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Bushfire safety

Recent New Zealand grass and scrub fires have highlighted the need for us to consider the risk of fire damage to buildings. The risk is higher where the climate is drier and/or we are building on the edge of town or adjacent to scrub or bush. While not on the scale of many Australian bushfires, it is not uncommon for houses to be subjected to a high level of fire risk. This was illustrated recently in Christchurch where houses have been lost. A National Institute of Water and Atmospheric Research (NIWA) study identified around 3,000 vegetation fires each year, which burnt around 7,000 hectares of rural land.

A recent TV3 report highlighted the risk of fire in New Zealand's rural areas.

So what can we do about this? First, determine the level of bushfire risk. Where risk is considered to exist, here are some simple tips to minimise it:

- Create a buffer and/or asset protection zone around the building by keeping it clear of items that can be ignited easily. In South Australia, buffer zone widths are often based on the height of the adjacent trees, while an asset protection zone must be at least 20 m wide.
- Keep grass as short as practical (keeping it green if possible also lowers risk).
- Landscape with species that have a lower flammability.
- Close off large gaps to the building subfloor.
- Install a tank to collect and store rainwater from the roof.
- Avoid wall and roof cladding materials that could ignite easily.
- Provide suitable access for fire service vehicles.

The NSW Rural Fire Service guidelines have recommendations for building in fire-risk areas:

- Build on flat land wherever possible, as fire runs more readily and with greater intensity uphill.
- Build on cut-in benches rather than on elevated platforms.
- Provide ember protection and build away from the flame zone.
- Avoid building on ridge tops and saddles.
- Avoid raised floors – use concrete slabs (raft construction) instead.
- Locate the habitable buildings near the property entrance for easier access/egress.
- Use non-combustible fencing and barriers (e.g. courtyards, fenced-off areas for gardens, BBQ areas and the like) to shield the building from the hazard.
- Reduce the bulk of a building (height and width) facing a bushfire hazard.
- Simplify the design of buildings to reduce the numbers of re-entrant corners.

More detail is available here.

Sizing a domestic car enclosure

Some questions have arisen over the sizing of domestic garages and the ability to use NZS 3604:2011 *Timber-framed buildings* to design them.

Free-standing non-habitable garages up to 30 m^2 in area are covered as Importance Level 1 buildings. To be designed using NZS 3604:2011, garages that are larger than 30 m^2 must be dealt with as Importance Level 2 structures (see Table 1.1 Classification of buildings).

Garages with a suspended timber floor must have the floor structure specifically designed, as the floor loads are outside the limitations of NZS 3604:2011.

Blown-in wool insulants

Where a blown-in wool insulant is specified, the insulating material must be treated to make it insect resistant. See AS/NZS 4859.1:2002 *Materials for the thermal insulation of buildings – General criteria and technical provisions*, clause 6.2.3.

Fixing stringers

It is common for timber decks to be supported on a stringer bolted to the adjacent building structure. NZS 3604:2011 requires M12 bolts spaced in accordance with Table 6.5. Bolts must be fixed through solid framing.

A second question is whether coach screws can be used. Our engineers advise that they can, provided:

- the fixings are at 600 mm centres
- penetration into framing is at least 85 mm
- the pilot hole diameter is the same as the root diameter of the screw.

All fixings will need to meet the durability requirements of NZS 3604:2011 section 4.

Roof and lintel strapping in exposure zone D

Exposure zone D (and E in E2/AS1) are the two most corrosive environmental classifications. To meet minimum durability requirements, continuously coated galvanised steel is identified. Where the steel strapping is exposed to salt air in a roof space (such as concrete tiles with no roof underlay), it is prudent to use stainless steel. Otherwise, replacement will be difficult should the galvanised steel corrode.

Tread carefully

All is not what it seems when using the web as a building-related resource. Read each page with caution. Many articles that come up in a search may be old and/or out of date, or the information is simply a rant or from an unverifiable source.

On scanning through a number of building-related websites, the following have been found:

- Monolithic cladding systems such as plaster on polythene – an inaccurate description of the cladding system materials.
- The main causes of leaky homes are (the) use of untreated kiln-dried timber framing (that is) more susceptible to rot. In fact, rot is the result not the cause – the timber won't rot if it is kept dry.
- In a product advertisement – "…accreditation by BRANZ (Building Research Association of New Zealand) is underway." In fact, 1) BRANZ does not accredit, and 2) a BRANZ Appraisal cannot be referenced in support of a product until the Appraisal is issued.

Product information – a caution

When scanning information on available products, care is needed to ensure that the information you have in front of you:

- is relevant to New Zealand – performance requirements, UV, durability, construction methods and so on
- the performance claims such as R-value can be verified or have been independently verified by a reputable source.

Two examples:

- The quoting of American R-values, which sound great. However, American R-values are imperial units and are quite different in value from New Zealand's metric units. To convert from American to New Zealand values, divide the American figure by 5.68. For example, an imperial R-value of R15 converts in metric to an R-value of 2.64. This is roughly equal to the insulation for a 90 mm-wide framed wall in New Zealand.
- Information that states that thermal performance equal to that of double glazing can be achieved by applying a coating or a film to existing single glazing. We believe the claim has been verified for Australia, but Australian construction of and performance requirements for double glazing are less

stringent than for New Zealand. Australian double glazing typically consists of 3 mm inner and outer glass panes with a 6 mm gap. In New Zealand, double glazing typically consists of 4 mm inner and outer glass panes with a 12 mm gap. This meets the minimum R0.26 m²K/W requirement of the NZS 4218:2009 schedule method. Independent verification of performance for New Zealand conditions is not readily apparent in the advertising. Some films applied to single glazing may increase the R-value of the window by up to 40%. However, they can significantly reduce the light transmission and may not be particularly durable.

BRANZ seminars 2015: Building Science at Work

BRANZ performs research that helps support all aspects of the building industry – but have you ever wondered what actually occurs in our laboratories and test facilities? This seminar for architects, engineers, designers, builders and BCAs brings some of that research to the fore and demystifies it.

The aim of this seminar, delivered by experienced BRANZ researchers, is to provide an insight into:

- how research priorities are determined and how you can get involved
- current research programmes including:
    - durability
    - materials performance, with a focus on corrosion
    - building resilience to seismic and flooding hazards
    - weathertightness and indoor air quality research
- recently completed projects such as:
    - the Window Energy Efficiency Rating System (WEERS)
    - Up-Spec – data for home performance improvements
    - the building quality survey
    - the updated BRANZ Maps tool
- new research projects for the coming year
- the National Science Challenge and the opportunity for the industry
- overseas research and where we might be in 10 or more years.

Seminar dates and venues are:

Monday 16 March	Queenstown	Crowne Plaza
Tuesday 17 March	Dunedin	Dunedin Centre
Wednesday 18 March	Christchurch	Addington Events Centre
Thursday 19 March	Auckland – North Shore	QBE Stadium
Monday 23 March	Hamilton	Claudelands Conference & Exhibition Centre
Tuesday 24 March	Tauranga	ASB Baypark
Wednesday 25 March	Auckland – Central	Rydges Auckland
Thursday 26 March	Wellington	Amora Hotel

Online registration is now available.