

Professionalisation of Australian bushfire planning and design practitioners

Abstract

This paper describes the professional development pathways for bushfire planning and design practitioners. It summarises the key competencies required and then shows that the growth of professionalism in the sector has been based on ongoing development of education and training opportunities, in parallel with establishing an independent accreditation agency. Australian states and territories have endorsed bushfire practitioners as valued personnel who improve the management of risk in urban interface areas between vegetation and human settlements.

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Introduction

Bushfire-prone areas are at risk of damage to, or destruction of, buildings. A major risk treatment is ensuring that new or modified structures and their surrounds are constructed to a standard that can reasonably resist likely fires. In association, design and siting of buildings must facilitate active firefighting or retreat to reduce risks. However, there is significant geographic variation in the characteristics and level of risks in interface areas. This, and the diversity of structures, means that each locale requires site-specific assessment that respond to the characteristics of existing and proposed built and natural environments.

This paper considers the development of accreditation of bushfire planning and design practitioners in Australia, including the nature of the accreditation as a response to the competencies required for practice. The paper commences with a description of bushfire risk and the built environment followed by the research into the competencies required to assess and reduce built environment bushfire risk. The paper considers the development of professionalism over time including accreditation of bushfire practitioners in Australia and a description of relevant education. The paper concludes that there has been considerable ongoing adjustment to professional standards and accreditation in parallel with the development of scientific knowledge, development and delivery of education opportunities as well as new statutory regulations and periodic bushfire events.

Bushfire risk and the built environment

Bushfire risks are typically highest in interface areas where bushfire-prone vegetation is in proximity to concentrations of vulnerable elements such as people, buildings and infrastructure (Mahmoud and

Chulahwat 2020; Modugno et al. 2018). The risks in these interface areas are often difficult to ascertain and to treat for 4 main reasons.

First, the morphology and physical characteristics of settlements and the characteristics of vegetated areas vary geographically, meaning that levels of risks will be highly variable spatially. Second, because bushfire likelihood, intensity and behaviour are influenced by weather conditions, high levels of variation in risks occur daily, seasonally and yearly (Van Oldenborgh et al. 2021). Third, human use, maintenance and occupation practices can vary significantly according to land use, seasonal and diurnal change and demographics. Finally, the practices of vegetation management can vary according to responsibility, resources, seasonal weather changes and intersecting goals such as farming, habitat protection or tourism (Rego et al. 2021; Schinko et al. 2023).

This paper’s focus is on professionals involved in the design, management and assessment of structures, subdivisions and the immediately surrounding vegetation in bushfire interface areas. Australian regulation relating to structures is based on building management via AS3959-2018 (2020) *Construction of buildings in bushfire-prone areas* as referred to in the National Construction Code. These national regulations are applied as part of codes applicable to structures in Australia, with minor variations between states. AS3959-2018 (2020) sets out methods to determine the likely fire intensity that a structure will be subject to (the Bushfire Attack Level (BAL)) and provides corresponding building standards to be met.

In addition to AS3959-2018 (2020), Australian states and territories establish additional urban planning (land use

planning or town planning) provisions for higher-risk locations. With variations between jurisdictions, the planning regulations establish additional requirements that augment the building controls. These include criteria for siting of structures, access to firefighting water, vehicular access, vegetation management and separation of vulnerable elements from the hazard.

Assessing and reducing built environment bushfire risk

Professional competencies are described and assessed as detailed by Biggs, Tang and Kennedy (2022) as the practitioner knowledge used, divided into declarative and functioning types. Declarative knowledge can be spoken or written about, while functioning knowledge is what a practitioner can competently do – otherwise described as applied knowledge. The characteristics of professional competence for tasks can be ascertained using 2 fundamentals that identify: 1) criteria for successful outcomes and 2) professional characteristics that contribute to performance of tasks (Boyatzis 1991; Mulder 2014:115). Using these competence criteria, this study examined 20 publicly available planning applications and supporting documentation in various Victorian local government areas within a 2-month period that included an assessment of bushfire risks required by the Bushfire Management Overlay in the Victoria Planning Provisions (Clause 44.06 and associated requirements). The relevant regulatory requirements of the Victoria Planning Provisions, including AS3959-2018 (2020) were assessed in parallel. The competencies identified were themed and collated in Table 1.

Table 1: Summarised stages of outcomes and competencies for bushfire planning and design assessment.

Outcomes/ Competencies	Outcome sought	Competencies for success
A. Initial context	Initial client goals. Regulatory requirements, processes and parameters.	Understanding of relevant planning and building regulations and codes. Determine permit requirements and broad parameters. Liaison with client and other relevant parties such as fire authorities.
B. Inputs for fire behaviour	Gather correct inputs.	Describe and map relevant site conditions, vegetation, topography and slope, surrounding area conditions such as roads and other relevant matters.
C. Fire behaviour and attack	Determine likely fire behaviour scenarios. Bushfire Attack Level (BAL)	Categorise vegetation and distances from structures. Determine slopes. Describe and assess wider context and fire attack scenarios. Establish bushfire attack category. Possible liaison with fire authorities, council and other agencies.
D. Design response	Integration of client goals with likely fire attack and design response meeting regulatory requirements.	Regulatory compliant solution that includes BAL, siting of structure, vegetation management, access, water, signage and achievement of client goals. May include other regulatory matters such as processes for removing certain vegetation.
E. Documentation and processes	Supply and/or submission of required documents for successful outcome.	Understanding of relevant planning and building regulations and processes. May also include further liaison with fire authorities, council and other agencies.

A need for professionalism and accreditation

Professionalism is more than good conduct during work. As an overarching approach, it allows individuals who have met certain criteria a level of exclusivity and protection to perform expert work (Noordegraaf 2020). In turn, this brings societal benefits because professionals can be trusted to carry out expert work with a high level of competence as a kind of social contract (Cruess and Cruess 2020). A key aspect of professionalism is that membership is managed by an independent organisation (Noordegraaf 2020). These professional organisations manage membership and accreditation on the basis of members meeting educational and practice standards. This is usually undertaken through a combination of education and practical demonstration of ability, as well as ongoing professional development and conduct (Bagdasarian et al. 2019).

Current accreditation in Australia

In Australia, there is one national bushfire planning and design accreditation framework and one that is state-specific. The Bushfire Planning and Design Accreditation (BPAD) Scheme is a national framework, managed and administrated by the independent not-for-profit Fire Protection Association Australia (FPA Australia 2024), which is the peak national body for fire safety. The association supports and represents the fire protection industry and provides accreditation to the fire protection sector.

BPAD accredits practitioners who meet set criteria and deliver bushfire assessment, planning, design and other advice services that reduce bushfire risks to property and building developments. The criteria include having a detailed knowledge of, and ability practically to apply, the relevant planning, development and building legislation and policies, including the National Construction Code, AS3959 and the National Association of Steel Framed Housing Standard - Steel Framed Construction in Bushfire Areas.¹

In recognition of the professional skills and knowledge required to undertake BPAD services, practitioners applying for accreditation must demonstrate their skills and knowledge through a rigorous peer panel interview, ongoing professional development and work conduct.

The BPAD Scheme comprises 3 levels and is a hierarchical framework wherein each level delineates a specific range of authorised responsibilities and competencies. This hierarchical arrangement is structured such that the higher levels encompass the competencies of the lower levels while also incorporating unique capabilities:

- BPAD Level 1 practitioners typically work with an orientation to building approvals under the National Construction Code and determine BALs using a simplified method.

- BPAD Level 2 practitioners develop planning and building applications by applying prescribed requirements in accordance with local planning regulatory requirements (that include AS3959 (2020)).
- BPAD Level 3 practitioners can develop alternative design solutions that go beyond the standardised methods (excluding construction provisions).

BPAD is currently recognised by authorities in Victoria, New South Wales and Western Australia. Fire Protection Association Australia is working towards similar arrangements in the Australian Capital Territory, Queensland and South Australia. The first state to adopt the scheme was New South Wales in 2006 as a joint effort by New South Wales Rural Fire Service (NSWRFS) and industry. Initially, there were 2 levels equivalent to the current levels 2 and 3. It is regulated through the *Environmental Planning and Assessment Act (1979)* that provides an option to use a certificate provided by 'a person who is recognised by the NSWRFS as a qualified consultant in bush fire risk assessment' as part of development consent (NSWRFS 2024). The NSWRFS refers to BPAD as qualified practitioners.

In response to the devastating bushfires of the 2009 bushfire season, the 2009 Victorian Bushfire Royal Commission provided a series of recommendations.² Recommendation 55 highlighted the need to develop a pool of professionals in the building and planning industry and develop a suitable course in Victoria. As a result, in 2012, BPAD was launched in Victoria with the support of the Country Fire Authority (CFA), which was the determining agency for relevant urban planning applications at that time. In addition to the existing 2 levels, BPAD Level 1 was introduced to satisfy the need in areas that require only a building response for bushfires. However, in 2014, the CFA was allocated only referral agency powers and BPAD became largely a voluntary scheme in Victoria.

In Western Australia, following the Perth Hill Fires in 2011, the *Report of the Independent Review into the SA 2019-20 Bushfire Season* (the Keelty Report)³ recommended a series of changes to the planning and building framework in including establishing a professional industry as well as bushfire consultants. A Bushfire Accreditation Steering Committee consisting of representatives from Department of Planning, Lands and Heritage, Department of Mines, Industry Regulation and Safety and Department of Fire and Emergency Services was established and BPAD became the

1. National Association of Steel Framed Housing Standard - Steel Framed Construction in Bushfire Areas, see <https://nash.asn.au/why-choose-steel/codes-and-standards>.
 2. 2009 Victorian Bushfire Royal Commission, see <http://royalcommission.vic.gov.au/Commission-Reports/Final-Report.html>.
 3. *Report of the Independent Review into the SA 2019-20 Bushfire Season*, see <https://resources-production.safecom.sa.gov.au/current/docs/Independent%2520Bushfire%2520Review%2520-%2520Final%2520Public%2520Handout.pdf>.

accepted accreditation scheme. All 3 levels were adopted in Western Australia and the planning guidelines specify what level must be used for specified development and land use types.

In Tasmania, the Chief Officer's Scheme for the Accreditation of Bushfire Hazard Practitioners (Tasmania Fire Service 2022) is administrated and managed by the Tasmania Fire Service. Similar to BPAD, it accredits practitioners who meet training requirements, with some differences. The Tasmanian scheme limits the ability to develop performance-based solutions. It also includes a mentoring program that is mandatory but is not currently available as part of BPAD.

Since inception in 2006, the BPAD Scheme has changed and grown, particularly after significant bushfire events and includes entry requirements related to the specific needs of jurisdictions. As such, in Western Australia, a specific 5-day BAL course was developed to accommodate the needs of the sector and the government at the time. In keeping with the literature of professionalism (Noordegraaf 2020), a key strength of BPAD is its independence and growing consistency that is separate from political agendas and financial allocations of state and territory governments.

Education for bushfire risk and the built environment

Currently, there are only 2 tertiary providers of recognised bushfire planning and design management education at the Graduate Certificate or Graduate Diploma level focusing on bushfire building and design. These are the University of Melbourne and Western Sydney University. A number of providers offer some training in this area, however, only Western Sydney University offers a Graduate Certificate and Diploma in Bushfire Protection. The University of Melbourne offers a Graduate Certificate in Bushfire Planning and Management. Graduates of these Graduate Certificate and Diploma courses can apply for BPAD levels 2 or 3. In addition to education, applicants must demonstrate their ability to practically apply their skills and knowledge. This is assessed based on observations of practice over the previous 2 years. Applicants are often initially unsuccessful, with the current pass rate of first applications approximately 30%. Unsuccessful applicants are requested to either provide more evidence or reapply within 6 to 12 months after gaining additional experience. Failure to pass is attributed to a lack of practical skills, particularly evident in applicants who do not have significant exposure to senior and experienced practitioners. It also reinforces professionalism in the industry and that a high bar has been established.

The 2 courses described are at postgraduate level. The need for a prior undergraduate is sometimes seen as an impediment to practitioners entering the sector.

To overcome this and to satisfy needs for a national approach, the Diploma of Bushfire Protection Assessment was developed and introduced through the vocational education training system in December 2022. It is not yet available for delivery due to the significant time required for registered training organisations to be approved. At time of publication, it is set for delivery in early 2025.

This Diploma was developed to allow for a consistent national approach, to enable practical skills delivery as compared to academic offerings, to be an affordable (cost and time) entrance to the sector and to allow flexible delivery that is contextualised to jurisdictions. It is mapped to the competencies of BPAD Level 2. This national approach of the Diploma and delivery through registered training organisations brings consistency in learning outcomes and delivery.

FPA Australia offers a 5-day BAL course providing practical training on AS3959 and it is a prerequisite for BPAD accreditation in Western Australia. This course was developed to satisfy a rapidly growing sector in Western Australia in 2016 and to ensure that site assessment and BAL determination is carried out in accordance with Western Australian regulations and landscapes. It is available in Victoria and its successful completion provides an option for practitioners to satisfy training requirements for BPAD Level 1.

Conclusion

The construction characteristics, siting, access and site management of buildings and properties in bushfire interface areas is a key element to managing risks. The development of professionalisation of bushfire planning and design practitioners includes a number of changes in related areas. This paper summarised 5 areas of professional competency required to assess and reduce built environment bushfire risk in association with meeting relevant building and urban planning codes. It has also been shown that professionalism has developed over time with the establishment of the BPAD Scheme and its adoption by many Australian states, usually after significant bushfire events. Acceptance into the sector requires education and subsequent demonstration of an acceptable level of applied skill, which is continuing to develop. There has been ongoing adjustment to professional standards and accreditation as well as development of education opportunities and introduction of new statutory regulations. There remains a need for suitable pathways to be established for people who do not have undergraduate degrees but may have excellent equivalent skills and knowledge. Many responders and building practitioners may fall into this category. It is likely to be cost effective in the long term to invest in this area. The jurisdictions that do not yet require accreditation of

practitioners may be caught between ensuring sufficient 'supply' of expertise, but because they do not require accreditation, are ultimately discouraging practitioners from gaining improved qualifications, particularly BPAD levels 2 and 3. The solution is to require accreditation. The many links between climate change knowledge and bushfire assessment and modelling may provide valuable future directions for professionalisation. Many relevant professions, such as architecture, land use planning, landscape architecture, ecology and engineering could develop formal pathways and sub-disciplines for careers in bushfire risk reduction. It would be appropriate that a broad range of disaster risk reduction qualifications are needed in Australia and it would be appropriate that bushfire be a component of a suite of nested and specific qualifications. Further research is required to consider the links between scientific advancement in this area and the bushfire professionalism described.

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