BRANZ

October 2021

GUIDELINE

Welcome to the BRANZ monthly technical update

COVID-19 alert levels and construction

Where to find reliable up-to-date details

While alert levels are in place for COVID-19, specific health and safety requirements apply to construction work and construction sites. You can find details on the CHASNZ website. If you have a workmate who is finding it tough to cope with everything that is happening, help is available through the MATES in Construction website or phone 0800 111 315.

In this issue:

Solid fuel appliances and house fires

One flue but no cuckoo's nest

There have been significantly more house fires this year than the average year. Part of the reason is more people working from home and overloading electrical systems, but one large insurer says that the number of fires involving solid fuel appliances has also been higher than usual. Faulty installation and faulty use can both lead to fires.

Some key requirements around installation:

- Freestanding appliances should be at least 1.2 m from combustible materials and a 150 mm diameter bare flue pipe at least 600 mm unless otherwise tested and specified by the manufacturer or a heat screen is used.
- A single flue shield should be at least 25 mm away from the flue pipe, allowing airflow to remove excessive heat.
- Manufacturers' minimum distances of the flue from walls, framing timber and other combustible materials should be strictly followed.

Some pointers on use and maintenance:

- Solid fuel appliances should ideally be run at optimum efficiency, achieving as complete a level of combustion as is possible. (Very airtight new homes may require inlet vents for outside air such as grilles in the floor or wall adjacent to the appliance to achieve this.)
- Slow smouldering fires are more likely to produce a build-up of creosote. If this ignites, it could cause a chimney fire. Creosote should be removed if it is more than 2 mm thick.
- Flues should be cleaned by an experienced chimney sweep at least once a year, more often if necessary. Dirty chimneys have been identified as a source of house fires.

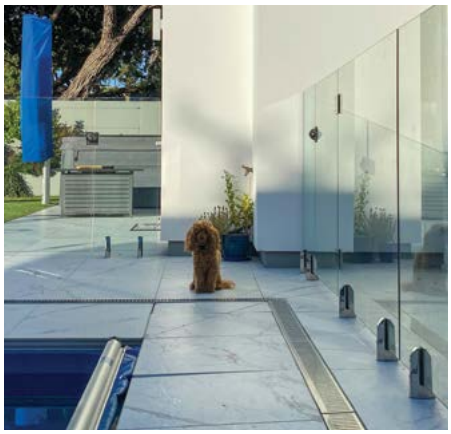
You can find more information in AS/NZS 2918:2018 *Domestic solid fuel burning appliances - Installation* and BRANZ Bulletin 654 *Installation and maintenance of solid fuel appliances*.

Minimum distances for flues should be strictly followed.

New research reinforces the need for home pool barriers

Pools still a risk for toddlers

Recent research confirms that, despite the fencing rules, home swimming pools (including portable pools) pose the greatest risk of fatal drowning for children under 5. There were 31 fatal drownings in this age group in home pools between 2005 and 2019. Toddlers were 15 times more likely to drown in a home pool than at the beach. With summer not far away, it's a good time to check that swimming pool barriers meet the requirements. You can find a recent *Build* article outlining the rules here, Building Code clause F9 *Means of restricting access to residential pools* here and download a free copy of the NZS 8500:2006 *Safety barriers and fences around swimming pools, spas and hot tubs* here.



Specifically designed frameless toughened glass barriers are popular around swimming pools.

Underfloor insulation

Big performance gains possible in existing houses

A significant proportion of existing homes with suspended floors don't have effective underfloor insulation. In the 2018/19 Pilot Housing Survey, almost a quarter of the houses with accessible subfloors did not have full underfloor insulation (with most of these having none at all). A further 16% had foil, which in many cases will be loose, dusty, torn or ineffective in other ways.

Underfloor insulation can be retrofitted with rigid polystyrene sheets or polyester, wool or fibreglass products. In colder climates and where joist depth allows, composite insulation (Figure 1) using two different insulation materials can give better thermal performance for relatively little extra work.

For a good result:

- Ensure there is no air gap between the underside of the floor and the top of the insulation.
- If you are removing dirty/torn foil insulation and/or stapling new insulation tabs or straps to joists, turn off the power supply and take care to avoid electrical cables. Electrical Code of Practice ECP 55 has guidance for managing safety risks with foil insulation.
- Keep polystyrene separated from PVC-sheathed electrical cables. Over time, the cable sheathing may interact chemically with the insulation and damage it.
- 4246:2016 *Energy efficiency - Installing bulk thermal insulation in residential buildings* has useful guidance.
- Hot water pipes that run under the floor can be insulated at the same time. Foam insulation tubes with a slit along one side can easily be pressed over the piping. Other pipe insulation materials are also available.

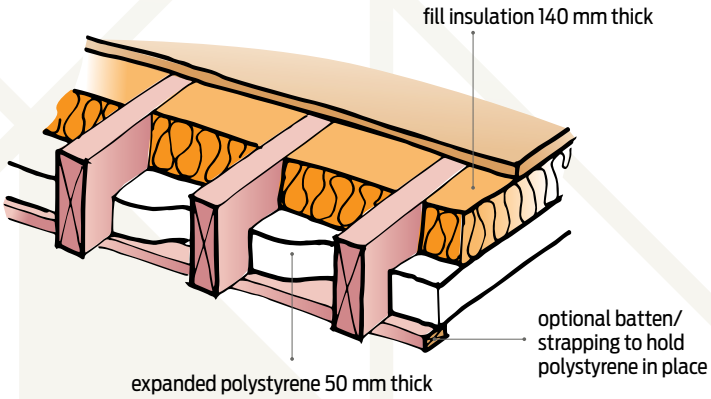


Figure 1. Composite floor insulation.

Construction work on sites subject to natural hazards

A recent MBIE determination has some pointers

Considering the massive flooding in Westport, Kumeū and other spots this year, a recent MBIE determination about construction in an area subject to natural hazards makes interesting reading.

Wellington homeowners who were planning renovations to a house on a site at risk of flooding were unhappy that the council's consent for the renovations was subject to a section 73 notification. This meant that the Registrar-General of Land would be told that the property is subject to a natural hazard and a conditional consent has been issued. Among other things, this limits the liability of the council. It could also affect future saleability of the property and insurance cover.

The MBIE determination supported the council's decision, even though part of the renovations included lifting the house floor level 300 mm. Some key points in the decision:

- For this part of the law to apply, work must be construction of a new building or "major alterations". To work out whether or not alterations are "major", the determination considered how they compare to Schedule 1 exemptions, construction complexity and increase in building footprint, among other matters.
- "Natural hazard" includes inundation. Flooding and ponding from rainwater and/or stormwater run-off can be considered a natural hazard. A 1% AEP (annual exceedance probability) satisfies the requirement for a natural hazard.
- It is not enough that the property in general is subject to the hazard - the area subject to hazard must be where the building work is being carried out.
- When a hazard occurs, it must be more than minor or trivial. An earlier determination was quoted that found that flooding of 0.2–0.3 m directly adjacent to the dwelling and 0.45 m in the surrounding area met this definition.
- The law requires that adequate provision has to be made to protect not just the building work from the natural hazard but the land too.

MBIE has developed a natural hazards decision tree to help make assessments in this area, and this is included as Appendix B in the determination.

Guttering by numbers

More to it than you might think

Specifying and fixing domestic external gutters and downpipes might seem the easiest job in the world, but there are a few key numbers to bear in mind to ensure the guttering will give long-term trouble-free performance:

- Downpipe size and shape - these must be appropriate for the roof area and roof pitch. This is done using Table 5 in Acceptable Solution E1/AS1 (Figure 2).

You can find a worked example in this *Build* article.

- The guttering size - this is determined from Figure 15 in E1/AS1. The *Build* article again gives a worked example.
- The gutter fall (slope) to the downpipe - this is to ensure that water drains to the downpipes and doesn't pond in the gutter. PVC eaves gutters should have a minimum fall of 0.5 mm per metre of length. For metal gutters, the minimum fall is 2 mm fall per metre.
- Spacing between PVC support brackets - brackets should generally be no greater than 500 mm apart or 300 mm in areas of high wind or where snowfall is possible.

As always, get hold of the installation advice of the manufacturer and make sure that what you do complies with it.

Table 5: Downpipe Sizes for Given Roof Pitch and Area
Paragraph 4.2.1

Downpipe size (mm) (minimum internal sizes)	Roof pitch			
	0-25°	25-35°	35-45°	45-55°
	Plan area of roof served by the downpipe (m^2)			
63 mm diameter	60	50	40	35
74 mm diameter	85	70	60	50
100 mm diameter	155	130	110	90
150 mm diameter	350	290	250	200
65 x 50 rectangular	60	50	40	35
100 x 50 rectangular	100	80	70	60
75 x 75 rectangular	110	90	80	65
100 x 75 rectangular	150	120	105	90

Amend 1 Sep 1993

Amend 2 Aug 1994

Figure 2. Calculating downpipe size and shape.

What a waste!

Reducing our invisible emissions

While moves to net-zero carbon construction often focus on building material selection and building performance, there is another type of emissions we need to reduce - those that come from waste. Greenhouse gas emissions from landfills are estimated to make up 4% of New Zealand's total emissions.

Multiple studies have found that construction and demolition wastes make up a third to a half of all waste going to New Zealand landfills and cleanfills. Each house construction generates an average 4 tonnes of waste.

Kāinga Ora has a target of diverting 80% of waste from landfill in its large development projects and its small to medium developments in Auckland. It aims to reuse or recycle up to 80% of building materials (excluding contaminated materials).

BRANZ has great resources to help:

- REBRI online resource
- Bulletin BU523 *Reducing waste from building sites*
- BRANZ Building Basics *Minimising waste* (2nd edition)

News

Draft standards on structural LVL specs, earth fill

Standards NZ has released drafts of two updated standards. DR AS/NZS 4357.0:2021 - *Structural laminated veneer lumber - Specifications* has a closing date for comments of 26 November. The draft that will replace NZS 4431:1989 *Code of practice for earth fill for residential development* has a closing date for comment of 10 December 2021.

BRANZ scholarships for 2022

The BRANZ postgraduate scholarship round is open for study in 2022. Funding for building/construction sector research is $20,000 for master's research and up to $25,000 for up to 3 years for PhD research. Applications close 24 November 2021.

Government seeks input on emissions reduction

The Government has released a consultation paper on reducing greenhouse gas emissions. Some of the suggestions will have an impact on construction. Consultation on the paper, *Te hau mārohi ki anamata | Transitioning to a low-emissions and climate-resilient future*, will close on 24 November.

Infrastructure strategy says 115,000 homes needed

The New Zealand Infrastructure Commission has released its draft strategy. It says 115,000 homes are needed to fix the housing crisis, we need to spend $90 billion to fix water networks and $5 billion of council infrastructure is exposed to sea-level rise.

BRANZ Levy in Action

The BRANZ publication 2021 Levy in Action is now available.

New law speeds up MDH planning changes

A new law will speed up the development of medium-density housing in larger cities. It would allow landowners to build up to three homes of up to 3 storeys on most sites up to 50% maximum coverage of the site without the need for a resource consent.

MBIE releases C5 evidence report phase 2

This report commissioned from Engineering New Zealand covers seismic assessments of buildings with precast concrete floors.

EECA acts against hot water cylinder company

Government agency EECA is taking legal action against an electric hot water cylinder company for making misleading claims about the energy efficiency of its cylinders.

A different way of seeing climate change

Save the Children has released a document about climate change with a focus on how children today will be affected over their lives. Of all children around the world, Pacific and East Asian children will face the greatest increased exposure (8x) to heatwaves over their lifetimes.

Turning waste into wallboards

Industrial packaging waste will be turned into construction boards at a Te Rapa factory from November. The New Zealand company saveBOARD has also received a A$1.74 million grant from the Australian and New South Wales Governments towards setting up a A$5 million facility in Australia.

Last red zone demolition

September saw the last demolition in Christchurch's red zone, the end of a 10-year programme of over 7,500 demolitions and clearances following the city's earthquakes.

Looking ahead

- **3 November** - end of the transition period for changes in the 2020 Building Code update. Changes apply to Acceptable Solutions and Verification Methods for C1-C6, E1, E2, E3, G9 and G13 - see the November 2020 Building Code update.
- **Late November** - MBIE due to publish details on the 2021 Building Code update.
- **22 November** - report due from the select committee looking at the Unit Titles (Strengthening Body Corporate Governance and Other Matters) Amendment Bill.
- **28 November** - councils must finish mapping liquefaction-prone land. This is part of the Building Code changes bringing in regulations already used in Canterbury following the Christchurch earthquakes.
- **28 November** - end of the transition period for the November 2019 Building Code updated B1/AS1 requirements for building on liquefaction prone soil.
- **31 December** - the last day an application can be received for a claim under the Weathertight Homes Resolution Services Act 2006.