

FRIENDS OF THE BOX-IRONBARK FORESTS (MOUNT ALEXANDER REGION) INC

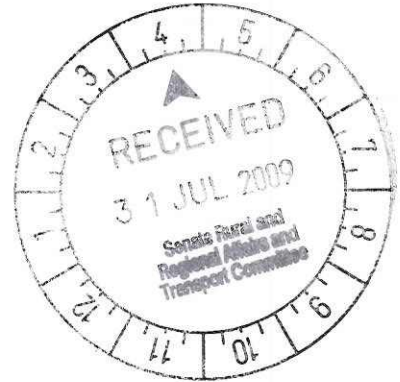
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20 July 2009

**SUBMISSION
SENATE BUSHFIRES INQUIRY**



Friends of the Box-Ironbark Forests (Mount Alexander Region) Inc. (FOBIF) is a community group working to protect what remains of the box-ironbark bush in our region of Victoria. Only 15% of pre-white settlement box-ironbark forest and woodland remain.

Protection of what remains of our box-ironbark bush and the safety of those living nearby is best achieved by avoiding creating a conflict between residents and native vegetation. The best protection of the bush would be obtained if new housing estates are designed and located with an adequate buffer of already low bushfire risk land between the housing and the wildfire risk. If residents feel they are safe they won't seek to clear vegetation on their land or on neighboring public land.

The evidence we will present to the Committee will help it respond to its Terms of Reference relating to the appropriateness of planning and building codes. Our evidence will also help in your consideration of the adequacy of the Australian Standard AS3959 *Construction of Buildings in Bushfire-Prone Areas*.

Any planning framework for wildfire protection of residential development will have to be compatible with and will build upon AS3959, and we have some comments on the adequacy of this Standard.

AS3959 Construction of Buildings in Bushfire-Prone Areas

We believe that during the 6 years it has taken to finalise the new Australian Standard AS3959 - 2009, the safety to residents it could have offered has been compromised.

The need for a review of the Standard was identified in the *COAG National Inquiry on Bushfire Mitigation and Management*, March 2004 in its Recommendation 6.2: *The Inquiry recommends that the review of the Building Code of Australia, with particular reference to the Construction of Buildings in Bushfire Prone Areas Standard – to deal with resistance to natural hazards, including bushfires – be completed by the Australian Building Codes Board as a matter of priority.* The National Inquiry wanted the review to include an assessment of the Standard's adequacy.

COAG's response to Recommendation 6.2 was:

COAG is concerned by the Report's observation concerning the delay in the review of the building code and in particular the Construction of Buildings in Bushfire Prone Areas Standard AS3959 by Standards Australia. COAG supports recommendation 6.2 and notes that the Australian Government Ministry for Tourism and Resources will write to the Board identifying this review as a priority and reinforcing both the urgency for, and benefits of, encouraging Standards Australia to complete the revision of the Australian Standard that follows COAG's "Principles and Guidelines for National Standard Setting and Regulatory Action by Ministerial Councils and Standard-Setting Bodies" and its enactment through the Building Code of Australia. The Board will be asked to resolve as soon as possible any other outstanding issues relating to the building code and natural hazards, including bushfires.

The House of Representatives Select Committee Report on Bushfires in October 2003 made similar recommendations on the need for a review of the Standard (see Recommendations 49 & 50 in their report *A Nation Charred*).

Despite the Government's call for urgency, the progress in the review of the Standard was slow, as can be seen from the timeline of significant events in the review:

- March 2003 – Standards Australia releases Draft Standard (Mark 1) DR 03182 for public comment.
- February 2005 – Standards Australia releases Draft Standard (Mark 2) DR 05060 for public comment.
- September 2008 – Australian Building Codes Board (ABCB) exhibits Draft Standard (Mark 3) AS 3959 as part of a Consultation Regulatory Impact Statement (RIS) process.
- 16 February 2009 – Premier Brumby calls for a tougher Building Code (media interviews).
- 5 March 2009 – ABCB adopts AS 3959-2009.

Why did it take so long to review the Standard?

To us on the outside there was little indication of why the review was taking so long. The only indicator was the posting on the internet of the minutes of two meetings of the relevant Standards Australia Committee (Bushfire Committee FP-020):

- MTG-007 of FP-020 on 14 & 15 May 2003
- MTG-008 of FP-020 on 4 & 5 September 2003

These minutes are included with this submission as Appendix 1.

We suggest the Committee obtain the minutes of all the FP-020 Committee Meetings, to see if they shed any light on why the Standard review took so long.

Two extracts from the September 2003 minutes concern us:

- *The assessment process contained in Section 2 AS 3959 may capture more buildings than originally believed and a dedicated sub-committee has been assigned the task of refining the assessment process [our emphasis].*
- *A publication date for the next edition of AS 3959 is dependent on the committee being satisfied that both the assessment process and design and*

construction requirements can be set at realistic and practical levels [our emphasis].

We believe these extracts cast doubt on the validity of the Standard's review process. The September 2003 minutes indicate to us that the Committee may have been more concerned that too many houses were going to be covered by the wildfire protection measures rather than the adequacies of the protection measures for current wildfire behaviour. Was the Committee more interested in down-grading the severity of wildfire behaviour in their modelling to more "realistic and practical levels" rather than a modelling based on current and predicted future wildfire behaviour?

Our concerns about the possible down-playing of the severity of wildfire behaviour in the modelling part of the AS 3959 review are supported by an inspection of the drafts of AS 3959 made during the review process. Table 1 shows the buffer distance needed between a site and a possible source of wildfire for successive drafts of AS 3959. The radiant heat flux limit of 29 kW/sq m was used as this is the level at which wood ignites spontaneously after prolonged exposure (Drysdale, 1985*).

Table 1

Buffer distances for wildfire protection at different stages of the AS 3959 review process (for Victoria)

Assumption: Vegetation classification – Forest

Standard or Draft Standard	Wildfire behaviour model for radiant heat flux	FDI assumed	Flame temperature assumed	Flat ground: buffer distance to get radiant heat flux <29kW/sq m	10°-15° downslope: buffer distance to get radiant heat flux <29kW/sq m
AS 3959-1999 June 2001	Not specified	Not specified	Not specified	Not specified	Not specified
DR 03182 19 March 2003	Empirical model by Leicester 1985+	120	Not specified	30 to <80m	50 to <140m
DR 05060 7 February 2005	Sullivan et al 2003#	120	1200K	39 to <52m	70 to < 90m
AS 3959 RIS Draft October 2008	Ditto	100	1000K	19 to <27m	38 to <52m
AS 3959-2009 6 March 2009	Ditto	100	1090K	25 to <35m	49 to <64m

Table 1 showed that each draft of AS 3959 produced a reduced buffer distance required. This was obtained by assuming a lower Fire Danger Index (FDI) and a lower flame temperature in the modelling. The exception to this trend was the March 2009 final version of AS 3959 which followed media statements from Premier Brumby that he wanted there to be a tougher building standard. The ABCB adopted a higher flame temperature (1090K) rather than the flame temperature (1000K) originally referred to them. .

We believe reducing the FDI from 120 to 100 in the wildfire behaviour modelling for Victoria is unjustifiable, because:

- On Black Saturday the predicted FFDI levels were up to 185 (www.bom.gov.au).
- The actual FDI on February 7th was well over even these levels.
- The CSIRO / Bureau of Meteorology have recently reported on bushfire weather and climate change\$. Climate predictions indicate Very Extreme and Catastrophic fire danger days may become much more common. Very Extreme Fire Weather is where the Forest Fire Danger Index (FFDI) is greater than 75. Bendigo currently experiences Very Extreme Fire Weather days around once every 11 years but with a High Level of global warming (1deg C rise by 2020) these days may occur every 6-7 years by 2020. By 2050 these days may be occurring every 2-3 years with a High Level of global warming.
- While it is reasonable to point out that the FDI is only defined on a zero to 100 scale, Catastrophic Fire Weather (FDI>100) occurs and is likely to occur more often. Until a more realistic index can be developed, which takes into account predictions for future weather, it is a reasonable and a precautionary approach to extrapolate the wildfire modeling beyond an FDI of 100. The alternative, which the Standards Australia Committee has done, is to ignore the possibility of Catastrophic Fire Weather.

Similarly we cannot see any justification for reducing the assumed flame temperature from 1200K. Bushfire scientists have found it difficult to measure or estimate wildfire flame temperatures. Typical estimates are in the range 1000K to 1500K (Sullivan et al 2003#). On Black Saturday flame temperatures were of the order of 1200 deg C [1470K] (Bushfire Bulletin, March 2009, Building Commission). The assumption of a flame temperature of 1090K is not taking a precautionary approach to the safety of people sheltering in their house from radiant heat.

We would like the Committee to find out why the AS 3959 Committee is dominated by industry representative groups:

- Australian Steel Institute
- Australian Window Association Inc.
- Housing Industry Association
- Master Builders Australia
- Plastic & Chemicals Industries Association Inc.
- Property Council Australia
- Think Brick Australia
- Timber Preservers Association Australia
- Wood Council Australia

The only groups represented on the Committee who have involvement with community safety or wildfire behaviour are:

- CSIRO
- Australasian Fire and Emergency Service Authorities Council (AFAC)
- Fire Protection Association Australia

Has the large number of industry groups on the Committee resulted in the Committee concentrating too much on how many houses are going to be caught by the Standard's requirements rather than the community safety offered by a realistic and precautionary approach to wildfire modeling?

Conclusion

So, after 6 years of deliberations the new Australian Standard will not provide protection to housing for the fire weather conditions present on Black Saturday. This is alarming as the basis for the *Stay and Defend or Leave Early Policy* is that the resident's house is to be used as a refuge against radiant heat as the fire front passes. A house built to the new Australian Standard would not withstand the radiant heat of a Black Saturday event as the FDI would be well over the value of 100 used in the Standard and flame temperatures would also be over the 1090K used.

A comparison can be made with the response to the Cyclone Tracy disaster in Darwin, where the Bureau of Meteorology measured winds up to 189 km/hr (one minute average speeds). The government's immediate response was to bring in a new building standard which ensured new buildings could withstand these winds.

If residents use AS3959 so that their house can withstand fire weather up to an FDI of 100 then as we experience higher FDI levels because of climate change, the residents will seek to remove the vegetation they see as threatening them. A better solution is to have an adequate building standard which provides for safe housing with the fire weather conditions we can expect with climate change and this will also help protect what is left of our remnant vegetation.

We are keen to help the Committee in whatever way we can with the issues we have raised. This may take the form of further information, an interview or we are willing to be a witness with respect to the issues we have raised. We have many case studies of housing estates established in Central Victoria where the land use planning for wildfire protection has been totally inadequate, which we could share with the Committee.

Yours truly,



Frank Panter,
Vice President

* *An Introduction to Fire Dynamics*, Drysdale D, 1985, John Wiley and Sons.

+ *Building Technology to Resist Fire, Flood and Drought*; RH Leicester, Natural Disasters in Australia, Proceedings of the Ninth Invitation Symposium, Australian Academy of Technological Sciences, Sydney, October 1985.

A Review of Radiant Heat Flux Models used in Bushfire Applications; AL Sullivan, PF Ellis & IK Knight; International Journal of Wildland Fire, 2003, **12**, 101-110.

\$ *Bushfire Weather in Southeast Australia: Trends and Projected Climate Change Impacts*; Lucas, Hennessy, Mills, Bathols, 2007, (www.climateinstitute.org.au).

Enc: Appendix 1



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MTG-007:2003-05-14 & 2003-05-15 Construction In Bushfire Prone Areas

Meeting Venue: CSIRO Campbell ACT
Meeting Date: 2003-05-14 & 2003-05-15
Meeting Time: 09:30
Duration: 2 days
Chair: Mr Barry Eadie
Secretary: Mr David Michel

Nominating Organizations:

- Australasian Fire Authorities Council
- Australian Building Codes Board
- Australian Institute of Building Surveyors
- Australian Steel Institute
- CSIRO
- Clay Brick and Paver Institute
- Fire Protection Association Australia
- Housing Industry Association Australia
- Master Builders Australia
- National Timber Development Council
- Plastic and Chemicals Industries Association Incorporated
- Royal Australian Institute of Architects
- Timber Preservers Association of Australia

1 Objective of the Meeting:

The Bushfire Committee FP-020 met on 14 & 15 May 2003 at CSIRO Campbell ACT for the purpose of reviewing comment received on Public Comment Draft DR 03182 for AS 3959-1999 Construction of buildings in bushfire-prone areas.

2 Summary of the Meeting:

Review of comment effectively resulted in recasting the Section covering the assessment of risk created by bushfire. Both a performance approach and a deemed to satisfy set of requirements will be contained in the revised section. A typical bushfire-prone zone will be depicted in a revised informative appendix.

The construction section has been restructured to effectively provide additional sections each dedicated to address the categories of bushfire attack, namely; Low, with no special construction requirements, Medium, High, Extreme and a new section for Flame Zone.

The committee is conscious of the costs associated with special construction measures and the next edition of the Standard is intended to address the direction of radiation source effect on a building. This is designed to limit construction requirements for categories of bushfire effects for radiation and direct flame contact although special

construction requirements will remain to address protection against burning embers. Informative Appendix A appearing in DR 03182 covering the procedure on how the Standard is to be used is being modified and will appear in Section 1 of the revised edition.

A number of yet to be resolved issues, such as, application of fire retarded materials and fire weather features, will be referred to the Cooperative Research Centre project into bushfire research. When resolved, the results of the research will appear in subsequent editions of, or amendments to, AS 3959.

The vegetation classifications appearing in Figure 2.1 are being recast in the next edition of AS 3959 and subsequent editions of AS 3959 will include photographs of vegetation following work to be addressed by a Sub-committee.

AS 3959 continues with its current scope covering special construction requirements to improve a building's ability to better withstand the effects of bushfire.

A Ballot Draft is currently in the course of preparation and following approval by the committee, publication has been targeted for September 2003 and subsequent reference in the Building Code of Australia.

3 Next Meeting:

- A tentative meeting date has been set for the next meeting of FP-020 at CSIRO Campbell ACT on 16 and 17 July 2003 for the purpose of reviewing comments on the Ballot Draft, prior to publication.

4 Current Projects:

Details of the current projects that the committee is responsible for can be found on the Committee website under Projects.


5 Note:

Please address all correspondence to the committee Projects Manager.


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MTG-008:2003-09-04 & 2003-09-05 Construction In Bushfire Prone Areas

Meeting Venue: SAI Sydney
Meeting Date: 2003-09-04 & 2003-09-05
Meeting Time: 09:30
Duration: 2 days
Chair: Mr Barry Eadie
Secretary: Mr David Michel

1 Objective of the Meeting:

The Bushfire Committee FP-020 met on 4 & 5 September 2003 at Standards Australia International Sydney for the purpose of determining whether the latest draft covering AS 3959-1999, Construction of buildings in bushfire-prone areas, could proceed to ballot and subsequent publishing.

2 Summary of the Meeting:

It was confirmed that construction requirements up to radiation levels of 29 kw/m² were justified and these equate to the medium and high levels of bushfire categories. However, radiation levels greater than 29 kw/m² require further research and quantification. On this basis, the construction requirements for the extreme category of bushfire may be removed from the Standard and in its place, a set of measures to address the higher categories included.

Test methods to assess building materials, such as timber and plastics, and elements of construction, such as doors and windows, are being developed by a dedicated sub-committee.

The assessment process contained in Section 2 of AS 3959 may capture more buildings than originally believed and a dedicated sub-committee has been assigned the task of refining the assessment process.

SAI handbook HB 36 Building in bushfire-prone areas - information and advice, is being considered to be of particular relevance to the project for revising AS 3959 and is to be fully revised. Additional measures that can be adopted when assessed to be in the higher categories of bushfire, such as landscaping and maintenance, are considered to be more appropriate in a guidance publication than in a Standard. The bushfire committee will be involved in the peer review process of the revised HB 36 handbook.

The scope of AS 3959 is being reviewed to reflect the intent of the Standard, namely to emphasise the reduction of the risk associated with potential ignition of a building. Not all construction methods are necessarily considered to be cost effective. The developing Standard is to consider measures additional to construction, which would be contemplated where heat radiated from a bushfire is likely to exceed 29 kw/m².

A publication date for the next edition of AS 3959 is dependent on the committee being satisfied that both the assessment process and design and construction requirements can be set at realistic and practical levels.

3 Next Meeting:

- A date for the next meeting of FP-020 is yet to be determined.

4 Current Projects:

Details of the current projects that the committee is responsible for can be found on the Committee website under Projects.

5 Note:

Please address all correspondence to the committee Projects Manager.

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