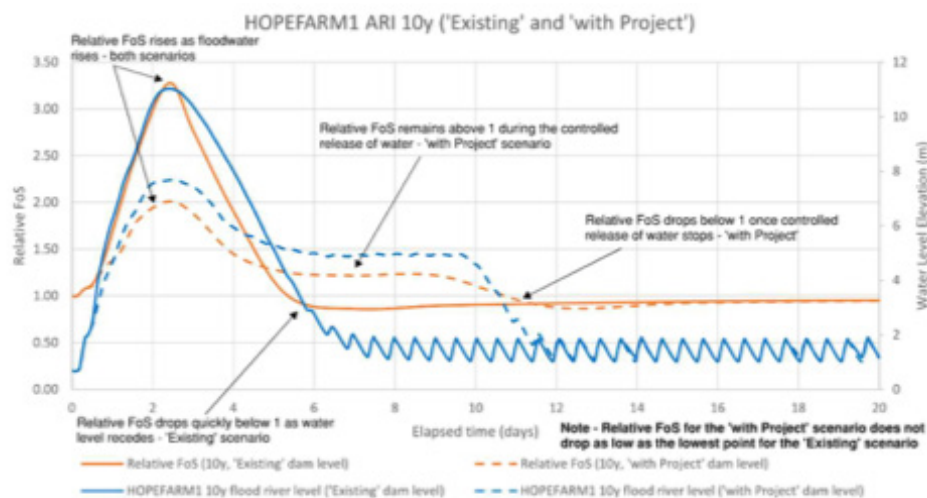


Figure 3. Example plot showing relative factors of safety over time for the 'Existing' and 'with Project' hydrographs at Hopefarm

A survey of likely impacts to heritage in the vicinity of increased riverbank erosion and by further housing development on the floodplain must be comprehensively undertaken and assessed by qualified, experienced experts in landscape heritage.

The requirement to demonstrate what the visual impact would reasonably be from all viewing locations, including areas beyond the project footprint where the works would be readily visible from scenic lookouts or other publicly accessible vantage points is not met as no ground level photography has been added in this stage of the investigations.

### The CSSI declaration is problematic.

*We are very concerned that the decision to make the project a CSSI was made in under 5 days would allow the Minister ultimate approval authority and the single assessment pathway is not appropriate for such a complex site covered by multiple statutory frameworks.*

The Declaration of critical State significant infrastructure "in accordance with s5.12 and s5.13 of the EP&A Act 1979" is inconsistent with the principles in the [guideline on the declaration of State significant infrastructure and critical state significant infrastructure](#) in that;



1. Safe and successful evacuation cannot be guaranteed when considering unpredictable inundations from all valleys, tributaries, waterbodies, incrementally built up areas, and variable water releases flowing to the Hawkesbury-Nepean Valley.
2. 1,350 construction jobs are not proportionate to the Project cost that has blown out from a CIV of \$600 million to \$1.3 billion. The construction jobs are temporary
3. Social benefits are not evident. All floodplain housing is becoming uninsurable with each flooding event, statewide.
4. Environmental benefit is also null as an attempted flood mitigation measure and as it does not relate to water storage.

The Wall raising is not critical (CSSI): "*essential for the State for economic, environmental or social reasons*" and inconsistent with the Guideline for these reasons;

- The NSW public would not significantly benefit from the project for these reasons
- If flooding potential is properly analysed at a whole floodplain level, it does not respond to a state of emergency or meet imminent infrastructure needs
- The project scenario is not uncommon and could have been anticipated in advance.
- This type of development could be accommodated for within the standard SSI/SSD framework
- This raising of the wall does not principally meet a *public* purpose. It supports existing and future property development on marginal land. This is not in the public interest.
- The proposal irreversibly impacts heritage of significance to the State and arguably to the World.
- The proposal does not deliver major public benefits such that it warrants removal of third-party appeal rights
- The single assessment pathway for all stakeholders is not appropriate when considering layers of impacts on Cultural Heritage of immense spiritual and sacred significance to the oldest living culture (gazetted as an Aboriginal Place) and UNESCO World Heritage level environmental significance, the National Parks, Wild Rivers, Wilderness Areas and other conservation areas, subject to multiple statutory protections;
  - UN Declaration on the rights of Indigenous Peoples (UNDRIP) 2007
  - The World Heritage Convention
  - The Australia ICOMOS Charter (the Burra Charter) for the Conservation of Places of Cultural Significance, the EPBC Act 1999 including the Bilateral Agreement between Commonwealth and State (Section 45)



- Matters of National Environmental Significance Significant Impact Assessment Guidelines
  - World, National and Commonwealth Heritage Principles
  - NSW Heritage Act 1977, The 2009 Relics provisions, Works, State Heritage Register and Section 170 Heritage Conservation Registers.
  - the EP&A Act 1979 (NSW)
  - State Environmental Planning Policy (Infrastructure) (SEPP) 2007
  - Local Environmental Plans  
as opposed to simply layers of services or utilities.
- The growth targets to satisfy Strategic Regional Plans are flawed and outdated as the floodplain is inappropriate
  - Ignores the International Climate Change Policy Framework in that retreat is not seriously considered
  - Responds to anticipated urban growth that is *irresponsibly* allowed, when considering the potential for floodplains to become inundated with both regional floodwater and local stormwater.
  - The level of irresponsibility of facilitating development on the Hawkesbury Nepean Valley floodplain is exacerbated since 1990, with the first International Panel on Climate Change Assessment Report (FAR), considering the likely impacts of the effects of climate change.
  - The Warragamba Dam Wall Raising will not generate long term employment, will not attract investment as floodplain development is equivalent to a stranded asset, it will deplete environmental benefits to the State by creating carbon and greenhouse emissions in construction and negatively impacting Outstanding Universal Values of its most visited, tourist attracting World Heritage Area and threaten its listing status.
  - Triple bottom line not met: the economic reasons will primarily benefit private investors. Social and environmental benefits are imperceptible.
  - Further field studies and offsets are inappropriate measures to address the potential impacts to the interpretation of the essential Dreaming epicentre of the Burratorang Valley: a living cultural landscape of tens of thousands of years of continuity.

Unsustainable, marginally located, outdated growth targets should not override the public interest of all Australians, least of all, World Heritage.

## RECOMMENDATIONS

As this exhibition of responses to over 2000 submissions and multiple further investigations entails 863 pages to consider, with inadequate time of 21 days to review, and reach organization wide approval, we refer to the previous recommendations. We believe these still hold.



Our intention communicated in the AILA Connection with Country position statement, is to deepen our collective understanding of the connection to values and uniqueness of 'Country' and the critical importance of acknowledging and embracing this connection for mutual understanding and respect.

AILA maintains the objection to the raising of the dam for the above reasons and urges the alternative flood management measures to be comprehensively analysed and tested before a decision is 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 opportunities to coordinate landscape architectural input on cross sector consultation (Government-authorities-utilities-industries-communities) to research and develop alternative strategies for Sydney flood mitigation. This 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 solution 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 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.

## CONCLUSION

AILA stands by our previous submission that the dam wall should not be raised, and that other alternative options need to be seriously considered. The project is fundamentally flawed, in that it will not stop downstream flooding, despite the enormous cost, and significant environmental, devastating cultural and social impacts.

Sincerely yours,

Tanya Wood

AILA NSW President

SUBMISSION TEAM

*This submission has been prepared by a working group of AILA NSW members.*



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Australian Institute of  
Landscape Architects

17/12/2021

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**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.<sup>1</sup> 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 insurance<sup>2</sup>.
- 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.<sup>3</sup>
- 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.

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<sup>1</sup>Multiple references in EIS incl. Appendix J

<sup>2</sup> pers.comm. Dr Stuart Khan

<sup>3</sup> [https://www.linkedin.com/posts/martin-o-dea-11983154\\_dangerous-floods-are-inevitable-so-stop-activity-6779524156443762688-mang/](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 (GBMWH) 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'*<sup>4</sup>. This was not included in the cost-benefit analysis of the proposal<sup>5</sup>. 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 GBMWH**<sup>6</sup>. **This is unacceptable**, and a recent warning of 'in danger' listing of the Great Barrier Reef<sup>7</sup> 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 report<sup>8</sup> and legislative review<sup>9</sup> 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 Group<sup>10</sup>. The definition of landscape items in the Warragamba Dam Wall Raising EIS - Non-Aboriginal Heritage Report is limited<sup>11</sup> and ignores that the whole Burrigorang 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 Assessment**<sup>12</sup>. **Where protection is not offered by State**

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

<sup>5</sup>Pittock, 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

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

<sup>7</sup>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>

<sup>8</sup>AILA Landscape Heritage Report 2018 supported by Heritage NSW

<sup>9</sup>Government response to the Standing Committee report for the Review of the Heritage Act 1977

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

<sup>11</sup>WDWR EIS 17.5.2.3

<sup>12</sup>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 level](#)<sup>13</sup>.

#### 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 Woodland<sup>14</sup> and
- b. Colonial cultural landscape heritage<sup>15</sup>.

#### 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 Alliance<sup>16</sup> 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 wall<sup>17</sup> 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

<sup>13</sup> 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>

<sup>14</sup> 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>

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

<sup>16</sup> 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>

<sup>17</sup> WDWR EIS 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 access<sup>18</sup>. **Compounding from this, potential dieback**, partially considered under ecological impacts<sup>19</sup>, assessed as high impact with unknown long term effects in terms, character and views<sup>20</sup> **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 Burratorang 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*

<sup>18</sup> WDWR EIS Appendix J: World Heritage Assessment 6.1.8 Table 6-1

<sup>19</sup> WDWR EIS Appendix F1: Biodiversity Assessment Report - Upstream

<sup>20</sup> 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'.<sup>21</sup>*

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 2021<sup>22</sup>, and subsequent comments of dissatisfaction on behalf of FNCHPA to media by Warren Entsch, Co-Chair, FNCHPA on 14 December 2021<sup>23</sup>

## 7. Substantial carbon footprint

- a. This proposal is incompatible with the NSW Government target of Net Zero by 2050.
- b. 700,000m<sup>3</sup> 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/m<sup>3</sup> = 210,000,000kg Co<sub>2</sub>-e or 210,000 tonnes Co<sub>2</sub>-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.

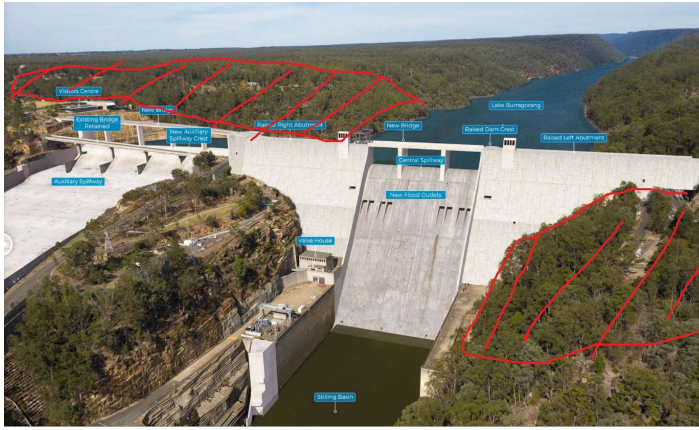
## 9. Visualisations are misleading



<sup>21</sup> 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/>

<sup>22</sup> 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>

<sup>23</sup> '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>



For the same reasons the visualisations are very misleading. Red hatched areas will be potentially bare earth as per NorthConnex and similar scale projects shown above. \$1 billion of concrete and it looks like it's just been slotted in there as if nothing has happened. This means destruction of the natural vegetated slopes and cliff faces that we know



to have very high cultural significance to Aboriginal people and to the character of the place for all people of the world and an unknown length of time for the replacement landscape works, if realised, to mature and evolve. Accurate impressions of the landscape restoration works over time must be comprehensively communicated using professional standards such as the SER Progress evaluation 'recovery wheel'<sup>24</sup> or scaleT<sup>25</sup>. Destroyed art,

artefacts and manipulated trees cannot be replaced. Further damage to of this sacred place is unacceptable.

#### 10. Harmful effects of climate change were anticipated

Since around 1988, when the IPCC was established by the United Nations Environment Program (UNEP), planning of developments on NSW floodplains could have anticipated increased risk of rainfall intensity and frequency, and greater flooding, due to climate change. In the intervening 33 years other countries have adapted in ways, and at a scale, that allows mixed use development, by reintroducing natural processes to manage inundation. It is imperative that NSW research and develop flood resilient development models that do not destroy irreplaceable world heritage. For example, world leading landscape architectural projects in the Netherlands, China, Perth WA and Braidwood NSW are refining adaptive models for development in flood prone areas, in an innovative move away from traditional dam infrastructure failing to solve complex flooding problems;

<sup>24</sup> National standards for the practice of ecological restoration in Australia, Society for Ecological Restoration (SER) Australia

<https://www.seraustralasia.com/standards/National%20Restoration%20Standards%202nd%20Edition.pdf> Figure 2. p.10

<sup>25</sup> <https://www.seraustralasia.com/standards/National%20Restoration%20Standards%202nd%20Edition.pdf> Table 2. p.15

- 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 storage<sup>26</sup>.
- 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'* <sup>27</sup>- Kongjian Yu, Landscape Architect. Recent studies<sup>28</sup> 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 risk<sup>29</sup>. **Adelaide's MAR**<sup>30</sup> 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** <sup>31</sup> 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'**<sup>32</sup> 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**

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

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

<sup>27</sup> 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

<sup>28</sup> Chan, 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

<sup>29</sup> Sarfaraz Alam, Ansh 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>

<sup>30</sup>

[https://www.waterconnect.sa.gov.au/Content/Publications/DEW/Managed%20Aquifer%20Recharge%20Schemes%20in%20Adelaide\\_Final.pdf](https://www.waterconnect.sa.gov.au/Content/Publications/DEW/Managed%20Aquifer%20Recharge%20Schemes%20in%20Adelaide_Final.pdf)

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

<sup>32</sup> 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'***.<sup>33</sup> 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 Burratorang 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

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<sup>33</sup> 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 that reads "Tanya Wood". The signature is written in a cursive, flowing style.

**Tanya Wood,**  
**AILA NSW President**



# About the Australian Institute of Landscape Architects



Australian Institute of  
Landscape Architects

**The Australian Institute of Landscape Architects (AILA) leads a dynamic and respected profession: creating great places to support healthy communities and a sustainable planet.**

## Who we are and what we do

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AILA's national position statements on Green Infrastructure, Climate Positive Design, Child Friendly Cities, Healthy Communities, and Active Travel; examine how an integrated approach can be used to shape the health and wellbeing of communities. Landscape architects play a central role in developing and implementing these strategies.

Our members are distributed across Australia and range from sole traders to large internationally recognised practices and are embedded within local and state government, creating significant and profound community impacts at a variety of scales.

AILA's values focus on the design, delivery, and management of:

### 1. Quality Public Places

Examples include:

- Southbank Parklands, QLD
- Sydney Park and Darling Quarter, NSW
- Royal Botanical Gardens Victoria – Cranbourne Gardens, VIC
- Pelzer Park/ Pityarilla (Park 19) Activity Hub, SA
- Elizabeth Quay and Scarborough Foreshore, WA
- and many more Australia-wide.

### 2. Stronger Communities

Through public open space networks, parks, and sporting complexes.

### 3. Environmental Stewardship

Through ecological restoration (flood, fire, weeds and contaminated waterways).

As landscape architects:

- We resolve to protect and sustain our landscapes.
- We affirm that self-sustaining landscapes are essential to our planet by placing a high value on the protection of living landscapes and taking a thoughtful approach to their change.
- We resolve to restore damaged landscapes to health.
- We recognise each landscape is best cared for by the community as a whole.
- We work to reveal the value of each landscape to all parties so that they can work in its best interests.
- We work collaboratively with the community and with other professionals to ensure the best outcome for each place.