Moving to medium-density

As housing pressure mounts, new BRANZ research explores how New Zealand can better adapt to medium-density living.

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POPULATION GROWTH, demographic changes, lifestyle trends and a need for more affordable housing are all driving demand for a greater number of homes in New Zealand.

Housing demand to be met by MDH

Meeting this demand is a complex issue, but part of the problem can be addressed through widespread adoption of mediumdensity housing (MDH). In order to be successful, however, MDH requires public education and acceptance, updated planning and urban intensification rules, streamlined consenting processes and a building industry proficient in higher-density design and construction techniques.

To help ensure these requirements can be met, BRANZ has a research programme to identify the barriers and technical challenges to MDH and provide practical solutions to overcome these problems.

With its second year almost complete, the programme has published several MDH



reports, including investigations into residents' attitudes, supply and demand, consenting, maintenance and bodies corporate, and acoustic performance. From early in the work, it became apparent that terminology was perhaps MDH's most confusing problem.

Common language

Unfortunately, there are several, often contradictory definitions of MDH in

common use in New Zealand and overseas. Many of these definitions include arbitrary limits for site size, building height, number of units per site or dwellings per hectare. Some definitions mention the type of dwelling, while others focus on the density of dwellings over a specific site size or land allocation.

To provide the industry with a simple description that enables everyone working

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in the field to use common terminology, BRANZ researchers define MDH as multi-unit dwellings (up to 6-storeys).

This super-set definition brings together the disparate terminology currently in use and encompasses all the types of buildings that are commonly considered MDH in New Zealand. It is also flexible enough to encompass new classes of building as they emerge in the future.

From there, BRANZ breaks MDH down into three categories:

- Category 1: 1-2-storey attached dwellings.
- Category 2: 2-4-storey attached dwellings.
- Category 3: Apartment buildings.

MDH developments on the rise

While a greater variety of MDH developments, such as terraced housing and lowrise apartments, have been built in the main centres, they do not always align with the proposed intensification in local authority strategies and policies. Yet the research made it clear that the shift to higher densities is well under way. In 2013, low-density stand-alone housing made up 81% (1,193,358 dwellings) of the total occupied New Zealand housing stock. Medium-density attached housing, such as units, terraced housing and apartments, made up just 18% (266,748 dwellings) of occupied private dwellings.

Contrast that with 2017, when MDH made up roughly a quarter of new builds. That figure is expected to rise dramatically, with more than one-third of all new dwellings built in this country likely to be MDH by 2025. Unsurprisingly, more than half of these builds will be located in Auckland.

Nationwide, the number of new MDH developments is expected to increase by 6% per year from today's estimate of 6,800 per year to about 10,500 by 2025. Flats and terraced housing to 3-storeys make up much of these at a 60% share of all new MDH in the next 5 years. Next largest numerically are retirement village units and apartments, each at 20% share of MDH over the next few years. The former is a mix of flats, apartments and duplexes.

Barriers with compliance and consents

The research identified resource and building consents as one of the greatest perceived barriers to MDH development by industry practitioners and local authorities alike. For the former, most consenting issues centre around:

- lack of clarity and uncertainty about the time it takes to receive a consent and the cost implications this has for industry
- the perception that councils have too much discretion over consenting, resulting in confusion and delays
- concerns that councils lack the skills to deal with complex building consent applications.

Local authorities, on the other hand, are frustrated by developers' apparent lack of understanding of MDH requirements, which results in inadequate consent applications. In some cases, they believe developers are undertaking work beyond their experience and capability.

Both groups agree that several aspects of the Acceptable Solutions and Verification Methods were not designed for the types of MDH currently being constructed, leading designers to develop their own alternative methods that may carry additional uncertainty and risk.

Possible solutions

The researchers identified a range of possible solutions for further investigation, including:

- changes to resource management legislation to make district plans and planning documents clearer and more consistent
- changes to the Acceptable Solutions and Verification Methods to better cater for MDH design
- national policy statements to clarify council planning documents, creating an information resource on MDH for both council and industry.

Improving acoustic performance

In a BRANZ study report released late last year, researchers identified several common sources of nuisance noise in >



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MDH environments, particularly apartment buildings and multi-unit dwellings. These included:

- activities of other residents, such as loud conversations
- televisions and loud music, particularly bass sounds
- plumbing systems
- heating, air-conditioning and ventilation (HVAC) systems
- building services, such as lifts
- exterior pedestrian and vehicle traffic
- foot noise from the floor above, adjacent walkways or stairways
- doors banging
- appliance noise, such as washing machines.

The report provides a range of guidance and techniques to achieve Building Code clause G6 *Airborne and impact sound* minimum sound insulation requirements for dwelling units of STC \geq 55 for intertenancy walls and floors and IIC \geq 55 for inter-tenancy floors.

The advice uses simple design concepts to enhance acoustic performance within a dwelling, such as positioning noisy living areas away from noise-sensitive spaces and using low-amenity areas as a buffer between noise-sensitive areas. Other guidelines



recommend ways to mitigate noise from external sources and help designers select materials to control sound transmission.

Focus on technical guidance

In the future, the BRANZ programme will look at some of these earlier research findings in greater depth.

'Over the course of the programme, we will use research results to provide the building industry with the technical information it needs to create high-quality medium-density housing,' says Kate Bryson, Research Programme Leader at BRANZ. 'Much of this work will deal with improving design and construction quality and addressing historically problematic areas in higher-density buildings,' she says. 'But we also intend to consult directly with industry practitioners to better understand the technical issues they face with mediumdensity housing. The results of this survey will help steer the future direction of the programme.'

For more For information on BRANZ's MDH research programme, including links to published study reports and the upcoming industry survey, see branz.co.nz/mdh.