Determination 2006/06

Refusal of a code compliance certificate for a house with a "monolithic" cladding system at 2/32 Hororata Road, Takapuna, North Shore City

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 the former owner, Mr Ian Jamieson ("the applicant"). The other parties are the new owner Mr Greg Davis, ("the owner"), and the North Shore City Council ("the territorial authority"). The application arises from the refusal by the territorial authority to issue a code compliance certificate for 8-year-old house unless changes are made to its monolithic cladding system.

1.2 The matters to be determined are:

1. Whether on reasonable grounds the monolithic wall cladding as installed to the timber-framed external walls and balcony balustrade 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.

2. Whether certain building elements, which have 5 and 15-year durability requirements, comply with clause B2 of the Building Code, considering the time that has elapsed since the elements were constructed.

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 In making my decision, I have not considered any other aspects of the Act or the Building Code.

2. Procedure

2.1 The building

2.1.1 The building is a two-storey house, with an attached single-storey garage, situated on an excavated sloping site that is in a high-wind zone in terms of NZS 3604: 1999 "Timber framed buildings". The house is of a relatively simple shape on plan, with the pitched roofs that are situated at various levels having hip, valley, and wall-to-roof junctions. The exterior walls are of conventional light-timber frame construction built on concrete bock retaining and foundation walls and are sheathed with monolithic cladding. There are generally 450mm wide eaves and verge projections to the roofs. The upper floor is cantilevered over the ground floor at some locations.

2.1.2 An open balcony is constructed at one first floor elevation over a habitable space and this has monolithic-clad-timber-framed intermediate columns infilled with metal balustrades. Close-boarded timber decks supported on timber posts and beams are situated adjacent to the northeast and southwest lower-level elevations. A set of tiled steps and an associated landing are constructed adjacent to the main entrance.

2.1.3 The specification calls for all concealed timber to be H1 treated. The owner has produced invoices showing that some of the framing timber used on the house is H1 treated. However, apart from an added freehand notation that the pre-nailed frame was H1 treated, the invoice does not show that the timber used for the external wall framing is treated.

2.1.4 The cladding system to the exterior walls is what is described as monolithic cladding and consists of 4.5mm "Hardibacker" fibre-cement backing sheets fixed directly to the framing over the building wrap, to which 20mm thick, galvanised mesh reinforced, solid plaster is applied. The plaster is finished with a "Hi Build Blocktex" coating system.

2.1.5 Reid Paints Ltd issued a "Warranty" dated 10 December 1997, which covered the "Hi Build Blocktex" coating for a period of 10 years.

2.2 Sequence of events

2.2.1 The territorial authority issued a building consent on 18 March 1997. The consent noted that the owner/builder had to ensure that the defined moisture content standards for timber framing were met.

2.2.2 The territorial authority carried out various inspections during the course of construction, and passed the pre-line and the pre-plaster inspections on 10 October 1997, and the post-line inspection on 29 October 1997. Following a final building inspection on 2 July 1999, the territorial authority listed some issues but none of these related to the cladding.

2.2.3 The territorial authority wrote to the owner on 25 June 2004, noting that as the house had a monolithic cladding and lacked a cavity, it would be assessed by the territorial authority's code compliance certificate resolution team.

2.2.4 The territorial authority carried out a specific weathertightness visual inspection on 25 June 2004. In a letter to the owner dated 26 July 2004, the territorial authority noted that, as the house had a monolithic cladding and lacked a cavity, the territorial authority was unable to verify that the house was code compliant. 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.

2.2.5 The owner commissioned a consultant company to inspect the house for the purpose of a "safe and sanitary" report. The company faxed the owner on 27 August 2004, noting that it had inspected the property but was unable to issue the report until certain listed items had been rectified. Once these items had been addressed, the company was of the opinion that a "safe and sanitary" report could be issued.

2.2.6 In a letter to the owner dated 6 September 2004, the balustrade installer described the method that was used to seal the balustrade fixings.

2.2.7 The timber supplier wrote to the owner on 16 September 2004, stating that it had engaged an expert to inspect and test the timber used to construct the pre-nailed walls. The expert confirmed that the timber was kiln dried machine stress graded Radiata Pine but made no comment as to that timber's treatment.

2.2.8 The owner carried out certain remedial work in response to some of the concerns raised by the territorial authority, including the insertion of a horizontal control joint.

2.2.9 The territorial authority did not issue a Notice to Rectify as required under section 43(6) of the Building Act 1991.

2.2.10 The Department received the owner's application for a determination on 10 March 2005.

3. The submissions

3.1 The territorial authority made a submission in the form of a letter to the Department dated 2 May 2005 that summarised the consent and inspection processes relating to the house. The territorial authority also noted that, in light of current knowledge, the verification process had become more complicated. In addition, due to the age of the building consent the durability of some of the material was in question. The territorial authority also listed the cladding defects that it had identified. The territorial authority stated that the matters of doubt were:

- Whether the installed cladding system complies with clauses B2.3.1 and E2.3.2 of the Building Code.
- Whether building elements, which have 5 and 15-year durability requirements, comply with clause B2 of the Building Code, considering the age of construction.

3.2 In a covering letter to the Department, the owner set out the timeline relating to the construction and to the inspection processes that had been undertaken by the territorial authority and its officers. The owner also described the remedial work that had been carried out on the cladding in response to the territorial authority's concerns.

3.3 The owner supplied copies of:

- the plans and specifications
- consent and inspection documentation
- correspondence with the territorial authority
- a fax from the company inspecting the house for a "safe and sanitary" report
- the coating manufacturer's quotation and warranty
- a tax invoice from Texturite Ltd dated 15 October 2004, for the cutting of a horizontal joint in the cladding
- a letter and invoices from the timber supplier describing some of the timber framing
- the backing sheet manufacturer's technical information.

3.4 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.

Issue 1 – The cladding

4. The relevant provisions of the Building Code

4.1 The dispute to be determined in regard to this issue 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 the cladding. The current Acceptable Solution, E2/AS1, allows for solid plaster systems with fibre cement backing sheets, but requires that they be fixed on battens to create a 20mm cavity between the sheet and the framing. The previous Acceptable Solution E2/AS1, which was in force when this consent was issued, allowed for mesh reinforced solid plaster to be applied to fibre cement backing sheets that were face fixed to the framing. The cladding is not currently certified 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 Department commissioned an expert ("the expert") to report on the cladding. The expert inspected the cladding of the building on 29 June 2005 and furnished a report that was completed on 13 July 2005.

5.2 The expert noted that generally the condition of the cladding appeared good, indicating an acceptable level of workmanship. The expert observed that appropriately spaced and positioned control joints had been installed and that the retrospectively installed horizontal control joint was well installed and adequately sealed. The expert removed the plaster coating at two locations to reveal a window jamb and the horizontal control joint. The expert also made the following comments regarding the cladding:

- Some hairline cracks are visible adjacent to the corners of some of the windows;

- At the left-hand side of the garage door and the entrance steps, the base of the cladding is too close to the adjoining paving or tiles;
- The window sill flashings terminate at the ends of the windows;
- There are no jamb flashings installed to the external joinery units as required by the relevant standard, and there is cracking between the window jamb and the reveal plaster at some locations;
- The gutters were installed prior to the application of the plaster;
- The ends of the gutters and the barge boards are embedded in the plaster at some locations;
- The lower-level decks are finished hard against the plaster, and the deck to the southwest elevation is constructed above the house ground floor level; and
- The tops of the intermediate balcony balustrade columns lack cross-falls.

5.3 The expert took non-invasive readings at the interior linings of the exterior walls and no raised moisture readings were obtained. A further 17 invasive readings were taken at various locations through the exterior plaster. Eleven moisture readings over 18 % were recorded, and these were 19%, 22% (at five locations), 24%, 28%, 29%, and 30% (at two locations). Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure.

5.4 The expert also suggested that the timber decking to the first floor balcony be made removable to allow debris to be removed and drainage facilities checked.

5.5 Copies of the expert's report were provided to each of the parties. In an email to the Department dated 5 August 2005, the territorial authority noted that it had no comments to make on the report.

6. Discussion

6.1 General

6.1.1 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 Building Industry 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 considered these comments in this determination.

6.2 Weathertightness risk

6.2.1 In relation to the weathertightness characteristics, I find that the house:

- Has generally 450mm eaves and verge projections and some upper-floor projections, which provide protection to the cladding areas below them;
- Is in a high wind zone;
- Is maximum two storeys high;
- Is of a fairly simple shape on plan with roofs having hip, valley and wall-to-roof junctions;
- Has one high-level open balcony that is constructed over a habitable space;
- Has a two lower-level decks;
- Has lower-level roof spaces that provide limited ventilation to the external walls 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.

6.3 Weathertightness performance

6.3.1 Generally, the cladding appears to have been installed according to good trade practice, but some junctions, edges, and penetrations are not well constructed. These areas are described in paragraph 5.2, and in the expert's report, as being:

- The hairline cracks adjacent to the corners of some of the windows;
- The base of the cladding being too close to the adjoining paving or tiles at the left-hand side of the garage door and the entrance steps;
- The window sill flashings terminating at the ends of the windows;
- The lack of jamb flashings to the external joinery units, and the cracking between the window jamb and the reveal plaster at some locations;
- The gutters being installed prior to the application of the plaster;
- The ends of the gutters and the barge boards being embedded in the plaster at some locations;
- The lower-level decks finishing hard against the plaster, and the deck to the southwest elevation being constructed above the house ground floor level; and
- The lack of cross-falls to the tops of the intermediate balcony balustrade columns.

6.3.2 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, as the cladding generally appears to have been installed according to good trade practice, this is a compensating factor assisting the performance of the cladding in this particular case. This factor also helps 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.

6.3.3 I note also the expert's comments regarding the fixed boarding over the high-level balcony deck and suggest that this matter be further considered by the parties.

6.3.4 I note that one elevation of the building demonstrates a low weathertightness risk rating and the remaining elevations a medium 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 monolithic cladding on the building is not adequate because it is allowing water penetration into the building at several locations, which could affect the cladding. Consequently, I am not satisfied that the cladding system as installed on the building complies with clause E2 of the Building Code.

7.2 In addition, the building also is 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 building to remain weathertight. Because the monolithic cladding faults on the building have already allowed the ingress of water, or will allow the ingress of moisture in the future, it does not comply with the durability requirements of clause B2 of the Building Code.

7.3 Subject to further investigations during the remediation process that may identify other faults, I consider that because the faults the expert has identified occur in discrete areas, I can conclude that satisfactory rectification of the items outlined in paragraph 6.3.1 is likely to result in the building 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 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, 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.

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 building does not comply with clause E2 of the Building Code. There are also a number of items to be remedied to ensure that it remains weathertight and thus meet the durability requirement of the Building Code. Consequently, I find that the building does not comply with clause B2. Accordingly, I confirm the territorial authority's decision to refuse to issue a code compliance certificate.

8.2 I also find that rectification of the items outlined in paragraph 6.3.1 to the approval of the territorial authority, along with any other faults that may become apparent in the course of that work, will consequently result in the house being weathertight and in compliance with clauses B2 and E2.

8.2 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 building 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.

8.3 I would suggest that the parties adopt the following process to meet the requirements of clause 8.2. Initially, the territorial authority should issue the notice to fix, listing all the items that the territorial authority considers to be non-compliant. The notice should indicate that this list may not cover all items of non-compliance and that further investigation by a competent and suitably qualified person will be required. The owner, with suitable assistance, should then produce a response to this in the form of a technically robust proposal. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.

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

Issue 2 – The additional durability considerations

9. Discussion

9.1 I note that the relevant provision of clause B2 of the Building Code is that building elements must, with only normal maintenance, continue to satisfy the performance requirements of the Building Code for certain periods "from the time of issue of the applicable code compliance certificate".

9.2 As set out in paragraph 3.1, the territorial authority has concerns about the durability, and hence the compliance with the Building Code, of certain elements of the building, taking into consideration the completion date of the building in 1998. I am of the opinion that the territorial authority should amend the original building consent by making it subject to a waiver of the Building Code in accordance with section 34(4) of the Act to the effect that the durability of the elements listed in paragraph 3.1 are to be measured from the date of the substantial completion of the building instead of from the time of the issue of the code compliance certificate. The land information memorandum relating to this house should also be amended in line with the above. For the purposes of this determination, I am of the opinion that "substantial completion" of the building is achieved when the building is ready for occupation.

10. The decision

10.1 I determine that the territorial authority is to amend the original consent, issued in March 1997, to incorporate a waiver of clause B2 of the Building Code to the effect that the required durability periods for the building elements put in place in the course of work carried out under that consent are to be measured from the date of the substantial completion of the building and not from the date of the issue of a code compliance certificate. For the avoidance of doubt I determine that this waiver is not to be applied to elements that have been renewed or replaced since the original construction and for which little of the required durability period has elapsed at the time of this determination.

10.2 Following this amendment, any code compliance certificate subsequently issued by the territorial authority should be issued in line with the amended building consent.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 10 February 2006.

John Gardiner
Determinations Manager