Australian Institute
of Landscape Architects
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LANDSCAPE ARCHITECTS AND BUSH FIRES

Final ratified position statement November 2016

Introduction

Landscape architects can play a significant role in the complex management, mitigation and response to bushfire in Australia. As part of multidisciplinary teams, landscape architects can ensure a holistic approach by reinforcing the need to consider the diversity of values that are significant to our society. Specialised landscape architects can recognise and manage the hazards and risks associated with development in and adjacent to fire prone landscapes – particularly areas of bush – and develop designs and management plans that mitigate future risk. Landscape architects understand and promote the value of landscape amenity and connection to nature, habitat retention, the economic resource of natural and rural landscapes to communities, and the need to balance the aims of mitigating bushfire risk with preservation of landscape values. This understanding adds value to all development proposals.

Landscape architects play a significant role in advising, supporting, and leading community efforts in planning for and recovering from fire, particularly on the peri-urban areas of cities. This knowledge and expertise will enable landscape architects to lead in the research and development of new standards regarding the role of landscape elements and green infrastructure in mitigating bushfire risk.

Bushfire is a naturally occurring process that has influenced the evolution of Australian ecosystems and landscapes. The role and use of fire to extensively manage the landscape by Aboriginal people is well documented. Since European occupation, farms, settlements and the broader landscape in southern Australia have been at risk from bushfires – especially in drought periods. Fuel reduction burns commenced in the forests of south-western Australia in the '60s, and improved suppression technology, better organised fire brigades, better understanding of fire regimes, more resilient building methods and materials, and fragmentation of bushland areas through settlement and roads may have reduced the risk over time. More recently, the 2009 Victorian Bushfires Royal Commission which followed the tragic fires of that year significantly influenced the management of bushfire risk in Australia. It resulted in accelerated changes to the building regulations to include the Bushfire Attack Level (BAL) assessment system (which determines the vulnerability of a structure to bushfire) and minor changes to the planning regulations to increase clear zone distances in Victoria, and a change of thinking on Bushfire Prone Areas.

Factors increasing bushfire risk in Australia include:

- Global warming associated with climate change is predicted to cause many areas of Australia to experience more frequent periods of drought and lower rainfall with higher average temperatures elevating the frequency of 'fire weather'.
- Increasing fuel loads due to the absence of appropriate fire regimes in some areas will lead to less frequent but higher intensity fires that can severely damage the environment and pose a high risk to people, assets, and settlements.
- The urban/bushland interface is larger than ever before, increasing the number of people and assets directly exposed to bushfire hazards and the increased frequency of major loss of property on the peri-urban areas of all major cities in Australia.

Key issues

The key issues for landscape design and mitigating bushfire risk include fuel reduction (particularly vegetation management), planning (providing for protection, suppression, and evacuation procedures) and supporting communities recovering from fire.

Fuel reduction

Landscape design principles in fire prone areas essentially mitigate fuel load risk through 'the art of fuel arranging'[1] by combining an understanding of fire behaviour, its movement across the landscape, and its attack mechanisms (principally embers, radiant heat flux, flame contact and smoke), with knowledge of plant material and flammability characteristics so that creative and intelligent solutions to living with the natural landscape emerge.

Vegetation management

Native vegetation provides environmental, social, and economic values. Strategic planning for bushfire risk mitigation should ensure native vegetation is retained. Better planning by locating new development in lower risk areas and the restriction of developments that require the removal of native vegetation, improvements to fuel reduction burning programs, the declaration of Bushfire Prone Areas, and new planning policies and associated guidelines for 'Planning in Bushfire Prone Areas' will improve outcomes for new communities. Vegetation in fire prone areas should be managed in a way that balances the risks and benefits across scales – from broad scale planning to detail design.

Planning for bushfire risks

Landscape planning for bushfire risks should focus on two objectives:

- Providing for fuel reduction, suppression and evacuation activities
- Reducing the Bushfire Attack Level of a place or property

The precautionary principle should always be used in planning for bushfire risk as knowledge is incomplete and lives are at stake. The complexity of planning for bushfire risk is compounded by the need to incorporate other values (e.g. native vegetation is preferred for its biodiversity values, but it can be very flammable). Landscape architects play a critical role in the multi-disciplinary team that plans and considers all values early in the planning and design process so that better outcomes can be achieved. This team should include accredited fire management consultants, local and state

[1] Power, Antony, Landscape Design for Bushfire Prone Areas, Presentation to Sun AILA Event March 2014

government representatives (environment, planning and fire and emergency services agencies), and designers (building and landscape).

Supporting communities recovering from fire

The increased frequency of fires in populated areas in the past 20 years has seen an increased role for landscape architects in re-establishing communities. This includes evaluating the safety and health of remaining urban trees, and stabilising degraded landscapes through rapid and long term revegetation. Landscape architects play a significant role in advising residents about establishing new gardens, public facilities, and restorative and commemorative spaces for residents undergoing the process of recovery.

AILA position

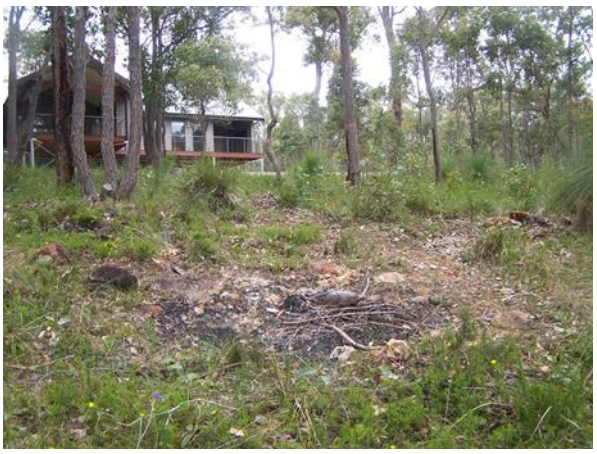
AILA advocates that local and state government policy must recognise the complexities of managing bushfire risk and vegetation management in bushfire risk areas. Planning for bushfire prone areas should consider all community values in risk management procedures. AILA recommends that landscape architects be integral to planning, design, management, communication, and research for bushfire risk mitigation.

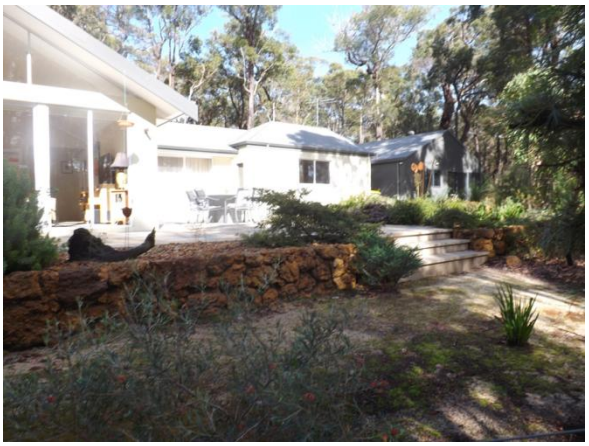
AILA advocates for appropriate standards for the use of landscape structures in the mitigation of bushfire risk and commits to ongoing support of the bushfire risk knowledge base of its members.

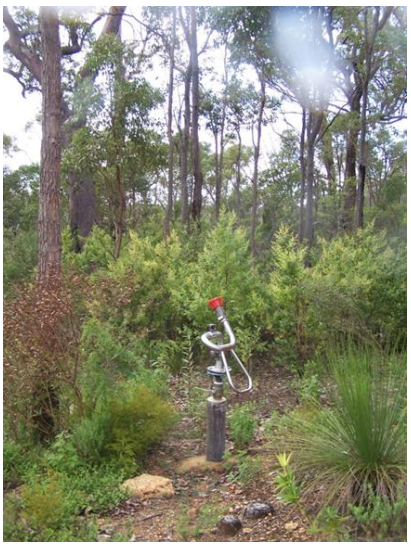
Case Studies of WHO Global Network members

Williamson/Gardner residence in Yallingup, Western Australia

This is an example of a garden design with native plants and native vegetation management.
Photos: C. Kemp, Department Parks and Wildlife. A number of techniques have been used to reduce the vulnerability of this property to bushfire attack including (Top L to R, clockwise): fuel reduction through small scale burning of debris; use of shielding walls and non-flammable materials such as stone mulch; sprinklers for damping down as fire approaches; and use of sparse planting (to reduce fuel load) with barriers such as stone retaining walls to reduce the spread and intensity of fire.

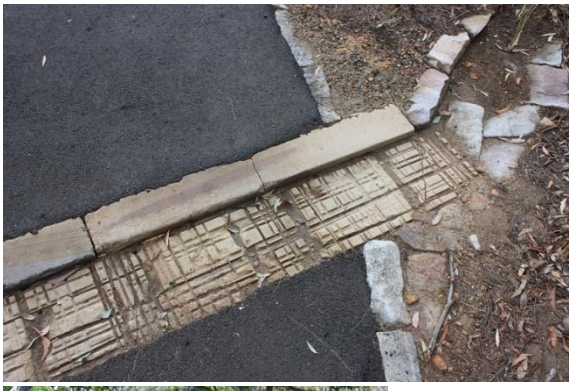


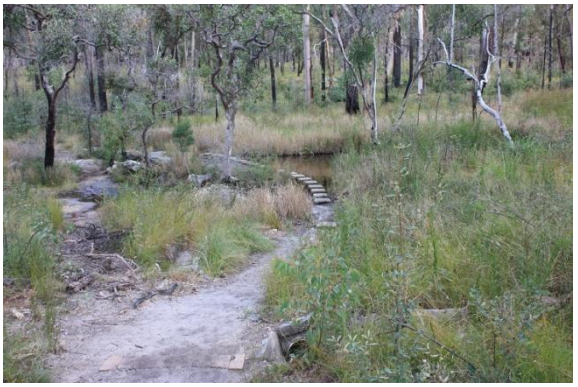


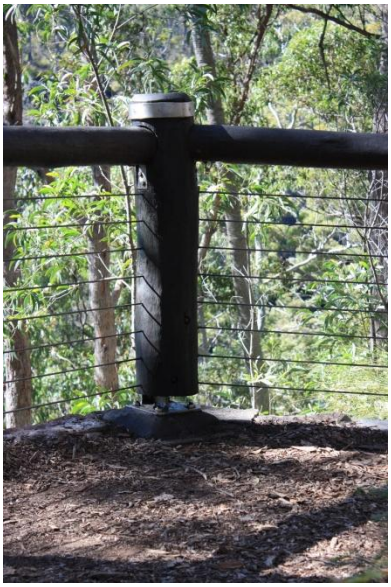


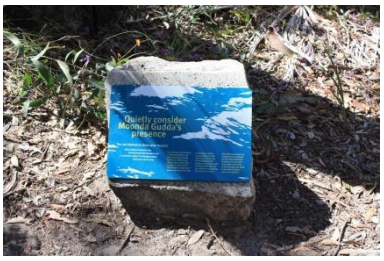
Blackdown Tablelands National Park, QLD

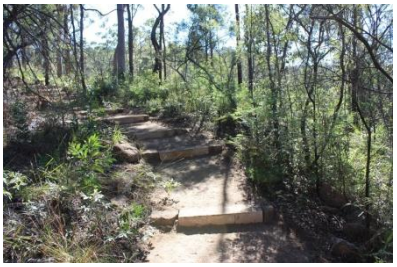
The Blackdown Tableland National Park is a 900 m (3,000 ft) plateau located in the north east of the central Queensland sandstone belt. Following significant fires in 2013 the park rebuilt the camping and walking trail infrastructure. The design response focused on the use of fire resistant materials and interpretation of the ecological and cultural association with fire on the plateau. Photos: Andrew MacKenzie, Queensland National Parks.











Supporting research/links

National Standards and Codes

- Building Code of Australia
  AS 3959: Construction of buildings in bushfire-prone areas (Standards Australia 2009)

Relevant legislation on a state by state basis

- State Planning Policy 3.7, 'Guidelines for Planning in Bushfire Prone Areas', December 2015, Western Australian Planning Commission

Information on fire behaviour, fuel loads and other technical aspects of fire

- Bushfire and Environmental protection Branch of FESA (now DFES), 'Visual Fuel Load Guide for the scrub vegetation of the Swan Coastal Plain', Aug 2015, FESA.
- Department of Sustainability and Environment, 'Overall fuel hazard assessment guide, Fire and adaptive management report no. 82', 4th Edition, July 2010
- Refer OBRM Update October 2015 accessed November 2015 from http://www.dfes.wa.gov.au/waemergencyandriskmanagement/obrm/Pages/default.aspx which noted OBRM was working on 'Guidelines for preparing a Bushfire Risk Management Plan', a 'Map of Bushfire Prone Areas in Western Australia', a review of the 'Local Government Permit to Burn System' and 'Kimberley Best Practice Guide'

Guides for site planning and design

- cfa.vic.gov.au
- http://www.fireandbiodiversity.org.au/publications.html (Queensland SEQ Fire and Biodiversity Consortium)
- Ramsay Caird and Lisle Rudolph, 'Landscape and Building Design for Bushfire Areas', CSIRO, 2003
- State Planning Policy 3.7, 'Guidelines for Planning in Bushfire Prone Areas', December 2015, Western Australian Planning Commission
- Kemp, Cherie, (Department of Parks and Wildlife) Presentation to the West Australian Local Government Association (WALGA) NAMN 'Forum on Bushfire Risk and Biodiversity Management'. 2015

Vegetation – suitability, flammability and potential uses

It is important to use vegetation lists specific to the local area/vegetation province to avoid introduction of weeds and to ensure growth habits are accurate for that area. See Shire of Serpentine Jarrahdale link below for an example.

- http://www.sjshire.wa.gov.au/assets/Uploads/Emergency/local-low-flammability-plant-species-050413.pdf
- http://www.fireandbiodiversity.org.au/publications.html (Queensland SEQ Fire and Biodiversity Consortium)
- Rudolph, L. 'Vegetation and Bushfires: Part 1 – The behaviour of Vegetation as Applied to the Landscaping around Buildings in Bushfire Areas – A Review and Evaluation.' 1993, *Landscape Australia* **15**(1), 17-23.
- Rudolph, L. 'Vegetation and Bushfires: Part 2 – A system for the assessment of the behaviour of vegetation as Applied to the Landscaping around Buildings in Bushfire Areas.' 1993, *Landscape Australia* **15**(2), 113-115.
- Refer http://www.cfa.vic.gov.au/plan-prepare/plant-selection-key/ accessed 6.55 11th March 2016.
- Sheridan, Jennifer A 'The Flammability of Common Garden Plants and Australian Natives: A search for Fire Retardant Plants.' 1996

Fire and Biodiversity

- http://www.fireandbiodiversity.org.au/publications.html (Queensland SEQ Fire and Biodiversity Consortium)
- Baxter, A. and Hussey, P., 'The Use of Fire in Small Remnants', *Wildlife Notes* No. 17, January 2006, Land for Wildlife and Department of Conservation and Land Management.
- Woinarski J. et al. 'Stemming the tide: progress towards resolving the causes of decline and implementing management responses for the disappearing mammal fauna of northern Australia,' *Therya*, vol. 6, pp. 169-225

Aboriginal use of fire

- Gammage, Bill, 'The Biggest Estate on Earth – How Aborigines made Australia', 2011, Allen and Unwin.

Education opportunities – courses and accreditation

- University of Western Sydney - Graduate Diploma Course in Planning for Bushfire Prone Areas
- University of Melbourne - Certificate and Diploma Courses in Bushfire Planning and Management
- Fire Protection Association Australia – accredited trainer

Professional organisations

- Fire Protection Association Australia: www.fpaa.com.au

Other AILA position statements

It is recommended that in due course associated position statements are developed for 'Fuel Reduction and Prescribed Burning' and for the 'Management of Areas of Remnant Bushland' as these issues influence how bushfire risk in retained native vegetation can be managed.

Further information

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