

## *Determination 2005/117*

# *Refusal of a code compliance certificate for a building with a “monolithic” cladding system at 24A Korotaha Terrace, Rothesay Bay, North Shore City – House 102*

## **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 Paul Wright, the owner and builder of the house (referred to throughout this determination as “the owner”), and the other party is the North Shore City Council (referred to throughout this determination as “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 of the 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 is a two-storey house situated on an excavated sloping site that is likely to be in a high-wind zone in terms of NZS 3604: 1999 “Timber framed buildings”. The house is of a relatively complex shape on plan with the roofs that are situated at two main levels having hip and wall-to-roof junctions. The exterior walls are of conventional light-timber frame construction built on a timber-framed piled floor and sheathed with monolithic cladding. There are 400mm wide eaves projections to the higher-level roof and to parts of two lower roof elevations. Elsewhere, the eaves have minimal projections. A balcony is constructed along one first floor elevation and this is set into a lower roof area over a habitable space. The balcony has a monolithic-clad-timber-framed balustrade. A lean-to roof is constructed over the carport and this is supported on timber posts and beams. A large boarded open external timber-framed deck is situated at two elevations of lower floor level and is supported on timber posts and beams. The deck has balustrades formed from timber balusters and handrails.
- 2.2 In a letter dated 21 June 2004, the timber supplier confirmed that all of the pre-nailed external wall framing timber is H3 LOSP treated.
- 2.3 The cladding system is what is described as monolithic cladding and consists of a 7.5mm thick “CSR” fibre-cement system fixed directly to the framing over the building wrap and finished with a “Wattyl Granosite” coating system. The independent expert commissioned by the Department (“the expert”) has noted the change of the backing sheets from the “Harditex” shown on the consented plans to a “CSR” product. However, it appears that James Hardie Ltd proprietary flashings and accessories were used for the cladding installation. I note that the territorial authority has commented on the change of the backing sheets in its weathertightness report.
- 2.4 Wattyl (New Zealand) Ltd provided a “Manufacturer’s Warranty” dated 22 June 2004, which covered the cladding coatings for a period of 5 years from the date of their application.

## Sequence of events

- 2.5 The territorial authority issued a building consent on 19 September 2001. The conditions attached to the consent stated that notice was required for certain inspections that would include the cladding.
- 2.6 The territorial authority carried out various inspections during the course of construction, and passed pre-line inspections on 18 September 2003 and the post-line inspection on 24 September 2003. Following final building inspections, carried out on 4 June 2004 and 25 August 2004, the territorial authority raised certain concerns about the cladding.
- 2.7 The territorial authority carried out a specific weathertightness visual inspection on 19 August 2004. In a letter to the owner dated 29 November 2004, the territorial authority stated that the building code required the durability of the cladding to be 15 years and that of the timber framing to be 50 years. The territorial authority then listed certain weathertightness risk factors identified with the building, together with a list of defects. The territorial authority stated that, due to the risk factors and defects, it could not be satisfied on reasonable grounds that the cladding system was code compliant.
- 2.8 The owner wrote to the territorial authority on 28 December 2004, expressing his concerns regarding the non-issue of the code compliance certificate for the house. The territorial authority responded in a letter dated 23 February 2005, noting that it had changed its procedures for issuing code compliance certificates for buildings built without a cavity behind the exterior claddings.
- 2.9 The territorial authority did not issue a Notice to Rectify as required under section 43(6) of the Act.
- 2.10 The owner applied for a determination on 12 March 2005.

## 3 THE SUBMISSIONS

- 3.1 The territorial authority made a submission in the form of a letter to the Department dated 23 May 2005 that summarised the consent and inspection processes relating to the house. The territorial authority also noted 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 also listed the cladding defects that it had identified. The territorial authority stated that the matter of doubt was:
- Whether the installed cladding system complies with clauses B2.3.1 and E2.3.2 of the Building Code.
- 3.2 The territorial authority supplied copies of:
- The plans;

- The consent and inspection documentation; and
  - The correspondence with the owner.
- 3.3 In a covering note, the owner described his building industry experience and how he endeavoured to use methods and materials that would ensure a “sturdy and lasting structure”. The owner had visited the territorial authority to obtain advice as to new building requirements and had been told that it was in order to continue with the construction in accordance with the consent plans.
- 3.4 The owner supplied copies of:
- The letter from the territorial authority dated 23 February 2005;
  - The cladding coating manufacturer’s warranty;
  - The cladding manufacturer’s and coating manufacturer’s recommendations;
  - The letter from the timber supplier describing the timber treatment of the external wall framing;
  - An invoice dated 15 August 2003 for the pvc sill flashings; and
  - A photograph showing a flashing to one sill location.
- 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 remain valid in this case in my view, about acceptable solutions and alternative solutions:
- Some acceptable solutions cover the worst case, so that they may be modified in less extreme cases 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 expert inspected the building on 21 and 24 June 2005 and furnished a report that was completed on 28 June 2005. It recorded the expert's opinion that the general quality of installation and finish of the cladding is "deficient in adherence to the manufacturer's specifications and in general quality of finish". The expert removed the coating to expose some of the jointing details at one front unit deck balustrade to reveal the details of the cladding and the external joinery unit flashings. The expert also made the following comments regarding the cladding:

- There is an absence of the vertical control joints as recommended by the manufacturer to some of the walls that exceeded 5.4 metres in length. There is evidence of compressed vertical joints in the cladding that could be attributed to this lack of control joints;
- Where vertical control joints are installed, they do not comply with the manufacturer's recommendations and at two locations do not extend far enough;
- The horizontal control joints are generally ineffectively installed and the cladding is bulging at some of these locations;
- The cladding jointing and finishing is poorly finished at some locations;
- At some locations the pvc corner mouldings are not been fitted correctly, are not evenly coated with plaster, and there is also evidence of some cracking in the cladding;
- There are incorrect cladding fixings at two lounge wall locations;
- The bottom edges of the cladding are ineffectively finished at some locations, including the cladding/apron flashing junctions;
- The building wrap is not trimmed off in some areas;
- The cladding is sealed onto the head flashings of most of the external joinery units and there is excessive sealant jointing at these locations;
- The sill flashings to the external joinery units do not meet the manufacturer's requirements and there is a lack of a gap between the flashings and the cladding at some locations;
- The deck stringer plates are bolted directly against the cladding and no drainage pathways or flashings are installed;

- There are no cap flashings installed over the balcony balustrade and there is damage evident at a balcony junction with the main cladding; and
- There is ineffective sealing at some of the cladding penetrations.

5.2 The expert took non-invasive readings at the interior of the external walls of the house. Further invasive readings were then taken and the following higher moisture readings were recorded:

- Two readings of 21% at the ground floor bottom plate at the northwest elevation;
- Readings of 21% to 22% below the deck boundary joist at the southeast elevation;
- A readings of 21% below a window on the southeast elevation; and
- Readings of 24% and 38% at the balcony balustrade on the southeast elevation.

Moisture levels of over 18% recorded after cladding is in place generally indicate that external moisture is entering the structure.

5.3 The expert also noted that there was peaking and compression of the liquid applied membrane on the upper balcony deck floor.

5.4 Copies of the expert's report were provided to each of the parties. The owner responded with two letters dated 8 and 12 July 2005. In the letter dated 8 July 2005 the owner commented that:

- A combined period of 12 hours of pile-driving for the carport and deck, carried out adjacent to the house and with such force that the house shook severely, may have caused some cracks and compressed joints on the house;
- There is a control joint on the eastern elevation located above and below the landing window to the side nearest the centre of the house, and made with butynol backing and polyurethane sealant;
- The owner has no recollection of any control joints to the western elevation;
- The cladding nailing passed an inspection on 24 September 2003;
- The cladding on part of the building, described as "untidy" by the expert was never intended to be clad, but was clad on the advice of the territorial authority inspector, and will be finished with vertical trellis;
- The finishing of the window installation details was deliberately put on hold "depending on the outcome of the council's decision". The owner complained of being given false information, well-meant but wrong, by the council; and
- The sill flashings were obtained by special order from a supplier, which said its branch had never supplied such items before.

In the letter dated 12 July 2005 the owner commented that:

- All finishing work had been put on hold “until a decision has been reached” (about the compliance of the cladding);
- The deck stringer fixed to the house was sealed against the cladding which had been coated and painted before the deck was built;
- The house passed a territorial authority inspection, at which point defects should have been raised;
- Some control joints are visible;
- A control joint noticed by the expert needs rectification. The butynol tape appears to have slipped; and
- A torched-on membrane applied to the pre-finished cladding and apparent in one of the expert’s photographs has not been commented on.

## **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:

- Is in a high-wind zone;
- Has 400mm wide high-level eaves projections and a roof over the car port that help to protect the cladding;
- Is two storeys high;
- Is of a fairly complex shape on plan, with roofs having hip and roof-to-wall junctions;
- Has one high-level balcony that is constructed over a habitable space;

- Has an external open deck; and
- Has external wall and balustrade framing that I accept is treated to H3 LOSP, which will prevent or at least delay decay unless the framing is exposed to moisture for a long period.

### **Weathertightness performance**

- 6.3 I find that the monolithic cladding in general does not appear to have been installed according to good trade practice. As a result, there are a number of identified defects, set out in paragraph 5.1 and in the expert's report, which have contributed to the moisture penetration already evident in some locations in the external walls and balustrade of the house.
- 6.4 The expert has pointed out that there is peaking and compression in the membrane applied to the balcony deck. I recommend that the territorial authority further investigate this concern to ensure the continuing durability and structural stability of the balcony.
- 6.5 I note that all the elevations of the house demonstrate a moderate weathertightness risk rating 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 constructed is assessed for the purposes of issuing a code compliance certificate.

## **7 CONCLUSION**

- 7.1 I am satisfied that the current performance of the cladding is inadequate because it has not been installed according to good trade practice, and is allowing water penetration into wall and balustrade framing at several locations at present. In particular, it demonstrates the key defects listed in paragraph 5.1. I have also identified the presence of a range of known weathertightness risk factors in this design, albeit that the use of timber framing treated to H3 LOSP significantly reduces the likely impact of those risk factors in this case. The presence of the risk factors on their own is not necessarily a concern, but they have to be considered in combination with the significant faults identified in the cladding system. It is that combination of risk factors and faults that indicate that the structure does not have sufficient provisions that would compensate for the lack of a drained and ventilated cavity in the long term. Consequently, I am not satisfied that the cladding system as installed complies with clause E2 of the building code.
- 7.2 In addition, 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 in this building are



allowing the ingress of moisture at present, and there is no effective cavity behind the cladding, the house does not comply with the durability requirements of clause B2.

- 7.3 I find that, notwithstanding the extent and apparent complexity of the faults that have been identified with this cladding, I am able to conclude, with the information available to me, that remediation of the identified faults could result in compliance with clause E2, especially given that the timber framing has clearly been treated to H3 LOSP level, which will significantly delay or prevent timber decay. I consider that final decisions on whether code compliance can be achieved by either remediation or re-cladding, or a combination of both, can only be made after a more thorough investigation of the cladding. This will require a careful analysis by an appropriately qualified person.. In my view that analysis must have particular regard to the relatively high level of decay resistance to be expected from the H3 LOSP treated timber used in this building. Once that decision is made, the chosen remedial option should be submitted to the territorial authority for its comment and approval. If the territorial authority chooses to reject the proposal, then the owner is entitled to seek a further determination on whether the proposed remedial work will comply with the requirements of clauses E2 and B2.
- 7.4 I note that, once the building has been made compliant with the building code, 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, repainting, replacing sealants, and so on.
- 7.5 In the circumstances, 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 Building Act 1991, I hereby determine that the monolithic cladding system as installed does not comply with clauses B2 and E2 of the building code, and accordingly confirm the territorial authority’s decision to refuse to issue a code compliance certificate.
- 8.2 I note that the territorial authority has not issued a Notice to Rectify. The territorial authority should now issue a notice to fix, 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.

- 8.3 I would suggest that the parties adopt the following process to meet the requirements of clause 8.3. Initially, the territorial authority should issue the notice to fix, listing all the items that the territorial authority considers to be non-compliant. The owner should then produce a response to this in the form of a technically robust proposal, produced in conjunction with an expert, as to the rectification or otherwise of the specified issues. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.
- 8.4 Finally, I consider that the cladding will require ongoing maintenance to ensure its continuing code compliance.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 2 August 2005.

John Gardiner  
**Determinations Manager**