Determination 2005/65

Refusal of a code compliance certificate for a building with a "monolithic" cladding system: House 56

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 applicants are the three joint-owners acting through their legal advisers, (referred to throughout this determination as "the owner"), and the other party is the territorial authority. The application arises from the refusal by the territorial authority to issue a code compliance certificate for a 3-year old house unless changes are made to its monolithic cladding system.

1.2 The question to be determined is whether on reasonable grounds the monolithic wall cladding as installed to the 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 is a one-and–a-half-storey detached house situated on an excavated sloping site in a high wind zone in terms of NZS 3604: 1999 "Timber framed buildings". The external walls of the house are of conventional light timber frame construction built on concrete block foundation walls, and are sheathed with monolithic cladding. The house is of a fairly simple shape, and the corrugated steel tiled steeply pitched roofs are at two main levels with hip, valley, and wall to roof junctions. Three large dormers with matching roofing and monolithic-clad walls are constructed within the upper roof. The eaves and verges have 450mm wide projections. A timber-framed monolithic-clad full height chimney is set into the main roof and the top of an internal chimney is similarly clad after it passes through the main roof. A cantilevered balcony is constructed at the main floor level over the main entrance.

2.2 The specification calls for the wall framing to be Laserframe, but does not mention any timber treatment. No other evidence has been provided as to what timber treatment, if any, was applied to the external wall framing.

2.3 The timber-framed external walls of the house that are the subject of this determination are clad with 4.5mm thick fibre-cement backing sheets fixed through the building wrap directly to the framing timbers, and finished with 20 to 25mm solid plaster applied directly onto the backing sheets over a building paper slip-layer membrane.

Sequence of events

2.4 The territorial authority issued a building consent on 2 August 2001. The "Consent Endorsements" included references to framing and the solid plaster exterior cladding system.

2.5 The territorial authority carried out various inspections during the construction of the house. According to the owner, the territorial authority refused to issue a code compliance certificate in early 2002, as the flue for the diesel burner was too wide. After the flue was eventually replaced, the territorial authority still declined to issue the code compliance certificate on the grounds that the plaster cladding system was not code compliant.

2.6 On 23 March 2004, in a letter to the territorial authority, the owner requested that a code compliance certificate be issued

2.7 The territorial authority issued a general commentary on the concepts relating to monolithic cladding, dated 25 March 2004, which did not relate specifically to this house.

2.8 The territorial authority issued a Notice to Rectify dated 1 April 2004. The 'Particulars of Contravention" attached to this Notice stated that the building work did not satisfy the requirements of the building code in respect of E2/AS1 as there was a "failure to provide an acceptable moisture management system to the cladding".

2.9 The owner applied for a determination on 9 June 2004, and made a submission on 12 October 2004.

3 THE SUBMISSIONS

3.1 In a letter to the Authority dated 12 October 2004, the owner set out the background leading up to the request for a determination. The owner sent a further letter to the Department, which was received on 18 April 2005. This letter set out the sequence of events from the completion of the house up to the final refusal by the territorial authority to issue the code compliance certificate. The delay in issuing the code compliance certificate centred on the flue to the heater, and the owner states that had this issue been settled earlier the territorial authority would have issued the code compliance certificate. However, despite the cladding being initially approved, the territorial authority's changed policy meant that it not now acceptable to the territorial authority.

3.2 The owner also forwarded copies of:

- The consent documentation;
- The Notice to Rectify; and
- The correspondence with the territorial authority.

3.3 The territorial authority forwarded copies of:

- The plans;

- The consent documentation;
- The Notice to Rectify; and
- The correspondence with the owner.

3.4 Copies of the submissions and other evidence were provided to each of the parties. The territorial authority did not respond and the owner e-mailed a response on 12 April 2005. The owner pointed out that most of the damage could be related to the recent earthquake, and that the higher moisture reading under one window could also be attributed to the earthquake. The owner agreed that the other issues raised in the report could be addressed in conjunction with the territorial authority.

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 B2.3.1 and E2.3.2 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 current Acceptable Solution, E2/AS1, allows for solid plaster systems with fibre cement backing sheets, but requires that they be fixed on battens to create a 20mm cavity between the sheet and the framing. The previous acceptable solution E2/AS1, which was in force when this consent was issued, allowed for mesh reinforced solid plaster to be applied to fibre cement backing sheets that were face fixed to the framing. The cladding is not currently 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 Authority 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 commissioned an independent expert ("the expert") to inspect and report on the cladding. The expert inspected the building on 25 February 2005, and

furnished a report that was completed on 31 March 2005. It noted that the quality of finishing is generally very good, with the plaster coating evenly applied and there is no evidence of bare/over-applied patches. The texture and paintwork appears to be sound and evenly applied, and there is no evidence of cracking, flaking, or staining. The expert removed a small section of the textured finish at one window. The expert noted that the dimensions of the additions meant that control joints were not required. The expert's report made the following specific comments on the cladding:

- There is an absence of horizontal control joints, which are described in the manufacturer's recommendations, to the east or west walls;
- There is cracking to the cladding on all elevations, some of these are severe and the plaster has started to blow on the east and west elevations. The owner informed the expert that the cracking was the result of a recent earthquake, and the Earthquake Commission had agreed to provide a sum of money to towards the cost of recladding the east and west external walls;
- There is insufficient clearance at the base of the cladding above the ground at the east elevation or above the balcony deck;
- The wall to eaves or wall to verge soffit junctions are inadequately sealed, as is the roof/cladding junction at the south side of the external chimney;
- Jamb and sill flashings as required by NZS 4251 have not been installed to the external windows and doors;
- The backing sheets and building paper membrane have been incorrectly installed adjacent to the kitchen window;
- At some locations, the plaster to the window sills has been applied after the jamb plaster, the sill plaster is poorly painted, and stress cracks are evident;
- The end of the apron flashing over the left-hand side of the north entry roof is poorly finished;
- The membrane applied to the balcony deck has failed and is only temporarily repaired. Water damage has already occurred at the soffit linings below the balcony;
- As the stormwater is discharged over the deck edges, the balcony lacks a proper stormwater disposal system;
- The metal balcony balustrade fixings are directly fixed through both the floor and the wall and these connections are inadequately sealed;
- Some penetrations through the cladding, including the meter box are inadequately sealed; and
- The stone fence wall is finished hard up to the cladding.

5.2 The expert carried out a series of non-invasive moisture tests at the interior and exterior of the external walls. All internal readings were at an acceptable level, with the highest reading being 16.8%. Some external readings were found to be at an unacceptable level, and further invasive readings were made at the exterior of the external walls and readings of 11.4%, 11.9%, and 21.6% (under the kitchen window)

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

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 450mm wide eaves and verge projections that provide good protection to the cladding areas below them;
- Is in a high wind zone;
- Is a maximum of two storeys high;
- Is of a relatively simple shape on plan, with roofs that have hip, valley and wall to roof junctions;
- Has one cantilevered balcony;
- Has windows and doors that lack jamb and sill flashings;
- Has lower level roof spaces that assist in the ventilation of the external wall cavities above them; and
- Has external wall framing that is unlikely to be treated to a level that would help prevent decay if it absorbs and retains moisture.

Weathertightness performance

6.3 I find that, generally, aspects of the cladding appear 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 listed in paragraph

5.1, and I also emphasise that the condition of the cantilevered balcony should be further investigated to establish its structural stability.

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 good trade practice;
- The house has 450mm wide eaves and verge projections that provide good protection to the cladding areas below them; and
- The house has lower level roof spaces that assist in the ventilation of the external wall cavities above them.

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 note that the cracking in the cladding has been attributed mainly to the effects of an earthquake and that, according to the owner, the Earthquake Commission will provide finance towards the recladding of the worst affected walls. This factor should be taken into account when the territorial authority is considering any rectification programme.

6.7 I note that all elevations of the house demonstrate a medium 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 am satisfied that the current performance of the cladding is not adequate because it is allowing water penetration into the wall framing in at least one location. Consequently, I am not satisfied that the cladding system as installed 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, it 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 5.1 will necessarily 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.

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 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 meets the durability requirement of the code. Consequently, I find that the 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 paragraphs 5.1 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 requiring an acceptable moisture management system to the cladding. Under the Act, a Notice to Rectify can require the owner to bring each Unit into compliance with the building code. The Authority has already found in a previous determination (2000/1) that the Notice to Rectify cannot specify how that compliance can be achieved. I concur with that view. A new Notice 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 5.1 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 5 May 2005.

John Gardiner
Determinations Manager