

## ***Determination 2005/100***

# ***Refusal of a code compliance certificate for a building with a “monolithic” cladding system: House 88***

### **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 the owner Mrs G Small (referred to throughout this determination as “the owner”), and the other party is the Hauraki District 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 4-year old extensive remodelling of an existing house (“the house”), unless changes are made to its monolithic cladding systems.
- 1.2 The question to be determined is whether on reasonable grounds the monolithic wall cladding as installed to the new and existing timber-framed external walls of the house (“the cladding”), complies with the building code (see sections 18 and 20 of the Act). By “the monolithic wall 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 consists of extensive alterations to an existing relocated house, situated on an excavated level site in a high wind zone in terms of NZS 3604: 1999 “Timber framed buildings”. The resultant house is 3-storeys high, including the extensive basement, and its external walls are of conventional light timber frame construction built on either piled timber-framed suspended floors or concrete block foundation and retaining walls. The new and existing timber-framed walls are sheathed with monolithic cladding, and in the case of the existing walls, the existing linings were removed prior to installing the cladding. The house is generally of a reasonably simple shape, but with some complex aspects, and the pitched roofs are set at two levels, with parapet walls and internal gutters. There are no eaves or verge projections,
- 2.2 The house has a balcony at the upper floor level that is constructed over a habitable space, and this has a timber-framed balustrade. A timber framed deck and portico running the length of one elevation are constructed at the first floor level. The deck and portico are supported on timber beams and full-height columns and a metal balustrade protects the deck perimeters.
- 2.3 The owner has supplied invoices showing that chemical-free (untreated) timber was purchased to construct the house wall framing.
- 2.4 The timber-framed external walls of the house that are the subject of this determination are clad with what is described as a monolithic cladding. In this instance it incorporates 7.5mm thick “Harditex” sheets fixed through the building wrap directly to the framing timbers, finished with a spray textured application and a further paint system. As noted by the territorial authority, the consented plans call for

an “Insulclad” external cladding system. Remedial work has been carried out using the “Nu Age” plaster system.

- 2.5 Nu-Age Plaster Ltd issued a Manufacturer’s Guarantee, dated 12 July 2004, covering the remedial plaster systems for 15 years against delamination or failure, other than for normal shrinkage or cracking.

### **Sequence of events**

- 2.6 The territorial authority issued a building consent on 24 November 2000. A condition of the consent was that certain inspections were to be called for, including the pre-line and final inspections.
- 2.7 The territorial authority carried out various inspections during the construction of the house. Following inspections on 28 May 2001 and 25 June 2001, the territorial authority wrote to the owner on 28 June 2001, noting that various items requiring rectification, including those listed in an independent report supplied by the owner, had been rectified. However certain items still required attention.
- 2.8 The independent report referred to in the territorial authority’s letter was an untitled and undated report listing various items that were defective or had not been carried out in accordance with the original plans. A set of photographs was attached to this report.
- 2.9 A painting and plastering company inspected the house on 28 January 2004, apparently at the request of the owner. Following this inspection, the company supplied an undated report to the owner, which listed various defects, and the remedial work required to make the house code compliant.
- 2.10 The territorial authority wrote to the owner on 24 February 2004, listing “Particulars of Contravention” in relation to a Notice to Rectify. The territorial authority stated that the territorial authority had not been informed of the change of cladding from that shown on the consented plans, nor had the owner requested an inspection. The territorial authority was eventually asked to inspect the work in May 2001, at which time the territorial authority was aware of the first independent report that had highlighted some building defects. The territorial authority also noted that rectification work had been carried out and that the territorial authority had been asked to inspect the work and issue a code compliance certificate. The territorial authority considered that, based on new information, it was not able to issue a code compliance certificate, as it was not satisfied that the building work was code compliant.
- 2.11 According to an undated second report to the owner prepared by the painting and plastering company, full remedial work was commenced on 7 June 2004 and completed on 9 July 2004. The company were of the opinion that the cladding was then code compliant.
- 2.12 The territorial authority wrote to the owner on 8 September 2004, stating that the purpose of the territorial authority’s latest inspection was to list items that did not

comply with the building code. The territorial authority went on to list the items requiring rectification, including some that related to the cladding.

- 2.13 Following a request from the owner, a consultant inspected the house on 16 November 2004. In a subsequent letter to the owner dated 18 November 2004, the consultant noted that, in its opinion, various aspects of the cladding were now satisfactory. The consultants stated that only low moisture readings were recorded at the interior of the house, and that regular maintenance was required to ensure continuing code compliance.
- 2.14 The owner applied for a determination on 18 January 2005.

### **3 THE SUBMISSIONS**

3.1 The owner stated that the alterations had taken place from February 2001 to May 2001 and noted that the builder had over 25 years experience in the building trade.

3.2 The owner forwarded copies of:

- The plans;
- Some of the consent and inspection documentation;
- The Notice to Rectify;
- Correspondence with the territorial authority;
- The reports from the plastering company and the consultant; and
- Some manufacturer's instructions.

3.3 The territorial authority forwarded copies of:

- The plans;
- Some of the consent and inspection documentation;
- The Notice to Rectify;
- Correspondence with the owner;
- The reports from the plastering company and the consultant; and
- Some manufacturer's instructions.

3.4 Copies of the submissions and other evidence were provided to each of the parties.

## **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.
  - 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 appointed an independent expert ("the expert") to investigate the cladding. The expert visited the property on 29 April 2005, and furnished a report that was completed on 12 May 2005. The report noted that the textured coating and painting is evenly applied and there is no evidence of bare/over-applied patches. The general condition of the spray texture is good. The cladding thickening around the windows and doors at the north and east elevations, in the opinion of the expert, give a secondary protection against water penetration. The expert removed a small section of cladding from a window jamb/cladding intersection and from the horizontal control joint band. I am prepared to accept that these examples are typical of the remaining similar situations. The expert was also of the opinion that the paint colour of the cladding might encourage excessive thermal movement. The expert made the following specific comments on the cladding:
- The horizontal control joint lacks a flashing, and the covering band is not meshed into the cladding;
  - The vertical control joint to the north elevation does not extend through the bottom sheet of the cladding, and there is a hairline crack at this location;
  - There are no vertical control joints inserted in the cladding to the interior of the lower roof parapet walls, and vertical cracks are evident along the south elevation;

- At some locations the joints and weather protection of the cladding to the interior of the upper roof parapet are unsatisfactory;
- The head flashings of the external windows and doors are cut short, the cladding junction with these flashings is inadequately finished, and at some locations, the gap between the flashing and the cladding is excessive;
- There are no sill flashings installed to the external windows and doors, no insole strip has been installed between the jamb overlap and the cladding and there is no evidence that a bead of silicone was applied before installing the units;
- The end of the apron flashing to the north elevation lacks a “kick out” extension;
- The metal capping to the parapet walls is flat, some of the jointing is suspect, and no saddle flashings have been installed at the junction of the parapets and the main wall cladding;
- Appropriate flashings have not been installed to the balcony wall balustrade junctions;
- The deck ribbon plate is fixed hard up against the cladding; and
- Unprotected cladding is evident below the dining room door and the deck structure.

5.2 The expert carried out a series of non-invasive moisture tests to the interior and exterior of the external walls, and no elevated readings were recorded. Invasive tests were also taken at 9 “at risk” external locations. Readings of 12.8%, 13.8% (at 2 locations), 14.4%, 14.9% (at 2 locations), 15.1%, 16.9%, and 38.4% (this latter reading being in the parapet wall) were obtained. Moisture levels above 18% at the exterior of the external walls after cladding is in place generally indicate that external moisture is entering the cladding.

5.3 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 parapets that do not provide any protection to the cladding below them;
- Is in a high wind zone;
- Is maximum 3 storeys high;
- Is generally of a reasonably simple shape on plan, but with some complex aspects;
- Has one balcony constructed over a habitable space, and a deck fixed hard against the cladding; and
- Has new external wall framing that is not treated to a level that would help prevent decay if it absorbs and retains moisture.

### **Weathertightness performance**

6.3 Generally the cladding appears to have been installed according to good trade practice, but some junctions, edges, and penetrations are not well constructed. These areas are all as described in paragraph 5.1 and in the expert's report as being:

- The lack of a flashing to the horizontal control joint, and the covering band not being meshed into the cladding;
- The vertical control joint to the north elevation not extending through the bottom sheet of the cladding, and the hairline crack at this location;
- The lack of vertical control joints in the cladding to the interior of the lower roof parapet walls, and the vertical cracks evident along the south elevation;
- The unsatisfactory joints and weather protection of the cladding to the interior of the upper roof parapet at some locations;
- The cut short head flashings of the external windows and doors, the inadequately finished cladding junctions, and the excessive gap between the flashing and the cladding at some locations;
- The lack of sill flashings and in seal strip between the jamb overlap and the cladding to the external windows and doors, and no bead of silicone being applied before installing the units;
- The lack of a "kick out" extension to the end of the apron flashing to the north elevation;

- The flat and inadequately jointed metal capping to the parapet walls, and the lack of saddle flashings at the junction of the parapets and the main wall cladding;
- The lack of appropriate flashings to the balcony wall balustrades;
- The deck ribbon plate being hard up against the cladding; and
- The unprotected cladding below the dining room door and the deck structure.

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. These are:

- Generally, the cladding appears to have been installed according to good trade practice; and
- The house is of a generally simple shape.

I consider that these factors help compensate for the lack of a full drainage and ventilation cavity and can allow the house to comply with the weathertightness and durability provisions of the building code, providing corrective measures are undertaken.

6.5 I note that all elevations of the house demonstrate a high 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 actually built 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 not adequate because it is allowing water penetration into the house in at least one location, which could affect the cladding of the house. Consequently, I am not satisfied that the cladding system as installed on the house complies with clause E2 of the building code.

7.2 In addition, the house 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 will allow the ingress of moisture in the future, the house does not comply with the durability requirements of clause B2 of the building code.

7.3 I consider that, because the faults that have been identified with this cladding occur in discrete areas, I am able to conclude that satisfactory rectification of the items



outlined in paragraph 6.3 is likely to result in the house being weathertight and in compliance with clauses B2 and E2, notwithstanding the lack of a ventilated cavity.

- 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. As reported by the expert, the house is finished in a colour that could encourage excessive thermal movement in the cladding and I suggest that this should be taken into account when considering the maintenance programme.
- 7.5 It is emphasised 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 Building Act 1991, I hereby determine that the cladding system as installed on the house does not comply with clause E2 of the building code. There are also a number of items to be remedied to ensure that the house remains weathertight and thus meet the durability requirement of the code. Consequently, I find that house does not comply with clause B2. Accordingly, I confirm the territorial authority's decision to refuse to issue a 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 issued a Notice to Rectify referring to a ventilated cavity. Under the Act, a Notice to Fix can require the owner to bring the building into compliance with the building code. The Authority has already found in a previous determination (2000/1) that a Notice to Rectify cannot specify how that compliance can be achieved. I concur with that view. A new Notice to Fix should be issued that requires the owners to bring the cladding into compliance with the building code, without specifying the features that are required to be incorporated. It is not for me to dictate how the defects described in paragraph 6.3 are to be remedied. How that is done 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 30 June 2005.

John Gardiner  
**Determinations Manager**