

Determination 2005/87

Refusal of a code compliance certificate for a building with a “monolithic” cladding system: House 77

1 THE DISPUTE TO BE DETERMINED

- 1.1 This is a determination by 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 joint owners of each of 3 separate townhouses (referred to throughout this determination as “the owners”) 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 3 three-year old townhouses (“the Units”) unless changes are made to their monolithic cladding system.
- 1.2 My task in this determination is to consider whether I am satisfied on reasonable grounds that the external monolithic wall cladding as installed (“the cladding”) to some of the walls of the three Units (described in this determination as Units A, B and C) complies with the building code (see sections 18 and 20 of the Act). By “external 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 No other aspects of the Act or the building code have been considered in this determination.

2 PROCEDURE

The buildings

- 2.1 Each of the buildings is a three-storey townhouse situated on a level site in a high wind zone in terms of NZS 3604: 1999 “Timber framed buildings”. The Units are of conventional light timber frame construction on a concrete slabs and blockwork foundation walls. The timber-framed external walls of the buildings are lined with either monolithic cladding or faced with a brick veneer that is constructed at both floor levels. The Units are of a relatively simple shape, with the pitched roofs set at varying levels with barrel vaulted sections, and hip, valley and wall to roof junctions. Two narrow “Juliet” balconies are installed at the first-floor level of each Unit, and there are projecting windows at varying levels. Unit C has one balcony constructed at the first-floor level over a habitable space. There are a variety of eaves and verge finishes, some of which have no projections and others that have varying width projections.
- 2.2 I have not received any information as to the treatment, if any, of the timber used in the construction of the exterior walls.
- 2.3 The monolithic cladding system incorporates 7.5 fibre-cement backing sheets fixed through the building wrap directly to the wall framing, and is, according to the expert appointed by the Department, finished with a high build, pigmented acrylic coating system. The cladding system has been subject to an independent appraisal.

Sequence of events

- 2.4 The territorial authority issued a building consent on 25 July 2001.
- 2.5 The territorial authority carried out various inspections during the construction of the Units and passed postline inspections on 25 June 2002, 13 September 2002, and 20 September 2002. The territorial authority passed the exterior of the Units in an interim final inspection on 14 January 2003.
- 2.6 Following a further inspection on 23 December 2003, the territorial authority wrote to the owner noting that the building had monolithic cladding without a ventilated

cavity, and that the territorial authority was reviewing the consent and would be undertaking another inspection.

2.7 The territorial authority carried out further site cladding inspections on 3 May 2004, and in two letters to the owners, both dated 19 May 2004, it regretted that the buildings might not comply with the building code in a number of respects. The territorial authority attached two Notices to Rectify also dated 19 May 2004 to this letter, together with a set of photographs illustrating items of non-compliance. One Notice related to Units A and B and the other Notice related to Unit C. The “Particulars of Contravention” attached to both of the Notices to Rectify listed requirements under the following headings:

- Items not installed per the manufacturer's specifications;
- Items not installed per the acceptable solutions of the building code, (no alternative solutions had been applied for); and
- Items not installed per accepted trade practice.

The Notice to Rectify for Unit C also had the additional requirement:

- A ventilated cavity system.

The owners were also required, amongst other items, to:

Provide adequate ventilation to the monolithic cladding and into the wall frame space by means of either a ventilated cavity or alternative approved system, and ensuring all issues related to the above are resolved.

I note that the territorial authority, according to the record of its final inspection of 14 January 2003, passed several of the items listed as now requiring attention on the Notices to Rectify.

2.8 The owners applied for a determination on 28 August 2004.

3 THE SUBMISSIONS

3.1 In a letter to the Authority dated 6 September 2004, the owners set out the sequence of events leading up to the request for a determination, including the territorial authority’s inspection process.

3.2 The owners also forwarded copies of:

- The plans;
- Some consent documentation;
- The territorial authority’s inspection records;
- The Notice to Rectify; and

- The correspondence with the territorial authority.
- 3.3 In a covering letter to the Authority dated 28 October 2004, the territorial authority noted the Particulars of Contravention and Specific construction defects.
- 3.4 The territorial authority also forwarded copies of:
- The plans;
 - The building consent documentation;
 - The territorial authority's inspection records;
 - The Notice to Rectify;
 - The correspondence with the owners; and
 - Some technical information.
- 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 12 May 2005, the territorial authority commented on aspects of the Draft Determination. In particular, the territorial authority is concerned that paragraphs 5.1, 5.2, 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; 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 buildings on 22 February 2005, and furnished a report that was completed on 11 March 2005. The expert cut away the cladding adjacent to window jambs to examine the finish between the cladding and the external windows and doors. A section of cladding was also removed to check on the construction of the horizontal inter-storey control joints. The expert found such joints to be correctly installed. The expert's report made the following specific comments on the cladding:

All Units

- The vertical control joints recommended by the manufacturer are not installed;
- The required ground clearances to the base of the cladding are not achieved at some locations;
- The required clearances between the base of the cladding and the roofing below the cladding is not achieved;
- There are excessively large gaps between the base of the cladding and the foundation walls in some locations;
- There is defective sealing of the vertical junctions between the cladding and the brick veneer;
- The ends of the eaves fascias and apron flashings at some locations are inadequately sealed;
- No flashings have been installed to the jambs or sills of the external windows and doors, and the applied sealant to these locations is inadequate;
- No flashings have been installed to the sills of the patio or balcony doors;
- The bolted connections securing the balcony ribbon plates and the balcony handrails through the cladding lack appropriate seals or sealants; and
- Some penetrations through the cladding, including pipes, vents, meter boxes, and electrical fittings are inadequately sealed.

Unit A

- The junction between the base of the eaves soffit above the living room and the cladding is not correctly flashed or sealed;
- The ends of the gable verge flashings are inadequately finished at some locations; and
- Diverter flashings are not installed to the end of the apron flashing at the western end of the roof.

Unit B

- The junction between the base of the eaves soffit above the front entrance doorway and the cladding is not correctly flashed or sealed and there is exposed timber showing at this location;
- The flashings to the barrel vaulted or arched sections of the roof are inadequate;
- The Juliet balcony on the south elevation is partially detached from the wall; and
- Some downpipes discharging onto the lower roofs lack adequate spreaders.

Unit C

- There is cracking of the plaster adjacent to the garage door;
- The junction between the base of the eaves soffit above the front entrance doorway and the cladding is not correctly flashed or sealed and there is exposed timber showing at this location;
- The fascia and eaves soffit above the first-floor balcony are not flashed correctly;
- The tops of the balcony balustrade walls lack cappings and cross-falls;
- There is no provision for drainage from the bottom track/ sill of the balcony French doors;
- There are inadequate drainage and overflow provisions from the balcony decks;
- The capping over the northern parapet wall is poorly jointed, has a minimal capillary gap, and is fixed directly through the top surface.

5.2 The expert also commented on some issues relating to the brick veneer as follows:

Unit A

- The vertical junction between the brick veneer and the cladding is not in accordance with the manufacturer's recommendations;
- There is no flashing at the junction of the asphalt tile roof above the dining room and the exterior brickwork.

Unit B

- There is exposed timber framing at the junction of the brick veneer and the roof above the dining room.

Unit C

- There is an exposed opening in the brick veneer where an extract vent cover has been removed.

- 5.3 The expert took moisture readings though both the interior and the exterior of the monolithic-clad external walls throughout each Unit using a non-invasive meter. The interior readings did not exceed 12.5%, and apart from one location adjacent to the Unit B meter box, no exterior readings were at an abnormal level. The expert then carried out one further invasive test through the exterior cladding adjacent to the Unit B meter box and obtained a reading of 25.4%. Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure.
- 5.4 Copies of the expert's report were provided to each of the parties and the owner did not make a response. In a letter to the Department dated 29 March 2005, the territorial authority accepted that the report supported the territorial authority's decision not to issue a code compliance certificate.

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 each Unit:
- Has locations without eaves and verge projections to provide protection to the cladding areas below them. Where there are such projections, they afford minimal additional protection;
 - Is in a high wind zone;
 - Is a maximum of three storeys high;
 - Is of a relatively simple shape on plan, with roofs that have hip, valley and wall to roof junctions;
 - Has two "Juliet" balconies;

- 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.

In relation to Unit C, there is also a balcony constructed over a habitable space.

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.
- 6.4 In addition I also find that the issues relating to the brick veneer and as listed in paragraph 5.2 should also be rectified.
- 6.5 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 Units have lower level roof spaces that assist in the ventilation of the external wall cavities above them; and
 - The moisture ingress appears to be entirely related to an inadequately sealed meter box in one Unit.
- 6.6 I consider that these factors help compensate for the lack of a drainage and ventilation cavity, and can allow each Unit to comply with the weathertightness and durability provisions of the building code, providing that corrective measures are undertaken.
- 6.7 I note that all elevations of all 3 Units 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 am satisfied that the current performance of the cladding is not adequate because it is allowing water penetration into the wall framing of Unit B at one location. Consequently, I am not satisfied that the cladding system as installed on Unit B complies with clause E2 of the building code.
- 7.2 In addition, all the Units are 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 Units to remain weathertight. Because the cladding faults on all the Units will allow the ingress of moisture in the future, none of the Units 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 paragraphs 5.1 and 5.2 is likely to result in all the Units 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 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.
- 7.7 In response to the territorial authority's letter to the Department of 12 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. I do not believe in this case that the territorial authority's inspections meet this standard. I note that the territorial authority's inspection described in a "Final Checklist" dated 8 August 2003 passed the following items in respect of the exterior of the building:
- Floor clearance from ground level
 - Cladding clearance from ground level
 - Secondary flow path

- Cladding Painted
- Window scribes (Noted as N/A [Not Applicable in checklist])
- Flashings
- Control joints

7.8 In addition, the item that required attention after this final inspection did not relate to the exterior cladding.

7.9 The Notices to Rectify issued on 19 May 2004 listed Particulars of Contravention that included:

- Floor clearances
- Ground clearances
- Flashings
- Control joints

7.10 I am disturbed to note that these obvious building defects were not discovered during the August 2003 final inspection. They are also issues that are unrelated to the question of a cavity that the territorial authority has raised. It can 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 and incorporated in the Notice to Rectify.

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 Unit B does not comply with clause E2 of the building code. There are also a number of items to be remedied to ensure that all the Units remain weathertight and thus meet the durability requirement of the code. Consequently, I find that none of the Units 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 and 5.2 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 all the Units 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 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 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 and 5.2 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 15 June 2005.

John Gardiner
Determinations Manager