Australian Institute of Architects

Inquiry into the incidence and severity of bushfires across Australia

Submission to the Senate Select Committee on Agricultural and Related Industries

31 July 2009

SUBMISSION BY

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PURPOSE

- This submission is made by the Australian Institute of Architects (the Institute) to the Senate Select Committee on Agricultural and Related Industries' Inquiry into the incidence and severity of bushfires across Australia.

- At the time of this submission the Executive of the Institute is: Melinda Dodson (National President), Karl Fender (President-Elect), Howard Tanner (Immediate Past President), Rod Mollett and Shelley Penn.

- The Chief Executive Officer is David Parken.

EXECUTIVE SUMMARY

In this submission the Australian Institute of Architects (the Institute) addresses issues it considers are relevant to the Senate Select Committee on Agricultural and Related Industries' inquiry into the incidence and severity of bushfires across Australia. The Institute's submission to the 2009 Victorian Bushfires Royal Commission forms the basis of this submission given the relevance of issues being examined by the Senate Select Committee.

In this submission, the Institute has identified and makes recommendations on the following key issues:

- the misnomer of 'fireproofing' the built environment,
- several issues in relation to required research and effective application of research,
- whether regulation is required to prevent buildings from being constructed in areas deemed to be at extraordinary bushfire risk,
- the need for AS 3959-2009 to be reviewed following research arising from the 2009 bushfires and the findings of the Victorian Bushfires Royal Commission,
- the need for a multi-disciplinary, master planned approach for the rebuilding of the bushfire affected areas,
- fire refuges, and
- a proposal to drive world's leading practice in bushfire resistant construction.

BACKGROUND TO THE AUSTRALIAN INSTITUTE OF ARCHITECTS

The Australian Institute of Architects is a not for profit, independent, national, member based organisation with approximately 9,500 members across Australia and overseas.

The Institute exists to:

- advance the interests of members, their professional standards and contemporary practice; and
- expand and advocate the value of architects and architecture to the sustainable growth of our community, economy and culture.

The Institute actively works to maintain and improve the quality of our built environment by promoting better, responsible and environmental design.

The Institute publishes both practice notes for architects and an Environment Design Guide (EDG) which has over 280 peer reviewed papers on sustainability and good design. There are two EDG papers which specifically address planning and design for bushfire protection and these are attached for information as appendices.

The terms of reference which this submission addresses include:

- *(e) any alternative or developmental bushfire prevention and mitigation approaches which can be implemented; and*

- *(f) the appropriateness of planning and building codes with respect to land use in the bushfire prone regions..*

KEY ISSUES

(1) 'Fireproofing' misnomer

There is currently no known way to 'fireproof' houses and other buildings which make up our built environment in a manner acceptable to Australia's lifestyle. The built environment needs to fulfil a number of criteria including that buildings are appropriate for their purpose. While some forms of buildings such as strategic defence facilities etc can be built to withstand a variety of threat scenarios including theoretically, bushfire, the inherent characteristics of these buildings, eg, built deep within a mountain or underground, windowless etc, are clearly not appropriate for residential and community buildings.

Residents of, and relevant authorities for bushfire affected areas may be seeking assurances that our built environment will be designed and constructed to be 'fireproof', to withstand similar conditions to those experienced in the 2009 Victorian bushfires. Not only may these calls for increased safety occur in the Victorian affected areas but are likely to also be sought in other fire prone areas across Australia.

The Institute contends that even with the best of endeavours and skills such as those that professional architects can bring to bear in collaboration with other experts, it is only possible to enhance the *fire resistance* of the built environment, within the parameters of the Australian community's lifestyle.

It is imperative that residents and authorities understand, with the help of the Senate Select Committee's findings, that it is not possible to 'fireproof' the built environment except in a way which is highly undesirable and impractical for Australian communities.

(2) Research

To facilitate meaningful decision making processes, the Institute of Architects strongly advocates evidence based decision making. Further research and analysis is urgently required to help inform residents and authorities in decisions to be made about the built environment in bushfire affected areas.

Research issues the Institute has identified include:

(a) The need for a thorough understanding of the prior state of the built environment in bushfire affected areas, ideally to determine the factors responsible for the destruction, damage or survival of a house or building. This scope of analysis should include but not be limited to factors such as: the slope of land, location of house or building on land, surrounding vegetation and combustible fuel load, design and maintenance of the house or building, building

materials used and residents' activities to 'safeguard or protect' the house or building, as well as, of course, the weather conditions.

Analysis of this kind is essential to determine what lessons can be gleaned from bushfires to assist the reconstruction of affected areas in a more fire resistant way.

(b) The need to maximise bushfire research and knowledge for effective application in the wider community, where bushfire vulnerability appears to be increasing.

The architecture profession understands that there has been extensive research and considerable findings arising, for example, from previous bushfire inquiries, the Cooperative Research Centre (CRC) into bushfire research, the CSIRO and Universities.

Such research can inform the Australian wide building sector including design professionals, future planning decisions, future revisions of the applicable Australian Standards and building regulations.

However the findings from such research and inquiries do not appear to the architecture profession to be coordinated or easily accessible.

This observation may be proved incorrect by the evidence of others, but if we are correct, to better equip State and Local Governments, designers and community and residents' decision making for the built environment in bushfire prone areas, the Institute suggests the Senate Select Committee give consideration to:

- how the various bushfire research projects can best be coordinated and information made available to the community, authorities and built environment professionals for application in bushfire prone areas, and
- the need to boost specialist research, for example into fire resistant building materials within a bushfire context, and fire refuges.

The Institute contends that the type of research and analysis outlined above, is needed to enhance the safety of current and future generations of residents in bushfire prone areas.

(3) *Appropriateness of rebuilding*

Consistent with the above discussion about research, the Institute of Architects contends that the research and analysis also needs to assist authorities to determine if it is appropriate to consent to rebuilding in some areas.

Architects are required, as are others in the building industry, to work with comprehensive regulation put in place to protect occupants and users of the built environment, and/or the property itself. Such regulations are exhaustive in their scope and include those of the Building Code of Australia for example, regulating proximity of buildings from each other and the materials of their construction to prevent the spread of fire. Planning regulations control the size and height of dwellings and their renovations. Heritage controls regulate the way in which they can be altered, or removed.

Any one of these regulations undoubtedly impinges on the rights of property owners to do with their property what they wish, even if sometimes the impact is only felt in the cost of buildings.

However, this regulation even extends to what might be considered the fundamental right to build a dwelling on one's land, where risk of flood is considered excessive.

The community generally accepts the value of these regulations and the need for compliance to prevent the possibility of death or injury, even where the statistical risk to the safety of occupants is low, or very low.

It seems inconsistent with the general policy of safety based regulation described above, that the risk to occupants of bushfire, where that risk is enhanced by an extraordinarily dangerous location, could fall outside the scope of such regulation, given that setting standards of construction cannot realistically eliminate this risk.

While the Institute strongly advocates that any such decision to regulate the right to build should only be made on sound research evidence, if the Senate Select Committee finds there is such a case for more extensive regulation to be made on the basis of research, then the Institute considers it a necessary and appropriate part of protecting our community.

(4) AS 3959- 2009 For construction of buildings in bushfire prone area

Regulations covering building in bushfire prone areas are defined by the Building Code of Australia through its reference to an Australian Standard.

Australian Standards are typically developed through a process of collective industry input and advice and are subject to a review cycle. For instance, *AS 3959- 2009 For construction of buildings in bushfire prone areas,* which was in the last stages of public comment shortly before the 2009 Victorian bushfires, arose from a revision of the Standard prompted by the 2003 Canberra bushfires.

The Institute supports the ongoing review of Standards, and it was represented on the Industry committee responsible for drafting the latest version of the Standard. However AS 3959-2009 has not been informed by the 2009 Victorian bushfires and we anticipate an expedited review of the Standard will occur to take into account the research conducted into the fires and the findings and determinations of the Victorian bushfires Royal Commission. However, as noted above, it must also be informed by the research which we hope will be prioritised, such as that of the CRC for bushfire research which has had an extension of its funding in the Commonwealth's recent budget.

(5) Planning and design for future rebuilding

Replacing a home or community building is a complex process. Arriving at the right design, navigating the town planning process, setting a realistic budget, selecting materials, finding the right builder and managing the building contract are just some of the tasks involved. Overlay this with the emotional and financial stress caused by bushfires, and the task ahead for many bushfire affected residents is likely to be daunting.

Following a catastrophe such as the 2009 Victorian bushfires, it is understandable that planning and design to mitigate the risk to people and the built environment in

bushfire prone areas is the prominent issue. The challenge is to also incorporate issues not quite so high in the bushfire affected community's consciousness at the time, such as sustainability principles.

Given the added complexity for rebuilding in the aftermath of bushfires, this only reinforces the need for a multidisciplinary, masterplanned approach to rehabilitation and rebuilding of the bushfire affected areas, particularly towns and townships. The new look and feel of bushfire affected communities should be responsive to the wishes of the communities, the lessons arising from the fires and not least, sustainability, and in our view needs to be informed by professional design and planning advice. This vision for regenerated communities should encompass leading practice for the built environment in bushfire prone areas and incorporate current sustainable design and principles.

(6) Fire Refuges

Following the 2009 Victorian bushfires, much publicity was given to some residents who attribute their survival to their ability to shelter in a self made fire refuge or bunker. We do not dispute this account of their experiences. Such publicity has led to community calls for fire refuges and bunkers to be provided in bushfire prone areas.

Conversely, we have the anecdotal evidence from an architect/CFA volunteer in Strathewen who found deceased persons in what appeared to be a fire refuge. The Victorian Bushfires Royal Commission has also heard evidence[1] that in the 1997 Ferny Creek fires, some deceased people were found in a 'garage', apparently because the previous owner had suggested it would make a good fire refuge.

It is imperative that the community understand that within Australia there are no prescribed standards or regulations for the construction of fire refuges. To the Institute's knowledge, there is also no known research based evidence within Australia supporting the safe design of fire refuges.

We submit that this is a critical issue as it is apparent community concern is driving this issue with the potential for further disaster where people may make futile purchases or have a false sense of safety which could ultimately lead to future loss of life. The architecture profession has experienced an increase in inquiries about fire refuges for current and future projects and anecdotal evidence suggests that some businesses are already advertising 'fire bunkers'.

While there are several important considerations that need to be given to the notion of fire refuges, not least whether they are a panacea to some of the issues already discussed above, and those raised by others, the Institute submits that these considerations cannot be addressed in the absence of thorough and exhaustive research, testing and modelling to determine both their effectiveness and the safety features they need to provide. This research should also canvass international knowledge with due regard given to the differences in typical bushfire scenarios and residential conditions between countries.

If this evidence indicates fire refuges are viable, this ought to lead to an Australian Standard on fire refuges, and interim Standards are a part of the process of Standards development in situations of urgent need.

[1] Witness statement (page 7) and testimony on 15/5/2009 of Dr Katharine Augusta Haynes, (page 438 lines 14-23)

(7) Suggestion to enhance bushfire resistance in the built environment

Experiences in the area of sustainable design may be relevant and applicable to the goal of mitigating bushfire risk. For example, the building sector has embraced in a significant way, the voluntary concept of Green Star rating for new buildings, developed by the Green Building Council of Australia. Green Star is based on going beyond regulatory compliance for construction, maximising energy, water and resource efficiency. Buildings are designed and rated according to Green Star criteria, drawing on worlds leading sustainable practice. The Green Star scheme has the effect of the market driving what is considered acceptable practice, at a higher level than that set by the minimum regulatory standards, resulting in a pull through effect of lifting the general standard.

The Institute suggests that endorsement and encouragement by relevant government and other organisations of a voluntary scheme which promotes the adoption of world's leading practice in bushfire resistant construction, complimentary to existing regulatory standards, is a worthwhile proposal the Senate Select Committee might consider for its recommendations.

CONCLUSION

The Australian Institute of Architects submits the above comments for consideration by the Senate Select Committee.

APPENDIX

Two Environment Design Guide (EDG) papers titled ' *Bushfires and Building – An Introduction'* and ' *Planning and Design for Bushfire Protection'* are attached for information.