

The problem is quality

Before trying to improve quality, the building industry must agree what quality means.

BY NICK HELM, FREELANCE TECHNICAL WRITER, TENPOINT COMMUNICATIONS

SEVERAL HIGH-PROFILE building quality issues have been reported in the media recently. Even someone unfamiliar with the building industry is likely to have heard about substandard reinforcing steel, cladding with questionable fire ratings, potentially dangerous electrical cable or poor-quality work being signed off by a building consent authority. Every day, it seems there is a new report of poor workmanship or knock-off products finding their way into Kiwi buildings.

High cost from poor quality

In its 2017 report *Electronic traceability of New Zealand construction products: Feasibility and opportunities*, BRANZ estimates that such non-conforming products cost the country \$232 million in repairs and replacements every year. And that's just building materials. Quality issues caused by substandard workmanship push the costs even higher.

Whether the media reports are merely a few isolated cases or the tip of some catastrophic building-quality iceberg remains to be seen. Either way, the coverage has prompted a great deal of discussion around what is to be done.

While some of the proposed solutions may be sound, quality can be a slippery concept, and an already underpressure industry should be wary of implementing a solution without first understanding what quality in building actually looks like. It's like setting off on a journey without the slightest idea where the destination lies. The industry may get lucky and wind up in the right place, but the odds are against it.

Three key parameters of quality

So, what exactly is quality?

'Quality in buildings can be defined using three key parameters - functionality, durability and performance,' says Matt Curtis,

Senior Research Analyst and Programme Leader for the Eliminating Quality Issues programme at BRANZ.

Functionality

He describes the first parameter - functionality - as how well the building meets the functional requirements of the building contract. This simply means that the building has all the features and characteristics that the homeowner or developer specified in the build. In other words, they get what they paid for.

Durability

The second parameter of quality - durability - refers to the ability of building materials, components and construction methods to satisfy the performance and functional requirements of the Building Code for the expected life of the building.

The emphasis on durability in the definition doesn't seem out of place given the recent release of *Evidencing quality issues*:



What can industry data tell us. In the 2018 report, BRANZ presents evidence that more than 50% of initial building consent applications had deficiencies related to durability, structure and external moisture.

Performance

The final quality parameter - performance - is broader and harder to pin down. Matt explains that it refers to any measurable aspect of the building's design, such as the thermal, structural, seismic and acoustic characteristics.

'A lot of it comes down to clients being able to specify performance and understand how they want their building to perform,' he says. 'We talk about it in terms of measuring performance after the build is complete, but to do that, you must have something to measure against. That's where the client's expectations of performance come in.'

However, some industry commentators suggest that these performance requirements

are often not well articulated at the design stage or, in many cases, not articulated at all.

Some measures easier than others

One of the problems with defining quality is that it can quickly become abstract. Matt says a good example of this is thermal performance.

'If you grew up in a typical 1960s house that is draughty and poorly insulated, what would you think when you walk into a new build that's airtight, well insulated and properly heated?

'You'd think the building has brilliant thermal performance. But how do you know that for sure, and what is it like relative to other new builds? You don't know, because you have no base metric for thermal performance and therefore no way to rank new builds,' he says.

He admits that it may be difficult to objectively gauge some aspects of building quality

but says measuring performance can be quite straightforward.

'For example, ensuring minimum indoor temperatures meet World Health Organization recommendations or using a blower door test to measure air infiltration,' he says. 'There are many tests you can do to isolate and measure even quite specialised aspects of building performance.'

Is more robust compliance testing needed?

Undoubtedly some would welcome more robust compliance testing as a means to enhance quality, and research already exists to support such changes.

For instance, in 2014, as part of the independent testing for its periodic New House Construction Quality Survey, BRANZ found that 82% of new builds had a compliance defect at the time of compliance ➤

inspection. Of those, there were an average of 2.2 defects per build.

Despite such telling statistics, the industry may be reluctant to adopt universal quality measures, especially given the additional expense testing them is likely to incur on those funding the build. And even with fuller quality standards in place, measuring quality becomes much more difficult when such objective performance measures are combined with the homeowner's or developer's expectations and limited understanding of performance.

'Imagine trying to do a post-occupancy evaluation and asking, "How is your building performing in your opinion?". You'll probably get a different answer for every building ever made,' says Matt.

Consumer-driven change

While the building industry should take responsibility for delivering quality, Matt believes homeowners, designers and developers must ultimately drive quality forward through what they require of their buildings. This would be similar to the way that consumer choice pushes the automotive industry to deliver safer and more fuel-efficient cars.

'At the moment, the information from the industry is quite disparate. We need to extract more data on building quality and feed it back into the design and building process,' he says.

'In particular, we need to find ways to educate homeowners, designers and developers so they can better understand

how to specify quality using the parameters of functionality, durability and performance and what these mean for their build.'

He's not suggesting every potential homeowner and developer go out and become an expert in building performance. Rather, he thinks that consumers should be able to expect quality by default, but for now, it doesn't appear to be the case.

'The stats tell us that the country clearly has a problem with the quality of building workmanship, materials and performance,' he says. 'The question now becomes, "How do we shift the industry from the status quo to a place where it can overcome these issues?" Unfortunately, that is not an easy question to answer.' ◀