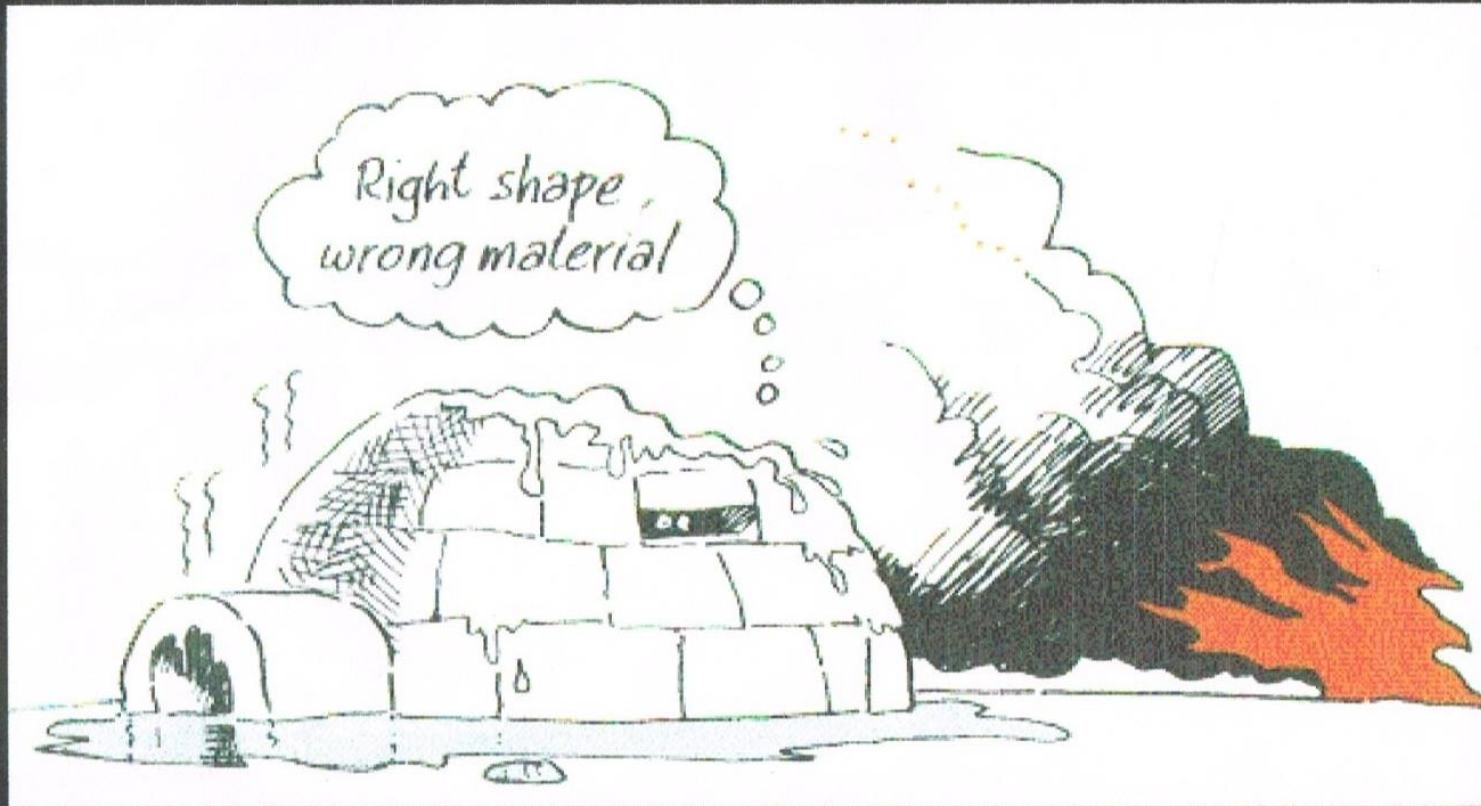


WADIC Bushfire Products



Timber in Bushfire Prone Areas



Alternative solution

Pilot Scale Test 1: November 2012

- ▶ 7 Items tested - all 800 x 800mm
 - ▶ WRC - 6.38 Clear Lam Awning - 50sec - Cracking
 - ▶ WRC - 6.00 Clear Toughened Awning - 1m 48sec - Only shattered
 - ▶ WRC - 6.38 Clear Lam Low E Fixed Lite - 35sec - Cracking
 - ▶ WRC - 6.38 Lam Sliding - 1m 30sec - Cracking
 - ▶ WRC - 6.00 Toughened Fixed Lite - 1m 50sec - Only shattered
 - ▶ WRC - 6.38 Clear Lam Fixed Lite - 1m - Cracking
 - ▶ WRC - Insulated Glass Unit (IGU) 6.38 Clear Lam Fixed Lite - 45sec - Cracking

What Did We Learn?



Timber WRCEDAR - Chars and self extinguishes

- ▶ FORGET LAMINATED GLASS!

Pilot Scale Test 2: February 2013

► 7 Items tested - all 800 x 800 mm



MERBAU - 5.00 Clear Toughened Frame



WRC - 6.00 Toughened Frame & Sash + HDS



WRC - 6.00 Toughened Frame & Door Sash + HDS



WRC - 6.00 Toughened Fixed Glazed Panel + HDS



WRC - 6.00 EnergyTech Grey Toughened Frame & Sash + HDS



WRC - 6.00 EnergyTech Grey Toughened Glazed Panel + HDS



WRC - 6.00 Clear Toughened with Frame + HDS

What Did We Learn?



MERBAU + 5mm Toughened Glass



WRC + 6mm Toughened Glass + HDS



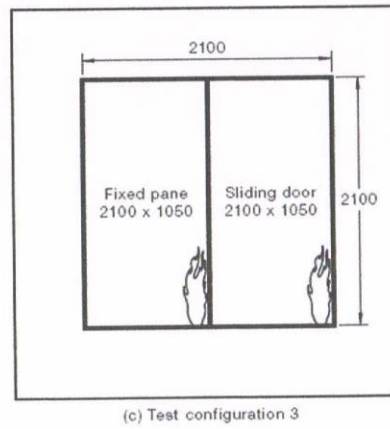
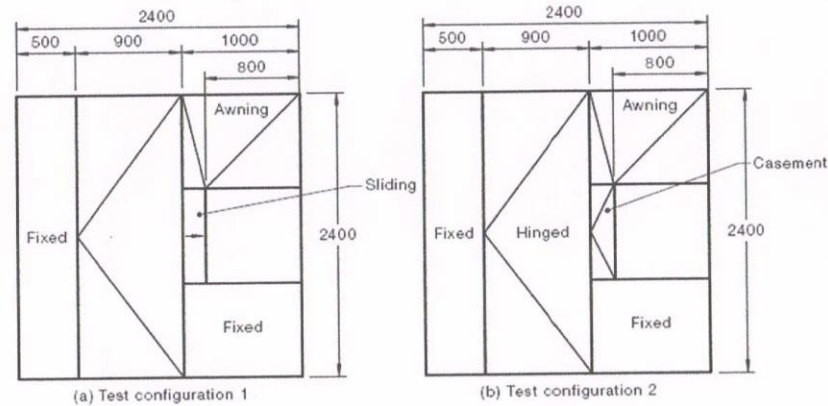
Glass responds well to heat (Does not respond well to cool)

- ❖ WRC chars to 7-10mm depth
- ❖ Merbau chars to 3 - 4mm depth
- ❖ Both self extinguish at approximately the same point during the tests

Major Tests: Standard Test Configurations

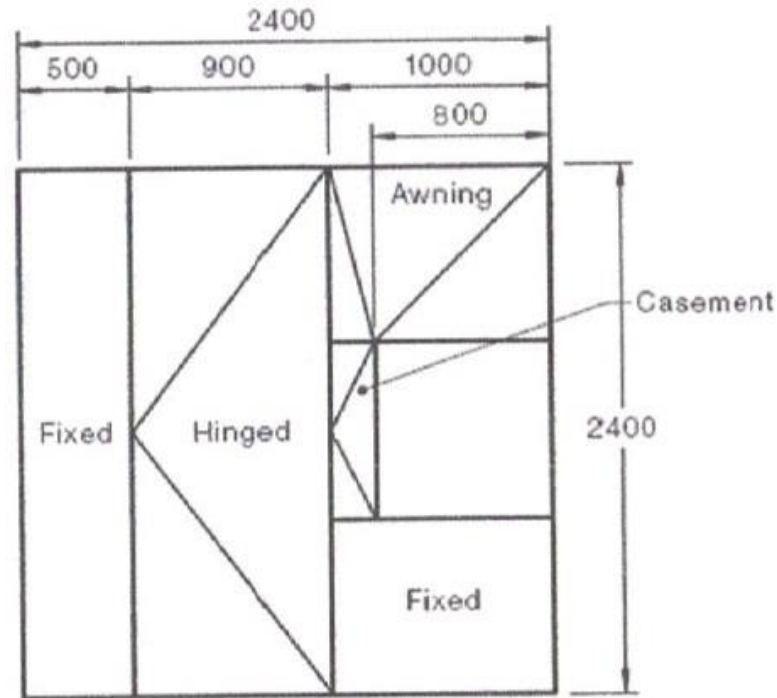
New Buildings In Bushfire Prone Areas - Testing AS1530.8.1 Standard Test Configurations

Glazed Vertical Elements AS1530.8.1

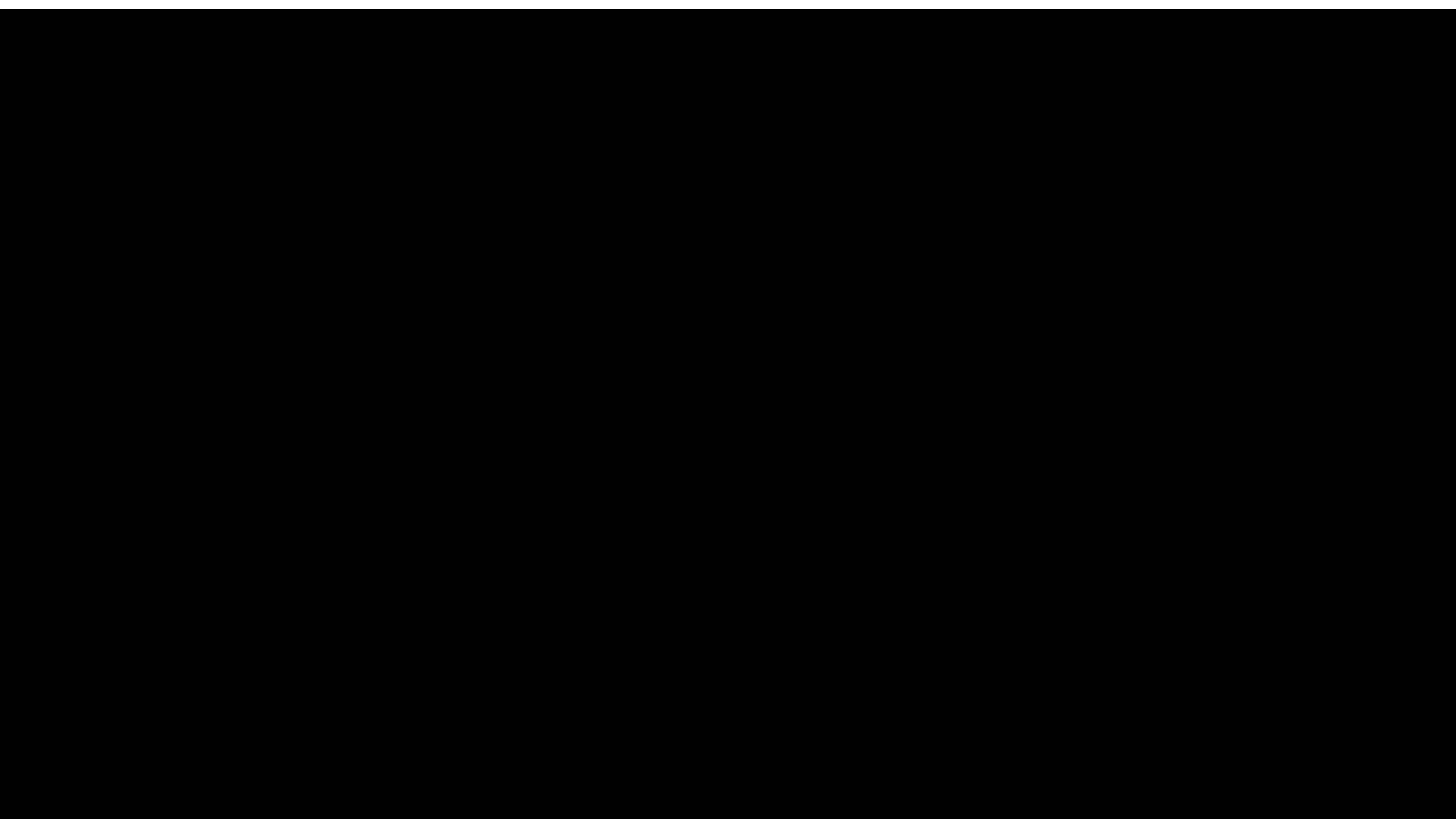


Major Test 1: March 2013

- ▶ Test configuration 1
- ▶ Size - 2400 x 2400 mm
- ▶ Timber - WRCEDAR with Merbau Sill
- ▶ Glass - 6mm Toughened Glass - Heat Dispersing Bar
 - ▶ Fixed Side Light
 - ▶ Outward Opening Swing Door
 - ▶ Awning Window
 - ▶ Casement Window
 - ▶ Fixed Glazed Window



(b) Test configuration 2



What Did We Learn?

- ❖ Latch side - Outward opening swing door failed due to deflection towards the heat source
- ❖ Seals pulled away from the test specimen opening up a gap
- ❖ Seals not adequate or positioned correctly
- ❖ All other parts of the test specimen passed
- ❖ The glass did not break
- ❖ Tolerances are critical

Recommendations to Remedy

- ❖ Restrain outward opening door top and bottom on latch side
- OR
- ❖ Reposition and apply heavier duty intumescent seals

Major Test 2: September 2013

- Configuration 2
- Size - 2400 x 2400 mm
- Timber - WRC with Merbau Sill
- Glass - 6mm Toughened Glass - Heat Dispersing Bar
 - 3 Door Bi-Fold Door Assembly (Opening Out Door)
 - 1 Door Opening In Door With Frame

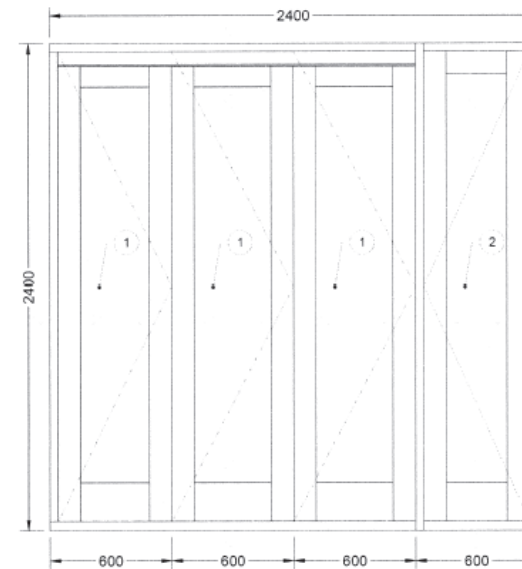


Figure A1.3: General Elevation (Exposed Side)

What Did We Learn?

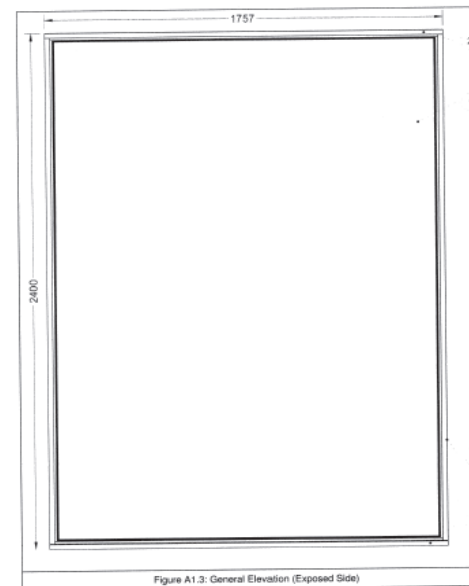
- ❖ Repositioned heavy duty intumescent seals - did not intumesce
- ❖ Fire seals not required
- ❖ WRC an excellent insulator
- ❖ Bi-Fold head and sill guide configuration was not compromised

Recommendation to Remedy

- ❖ Three point locking system required for all opening out doors

Major Test 3: October 2013

- Configuration 3 (modified)
- Size - 2400 x 1760mm
- Timber - WRC with Merbau Sill
- Glass - 6mm Toughened Glass + HDS
- Timber framed fixed glazed pane of glass equal to 4 metres square



Major Test 3: October 2013



1. Lighting the crib



2. Furnace at 900 Celsius



3. Furnace Plate



4. End Result

What Did We Learn?

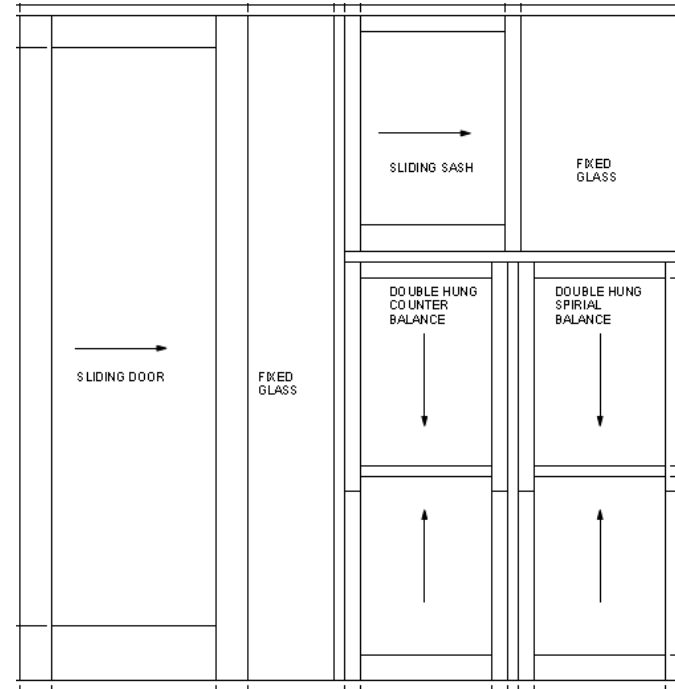
- Window caught fire
- Fire went out
- Glass did not break



WE PASSED!

Major Test 4: June 2015

- Configuration 4
- Size - 2400 x 2400mm
- Timber - WRC with Merbau Sill
- Glass - 6mm Toughened Glass + HDS
- Sliding Door with fixed pane
- Sliding Window with fixed pane
- Double Hung - Counter Balance Window
- Double Hung - Spiral Balance Window



Major Test 4: June 2015 - Before & After



Before Front & Back












After Front & Back

General Observations





- ▶ WRCEDAR (low density) is an excellent insulator
 - ▶ glass has cool edges and hot centre (thermal shock)
 - ▶ need Heat Dispersing System (HDS)
 - ▶ fire seals may not intumesce (expand)
 - ▶ no need for fire seals
- ▶ WRCEDAR does not get hot
 - ▶ however, deflects when radiant heat applied
 - ▶ need to allow for in design
- ▶ Merbau (higher density) gets hot.
 - ▶ no thermal shock
 - ▶ merbau and 5mm toughened glass performs well
- ▶ Laminated glass does not perform
 - ▶ interlayer dissolves / delaminates.

Achievements - All Passed AS1530.8.1

Round 1:

-  Fixed Glazed Side Panel
-  Awning Window
-  Casement Window
-  Hinged Door - Opening Out - Locking System
-  Hinged Door - Opening In
-  Bifold Door System
-  Bifold Window System
-  Large Glazed Panel
-  Insulated Glass Units x 6

Round 2:

-  Sliding Door System
-  Sliding Window System
-  Spiral Balance - Double Hung Window
-  Counter Balance - Double Hung Window

Variations & Inclusions To Tested Prototypes



Outer pane of glazing Grade A toughened safety glass - 6mm, 8mm, 10mm, 12mm, 15mm up to 4 metres square



WRCEDAR & merbau sills and transoms allowed greater than 400mm from ground



Merbau sills and transoms allowed less than 400mm from ground



Heat dispersing system (HDS)



Maximum height of assembly 3 metres



Maximum window assembly length unlimited



Sectional sizes can be increased but not decreased behind the glass

New South Wales

				Lic #
Against the Grain Windows & Doors P/L	Katoomba	(02) 47823210	www.against-the-grain.com.au	1040
Bakers Joinery	Kempsey	(02) 65655455	www.bakersjoinery.com.au	1008
Branches Timbercraft Pty Ltd	Lawson	(02) 47592169	www.branchestimbecraft.com.au	1009
Cardiff Joinery P/L	Cardiff	(02) 49548166	www.cardiffjoinery.com.au	1043
Country Style Windows P/L	Queanbeyan	(02) 62992557	www.cswindows.com.au	1042
Dengate Joinery	Tamworth	(02) 67652577	http://www.dengatejoinery.com.au/	1022
Fewings Joinery	Mascot	(02) 96391100		1004
Fineworx Joinery	Warnervale	(02) 4392 1866	www.fineworx.com.au	1027
H2 Custom Joinery		0455482385	http://h2customjoinery.com.au/	1045
Moar Windows & Doors	Armidale	(02) 67720068	www.moarwindows.com.au	1001
Nicco Joinery	Kingsgrove	(02) 97580898	www.niccojoinery.com.au	1003
PJ Truman Construction P/L	Tamworth	(02) 67609507	www.pjtruman.com.au	1039
Ryleho Pty Ltd	Queanbeyan	(02) 62977811	www.ryleho.com.au	1037
Shamrock Joinery & Associates P/L	Fountaindale	(02) 43893877		1036
Stockwells Joinery	Prospect	(02) 88631444	www.stockwellsjoinery.com.au	1019
Timbercraft Windows	Batemans Bay	(02) 44729772		1023
Wilkins Windows	St Marys	(02) 98337743	www.wilkinswindows.com.au	1013
Windoor Pty Ltd	St Marys	(02) 98336900	www.windoor.com.au	1031
Woodview Joinery		(02) 45763478	http://www.woodviewjoinery.com.au	1044

South Australia

Lic #

Otto & Co	Stepney	(08) 83623522	www.ottotimber.com.au	1026
Tiana Joinery	Hahndorf	(08) 83887715	www.tianajoinery.com.au	1011
Woodlite Joinery	Lonsdale	(08) 83261466	www.woodlitejoinery.com.au	1014

Queensland

Lic #

Allkind Joinery & Glass	Chermside	(07) 33593025	www.allkind.com.au	1034
Brisbane Timber Doors & Windows	Underwood	(07) 32994398	www.btdw.com.au	1038
North Coast Joinery	Forest Glen	(07) 54766999	www.northcoastjoinery.com.au	1017

Tasmania

Lic #

Trimview Pty Ltd	Huntingfield	(03) 62393007		1028
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Victoria

Lic #

3D Windows Pty Ltd	Seaford	(03) 97860597	www.3dwindows.com.au	1025
Baker & Davies Joinery	Moorabbin	(03) 95553322	www.baker-davies.com.au	1018
Cedar Windows Pty Ltd	Moolap	(03) 52484315	www.cedarwindowsgeelong.com.au	1032
Davies Joinery	Maryborough	(03) 54604600	www.daviesjoinery.com.au	1005
Future Windows	Mornington	(03) 59754686	www.futurewindows.com.au	1007
Ludbook's Joinery	Ballarat	(03) 53335881		1041
McKay Joinery Pty Ltd	Preston	(03) 94845407		1024
Pickering Windows Pty Ltd	Belmont	(03) 52434166	www.pickeringwindows.com.au	1006
Premier Doors & Windows	Dandenong South	(03) 97979289	www.pdw.com.au	1047
Preston Windows and Joinery	Warrnambool	1300 651721	www.prestonwindows.com.au	1002
Redwood Joinery	Mordialloc	(03) 95871482	www.redwoodjoinery.com.au	1012
Sashman Carpenters & Joiners	Oakleigh	(03) 95441016	www.sashman.com.au	1020
Valley Windows	Gippsland	(03) 51285870	www.valleywindows.com.au	1010
Vision Cedar Windows	Rye	(03) 59855880		1016
Whetstone Windows & Doors Pty Ltd	Airport West	(03) 93387006	www.whetstonejoinery.com.au	1033