Determination 2006/07

Refusal of a code compliance certificate for three separate buildings with "monolithic" cladding systems at 13 Seaview Terrace, Mount Albert, Auckland

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 Mr and Mrs Forbes, the joint owners of 3 separate townhouses ("the owner") and the other party is the Auckland City Council ("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 systems.

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 the walls and columns of the Units (described in this determination as Units 13, 13A and 13B respectively) 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"

1.4 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.

1.5 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.

1.6 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 Units is a two-storey house situated on a level site in what is assumed to be a medium 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 sheathed with a monolithic cladding. The Units are of a relatively simple shape, but with some complex features, and the pitched roofs are set at varying levels with hip, valley and wall to roof junctions. Unit 13 has 3 first floor balconies constructed partially over habitable spaces and a cantilevered "Juliet" balcony. Unit 13A has one first floor balcony constructed over a habitable space. The balcony balustrades are generally timber-framed, with the balance being coated steel. The eaves generally have 300mm wide projections. Unit 13 has some projecting upper floors and balconies over the lower floors and Unit 13A has a projecting upper floor to one location. The projections are generally supported on monolithic clad timber-framed columns.

2.2 I have not received any written 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 Harditex backing sheets fixed through the building wrap directly to the wall framing, and is, according to the information supplied by the owner, finished with a "Fosroc" medium profile acrylic coating system.

Sequence of events

2.4 The territorial authority issued a building consent for Unit 13 in early 1998, and for Units 13A and 13B in late 1998.

2.5 The territorial authority carried out various inspections during the construction of the Units. The territorial authority passed the preline building inspection for Unit 13 on 3 August 1998, for Unit 13A on 4 February 1999, and for Unit 13B on 10 February 1999. The postline inspection for Unit 13 was passed on 25 August 1998. A final

inspection was carried out on all 3 Units on 19 November 2003 and none were passed. The "Final Check List" for each Unit carried the notation: "Require a moisture of timber for the Harditex".

2.6 The territorial authority carried out further site cladding inspections on all 3 Units on 8 June 2004, and in three letters to the owners, all dated 23 June 2004, it regretted that the buildings might not comply with the Building Code in a number of respects. The territorial authority attached three Notices to Rectify also dated 23 June 2004 to this letter, together with a set of photographs illustrating items of non-compliance. The "Particulars of Contravention" attached to all 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; and

4. Ventilated cavity system.

2.7 The Particulars of Contravention said that 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…

2.8 The labour-only builder for all 3 Units wrote to the owner on 5 July 2004. The builder described to processes involved in installing the cladding and responded to the items raised by the territorial authority in the Notice to Rectify. The builder also noted that a check with the territorial authority had revealed that the various inspections undertaken by the territorial authority had been recorded against each building consent as completed.

2.9 The owners applied for a determination for all 3 Units on 10 August 2004.

3 The submissions

3.1 The owners forwarded copies of:

- The plans
- Some consent documentation and territorial authority inspection records
- The Notices to Rectify
- The correspondence with the territorial authority
- Some of the coating system manufacturer's technical data

- A set of photographs.

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

3.3 In a letter to the Department dated 21 July 2005, the territorial authority commented on aspects of the draft determination. In particular, the territorial authority is concerned that paragraphs 6.3 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 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; 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 24 March 2005 and 6 April 2005, and furnished a report that was completed in April 2005. The expert was able to confirm that the flashings to the heads of the external windows and doors were correctly installed and noted that while no sill or jamb flashings had been installed, this was not a manufacturer's recommendation at the time of installation. The expert was unable to discern whether sealant and Inseal strips had been installed to the jambs of the units, as the jambs were covered by texture coated bands. The expert's report made the following specific comments on the cladding:

Unit 13

- The standard of the textured coating finish is generally satisfactory, and there is no evidence of cracking in the cladding;
- The vertical control joints as required by the manufacturer's recommendations were not apparent on the east wall, or on the garage end and side walls;
- The cladding abuts the paved areas at some locations, including the first floor balcony, where the gap between the cladding and the tiles has been infilled with a cement/sand grout;
- The clearance below the base of the cladding to the finished ground is less than the required separation at some locations;
- The timber capping to the master bedroom balcony balustrade does not adequately protect the balustrade;
- The timber balcony kerb upstands lack cap flashings;
- The cladding is broken away from the apron flashing above bedroom 2, leaving a gap that exposes the PVC edging strip;
- The ends of the apron flashings are inadequately finished at some locations, and there are some gaps where the flashings adjoin the cladding;
- The end of the cap flashing to the north deck canopy roof is inadequately finished;
- The cap flashing to the upper level roof falls back towards the roof tiling, water is ponding at this location, and the sealant joint is delaminating; and
- There is a lack of sealant where the bathroom extract grille penetrates the cladding.

Unit 13A

- The standard of the textured coating finish is generally satisfactory, but there is one crack in the cladding;
- The vertical control joints as required by the manufacturer's recommendations were not apparent on the garage end and side walls;
- The cladding abuts the paved areas at some locations;
- The clearance below the base of the cladding to the finished ground is less than the required separation at some locations;
- The sealant at the rear of the polystyrene band at the sill of the north facing kitchen window has failed;

- The timber capping to the bedroom 1 balcony balustrade does not adequately protect the balustrade;
- The flashing between the end of the rear garage apron flashing and the barge tile is inadequately sealed;
- The butyl-rubber underflashing to the capping of the parapet over the main entrance is defective, and where the capping is cut around a column, the applied sealant may not be effective;
- The ends of the apron flashings are inadequately finished at some locations and there are some gaps where the flashings adjoin the cladding;
- Some penetrations through the cladding are inadequately sealed; and
- The balcony has only one outlet and no overflow provisions.

Unit 13B

- The standard of the textured coating finish is generally satisfactory and there is no evidence of cracking in the cladding;
- The vertical control joints as required by the manufacturer's recommendations were not apparent on the garage end and side walls;
- The cladding abuts the paved areas at some locations;
- The clearance below the base of the cladding to the finished ground is less than the required separation at some locations;
- The gap between the base of the cladding and the foundation wall is partially obstructed by the texture coating at some locations;
- There is no turn up to the metal capping of the canopy roof where it enters the cladding or behind the barge flashing. There is also a distorted cut tile where the capping is taken into the roofing, and a fixing is missing from the tile;
- The junction between the garage roof guttering and the fascia and the cladding is inadequately sealed;
- The secondary end flashing to the apron flashing at the south end of the ground floor roof is inadequate; and
- Some penetrations through the cladding are inadequately sealed.

5.2 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. No elevated readings were obtained. The expert then carried out further invasive testing through the exterior cladding and the following higher readings were obtained:

Unit 13

- Readings of 21%, 28% (at 2 locations), and 29% at the studio balcony;
- Readings of 22% (at 3 locations, and 23% (at 2 locations) at the dining room balcony; and
- Readings of 54% and 99% at the bedroom 1 balcony.

Unit 13A

- A reading of 19% at the base of the south elevation wall;
- A reading of 22% below an east elevation window;
- A reading of 23% below a north elevation window; and
- A reading of 29% at the balcony balustrade.

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. In a letter to the Department dated 5 May 2005, the territorial authority acknowledged receipt 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 the weathertightness characteristics, I find that:

Each Unit:

- Has 300mm wide eaves projections that provide minimal protection to the cladding areas below them;
- Is in what is assumed to be a medium wind zone;

- Is 2 storeys high;
- Is of a relatively simple shape on plan, with some complex features, and roofs that have hip, valley and wall to roof junctions;
- 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.

Unit 13 has:

- Projecting upper floors or balconies that provide additional excellent protection to the cladding under them;
- Three first floor balconies constructed partially over habitable spaces; and
- A small cantilevered Juliet balcony.

Unit 13A has:

- Projecting upper floors that provide additional excellent protection to the cladding under them; and
- A first floor 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:

Unit 13

- The absence of vertical control joints on the east wall, and on the garage end and side walls;
- The cladding abutting the paved areas at some locations, including the first floor balcony;
- The inadequate clearance below the base of the cladding to the finished ground at some locations;
- The inadequate timber capping to the master bedroom balcony balustrade;
- The lack of cap flashings to the timber balcony kerb upstands;
- The broken away cladding from the apron flashing above bedroom 2;
- The inadequately finished ends of the apron flashings at some locations, and the gaps where the flashings adjoin the cladding;

- The inadequately finished end of the cap flashing to the north deck canopy roof;
- The cap flashing to the upper level roof falling back towards the roof tiling, together with the delaminating sealant joint; and
- The lack of sealant or flashing where the bathroom extract grille penetrates the cladding.

Unit 13A

- The crack in the cladding;
- The absence of vertical control joints on the garage end and side walls;
- The cladding abutting the paved areas at some locations;
- The inadequate clearance below the base of the cladding to the finished ground at some locations;
- The failed sealant at the rear of the polystyrene band at the sill of the north facing kitchen window;
- The inadequate timber capping to the bedroom 1 balcony balustrade;
- The inadequately sealed flashing between the end of the rear garage apron flashing and the barge tile;
- The defective butyl-rubber underflashing to the capping of the parapet over the main entrance;
- The inadequately finished ends of the apron flashings at some locations and the gaps where the flashings adjoin the cladding;
- The inadequately sealed penetrations through the cladding; and
- The balcony outlet and lack of overflow provisions.

Unit 13B

- The absence of vertical control joints on the garage end and side walls;
- The cladding abutting the paved areas at some locations;
- The inadequate clearance below the base of the cladding to the finished ground at some locations;
- The obstructed gap between the base of the cladding and the foundation walls at some locations;
- There lack of a turn up to the metal capping of the canopy roof, the distorted cut tile, and the missing tile fixing;

- The inadequately sealed junction between the garage roof guttering and the fascia and the cladding;
- The inadequate secondary end flashing to the apron flashing at the south end of the ground floor roof; and
- The inadequately sealed penetrations through the cladding.

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 300mm wide eaves in conjunction with the additional floor and balcony projections to Units 13 and 13A provide some protection to the cladding; and
- The Units have 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 each Unit to comply with the weathertightness and durability provisions of the Building Code, providing that corrective measures are undertaken.

6.6 I note that the Units demonstrate the following weathertightness risk ratings 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:

- Unit 13 demonstrates a high risk for all elevations;
- Unit 13A demonstrates a moderate risk for all elevations; and
- Unit 13B demonstrates a low risk for one elevation and a moderate risk for the remaining elevations.

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 Units 13 and 13A at several locations. Consequently, I am not satisfied that the cladding system as installed on Units 13 and 13A 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 the Units are allowing, or will allow in the future, the ingress of moisture, 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 paragraph 6.3 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 Building 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.

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 Units 13 and 13A 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 Building 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 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 all the Units being weathertight and in compliance with clauses B2 and E2, notwithstanding the lack of a ventilated cavity.

8.3 In response to the territorial authority’s letter to the Department of 21 July 2005, I consider that I am entitled to determine whether proposed building work complies with the Building 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 by the territorial authority. I note that the territorial authority's inspections described in the "Final Checklists" dated 19 November 2003 did not list any specific issues relating to the cladding, apart from the question of moisture in the timber.

8.4 In contrast, the Notice to Rectify issued on 23 June 2004 listed Particulars of Contravention that covered various specific cladding issues.

8.5 I note that these obvious building defects were not referred to during the November 2003 final inspections. 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 Notices to Rectify.

8.6 I note that the territorial authority has issued Notices to Rectify requiring provision for adequate ventilation, drainage and vapour dissipation. Under the Act, a notice to fix can require the owner to bring the house into compliance with the Building Code. The Authority has previously found (in Determination 2000/1) that the Notice to Rectify cannot specify how that compliance can be achieved. I concur with that view. New notices 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 as described in paragraph 6.3 are to be remedied.

8.7 I would suggest that the parties adopt the following process to meet the requirements of paragraph 8.3. Initially, the territorial authority should issue the notices 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.

8.8 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 10 February 2006.

John Gardiner
Determinations Manager