The Wood Processors and Manufacturers Association of New Zealand (WPMA) is producing a series of Wood Design Guides supporting the uptake of timber products and appropriate fabrication systems in the construction industry. WPMA worked with BRANZ, NZ Timber Industry Federation, New Zealand Timber Design Society, Engineered Wood Products Association of Australasia, Scion and the Forest Growers Levy Trust to produce the design guides.

Design for fire safety

The first of 54 guides to be available is Design for Fire Safety. Given interest in flammable façades after the Grenfell Tower disaster in the UK, the guide includes a revised exterior cladding chapter referencing the latest MBIE guidance, Fire performance of external wall cladding systems, December 2018.

It also covers fire behaviour, charring and spread of flame, New Zealand Building Code requirements for fire safety, connection design and more.

Fire safety can be achieved

As noted in the guide, ‘Because wood burns, many people assume that all timber buildings have poor behaviour in fires. However, where necessary, timber buildings can be designed with excellent fire safety for the occupants, and sufficient fire resistance to prevent spread of fire or structural failure.

‘Timber structures tend to fall into two distinct categories - heavy timber structures and light timber framing. Heavy timber structures are those where the principal structural elements are beams, columns or panels made from sawn timber, glue laminated timber (glulam), laminated veneer lumber (LVL), or cross laminated timber (CLT). Light timber framing consists of timber stud and joist construction, typical of New Zealand house construction.

‘Large-sized timber members, whether sawn timber or engineered wood products, have the inherent ability to provide fire resistance because surface charring of the wood allows an insulating layer to form that provides some protection to the underlying timber. In light timber-framed structures, appropriate protective lining materials - for example, gypsum plasterboard - can provide excellent fire resistance.

‘The contribution from timber building materials to the overall fire load depends on the surface area of timber exposed to the fire. With limited amounts of timber exposed, it is small compared with the contribution of the combustible contents which constitute the main fire load. However, a significant contribution will be made where large surface areas of timber walls or the underside of timber floors become involved in the fire.'