

A dramatic bushfire scene. In the foreground, a large, dark, leafless tree stands prominently. Behind it, a dense line of trees is engulfed in a massive wall of fire, with bright orange and yellow flames reaching high into the sky. The fire is intense and widespread, creating a stark contrast with the dark silhouettes of the trees. The overall atmosphere is one of a powerful and destructive natural event.

# Bushfire : Design

Sven Maxa

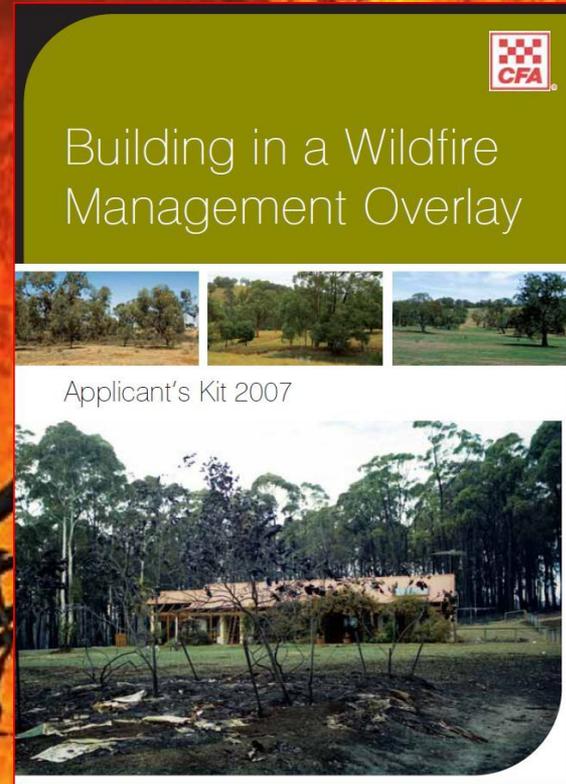
Maxa Design Pty Ltd

# WMO : BAL

- Wilfire Management Overlay - planning scheme
- Bushfire Attack Level - to determine risk
- All homes in Victoria are now in a bushfire prone area!
- ...yup - even an apartment in the cbd!

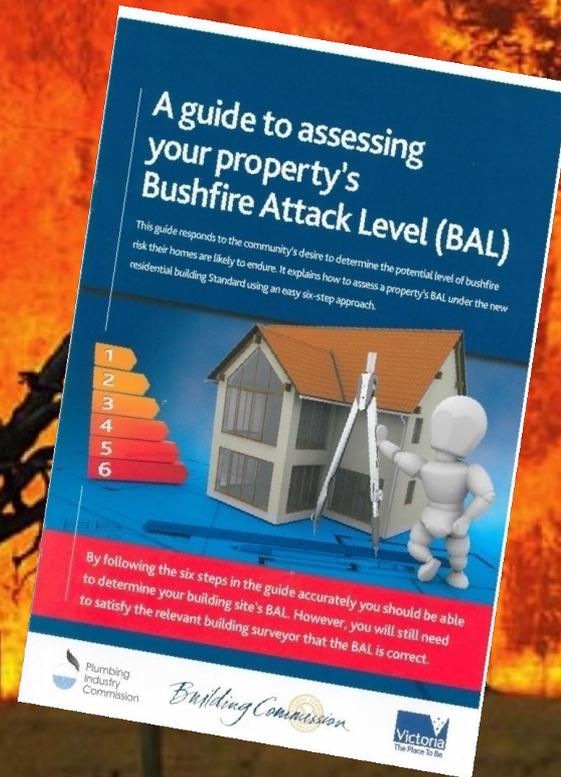
# Town Planning

- WMO requires completion of 'CFA Applicants Kit':
- Contains 3 options for your site:
  1. : lower risk
  2. : higher risk
  3. : detailed assessment of the site (4 steps)
- Sign the declaration form agreeing to the CFA conditions (access, water supply etc.)
- CFA assess your application and should advise your BAL



# Building Permit

BAL:      LOW      12.5      19      29      40      FZ



# BAL's

- LOW: none
- 12.5: risk is low: ember attack, radiant heat 12.5kW/m<sup>2</sup>
- 19: risk is moderate: ember attack & burning debris, radiant heat 12.5 - 19kW/m<sup>2</sup>
- 29: risk is high: ember attack & burning debris, radiant heat 19 - 29kW/m<sup>2</sup>
- 40: risk is very high: ember attack & burning debris, likelihood of flame contact, radiant heat 29 - 40kW/m<sup>2</sup>
- FZ: risk is extreme: ember attack & burning debris, direct flame contact, radiant heat 40kW/m<sup>2</sup> and up

10kW/m<sup>2</sup> = pain to humans after 3 seconds!  
55kW/m<sup>2</sup> = timber ignites in 10 seconds without flame!

# Materials...

- Bushfire resisting timbers are acceptable up to, and including BAL 29

AS 3959—2009

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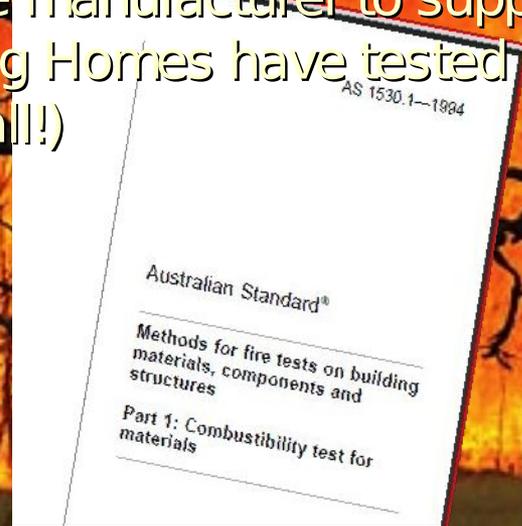
## F4 TESTED SPECIES

The following species have been tested and have met the requirements of Paragraph F2 above:

Standard trade name	Botanical name
Ash, silvertop	<i>Eucalyptus sieberi</i>
Blackbutt	<i>Eucalyptus pilularis</i>
Gum, red, river	<i>Eucalyptus camaldulensis</i>
Gum, spotted	<i>Corymbia maculata</i>
	<i>Corymbia henryi</i>
	<i>Corymbia citriodora</i>
Ironbark, red	<i>Eucalyptus sideroxylon</i>
Kwila (Merbau)	<i>Intsia bijuga</i>
Turpentine	<i>Syncarpia glomulifera</i>

- Other timbers may comply – need to meet specific testing criteria
- Be careful with recycled timbers!

- Steel claddings (e.g.. corrugated iron) ok up to BAL-40- consider whether Colorbond is appropriate?
- Masonry, including Mud Brick and Hebel are ok for all BAL's
- FC sheet (fibro, cement sheet, scyon) 6mm thick BAL-29, and 9mm thick BAL-40
- New product - 'Energy Brick':  
1 minute video clip of energy brick fire test
- BAL-FZ allows any 'system' that complies with AS1530.8.2 (which means you need the manufacturer to supply certification of such - e.g. Appalachian Log Homes have tested and certified their 90mm thick solid timber wall!)



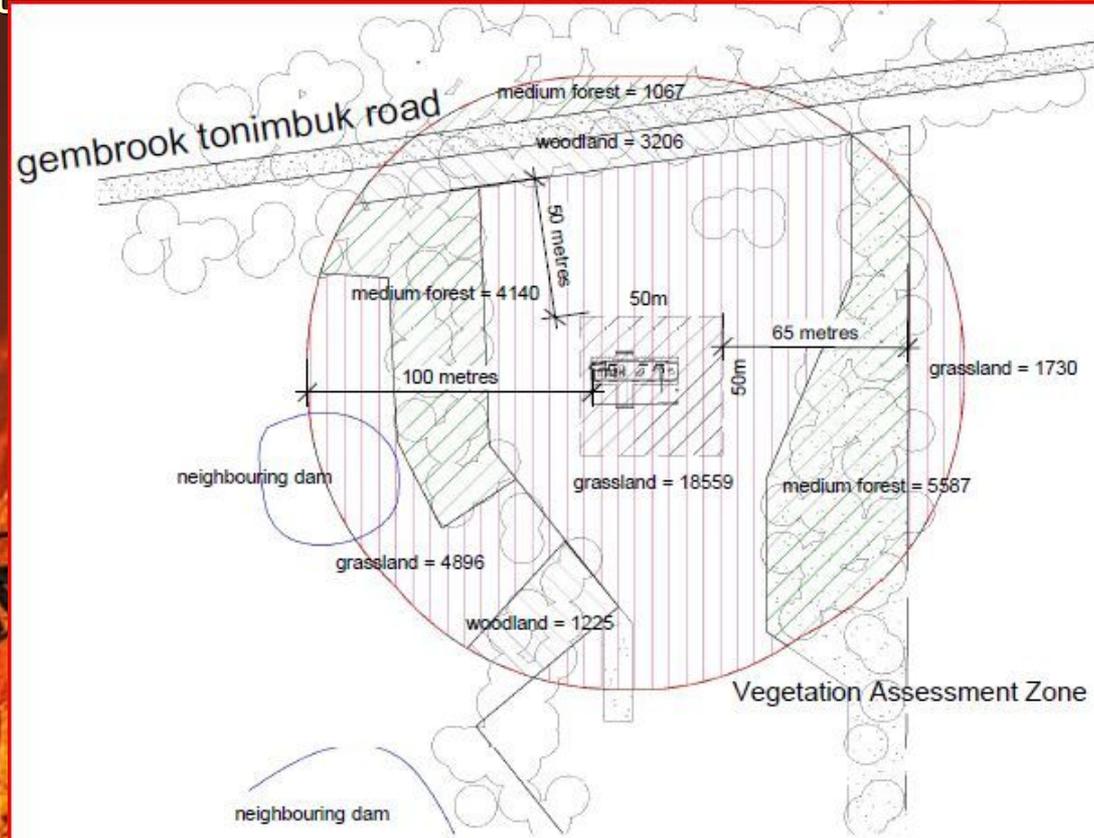
# :Example

- Location: Tonimbuk (near Gembrook)
- Bushfires came within 1km



# :Example

- WMO Assessment:



## 1 : Wildfire Assessment Plan

1 : 2000

### Predominant Vegetation Area Analysis:

Grassland	-	25185	(62%)
Woodland	-	4431	(11%)
Medium Forest	-	10794	(27%)
Total	-	40410	(100%)

# :Example

- Planning Permit : BAL certification

Form 4

<b>PLANNING PERMIT</b>	Permit No: T090207
	Planning Scheme: Cardinia Planning Scheme
	Responsible Authority: Cardinia Shire Council

ADDRESS OF THE LAND: Lot:1 PS519344Y, Gembrook-Tonimbuk Road, Tonimbuk

THE PERMIT ALLOWS: The development of the land for the purpose of constructing a dwelling and completion of the construction of a shed generally in accordance with the approved plan/s.

THE FOLLOWING CONDITIONS APPLY TO THIS PERMIT:

16. Vegetation Management Requirements:  
A distance of 30 metres around the proposed dwelling or to the property boundary whichever is the lesser) must be maintained to the following requirements during the declared 'Fire Danger Period' to the satisfaction of the Responsible Authority:

- Grass must be no more than 100mm in height
- Leaf litter must be less than 10mm deep
- There must be no elevated fuel on at least 50% of the area. On the remaining 50% the elevated fuel must be at most, sparse, with very little dead material.
- Dry native shrubs must be isolated in small clumps more than ten metres away from the dependent person's unit.
- Trees must not overhang the roofline of the building.

*CFA Footnotes*

Category of Bushfire Attack Level (BAL)  
The land is in a bushfire prone area with a vegetation classification of grassland between the predominant vegetation within 100 metres of the proposed dwelling. This corresponds to a minimum requirement of 12.5 of the Bushfire Attack Level under AS 3959-2009.



# :Example

- Result:



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- 'Alternative' walling systems such as rammed earth and strawbale may be suitable however will need to be tested and certified
  - Typical roof materials – tiles and sheets must be non-combustible and fully sarked!
  - Adopting bushfire sprinklers/sprays, leaf gutter guards or similar is not 'required' – but if installed must be non-combustible!
  - **As always - the building surveyor needs to be satisfied!**

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- A large bushfire with a dead tree in the foreground. The fire is intense, with bright orange and yellow flames rising high into the air. In the foreground, a dead, blackened tree stands prominently, its branches reaching out against the fire. A fence line is visible in the lower part of the image. The overall scene is dramatic and emphasizes the severity of bushfires.
- Bushfire shutters are not 'required' (provided other criteria met)
  - Generally, gaps in surfaces to be less than 3mm
  - Timber storm moulds ok for all BAL's

Standards are minimum requirements only!

# Links

- <http://www.wewillrebuild.vic.gov.au/>
- <http://www.csiro.au/science/Bushfires.html>
- <http://www.timber.net.au/bushfire/> (although still references old standard)
- <http://www.yourhome.gov.au/technical/fs35.html>

