

Determination 2005/139

Refusal of a code compliance certificate for a house with a “monolithic” cladding system at 45 Cape Hill Road, Pukekohe – House 119

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 joint-owners, Ms Haringa, Mr MacPherson and Ms MacPherson (“the owners”), and the other party is the Franklin District Council (“the territorial authority”). The application arises because no code compliance certificate was issued by the territorial authority for 3-year-old additions and alterations to an existing house.
- 1.2 The question to be determined is whether I am satisfied on reasonable grounds that the monolithic wall cladding as installed to the external walls of the new addition (“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.
- 1.3 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 additions and alternations to the sub-floor area of an existing detached house situated on a excavated stepped site, which is in a medium wind zone in terms of NZS 3604: 1999 “Timber framed buildings”. The house is two storeys high, and has a steep bank close to the rear wall, with the gap to the original upper level bridged with a timber deck. The lower level contains the original open

garage and a new family room, bedroom and bathroom. Construction of the new basement is conventional light timber frame, with concrete slab and foundations, aluminium windows and monolithic wall cladding. The house shape is fairly simple in plan and form, with fibre cement planks and 2 timber decks to the upper walls.

- 2.1.2 The original profiled metal roof is a 20° gable, with a 1500 mm hip section wrapping around the north end to form a lean-to over the dining room. The northeast corner of the dining room, below the end of the lean-to, has a large window with the glass panes butt-jointed at the corner. Eave projections vary from 1500 mm wide above the deck on the west elevation to 100 mm above some projecting walls on the north and east elevations. Verge projections are about 300 mm wide verge projections except for the end of the lean-to, which has no projection.
- 2.1.3 The expert commissioned by the Department to inspect the cladding (“the expert”) noted that a window in the 1500 mm east wall of the new family room is not shown in the consent drawings. The territorial authority has made no reference to this additional window in their inspection records.
- 2.1.4 The expert noted that he was shown invoices by the owner indicating that boric treated framing has been used for the external walls of the basement addition, but not stating the level of treatment. Based on this evidence, I accept that the external wall framing is likely to be boric treated.
- 2.1.5 The cladding system to the addition 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, which the expert reports was applied by the owner with assistance from a contractor. I have seen no evidence of producer statements or warranties for the cladding.
- 2.1.6 I note that 3 elevations of the building demonstrate a low weathertightness risk rating and one a moderate 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.).
- 2.1.7 Accordingly I consider this face-fixed fibre-cement sheet cladding to be an alternative solution (refer to clause 4.2).

2.2 Sequence of events

- 2.2.1 The expert reports that the territorial authority issued a building consent on 11 November 1999.
- 2.2.2 The territorial authority made various inspections during the course of construction, including prior to lining installation on 21 June 2001 and following lining installation on 3 January 2002. The work appears to have been completed during 2002, although the final inspection did not take place until 29 November 2004.

- 2.2.3 Following the final inspection, the territorial authority issued a Notice to Rectify on 29 November 2004 noting , amongst other outstanding items noted that “a BIA Determination was required for the exterior cladding.”
- 2.2.4 The owners applied for this Determination on 27 July 2005.

3. The submissions

- 3.1 The owner forwarded copies of:
- the plans
 - the territorial authority’s interim Notice to Rectify.
- 3.2 The territorial authority forwarded a copy of the inspection summary.
- 3.3 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.

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 or section 49 of the Building Act 1991 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 experts report

5.1 The Department commissioned an expert (“the expert”) to inspect the cladding on the building. The expert inspected the cladding on 1 September 2005 and furnished a report that was completed on 8 September 2005. The expert noted that the cladding has generally been installed in accordance with the manufacturer’s instructions and that the coating appeared sound, uniform and well maintained, with no signs of cracking. Pipe, services and fixings through the cladding appeared to be adequately sealed, with the cladding continuous behind all obstructions. There are no unbroken areas of cladding greater than the limit above which control joints are required by the manufacturer. Cladding clearances at the base of walls appeared adequate in some areas but not in others. The expert noted that windows have aluminium head flashings, and had been face-fixed over “Inseal” flashings, with the cladding sealed and coated prior to window installation.

5.2 The expert took non-invasive moisture readings at risky areas through interior linings of some of the original upper level walls, and the following two elevated readings were noted:

- 24% in the sill liners and 29% in the linings below the corner window in the upper level dining room.

The expert took further non-invasive moisture readings through the exterior cladding of the new walls, and the following elevated moisture readings were noted:

- 25% to over 40% in the 600 mm north wall of the new family room
- 20% to 30% in the 3500 mm north wall of the new family room
- similar readings in the 1500 mm east wall of the new family room
- over 35% through the fibre cement planks above the east wall of the new family room.

5.3 A small section of lining above the north ranch sliders in the family room was removed, and moisture staining to the framing was noted. Further invasive moisture readings were taken through the cladding and the following elevated readings were noted:

- 25.9% and 28.3% in the north east corners of the new family room
- 23.8% and 31.9% in framing at the inter-cladding junction at the north east corner of the new family room, below the existing dining room corner window
- 29.1% above the ranch slider in the family room.

Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure.

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

- there is a gap at the corner mitre of the head flashings above the dining room corner window, and the sill mitres are also starting to open
- the additional window to the 1500 mm east wall of the family room is not installed as per the manufacturer's instructions
- there is no horizontal flashing at the junction of the upper weatherboards with the new cladding
- the base of the cladding is too close to the paving at some locations
- there is no gap between the bottom of the cladding and the slope of the head flashings of the new windows, contrary to the manufacturer's instructions.

5.5 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 taken these comments into account in this Determination.

6.2 Weathertightness risk

6.2.1 In relation to these characteristics I find that the house:

- is built in a medium wind zone
- is a maximum of two storeys high
- is fairly simple in plan and form, with two different cladding materials and few complex roof to wall junctions
- has eave projections varying from 100 mm to 1500 mm, and verge projections of 300 mm, except for the 1500 mm end of the lean-to which has no projection
- has 2 timber decks off the upper floor

- has monolithic cladding which is fixed directly to the framing with no drainage cavity and a horizontal inter-cladding junction above
- has external wall framing that is likely to be treated to a level that would provide limited 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, but some junctions, edges, and penetrations are not well constructed. These areas are all as described in paragraph 5.4 and in the expert's report as being:

- the head flashing and sills to the existing dining room corner window
- the flashing of the additional window to the east wall of the family room
- the inadequate weatherproofing of the junction of the upper weatherboards with the new cladding
- the inadequate clearance from the paving to the base of the cladding at some locations
- the lack of a gap between the bottom of the cladding and the slope of the head flashings of the new windows.

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 have noted certain compensating factors that assist the performance of the cladding in this particular case.

- The building additions are on the ground floor and there are upper story projections over most walls that provide some protection to the cladding areas below them
- The house is a fairly simple, two-storey building
- The cladding system generally appears to have been installed according to reasonable trade practice.

6.3.3 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 not adequate because it is allowing water penetration into the building at a number of locations at

present. Consequently, I am not satisfied that the cladding system as installed on the additions to 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 have already allowed the ingress of moisture, or are likely to allow it 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 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, re-painting, replacing sealants, and so on. As the external wall framing is not treated, 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.

8. The decision

- 8.1 In accordance with section 188 of the Act, I hereby determine that the monolithic cladding system as installed does not comply with clause E2 of the Building Code. There are a number of items to be remedied to ensure that the house becomes and remains weathertight and thus meets the durability requirements of the Building 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 being weathertight and in compliance with clauses B2 and E2.

- 8.3 I note that the territorial authority has issued an interim Notice to Rectify. The territorial authority should now withdraw the interim Notice to Rectify and issue a notice to fix 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 8.2. Initially, the territorial authority should issue the notice to fix, listing all the items that the territorial authority considers to be non-compliant. The 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.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 6 October 2005.

John Gardiner
Determinations Manager