Determination 2005/85

Refusal of a code compliance certificate for a building with a "monolithic" cladding system: House 75

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 two joint-owners (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 9-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 two-storey detached house with a basement garage situated on an excavated sloping site in a medium 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 and retaining walls, and are sheathed with monolithic cladding. The house is of a fairly simple shape, and the concrete tiled pitched roofs are at two main levels with hip, valley, and wall to roof junctions. The eaves have 450mm wide projections. A timber-framed monolithic-clad chimney passes through one of the lower level roofs. A partially cantilevered balcony with a curved balustrade is constructed at the main floor level and a fully cantilevered balcony with a curved balustrade is constructed at the higher floor level. A shaped canopy, supported by two timber posts that have plastered 250 diameter polystyrene surrounds, is situated at the main entry.

2.2 The expert commissioned by the Department is of the opinion that apart from the deck and barrier walls, the timber frames of the house appear to be either untreated or H1 treated. 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 7.5mm thick fibre-cement backing sheets fixed through the building wrap directly to the framing timbers, and having a high build textured finish.

Sequence of events

2.4 The territorial authority issued a building consent in June 1995.

2.5 The territorial authority carried out various inspections during the construction of the house. Following a preline inspection, the territorial authority issued an Interim Notice to Rectify, dated 28 November 1995, which related mainly to bracing issues.

2.6 According to the owner, the owner purchased the house on 16 May 2001, after a final inspection by the territorial authority that took place on 24 February 2001. The "Final Inspection" notes, dated 24 February 2001, required certain items to be attended to, but none of these related to the cladding.

2.7 The territorial authority carried out a further site cladding inspection on 23 August 2004, and in a letter to the owner dated 30 August 2004, it regretted that the building might not comply with the building code in a number of respects. The territorial authority attached a Notice to Rectify also dated 30 August 2004 to this letter, together with a set of photographs illustrating items of non-compliance. The "Particulars of Contravention" attached to both of the Notices to Rectify listed requirements under the following headings:

1. Items not installed per the manufacturer's specifications;

2. Items not installed per the acceptable solutions of the building code, (no alternative solutions had been applied for);

3. Items not installed per accepted trade practice.

4. A ventilated cavity system.

The owner was also required, amongst other items to:

1. Provide adequate ventilation to the monolithic cladding and into the wall frame space by means of either a ventilated cavity or alternative approved system, or alternatively

2. Remove the monolithic cladding and replace with an approved cladding system…

2.8 The owner applied for a determination on 29 October 2004.

3 THE SUBMISSIONS

3.1 In an attachment to its submission the owner set out the sequence of events leading up to the request for a determination, including the territorial authority's inspection process. The owner also responded to the issues set out in the Notice to Rectify. The owner stated that any work identified as being necessary to meet the requirements for a code compliance certificate would be undertaken.

3.2 The owner also forwarded copies of:

- The territorial authority's "Final Inspection" list dated 24 February 2001;
- The Notice to Rectify; and
- The correspondence with the territorial authority.

3.3 In a covering letter to the Authority dated 18 November 2004, the territorial authority described the Particulars of Contravention and specific construction defects

3.4 The territorial authority also forwarded copies of:

- The plans;
- Some of the consent documentation;
- The Interim Notice to Rectify;
- The Notice to Rectify; and
- The correspondence with the owner.

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

3.6 In a letter to the Department dated 3 May 2005, the territorial authority commented on aspects of the Draft Determination. In particular, the territorial authority is concerned that paragraphs 5.1 and 8.2 indicate a scope of work required to make the house code compliant. The territorial authority claims that this is not part of the determination.

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 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 15 March 2005, and furnished a report that was completed on 18 March 2005. The expert was of the opinion that the cladding had been installed "unsatisfactorily", and noted that it had numerous defects. The cladding had not been painted since it was originally installed. The expert removed a small section of the textured finish at two windows, at a horizontal control joint and at a balcony balustrade. The expert's report made the following specific comments on the cladding.

- There is an absence of the vertical control joints that are described in the manufacturer's recommendations;
- A horizontal control joint has not been installed to the cladding on the south elevation;
- There is cracking at the sheet joints and the backing sheets have been joined at the window edges contrary to the manufacturer's recommendations;
- There are locations where there is either no clearance or insufficient clearance between the base of the cladding and the ground, paving, or balcony decks;
- The required 6mm gap and Inseal strips between the base of the cladding and the foundation wall have not been provided;
- With regard to the external windows and doors:
    - The ends of the head flashings finish flush with the frames, and the paint coating is finished hard down onto these flashings and also finishes into the sides and sills of the frames,
    - There are no Inseal strips or sealant to the jambs,
    - There are no sill flashings installed,
    - There is no head flashing installed over the garage door opening, and
    - There are no head flashings installed to the small decorative windows installed on the south elevation;
- The tops of the balcony balustrades lack cross-falls and are penetrated by the metal handrail stanchions;
- The cladding to the canopy roof is touching the decorative stones;
- Some penetrations through the cladding lack rubber flanges or flashings and are inadequately sealed; and
- The outlets to the balcony decks are inadequate.

5.2 The expert carried out a series of non-invasive moisture tests at the interior and exterior of the external walls. Further invasive readings were made at the exterior of the external walls and high adjusted readings of 19%, 28% and 32%(x2) were recorded. Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure. In addition, the expert noted

that this inspection was made after a prolonged period of dry weather. The expert also identified an area of fungal decayed plywood at the eastern balcony balustrade.

5.3 The expert also noted that the concrete tile roof coverings as installed differed from the fibreglass shingles shown on the consented plans. This raised the question of additional loadings on the structural elements of the house.

5.4 Copies of the expert's report were provided to each of the parties. In a letter to the Department dated 29 March 2005, the territorial authority accepted the content of the report.

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 these characteristics I find that the house:

- Has 450mm wide eaves projections that provide some protection to the lower cladding;
- Is built in a medium wind zone;
- Is two storeys high;
- Is fairly simple on plan, with roofs having hip, valley, and wall to roof junctions;
- Has two balconies, one of which is partially constructed over the garage;
- Has external windows and door without jamb or sill flashings; and
- Has external wall framing that may not be able to resist the onset of decay if it absorbs and retains moisture.

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 levels of moisture penetration already evident in many locations in the external walls of the house. The main areas of concern are the lack of control joints and adequate flashings to the external windows and doors, the cracking at cladding joints, the inadequate finish and clearances at the base of the cladding, concerns with the balustrade cappings, the inadequate balcony outlets, the inadequate penetration sealing, and the quality of the paintwork. In addition, the external wall framing timber is in all likelihood not treated, and thus unable to delay the onset of decay if it gets wet.

6.4 While the issue is outside the ambit of this determination, I view with concern that the roof cladding has been changed to a heavier material than that shown on the consent plans. I urge the territorial authority to look into this matter to ensure that the structural integrity of the building has not been compromised. I note also that the territorial authority has not referred to this change, nor to my knowledge has the original consent been amended.

6.5 I note that two elevations of the house demonstrate a moderate weathertightness risk rating, and the remaining two elevations a high 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 performance of the monolithic cladding is inadequate because it has not been installed according to good trade practice. In particular, it demonstrates the key defects listed in paragraph 5.1. I have also identified the presence of some known weathertightness risk factors in this design. 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 full drainage cavity. 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. The cladding faults in the house are allowing the ingress of moisture into the cladding itself. Accordingly, as there is not, in my

opinion, an efficient cavity behind the cladding, I find the house does not comply with the durability requirements of clause B2.

7.3 I find that because of the apparent complexity of the faults that have been identified with this cladding, I am unable to conclude, with the information available to me, that remediation of the identified faults, as opposed to partial or full recladding, could result in compliance with clauses B2 and E2. I consider that any final decisions on whether code compliance can be achieved by either remediation or recladding, 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 expert as to the correct remedial option to be followed. Once that decision has been made, it 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 that will rule on whether the proposed remedial work will comply with the requirements of 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. The fact that the cladding has not been repainted over its 9-year life is a matter for concern.

7.5 In the circumstances, I decline to incorporate any waiver or modification of the building code in its determination.

7.6 In response to the territorial authority's letter to the Department of 3 May 2005, I consider that I am entitled to determine whether proposed building work complies with the code, and in fact I have done so in this case. However, the question of whether the work has been properly completed and is code compliant requires careful inspection. In this regard, I do not believe in this case that the territorial authority's inspections meet this standard. I note that none of the items requiring attention on the territorial authority's "Final Inspection" document dated 24 February 2001 related to the cladding.

7.7 The Notice to Rectify issued on 30 August 2004 listed Particulars of Contravention that included:

- Floor clearances
- Ground clearances
- Control joints
- Flashings and seals
- Drip edges

- Penetrations
- Directly attached members

7.8 I am disturbed to note that these obvious building defects were not discovered during the February 2001 final inspection. They are also issues that are unrelated to the question of a cavity that the territorial authority has raised. It can also be seen that the expert's report provides the comprehensive description of the building's outstanding shortcomings that should have been detected before or at the final inspection process of February 2001and incorporated in the Notice to Rectify at that time.

8 THE DECISION

8.1 In accordance with section 20 of the Act, 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 decision of the territorial authority to refuse to issue a code compliance certificate.

8.2 I note that the territorial authority has issued a Notice to Rectify requiring provision for adequate ventilation, drainage and vapour dissipation. 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 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 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.

8.3 Finally, I consider that continuing maintenance of the cladding will be required to ensure its continuing building 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