

# Construction defects

As New Zealand increasingly adopts medium-density housing (MDH) as a mainstream housing option, the building industry needs to identify and overcome construction quality issues.



**MANY OF THE CONSTRUCTION** issues found in stand-alone housing are shared by MDH developments.

In a 2013 survey of new-home owners, BRANZ found that 34% of defects that were present upon handover could be attributed to damage or faulty workmanship, usually caused by a subtrade. Further research in 2015 found that approximately 8% of new house builds had compliance defects that were cause for serious concern, with an average of four quality defects per house.

When asked to describe the greatest challenges they face when constructing housing, builders stated the main problem was inadequate detailing, particularly

around roof and wall flashings and structural connections. The second most commonly identified issue was difficulty obtaining workers with adequate skill levels.

## Defects in new MDH

In 2017, BRANZ commissioned detailed inspections of 10 different MDH developments that were currently under construction.

While the inspections didn't detect a consistent pattern of poor construction quality across all of the developments, it did identify significant problems associated with weathertightness, provision of services, and design detailing.

## Weathertightness

Issues were found across multiple developments relating to loose wall underlay and flashing tape during a post-wrap survey. This risks the transfer of moisture across the cavity, and therefore water ingress, if not identified during the council inspection.

One builder reported seeing poor installations of wall underlay using off-cuts. Another considered that flashing details were sometimes not buildable.

Despite this, moisture meter readings taken during each inspection did not indicate high moisture readings in any of the units that were examined.

Inspectors also rated the overall risk for

weathertightness issues in all 10 developments as medium, stating that simple designs with few junctions, the use of junction and joinery flashings and a cavity cladding system helps manage the risk.

Nevertheless, given its higher risk in MDH and the increasing proportion of MDH being constructed, weathertightness remains the highest concern in the construction of new higher-density dwellings.

### Services

The inspections showed that the provision of services becomes a greater issue as the size and complexity of construction increases.

It was often difficult to install services, with tradespeople commenting that services were frequently not well provided for in MDH plans. In some cases, trades were forced to create large holes in structural elements, greatly reducing their strength. Instances of large plumbing cut-outs were spotted during the inspections.

Ensuring that designs have fully considered the needs of the different services and that services within the design are the services being installed could help overcome some issues in this area.

### Design detailing

Common design detailing aims to solve some of the buildability issues related to MDH. However, survey results indicate that builders still feel that many designers do not take buildability into account during the design of a building.

In response, one designer stated that there was a strong resistance from builders against non-standard details due to concerns over a lack of skills to carry out the work on site. However, designers did not think that they could offer standard details as contractors often had individual supply agreements for materials and wanted to substitute cheaper products.

### Bracing

There were also issues with insufficient roof bracing on multiple developments. This could be due to the work being incomplete at the time of the inspections, and bracing could have been added later.

One development had several units where

the bottom plates were found to have unacceptable cut-outs in bracing walls. Wastepipes had also been installed through plywood bracing, and a stud in the bracing wall had been cut out for a pipe.

### Defects in existing MDH

Following the new MDH construction research, BRANZ commissioned the inspection of eight existing MDH developments. These projects were all completed and occupied between the years 2000 and 2017.

These inspections revealed many of the same issues with weathertightness, provision of services and detailing that were seen in new MDH developments.

### Weathertightness

Inspections found multiple instances of compromised weathertightness caused by poor flashing details.

In one case, there was minimal clearance between the cladding and head flashings and the cladding and service penetration flashings. There was also a minimal gap between the horizontal flashings and the cladding. In another, vents had not been flashed to the cladding, and the clearance between the cladding and head flashings was insufficient.

Staining was found on some internal walls, particularly around windows and exterior doors. The stains indicate the developments may have issues with moisture ingress.

However, for the majority of the developments surveyed, moisture meters did not detect significant levels of internal moisture, and inspectors deemed the weathertightness risk to be medium. One development was rated high risk.

### Maintenance

Inspections found additional issues related to a lack of maintenance in the existing MDH stock. In some cases, it was clear that maintenance had not been carried out at all.

There were several issues related to a lack of maintenance to the cladding. Cracks were found in some timber weatherboards, paint was peeling, vegetation was not cleared and fixings had pulled or popped. Some fencing had been erected and vegetation planted in close proximity to the exterior cladding,

preventing maintenance of the cladding.

Many other external components also required repair. Cracking was present between some window sills and frames, and painting was required to prevent moisture damage. There was evidence of damage, such as to the fascia board to the front of one unit, that could have been repaired or replaced.

There were also numerous cases of internal moisture damage caused by plumbing leaks in and around the shower in the units inspected.

### More information

Curtis, M & Brunson, N. (2018). *Medium-density housing construction quality survey*. BRANZ Study Report SR412. Judgeford, New Zealand: BRANZ Ltd.

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