

Bushfire Safety Measures – What have we learned so far?

Permit Authority Forum

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July 15th, 2014

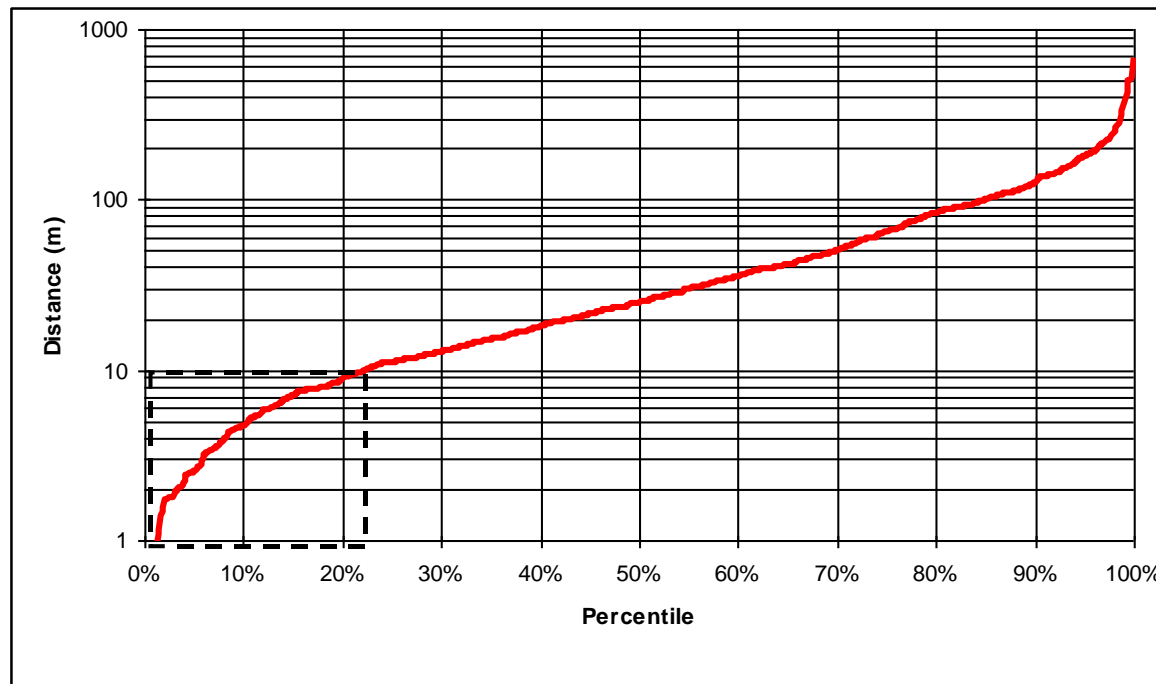


Intro

- *Bushfire Prone Areas*
- *BCA Requirements*
- *Planning vs Building*
- *BAL Anomalies*
- *Materials and Assemblies*
- *Information Sources*

Bushfire Prone Areas

- Locations where bushfires **occur** and the likely level of attack is **sufficient to warrant** specific design responses
- Within or beside the bush: 100m (85%), 180m (95%), 360 m (99%).....



Bushfire Prone Areas

- The definition seeks to directly adopt the classification system used in Section 2 of AS3959.
- The definition in the Building Regulations, is the same in the Planning Code.
- Draft maps are ready for consultation, verification and adoption. This will occur between councils and local TFS.
- The boundary will mark the line between the areas where bushfire risks are relatively low and can be managed through hazard abatement and those areas where a built response is warranted.

BCA Requirements

- Bushfire-Prone Areas require construction, access and water for buildings of Classes 1-3 & 10A if within 6m.
- Building Surveyors required to ensure these requirements are met.
- Building Surveyors can rely on an Accredited Person to determine BAL (Form 55) or they may decide to accept the designer's assessment

BCA Requirements

- Construction requirements are determined by the Bushfire Attack Level Assessment and are national requirements.
- Water Supply and Access requirements are a Tasmanian Variation and are triggered by being in a Bushfire Prone Area.
- Existing non-compliant water supplies and access may continue to be used in the case of extensions etc. But if one or other is not present it will need to be installed and compliant

BAL Assessments

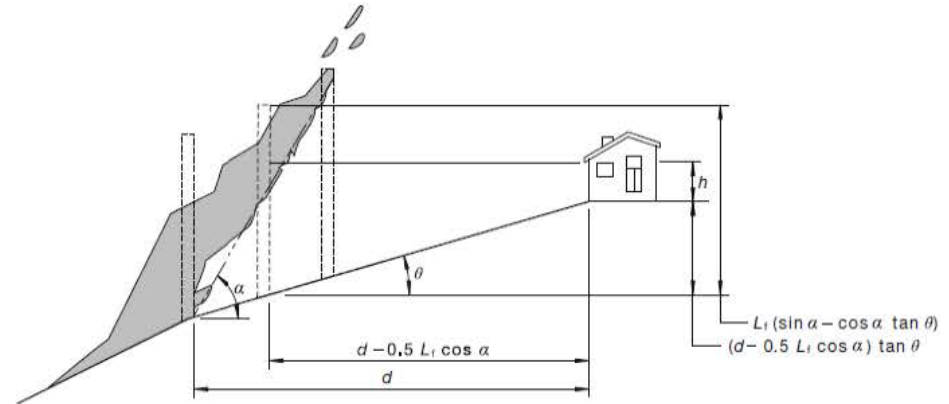
- Bushfire Prone Area is the trigger for assessment.
- BAL Assessment can be provided by a designer for Building Work but the designer has to include sufficient information to allow the BS to understand the basis of the assessment before the BS then accepts the risk associated with the assessment.
- The Tables in the Standard are DTS and won't be suitable for steep sites or places where the bushfire attack is very limited.

BUSHFIRE ATTACK LEVEL – BAL

TABLE 2.4.4

DETERMINATION OF BUSHFIRE ATTACK LEVEL (BAL)—FDI 50 (1090 K)

Vegetation classification	Bushfire Attack Levels (BALs)				
	BAL—FZ	BAL—40	BAL—29	BAL—19	BAL—12.5
	Distance (m) of the site from the predominant vegetation class				
All upslopes and flat land (0 degrees)					
A. Forest	<12	12–<16	16–<23	23–<32	32–<100
B. Woodland	<7	7–<10	10–<15	15–<22	22–<100
C. Shrubland	<7	7–<9	9–<13	13–<19	19–<100
D. Scrub	<10	10–<13	13–<19	19–<27	27–<100
E. Mallee/Mulga	<5	6–<8	8–<12	12–<17	17–<100
F. Rainforest	<3	5–<6	6–<9	9–<14	14–<100
G(i). Grassland	<5	5–<6	6–<10	10–<14	14–<50
G(ii). Tussock Moorland	<7	7–<9	9–<14	14–<20	20–<100
Downslope >0 to 5 degrees					
A. Forest	<14	14–<19	19–<27	27–<38	38–<100
B. Woodland	<9	9–<12	12–<18	18–<26	26–<100
C. Shrubland	<7	7–<10	10–<15	15–<22	22–<100
D. Scrub	<11	11–<15	15–<22	22–<31	31–<100
E. Mallee/Mulga	<7	7–<9	9–<13	13–<20	20–<100
F. Rainforest	<6	6–<8	8–<12	12–<17	17–<100
G(i). Grassland	<5	5–<7	7–<11	11–<16	16–<50
G(ii). Tussock Moorland	<8	8–<10	10–<16	16–<23	23–<100
Downslope >5 to 10 degrees					
A. Forest	<18	18–<24	24–<34	34–<46	46–<100
B. Woodland	<11	11–<15	15–<23	23–<32	32–<100
C. Shrubland	<8	8–<11	11–<17	17–<25	25–<100
D. Scrub	<12	12–<17	17–<24	24–<35	35–<100
E. Mallee/Mulga	<7	7–<10	10–<15	15–<23	23–<100
F. Rainforest	<7	7–<10	10–<15	15–<22	22–<100
G(i). Grassland	<6	6–<8	8–<13	13–<19	19–<50
G(ii). Tussock Moorland	<9	9–<12	12–<18	18–<26	26–<100
Downslope >10 to 15 degrees					
A. Forest	<22	22–<30	30–<41	41–<56	56–<100
B. Woodland	<14	14–<19	19–<28	28–<40	40–<100
C. Shrubland	<9	9–<13	13–<19	19–<28	28–<100
D. Scrub	<14	14–<19	19–<28	28–<39	39–<100
E. Mallee/Mulga	<8	8–<11	11–<18	18–<26	26–<100
F. Rainforest	<9	9–<13	13–<19	19–<28	28–<100
G(i). Grassland	<7	7–<10	10–<15	15–<22	22–<50
G(ii). Tussock Moorland	<10	10–<13	13–<20	20–<29	29–<100
Downslope >15 to 20 degrees					
A. Forest	<28	28–<37	37–<51	51–<67	67–<100
B. Woodland	<18	18–<25	25–<36	36–<48	48–<100
C. Shrubland	<10	10–<15	15–<22	22–<31	31–<100
D. Scrub	<15	15–<21	21–<31	31–<43	43–<100
E. Mallee/Mulga	<9	9–<13	13–<20	20–<29	29–<100
F. Rainforest	<12	12–<17	17–<25	25–<35	35–<100
G(i). Grassland	<8	8–<11	11–<17	17–<25	25–<50
G(ii). Tussock Moorland	<11	11–<15	15–<23	23–<33	33–<100



$$\phi = \frac{1}{\pi} \left\{ \frac{X_1}{\sqrt{1+X_1^2}} \tan^{-1} \left[\frac{Y_1}{\sqrt{1+X_1^2}} \right] + \frac{Y_1}{\sqrt{1+Y_1^2}} \tan^{-1} \left[\frac{X_1}{\sqrt{1+Y_1^2}} \right] + \dots B6 \right. \\ \left. \frac{X_1}{\sqrt{1+X_2^2}} \tan^{-1} \left[\frac{Y_2}{\sqrt{1+X_2^2}} \right] + \frac{Y_2}{\sqrt{1+Y_2^2}} \tan^{-1} \left[\frac{X_2}{\sqrt{1+Y_2^2}} \right] \right\}$$

$$X_1 = (L_f \sin \alpha - 0.5 L_f \cos \alpha \tan \theta - d \tan \theta - h) / (d - 0.5 L_f \cos \alpha)$$

$$X_2 = [h + (d - 0.5 L_f \cos \alpha) \tan \theta] / (d - 0.5 L_f \cos \alpha)$$

$$Y_1 = Y_2 = 0.5 W_f / (d - 0.5 L_f \cos \alpha)$$

where

L_f = flame length (m), determined in Paragraph B7

W_f = flame width, determined in Paragraph B8

α = flame angle (degrees), determined using the algorithm in Figure B5

θ = slope of the land between the site and the classified vegetation (degrees), determined in Paragraph B5

d = distance between the site and classified vegetation (m), determined in Paragraph B6

h = elevation of receiver (m), determined in Paragraph B9

Planning v Building

- **Only an Accredited Person** can provide an Exemption or a BHMP if the site is within a Bushfire Prone Area (until the maps appear).
- Code E1.0 exempts non-habitable buildings but the BCA does not.
 - A BHMP may be a better investment than finding the exempted garage needs to be Flame Zone!
- Extensions to a house require a BHMP for planning, even if a BS may accept the extension is Class 10 building work. Once a BAL is provided in a BHMP it can be accepted by the BS (Building Regs)

Planning v Building

- For vulnerable and hazardous uses the BHMP may require more (or less) separation from the hazard than would be required for a Class 1 even if it is for a class of building having no construction requirements.
- For building classes without construction requirements water and access will still be required

E1.0 BUSHFIRE-PRONE AREAS CODE

- Planning Directive No. 5 made Sept 19 2012.
- Applies to all new schemes and interim schemes
- Accepted by Tasmania Fire Service as best practice for adoption into existing schemes where possible
- All Northern and NW Planning Schemes except Flinders as well as Huon Valley (old)

BAL Anomalies

- The DTS Tables are deliberately conservative . Non-DTS (Table 2.4.1) situations occur and the Accredited Persons are gradually being equipped to deal with them:
 - Woodland has to have the low fuel loads
 - Slopes must be 20 degrees or under.
- Additionally:
 - Fires need to be able to develop into the 100m wide front
 - Managed Vegetation must meet Low Threat criteria
- Different Accredited Persons will have a different level of comfort (or risk tolerance)

BAL Anomalies

- Shielding (Clause 3.5) concessions must be supported by suitable drawings. Shielding is about radiation on elevations, not ember attack.
- BAL Low is not a possible shielding outcome due to ember attack, especially on lee sides.
- Use of non-combustible barriers needs to be supported by suitable drawings to show the protection achieved. As barriers they are fine but they have to be tall enough.

Materials & Assemblies

- Timber
- Polycarbonate Sheeting
- Windows
- Seals

Materials & Assemblies

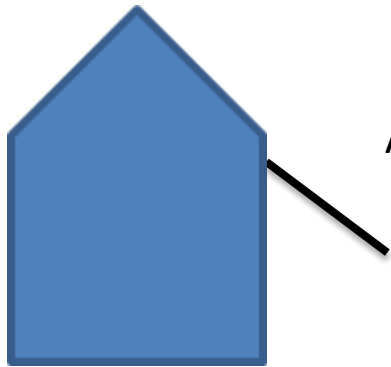
- Timber
- BAL 12.5 & 19: cladding and joinery within 400mm listed in Appendix E. Celery-Top Pine is only listed for joinery, not cladding.
- BAL 29: listed in Appendix H (F gives requirements).
- Some paints meet required tests but reports not yet sighted. Weathering is usual failure area and so paints best used in protected areas

Materials & Assemblies

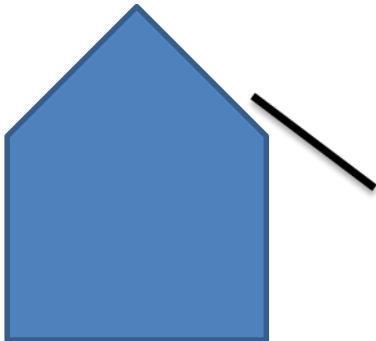
- Polycarbonate Sheeting
- Not deemed non-combustible but.....
- If roof is not part of ember sealing for a room, only risk arises from sheeting providing place for embers to lodge.
- Apply 400mm rule and join/ flash/ slope/ avoid having combustible surfaces above the place where embers may lodge.
- Chief Officer's advice to come

Materials & Assemblies

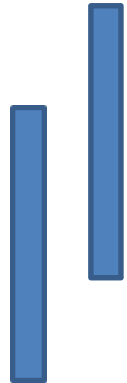
- Polycarbonate Sheeting



Angle more than 18 degrees or flash above for 400mm



Install above roof edge,



Materials & Assemblies

- Windows
- BAL 19 – Screened, Toughened or Tested
- BAL 29 – Shuttered, Toughened or Tested
- Tested: Stegbar, Trend, Miglas, Breezeway (louvres!), AWS, Aneeta, Hanlon, Paarhammar, Viridian.....
- Shutters: available and effective, great for security

Materials & Assemblies

- Seals Around Doors etc.
- Silicone seals and brushes are required. Raven products are suitable. Other, generic products may not be.

Topics

- Sealing around roller doors, doors, windows, etc. and what products do they use?
- Gaps on roofs under ridge caps, valleys and gutters.
- How to comply with tile roofs.
- Timber windows and door frames, insect screens – how to comply?
- What timber deck material choice to comply?
- Under floor enclosures – how to comply?
- Under floor ventilation requirements (vents)?
- Determination of BAL rating for house orientation and effect on choice of building materials for each face.

Where To From Here?

- New Brochure for community
- More Practitioners coming on line
- Modified regulations to ensure consistency
- More Short Courses
- New dedicated section on TFS website
- Draft mapping for councils due this month
- More planning schemes coming on line
- Auditing of completed buildings

Information Sources

Tasmanian Planning Commission for Development and Planning Issues

- Outline in Planning Advisory Note 20

http://www.planning.tas.gov.au/__data/assets/pdf_file/0006/225366/Planning_Advisory_Note_20_-_Planning_Directive_No._5_Bushfire-Prone_Areas_Code.pdf

- Full copy of the Planning Code:

http://www.planning.tas.gov.au/__data/assets/pdf_file/0005/268862/Planning_Directive_-_Bushfire-Prone_Areas_Code_-_October_2013.pdf

Information Sources

Building Standards and Regulation Unit for Builders and building related issues

- Information page

http://www.justice.tas.gov.au/building/regulation/building_in_hazardous/bushfire-prone_areas

- Advisory Notes page

http://www.justice.tas.gov.au/building/regulation/advisory_notes2

Information Sources

Tasmania Fire Service for accredited practitioner information and advice including Chief Officer's Advice

- Building for Bushfire page

<http://www.fire.tas.gov.au/Show?pageId=colBuildingForBushfire>


TFS Building for Bushfire


Tasmania Fire Service - Windows Internet Explorer

http://www.fire.tas.gov.au/Show?pageId=colBuildi

Tasmania Fire Service

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EMERGENCY

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Quick Find... Find

Members Area

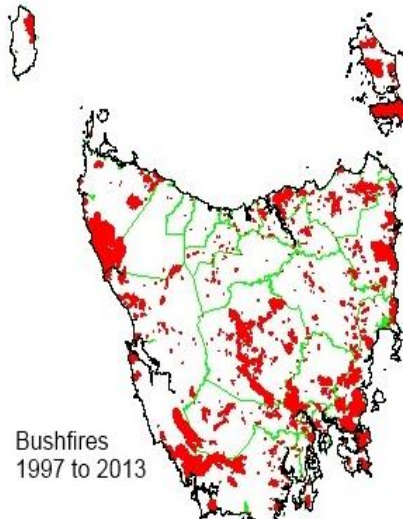
- Alerts List
- Alerts Map
- Fire Bans & Permits
- Fire Danger Rating Forecast
- Current Media Campaign
- Site Map
- Media Releases
- Fire Safety and You
- Using Fire Outdoors
- Bushfire Ready Neighbourhoods
- School Fire Education
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Building for Bushfire


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BUILDING FOR BUSHFIRE

Tasmania is well known for being bushfire-prone. There is a history of infrequent but severe bushfires which have destroyed much property and infrastructure as well as injuring and killing people. There have also been many smaller and less damaging fires that are more local in their effects. The map shows most of the areas burnt in bushfires in the 16 fire seasons to June 2013: clearly bushfires occur in all parts of Tasmania.



Bushfires
1997 to 2013



Building for Bushfire



Information Sources

- Brochure outlines the system, suitable to give to clients



Tasmania Fire Service



Planning and Building in
Bushfire-Prone Areas
for Owners and Builders

December 2013