Appraising wall claddings

BRANZ has a rigorous and independent Appraisal process for verifying that wall cladding systems are fit for purpose and able to comply with the Building Code. These can now cover systems on even taller buildings.

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CLADDING MANUFACTURERS invest considerable time and effort in developing new products and systems for the market, but how can they show that their cladding will be durable, weathertight and meet designers' needs?

Through its Appraisal process, BRANZ can verify that cladding systems are fit for purpose and able to comply with the New Zealand Building Code (NZBC).

BRANZ Appraisals for wall cladding systems offer an independent third-party endorsement and provide designers, specifiers and building consent authorities with reassurance that the system is able to perform.

Systems on buildings up to 25 m high

The typical wall cladding Appraisal scope is limited to building heights 10 m or less, in accordance with NZBC Acceptable Solution E2/AS1.

BRANZ also now offers Appraisals for residential-style cladding systems on buildings between 10 and 25 m in height. This is becoming more important as the need for medium-density housing increases.

Formal traceable, transparent process

The BRANZ Appraisal process is a formal process that ensures all steps are traceable and transparent (see Figure 1).

When an application is made to BRANZ for an Appraisal, the first step is to determine the system's scope of use and all of its components and accessories.

Based on the scope of use, the NZBC performance requirements that the system must meet are identified. From this, evaluation criteria for the Appraisal are developed.

Detailing in residential housing systems

Buildings less than 10 m in height fall within the scope limitations of NZBC Acceptable Solution E2/AS1.

Nowadays, most cladding systems incorporate a drained cavity, so they are tested using NZBC clause E2 *External moisture* Verification Method E2/VM1.

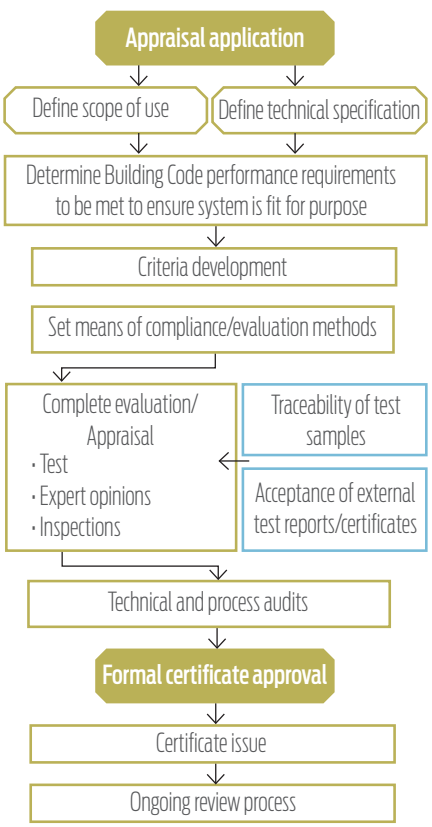

Figure 1: BRANZ Appraisal process.

This testing is carried out to enable BRANZ and the cladding proprietor to verify the performance of a range of standard details most commonly used with the system. It includes the performance of:

- the interface between the cladding system and cladding penetrations such as window joinery
- corner junctions
- drainage joints.

BRANZ then evaluates and offers an opinion on other detailing to be covered by the Appraisal. This is important because subtle variations in the installation detailing of a system can result in a cladding system that leaks.

Extended to medium-density housing

BRANZ now offers an Appraisal that covers the performance of wall claddings on buildings between 10 and 25 m high.

The maximum wind exposure covered by these Appraisals is 2.13 kPa ULS (NZS 3604:2011 *Timber-framed buildings* extra high wind zone). The Appraisal provides independent verification of the cladding system's performance within this scope.

Ongoing research in this area will support future development of performance standards and/or NZBC Verification Methods.

More than weathertightness evaluated

In addition to the weathertightness assessment, other equally important aspects of the cladding are evaluated.

Wind, earthquake and serviceability loading

Most cladding systems are tested or evaluated for resistance to wind loading and impact.

Heavy monolithic claddings are tested for earthquake and serviceability loading and in some cases for other movement such as thermal.

Durability

All cladding systems are evaluated for durability. This can be complex where the materials in the system have little history in our climate. It requires in-house expertise on building product durability along with material testing to support a durability assessment.

The durability assessment includes all of the system's components and accessories, including fixings, flashings and the interface with the rest of the building. It also includes how the cladding system will weather and the ongoing maintenance that will be needed for the cladding to perform for the serviceable life.

Fire spread

Spread of fire is checked to determine any limitations for the cladding use in proximity to a boundary. An assessment of the system's peak rate of heat release and total heat released is required. This is done through cone calorimeter testing.

Moisture issues

BRANZ also checks that the cladding system will not cause any moisture-related problems. An example is whether it will allow excess moisture present at the completion of construction to dissipate without permanent damage to the building elements.

Thermal performance

Where a cladding system is able to assist with the thermal performance of the building, this will also be assessed.

Commercial building claddings

Buildings that fall outside the scope of E2/AS1 and medium-density housing classification are typically commercial. Appraisal criteria for cladding systems for these buildings are very scope-of-use specific and weathertightness testing must be completed in accordance with AS/NZS 4284:2008 *Testing of building façades*.

Like residential cladding, structural, fire and durability requirements along with practicability of installation and quality are assessed. A BRANZ Appraisal of these systems will provide the designer and the building consent authority with the basis for the approval of the cladding system.

However, specific design by competent experts, such as a façade engineer, must be carried out for each building.

Site inspections and quality control

Construction site inspections and review of technical literature are completed as part of every Appraisal. The site inspections check that the technical literature contains clear installation information and that the system can be installed as intended by appropriately skilled workers. The literature must also provide clear guidance for designers.

Follows into manufacturing quality

Finally, the Appraisal process requires that there are adequate quality control procedures in place for the manufacture and fabrication of the system. The manufacturing quality will be inspected regardless of whether the system's components and accessories are manufactured locally or overseas.

The properties of the product as manufactured are also compared to those tested to ensure a consistent product is being supplied to the market.

Ongoing validity

Following the successful completion of a BRANZ Appraisal, BRANZ carries out ongoing surveillance of the cladding system. This monitors aspects including quality control, specifications, performance in use, technical literature and any changes to the NZBC and standards.