

## *Determination 2005/91*

# *Refusal of a code compliance certificate for a building with a “monolithic” cladding system: House 81*

## **1 THE DISPUTE TO BE DETERMINED**

- 1.1 This is a determination of a dispute referred to the Chief Executive of the Department of Building and Housing (“the Chief Executive”) under section 17 of the Building Act 1991 (“the Act”), as amended by section 424 of the Building Act 2004. The applicant is Ms G McKinney (referred to throughout this determination as the “owner”), and the other party is the North Shore City Council (“the territorial authority”). The application arises from the refusal by the territorial authority to issue a code compliance certificate for a 2-year old house unless changes are made to its monolithic cladding system.
- 1.2 My task in this determination is to consider whether I am satisfied on reasonable grounds that the external cladding as installed (“the cladding”), which is applied to the external walls and support columns of this house complies with the building code (see sections 18 and 20 of the Act). By “external cladding as installed” I mean the components of the system (such as the backing sheets, the flashings, the joints and the plaster and/or the coatings) as well as the way the components have been installed and work together.
- 1.3 This determination is made under the Building Act 1991 subject to section 424 of the Building Act 2004. That section came into force (“commenced”) on 30 November 2004, and its relevant provisions are:
- “. . . on and after the commencement of this section,—
- “(a) a reference to the Authority in the Building Act 1991 must be read as a reference to the chief executive; and
- “(b) the Building Act 1991 must be read with all necessary modifications to enable the chief executive to perform the functions and duties, and exercise the powers, of the Authority . . . ”

It should be noted that the new legislation does not amend the determination process set out under the 1991 Act, other than to transfer the power to make a determination from the Building Industry Authority (“the Authority”) to the Chief Executive.

- 1.4 This determination refers to the former Authority:
- (a) When quoting from documents received in the course of the determination, and
  - (b) When referring to determinations made by the Authority before section 424 came into force.
- 1.5 In making my decision, I have not considered any other aspects of the Act or the building code.

## **2 PROCEDURE**

### **The building**

- 2.1 The building work is a two-storey detached house, with a large developed basement area, situated on an excavated sloping site, which is in a high wind zone in terms of NZS 3604: 1999 “Timber framed buildings”. The external walls are of conventional light timber frame construction built on concrete block foundation and retaining walls, and sheathed with monolithic cladding. The house is of a fairly complex shape, and the low-pitched roofs are at varying levels with some hip, valley, and wall to roof junctions. Apart from some lower level eaves, the roofs have perimeter parapet walls.
- 2.2 A large deck is constructed to 2 elevations at the ground floor level and another large deck is constructed to 3 elevations at the first floor level. Both decks are partially cantilevered and partly constructed over habitable spaces, and have timber-framed edge upstands and metal balustrades. A monolithic clad timber-framed chimney is built against an external wall and is set through the upper deck. Monolithic-clad timber-framed columns support the lower deck and the upper roof.
- 2.3 The builder has issued a “Variation Schedule”, which was accepted by the owner, which substituted H1.2 treated timber for the apparently previously specified untreated timber.
- 2.4 The cladding system is what is described as monolithic cladding, and is 60mm thick “New Generation Insulclad” as manufactured by Plaster Systems Ltd, and is finished with a textured coating. The system has been subject to a BRANZ appraisal. I note that the builder has issued a “Variation Schedule”, which was accepted by the owner, and which changed the 40mm “Insulclad” shown on the plans to the 60mm as installed. This has vertical groves down the back of the EPS, which may facilitate drainage of moisture from the cladding.
- 2.5 The plaster system supplier provided a “Producer Statement” dated 11 December 2002, and a 15-year “Materials Components Guarantee” dated 5 December 2002,

covering the plaster system. The plasterer issued a 10- year “Workmanship Guarantee” dated 10 December 2002, for the plasterwork.

### **Sequence of events**

- 2.6 The territorial authority issued a building consent on 20 February 2002, based on a certificate supplied by Approved Building Certifiers Ltd (“the building certifier”). There were no conditions attached to the consent that related to the cladding.
- 2.7 The building certifier carried out inspections during the course of construction and approved the pre-line building inspection on 2 December 2002, and the final building inspection on 26 September 2003.
- 2.8 The building certifier issued a building certificate for the house on 20 November 2002, and an interim code compliance certificate dated 21 October 2003, for all building work, with the exception of the “outer cladding”.
- 2.9 The building certifier wrote to the owner on 21 October 2003, stating that as its authorisation had now been limited, it was now the owner’s responsibility to engage the territorial authority to inspect the cladding, so that the territorial authority could issue a final code compliance certificate if satisfied that the cladding was code compliant.
- 2.10 The territorial authority wrote to the owner on 28 October 2003, noting that the territorial authority was required to carry out a final inspection, as the building certifier could no longer inspect the cladding.
- 2.11 In a letter to the owner dated 10 February 2004, the territorial authority stated that, contrary to previous information it had provided, it could no longer accept reports to establish code compliance.
- 2.12 On 29 February 2004, the owner wrote to the Authority setting out the sequence of events and requesting advice from the Authority as to how to proceed. The Authority responded by e-mail on 19 March 2004, and concluded that the owner could apply for a determination as to the cladding’s compliance.
- 2.13 The territorial authority did not issue a Notice to Rectify as required under section 43(6) of the Act.
- 2.14 The owner applied for a determination on 29 October 2004.

### **3 THE SUBMISSIONS**

- 3.1 In a covering letter to the Department dated 26 October 2004, the owner set out the sequence of events leading up to this determination
- 3.2 The owner supplied copies of:
  - The plans and specifications;

- The consent documentation;
- The building certifier's inspection documentation;
- The "Insulclad" technical data and the BRANZ Appraisal;
- The builder's variation schedules;
- The producer statements and warranties; and
- The correspondence with the territorial authority and the building certifier.

3.3 The territorial authority made a submission in the form of a letter to the Authority dated 24 November 2004, which summarised the consent and inspection processes relating to the house. The territorial authority also noted that no specific cladding inspections had been undertaken for the external cladding system. The owner had been informed that, due to the type of monolithic cladding applied to the house, together with its attendant risk factors, the territorial authority was unable on reasonable grounds to accept the compliance of the cladding. The territorial authority noted that the matters of doubt were:

- Whether the installed cladding system complies with clauses B2.3.1 and E2.3.2 of the Building Code.

3.4 The territorial authority supplied copies of:

- The consent documentation;
- The building certifier's inspection documentation;
- The producer statements and warranties; and
- The correspondence with the owner and the building certifier.

3.5 The copies of the submissions and other evidence were provided to each of the parties. Neither the owner nor the territorial authority made any further submissions in response to the submissions of the other party.

#### **4 THE RELEVANT PROVISIONS OF THE BUILDING CODE**

4.1 The dispute for determination is whether the territorial authority's decision to refuse to issue a code compliance certificate because it was not satisfied that the cladding complied with clauses B2 and E2 of the building code (First Schedule, Building Regulations 1992) is correct.

4.2 There are no Acceptable Solutions that have been approved under section 49 of the Act that cover this cladding. The cladding is not accredited under section 59 of the Act. I am therefore of the opinion that the cladding system as installed must now be considered to be an alternative solution.

4.3 In several previous determinations, the Department has made the following general observations, which in my view remain valid in this case, about acceptable solutions and alternative solutions.

- Some acceptable solutions cover the worst case, so that in less extreme cases they may be modified and the resulting alternative solution will still comply with the building code; and
- Usually when there is non-compliance with one provision of an acceptable solution, it will be necessary to add some other provision to compensate for that in order to comply with the building code.

## **5 THE EXPERT'S REPORT**

5.1 The Department commissioned an independent expert ("the expert") to inspect and report on the cladding. The expert inspected the building on 30 March 2005, and furnished a report that was completed on 1 May 2005. It noted that the house was well built and finished with considerable care, and the cladding was finished to a high standard in accordance with the manufacturer's recommendations at the time of its application. The expert was of the opinion that the builder and cladding contractor took considerable care with their work. The expert removed the plaster coating to reveal the window perimeter details at two locations, and noted that the windows were fully flashed and installed in accordance with the manufacturer's recommendations at the time of installation. The expert was of the opinion that, with the exception of the chimney, control joints were not required for a house with the dimensions of the one in question. The expert also made the following comments regarding the cladding:

- The chimney requires a horizontal control joint, however the chimney walls are very narrow;
- There is some minor cracking evident in the cladding at some locations;
- The balustrade supports pass through the top of the deck upstands, and due to the top slope only being 7 degrees and the evidence of cracking at one location, this poses a future risk; and
- The TV aerial fixings through the top of the roof parapet are inadequately sealed.

5.2 The expert had concerns regarding the brown colour of the cladding as it has a low light reflective value of the finished plaster. The expert also pointed out that there were pronounced "ripples" in the deck liquid membranes, due to what the expert considered was movement in the substrate.

5.3 The expert took non-invasive readings at the interior linings and invasive readings at the exterior of the external walls and also at the deck soffits. The invasive testing provided 8 readings that varied from 13% to 18%. Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is

entering the structure. The expert noted that the readings were taken after a long dry period. The expert also examined the timber fragments extracted from the invasive testing and found no evidence of possible damage.

5.4 Copies of the expert's report were provided to each of the parties.

## **6 DISCUSSION**

### **General**

6.1 I have considered the submissions of the parties, the expert's report and the other evidence in this matter. The approach in determining whether building work complies with clauses B2 and E2, is to examine the design of the building, the surrounding environment, the design features that are intended to prevent the penetration of water, the cladding system, its installation, and the moisture tolerance of the external framing. The Authority and the Department have described the weathertightness risk factors in previous determinations (Refer to Determination 2004/01 *et al*) relating to monolithic cladding and I have taken these comments into account in this determination.

### **Weathertightness risk**

6.2 In relation to the weathertightness characteristics, I find that the house:

- Has no eaves or verge projections to the upper cladding that would provide protection to the cladding areas below them. However, the lower eaves projections and deck projections afford some protection to the lower cladding;
- Is in a high wind zone;
- Is two storeys high, with a developed basement;
- Is of a fairly complex shape on plan, with roofs that have hip and wall to roof junctions;
- Has two external decks that are partially cantilevered or constructed over habitable spaces;
- Has windows and doors that are fully flashed but exclude sill trays;
- Has lower level roof spaces that assist in the ventilation of the external wall cavities above them; and
- Has external wall framing that may be treated to a level that would help prevent decay if it absorbs and retains moisture. However there is a degree of uncertainty as to the treatment due a lack of consistency in documentation provided.

## **Weathertightness performance**

- 6.3 Generally, the cladding appears to have been installed according to good trade practice and to the manufacturer's instructions, but some junctions, edges, and penetrations are not well constructed. These areas are described in paragraph 5.1, and in the expert's report, as being:
- The lack of a horizontal control joint to the chimney wall cladding;
  - The minor cracking in the cladding at some locations;
  - The balustrade supports passing through the top of the deck upstands and the evidence of cracking at one of these locations; and
  - The inadequately sealed TV aerial fixings through the top of the roof parapet.
- 6.4 Notwithstanding the fact that the backing sheets are fixed directly to the timber framing, thus inhibiting drainage and ventilation behind the cladding sheets, I find that there are compensating factors that assist the performance of the cladding in this particular case:
- The cladding generally appears to have been installed according to very good trade practice;
  - The external doors and windows are fully flashed;
  - The house has lower level roof spaces that assist in the ventilation of the external wall cavities above them; and
  - The house has external wall framing that is likely to be treated to a level that would help prevent decay if it absorbs and retains moisture.
- 6.5 I consider that these factors help compensate for the lack of a drainage and ventilation cavity, and can allow the house to comply with the weathertightness and durability provisions of the building code.
- 6.6 I also draw the parties' attention to the expert's comments regarding the membrane applied to both of the decks, and recommend that suitable remedial work be undertaken if, on further examination, this is perceived to be a problem.
- 6.7 I note that all elevations of the house demonstrate a high weathertightness risk rating as calculated using the E2/AS1 risk matrix. The matrix is an assessment tool that is intended to be used at the time of application for consent, before the building work has begun and, consequently, before any assessment of the quality of the building work can be made. Poorly executed building work introduces a risk that cannot be taken into account in the consent stage, but must be taken into account when the building as actually built is assessed for the purposes of issuing a code compliance certificate.

## **7 CONCLUSION**

- 7.1 I consider that the expert's report establishes there is no evidence of external moisture entering the house, and accordingly, that the monolithic cladding does comply with clause E2 at this time.
- 7.2 However, the building is also required to comply with the durability requirements of clause B2. Clause B2 requires that a building continues to satisfy all the objectives of the building code throughout its effective life, and that includes the requirement for the house to remain weathertight. Because the cladding faults on the house are likely to allow the ingress of moisture in the future, the house does not comply with the durability requirements of clause B2.
- 7.3 I also consider that because the faults in the house cladding occur in discrete areas, I am able to conclude that rectification of the identified faults will consequently bring the cladding into compliance with the code. Once the cladding faults listed in paragraph 6.3 have been satisfactorily rectified, this house should be able to remain weathertight and thus comply with both clauses E2 and B2.
- 7.4 I note that effective maintenance of monolithic claddings is important to ensure ongoing compliance with clause B2 of the building code. That maintenance is the responsibility of the building owner. The code assumes that the normal maintenance necessary to ensure the durability of the cladding is carried out. For that reason clause B2.3.1 of the building code requires that the cladding be subject to "normal maintenance". That term is not defined and I take the view that it must be given its ordinary and natural meaning in context. In other words, normal maintenance of the cladding means inspections and activities such as regular cleaning, re-painting, replacing sealants, and so on.
- 7.5 It is emphasized that each determination is conducted on a case-by-case basis. Accordingly, the fact that a particular cladding system has been established as being code compliant in relation to a particular building does not necessarily mean that the same cladding system will be code compliant in another situation.
- 7.6 I decline to incorporate any waiver or modification of the building code in this determination.

## **8 THE DECISION**

- 8.1 In accordance with section 20 of the Act, I determine that the house is weathertight now and therefore the cladding complies with clause E2. However, as there are a number of items to be remedied to ensure it remains weathertight and thus meets the durability requirements of the code, I find that the house does not comply with clause B2. Accordingly, I confirm the territorial authority's decision to refuse to issue the code compliance certificate.
- 8.2 I also find that rectification of the items outlined in paragraph 6.3 to the approval of the territorial authority, along with any other faults that may become apparent in the course of that work, will consequently result in the house being weathertight and in

compliance with clauses B2 and E2, notwithstanding the lack of a ventilated cavity.

- 8.3 I note that the territorial authority has not issued a Notice to Rectify. The territorial authority should do so and the owner is then obliged to bring the house up to compliance with the building code. It is not for me to decide directly how the defects are to be remedied and the cladding brought to compliance with the building code. That is a matter for the owner to propose and for the territorial authority to accept or reject, with either of the parties entitled to submit doubts or disputes to the Chief Executive for another determination.
- 8.4 Finally, I consider that the cladding will require on-going maintenance to ensure its continuing code compliance.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 15 June 2005.

John Gardiner  
**Determinations Manager**