Determination 2005/171

Refusal of a code compliance certificate for a house with a "monolithic" cladding system at 21 Kereru Grove, Greenhithe, North Shore City

1. The dispute to be determined

1.1 This is a determination of a dispute under Part 3 Subpart 1 of the Building Act 2004 ("the Act") made under authorisation by me, John Gardiner, Determinations Manager, Department of Building and Housing, for and on behalf of the Chief Executive of that Department. The applicants are the owners, Mr and Mrs Malone ("the owner"), and the other party is the North Shore City Council ("the territorial authority"). The application arises because no code compliance certificate was issued by the territorial authority for this 8-year-old house and 2-year-old additions.

1.2 The questions to be determined are:

1.2.1 Issue 1

1.2.1.1 Whether I am satisfied on reasonable grounds that the monolithic wall cladding as installed to the external walls of the building ("the cladding") complies with the Building Code (see sections 177 and 188 of the Act). By "the monolithic wall cladding as installed" I mean the components of the system (such as the backing sheets, the flashings, the joints and the plaster and/or the coatings) as well as the way the components have been installed and work together.

1.2.2 Issue 2

1.2.2.1 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 of the 8-year-old part of the house were constructed.

1.3 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 work consists of a house with detached carport situated on a gently sloping building platform, which is in a high wind zone for the purposes of NZS 3604: 1999 "Timber framed buildings". Most of the house is one storey high, apart from a raised roof section that houses the master bedroom. Construction is conventional light timber frame, with a concrete slab and foundations to the garage, timber piles and subfloor framing to the remainder of the house, monolithic wall cladding and aluminium windows. The house shape is moderately complex, with 15^{o} asphaltic tile roofs over upper and lower roofs. The upper roof is a hip roof with 420 mm eave projections, while lower roofs are a combination of hips and gables with 470 mm eave and verge projections. The lower roof extends to form canopies above the garage doors, the main entry and the north deck. The additions to the original house, which were completed 4 years ago, comprise a new family room with deck extension to the north, a new bedroom with deck to the south, and a new carport building. The ground floor decks are timber framed with spaced timber decking.

2.1.2 The owner has submitted copies of invoices from the timber supplier indicating that the timber wall framing supplied was "chemical free". Based on this evidence, I consider that the external wall framing is unlikely to be treated.

2.1.3 The cladding system to the building is what is described as monolithic cladding, and is a "Harditex" system with 7.5 mm thick fibre cement sheets fixed through the building wrap to the framing, and finished with an applied textured coating system.

2.1.4 "Jointpro Commercial Sealers" provided a "Producer Statement" dated 15 July 2005, for the coating system applied to the Harditex of the additions. I have seen no evidence of producer statements or warranties for the cladding on the original house.

2.1.5 I note that 3 elevations of the building demonstrate a moderate weathertightness risk and one a high 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.

2.1.6 Accordingly I consider this face fixed fibre-cement cladding to be an alternative solution (refer to paragraph 4.2).

2.2 Sequence of events

2.2.1 The territorial authority issued a building consent for the original house on 17 October 1996, and carried out various inspections during construction, including pre-line and post-line. The last inspection was carried out on 28 January 1999, and the territorial authority's inspection summary notes that all outstanding items were completed apart from some outstanding paperwork.

2.2.2 The territorial authority issued a building consent for the new additions on 1 May 2002, and carried out various inspections during construction, including pre-line and post-line. The last inspection was carried out on 22 December 2003, and the territorial authority's inspection summary notes that all outstanding items were completed.

2.2.3 The owner arranged for an inspection of the house by House Assessments Ltd ("the owner's consultant"), and a "Condition and cladding report", dated 15 December 2004, was produced. The report commented on aspects of the interior and exterior of the building, and concluded that the "property has originally been constructed and altered to a reasonable standard", noting also that a number of items required attention.

2.2.4 Following the owner's request for a code compliance certificate, the territorial authority carried out a visual inspection of the original house and the new additions on 17 January 2005. In a letter to the owner dated 9 February 2005, the territorial authority stated that the Building Code required the building work to remain durable for specific periods of time. The territorial authority listed certain weathertightness risk factors identified with the building, together with a list of defects and stated that, due to the risk factors and defects, it could not be satisfied on reasonable grounds that the cladding system complied with clauses E2 and B2 of the Building Code.

2.2.5 The territorial authority also noted concerns in regard to the age of the original house, noting that:

> As the age of construction is now over 8 years, Council cannot be satisfied that various elements will satisfy the durability requirements.

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

2.2.7 The owner applied for a determination on 20 July 2005.

3. The submissions

3.1 In a letter dated 19 July 2005 which accompanied the application, the owner summarised the history of the project, and concluded by noting:

> Unfortunately, the council even though they inspected the property and we have had an independent inspection by [the owner's consultant], which shows that it is not a leaking building we have had to apply to you for a determination.

3.2 The owner also noted in the application that the "Matter of doubt or dispute" is:

> …The refusal is based on North Shore City Council's refusal to issue the certificate because of supposed "weathertightness issues" relating to harditex monolithic cladding without a cavity of the dwelling in spite of having had "final inspections" of the building.

3.3 The owner forwarded copies of:

- the drawings of the new additions
- some of the consent documentation
- some of the inspection records
- the report by the owner's consultant
- some of the correspondence with the territorial authority
- various other invoices, producer statements and other statements.

3.4 The territorial authority made a submission in the form of a letter to the Department dated 4 October 2005, which summarised the consent and inspection processes related to the original house and the new additions, and noted that:

> In regards to this application for a determination, the matters of doubt are:
>
> - Whether the installed cladding system complies with clauses B2.3.1 and E2.3.2 of the Building Code.
> - Whether other building elements, which have 15-year durability requirements comply with clause B2 of the Building Code, considering the age of construction. Specifically roof claddings, valley gutters, external joinery units, flashings, timber strip decking, fixings, plumbing and piping, showers and internal wet areas.

3.5 The territorial authority forwarded, for the original house and the new additions, copies of:

- some of the drawings
- the consent documentation
- the inspection records
- some of the correspondence with the owner.

3.6 Copies of the submissions and other evidence were provided to each of the parties. Neither party made any further submissions in response to the submission of the other party.

Issue 1: The cladding

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 B2.3.1 and E2.3.2 of the Building Code (First Schedule, Building Regulations 1992) is correct.

4.2 There are no Acceptable Solutions that have been approved under section 22 of the Act that cover the monolithic cladding as installed on this house. The cladding is not currently certified under section 269 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 they may be modified in less extreme cases and the resulting alternative solution will still comply with the Building Code.

- Usually, when there is non-compliance with one provision of an Acceptable Solution, it will be necessary to add some other provision to compensate for that in order to comply with the Building Code.

5. The expert's report

5.1 The expert inspected the cladding on 16 August 2005, and furnished a report that was completed on 5 September 2005. The expert noted that the coating appeared well adhered with no significant discolouration and the cladding generally had a uniform finish, with no evidence of joint delamination, although there were a number of visible cracks and signs of recent repairs. The expert noted that clearances from cladding to ground and paving generally appeared adequate, adequate horizontal control joints appeared to be provided, and some vertical control joints had been provided. The expert cut away a small section of plaster over a vertical control joint to examine the joint. The expert noted that doors and windows were face-fixed, with the lower floor windows sealed between the joinery flanges and the cladding.

5.2 The expert took non-invasive moisture readings at skirting level through interior linings, and recorded no elevated readings. Further invasive moisture readings were taken at risky areas, and the no elevated moisture contents were recorded in the wall framing.

5.3 The expert made the following specific comments on the cladding:

- while cladding clearances and base overlaps were not in accordance with the requirements of E2/AS1 at the main entrance and the garage doors, both areas are recessed under roof overhangs of 2.4 m and 1.5 m respectively

- clearances from the upper wall cladding to the roof cladding vary from none to 15 mm, in contrast to 20 mm clearance as recommended by the manufacturer

- the bottom of flashings of the roof to wall junctions lack kickouts, and are poorly sealed in some locations, with gaps showing in the cladding

- the aluminium head flashings do not extend sufficiently past the jambs at a number of locations
- the windows to the upper floor lack any sealant at the jambs
- there are no vertical control joints in the 12.5 m north and south upper walls, and the 7.3 m lower west wall, where dimensions exceed the 5.4 m limit recommended by the manufacturer
- the vertical control joints have been recently installed, and the sealant appears poorly adhered to the underlying filler with no flashing behind
- there is cracking evident in line with backing sheet joints at a number of locations, and signs of recent resealing and repainting
- the timber decking and framing of the decks butt against the coated cladding, with no drainage gaps provided. However, moisture contents in boundary joists were only about 2% higher than floor joists within the subfloor, and were similar to or less than boundary joists with no adjacent decks
- the meter box and family room fireplace flue penetrations are sealed, but lack top flashings
- pipe penetrations through the cladding, below the ground floor level, are unsealed.

5.4 Copies of the expert's report were provided to each of the parties.

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 these characteristics I find that the house:

- is built in a high wind zone
- is a maximum of two storeys high

- has two attached timber decks at ground floor level
- is moderately complex in plan and in form
- has eave and verge projections of 420 mm to 470 mm overall, with deep canopies over some west and north walls
- has monolithic cladding which is fixed directly to the framing
- has external wall framing that is not treated, so providing no resistance to the onset of decay if the framing absorbs and retains moisture

6.3 Weathertightness performance

6.3.1 Generally the cladding appears to have been installed according to good trade practice, apart from some faults identified in paragraph 5.3. Some junctions, edges and penetrations are not well constructed, and these areas are all as described in paragraph 5.3 and in the expert's report as being the:

- lack of clearance of wall cladding above the adjacent roof cladding
- lack of kickouts, sealing and gaps at bottoms of roof to wall flashings
- inadequate projections of head flashings past the jambs of some joinery units
- lack of sealant behind the jamb flanges of upper floor windows
- poor sealing of vertical control joints
- lack of vertical control joints on lower west, and upper north and south walls
- cracking to the cladding at a number of locations
- lack of flashing to the tops of the meter box and flue
- lack of sealing to pipe penetrations at a number of locations

6.3.2 I note the expert's comments regarding the shelter provided by the roofs above the main entry and garage doors, and accept that cladding clearances are adequate at these locations.

6.3.3 I note the expert's comments regarding the deck timbers butting against the coated cladding, and accept that this does not appear to be causing moisture penetration into subfloor boundary joists. Provided adequate subfloor ventilation is maintained, moisture levels should continue to be acceptable at these locations.

6.3.4 Notwithstanding the fact that the backing sheets are fixed directly to the timber framing, thus inhibiting drainage and ventilation behind the cladding sheets, I have noted certain compensating factors that assist the performance of the cladding in this particular case:

- the cladding generally appears to have been installed to good trade practice
- the house has eave projections over walls, which provide some protection to the cladding areas below them

6.3.5 I consider that these factors help compensate for the lack of a ventilated cavity and can assist the house to comply with the weathertightness and durability provisions of the Building Code.

7 Conclusion

7.1 I am satisfied that the current performance of the monolithic cladding is adequate because it is preventing water penetration into the building at present. Consequently, I am satisfied that the cladding system as installed on the building complies with clause E2 of the Building Code.

7.2 In addition, the building is also required to comply with the durability requirements of clause B2. Clause B2 requires that a building continues to satisfy all the objectives of the Building Code throughout its effective life, and that includes the requirement for the house to remain weathertight. Because the cladding faults on the building are likely to allow the ingress of moisture in the future, the house does not comply with the durability requirements of clause B2.

7.3 Subject to further investigations that may identify other faults, I consider that, because the faults that have been identified with the cladding system occur in discrete areas, I am able to conclude that satisfactory rectification of the items outlined in paragraph 6.3.1 is likely to result in the building remaining 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 checking, cleaning, re-painting, replacing sealants, and so on. As it is unlikely that the framing is treated, periodic checking of its moisture content should be carried out as part of normal maintenance.

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 In the circumstances, I decline to incorporate any waiver or modification of the Building Code in this determination for the additions to the original part of the house.

8 The decision

8.1 In accordance with section 188 of the Act, I hereby determine that the monolithic cladding system as installed complies with clause E2 of the Building Code. There are a number of items to be remedied to ensure that the house remains weathertight and thus meets the durability requirements of the code. Consequently, I find that the house 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, is likely to result in the house remaining weathertight and in compliance with clauses B2 and E2.

8.3 I note that the territorial authority has not issued a notice to fix. A notice to fix should be issued that requires the owners to bring the cladding into compliance with the Building Code, without specifying the features that are required to be incorporated. It is not for me to 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 paragraph 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 a competent and suitably qualified person, 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.

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

9 Issue 2: The additional durability considerations

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 code for certain periods "from the time of issue of the applicable code compliance certificate".

9.2 As set out in paragraph 3.4, the territorial authority has concerns about the durability, and hence the compliance with the Building Code, of certain elements within the building, taking into consideration the completion date of the original part of the building in 1997. I am of the opinion that the territorial authority should amend the original building consent for original part of the building by making it subject to a waiver of the Building Code in accordance with section 67 of the Act to the effect

that the durability is to be measured from the date of the substantial completion of the original part of the building instead of from the time of the issue of the code compliance certificate. The land information memorandum relating to the original part of the building 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.

9.3 I therefore determine that the territorial authority is to amend the original consent, issued in October 1996, 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.

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

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 23 December 2005.

John Gardiner
Determinations Manager