Determination 2005/106

Refusal of a code compliance certificate for a building with a "monolithic" cladding system at 5 Garadice Road, Rothesay Bay, Auckland – House 93

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 Peter St. Johanser, the owner (referred to throughout this determination as the "owner"), and the other party is the North Shore City 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 6-year-old house and additions to a second relocated house 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 cladding as installed ("the cladding"), which is applied to the external walls of the house and the addition, complies with the building code (see sections 18 and 20 of the Act). By "external 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 two separate houses on a site that is likely to be in a medium-wind zone in terms of NZS 3604: 1999 "Timber framed buildings". The front house ("the front unit") is 3 storeys high and is of a relatively simple shape on plan, but with some complex features. The exterior walls are of conventional light-timber frame construction sheathed with monolithic cladding. The roofs, which are constructed at various levels, have numerous hip, valley, and wall-to-roof junctions. Apart from the deck overhangs and main entry recess soffit, there are minimal or no projections, such as eaves and verges, to protect the cladding. A large timber-framed deck is situated at two elevations of each of the upper floor levels, and these decks are partly cantilevered as well as partly constructed over habitable spaces. The decks have monolithic-clad-timber-framed balustrades with tubular metal handrails fixed over them.

2.2 The rear house ("the rear unit") has been relocated to its present position, and a large open deck with a garage and entry area beneath it ("the addition") has been added to the front elevation of the house. I note that this determination is concerned only with the deck and garage in respect of this unit. The exterior walls of the addition are of conventional-light-timber-frame construction sheathed with monolithic cladding. The deck forms the roof over the garage and has a balustrade similar to that described for the front unit. Apart from the small soffit to the entry area, there are no projections such as eaves or verges that could provide protection to the cladding.

2.3 The timber supplier issued an invoice dated 23 December 1998, which indicates that the external wall framing timber is Boric treated. A sample obtained by the expert commissioned by the Department ("the expert") has established that the timber to the front unit balustrades is likely to be H3 treated. However, an inspection of the

framing used in the construction of the rear unit's deck indicated that it is likely not to be treated.

2.4 The cladding system to the front unit is what is described as monolithic cladding and is a 40mm thick "Insulclad" system fixed directly to the framing over the building wrap and finished with a medium spray-textured finish. The cladding to the rear unit is "Harditex" and this is also direct-fixed and finished with a medium spray-textured finish. I note that, as described by the territorial authority, the cladding to the front unit was noted as being "Harditex" on the consented plans.

2.5 Plaster Systems Ltd provided a Producer Statement dated 12 March 2005, which covered the cladding system for the front unit, together with two related "Insulclad" guarantees, both of which were dated 8 March 2005. One of the latter was a 15-year "Materials Components Guarantee", and the other was a 5-year "Workmanship Guarantee".

Sequence of events

2.6 The territorial authority issued a building consent on 12 January 1999. The conditions attached to the consent stated that notice was required for certain inspections that would include the cladding.

2.7 The territorial authority carried out various inspections during the course of construction, and passed pre-line inspections on 28 May 1999 and 17 June 1999 and the post-line inspections on 9 and 22 June 1999. The final building inspections, carried out on 19 November 1999 and 25 November 2004, revealed items that were not complete.

2.8 The territorial authority carried out a specific weathertightness visual inspection on 6 December 2004. In a letter to the owner dated 8 December 2004, the territorial authority stated that the building code required the durability of the cladding to be 15 years and that of the timber framing to be 50 years. The territorial authority then listed certain weathertightness risk factors identified with the building, together with a list of defects. The territorial authority stated that, due to the risk factors and defects, it could not be satisfied on reasonable grounds that the cladding system was code compliant.

2.9 The territorial authority did not issue a Notice to Rectify as required under section 43(6) of the Act.

2.10 The owner applied for a determination on 28 January 2005.

3 THE SUBMISSIONS

3.1 The territorial authority made a submission in the form of a letter to the Department dated 7 April 2005 that summarised the consent and inspection processes relating to the house. The territorial authority also noted that, due to the type of monolithic cladding applied to the house, together with its attendant risk factors, the territorial

authority was unable on reasonable grounds to accept the compliance of the cladding. The territorial authority also noted that the cladding as installed differed from that approved on the consent documentation. The territorial authority stated that the matter of doubt was:

- Whether the installed cladding system complies with clauses B2.3.1 and E2.3.2 of the Building Code.

3.2 The territorial authority supplied copies of:

- The consent and inspection documentation; and
- The correspondence with the owner.

3.3 The owner wrote to the Department on 19 March 2005, describing the builder and the cladding installed on the house and noting that the outside framing timber is treated. The owner stated that a dispute had arisen with the builder. However, an independent report had noted that "overall the standard of work is not poor". A "Master Build" 5-year guarantee had been issued for that house, but no claims had been made against this or against the membrane supplier's warranty. The owner also listed the reasons why the building process had been delayed and attached a timeline describing the construction process.

3.4 The owner supplied copies of:

- The plans;
- The correspondence with the territorial authority;
- A letter from Master Build Services, dated 29 July 1999 relating to their guarantee;
- A copy of the undated independent report, which dealt mainly with the contractual issues arising from the building contract;
- A letter from Topline Ltd dated 8 March 2005 in regard to the membrane installation and warranty;
- The cladding manufacturer's recommendations;
- The timber supplier's invoices; and
- The producer statements and guarantees.

3.5 The copies of the submissions and other evidence were provided to each of the parties. Neither the owner nor the territorial authority made any further submissions in response to the submissions of the other party.

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 remain valid in this case in my view, about acceptable solutions and alternative solutions.

- Some acceptable solutions cover the worst case, so that they may be modified in less extreme cases 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 expert inspected the buildings on 25 May 2005 and again on 13 June 2005 and furnished a report that was completed on 29 June 2005. It recorded the expert's opinion that the coating had been applied satisfactorily to both units. The expert also noted that the owner was in the process of painting the front unit. The expert removed the plaster coating at one front unit deck balustrade to reveal the details of the cladding. The external doors and windows of the front unit were fully flashed but did not have sill trays installed. The expert also made the following comments regarding the cladding:

Front unit

- There is no 6-mm gap formed at the junction between the base of the cladding and the foundation walls at some locations;

- There is insufficient ground clearance at the base of the cladding at some locations;

- The cladding is unsealed behind the roof fascias;

- The external doors and windows lack sill trays;

- The top of the deck balustrade has no cross fall and is capped with timber, and there are no saddle flashings installed at the wall junctions;
- The gutter penetrates the cladding at some locations;
- The grab rail fixings are penetrating the top of the deck balustrade;
- The back entrance steps are finished hard against the cladding at some points; and
- The vent penetrating the west elevation cladding is not hooded.

Rear unit

- There is no 6-mm gap formed at the junction between the base of the cladding and the foundation walls;
- There is no vertical expansion joint installed to the north elevation cladding;
- There is insufficient ground clearance at the base of the cladding at one location;
- The top of the deck balustrade has no cross fall;
- The grab rail fixings are penetrating the top of the deck balustrade;
- The falls on the deck floor do not meet the requirements of E2/AS1;
- There is insufficient freeboard between the deck floor and the internal floor surface;
- The French doors installed above that deck are allowing water into the building; and
- The coating is delaminating at the deck north outlet location.

5.2 The expert took non-invasive readings at the interior of the external walls of both units. A further four invasive readings were then taken at the front unit, and readings of 13%, 14% (at two locations) and 15% were recorded. Three similar readings were taken at the rear unit, and readings of 16%, 18%, and 20% were recorded. Moisture levels of over 18% recorded after cladding is in place generally indicate that external moisture is entering the structure. The expert also noted that the readings were taken after a period of 80 days during which very little rainfall had been recorded. The expert also noted that there was fungal growth damage evident on the plasterboard linings above the rear unit garage door, and there is also evidence of water staining and possible fungal growth on the underside of the deck above the garage area.

5.3 The expert noted that the liquid applied membrane on the front and rear unit deck floors was pouting at the joints of the deck plywood substrate. This was particularly evident on the rear unit deck. The expert was of the opinion that the membrane was

under stress and was in danger of breaking down, with consequential risk of water entry.

5.4 Copies of the expert's report were provided to each of the parties. The territorial authority did not respond, and the owner informed the Department in a letter dated 2 July 2005 that the report had been passed on to the owner's architect for comment.

5.5 The architect forwarded his comments to the Department on 12 July 2005. The architect took issue with the wind zone rating assessed by the expert, noting that the rating established by the territorial authority should take precedence. The architect commented that the solid timber balcony capping was shaped to fall both ways and is lapped over the linings. The metal handrail fixings do not pierce the capping. The cladding has been certified by the applicator that has also issued a producer statement. The windows were installed to the standard details supplied by the code and the owner will supply a producer statement and warranty in regard to these. The architect noted that remedial work would be undertaken in regard to:

Front unit

- The deck membrane;
- The cladding concrete junction; and
- The fascia gutters.

Rear unit

- The garage control joint;
- The ground clearances;
- The deck slope and adjacent French doors; and
- The top of the balustrade.

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 front unit

- Is in a medium-wind zone;
- Lacks high-level projections that could help to protect the cladding;
- Is three storeys high;
- Is of a fairly simple shape on plan, but with some complex elements, and with roofs having numerous hip, valley and roof-to-wall junctions;
- Has two high-level decks that are partly cantilevered as well as constructed over habitable spaces; and
- Has external wall and balustrade framing that is likely to be treated to a level that would help to prevent decay if it absorbs and retains moisture.

The rear unit

- Is in a high-wind zone;
- Lacks projections that could help to protect the cladding;
- Is of a simple shape on plan;
- Has a deck that forms the roof over the garage and entry areas; and
- Has external wall and balustrade framing that is not likely to be treated to a level that would help to 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 and to the manufacturer's instructions, but some junctions, edges, and penetrations are not well constructed. These areas are described in paragraph 5.1, and in the expert's report, as being:

Front unit

- The lack of a 6-mm gap at the junction between the base of the cladding and the foundation walls at some locations;
- The insufficient ground clearance at the base of the cladding at some locations;
- The unsealed cladding behind the roof fascias;

- The timber capping and the lack of a cross fall and saddle flashings to the top of the deck balustrade;
- The gutter penetrating the cladding at some locations;
- The grab rail fixings penetrating the top of the deck balustrade;
- The back entrance steps being finished hard against the cladding at some points; and
- The non-hooded vent penetrating the west elevation cladding.

Rear unit

- The lack of a 6-mm gap at the junction between the base of the cladding and the foundation walls;
- The lack of a vertical expansion joint to the north elevation cladding;
- The insufficient ground clearance at the base of the cladding at one location;
- The lack of a cross fall to the top of the deck balustrade;
- The grab rail fixings penetrating the top of the deck balustrade;
- The falls on the deck floor not meeting the requirements of E2/AS1;
- The insufficient freeboard between the deck floor and the internal floor surface;
- The French doors being installed above that deck so as to allow water into the building; and
- The delaminating coating at the deck north outlet location.

6.4 I also find that there are compensating factors that assist the performance of the cladding in this particular case:

- Apart from some design and workmanship faults, the cladding generally appears to have been installed according to good trade practice;
- The front unit has external wall and balustrade framing that is treated to a level that would help to prevent decay if it absorbs and retains moisture;
- The front unit has lower level roof spaces that give some limited ventilation facilities to the walls above them; and
- The rear unit addition is single-storey.

6.5 I consider that these factors help to compensate for the lack of a drainage and ventilation cavity and can assist the house to comply with the weathertightness and durability provisions of the building code.

6.6 The expert has pointed out that there is evidence that damage is occurring in the deck membranes and that the timber used to construct the rear unit deck members is likely to be untreated. Accordingly, I recommend that the territorial authority further investigate all three of the decks and satisfy itself as to the longer-term structural viability of these.

6.7 I note also the expert has pointed out that the external doors and windows to the front unit, while being fully flashed, lack sill trays. The cladding to this unit is now 6 years old and is not showing any evidence that moisture is entering the building. Accordingly, I accept that the windows as they are currently flashed are not likely to allow water ingress in the future.

6.8 I note that all elevations of the 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 on the rear unit is not adequate because it is allowing water penetration into the unit in at least one location, which could affect the cladding of the building. Consequently, I am not satisfied that the cladding system as installed on the unit complies with clause E2 of the building code. However, I determine that as the front unit is weathertight now, the cladding to this unit does comply with clause E2 at this time.

7.2 In addition, both 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 house to remain weathertight. Because the cladding faults on the units have already allowed the ingress of water, or will allow the ingress of moisture in the future, both units do 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, together with any work required to remedy any faults in the deck membranes, is likely to result in both units being weathertight and in compliance with clauses B2 and E2.

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, repainting, 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 the rear unit does not comply with clause E2 of the building code, whereas that applied to the front unit does comply. There are also a number of items to be remedied to ensure that both units remain weathertight and thus meet the durability requirement of the code. Consequently, I find that neither unit complies 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, together with any work required to remedy any faults in the deck membranes, 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 both units being weathertight and in compliance with clauses B2 and E2.

8.3 I note that the territorial authority has not issued a Notice to Rectify. The territorial authority should now issue a notice to fix, and the owner is then obliged to bring the house up to compliance with the building code. It is not for me to decide directly how the defects are to be remedied and the cladding brought to compliance with the building code. That is a matter for the owner to propose and for the territorial authority to accept or reject.

8.4 I would suggest that the parties adopt the following process to meet the requirements of clause 8.3. Initially, the territorial authority should issue the notice 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. As indicated earlier in this

determination, the Chief Executive might already have decided upon some of the issues that may be raised by the territorial authority in its notice to fix, including the territorial authority's requirement, if any, for a ventilated and drained cavity or equivalent.

8.5 Finally, I consider that the cladding will require ongoing maintenance to ensure its continuing code compliance.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 20 July 2005.

John Gardiner
Determinations Manager