

Determination 2006/02

Refusal of a code compliance certificate for a house with a “monolithic” cladding system at 10 Oratia Drive, Glen Eden, Auckland

1 The dispute to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004 (“the Act”) made under due authorisation by me, John Gardiner, Determinations Manager, Department of Building and Housing, for and on behalf of the Chief Executive of that Department. The applicant is the owner, Mr Fafeita (“the owner”), and the other party is the Waitakere City Council (“the territorial authority”). The application arises from the refusal by the territorial authority to issue a code compliance certificate for a 3-year-old house, unless changes are made to its monolithic cladding system.
- 1.2 The question to be determined is whether I am satisfied on reasonable grounds that the monolithic wall cladding as installed to the new timber-framed external walls of the house (“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 a detached maximum three-storey house, with an attached single-storey garage, situated on an excavated sloping site that is in a very high wind zone in terms of NZS 3604: 1999 “Timber framed buildings”. The house is of a fairly complex shape on plan with pitched roofs at varying levels that have hip

and wall-to-roof junctions. There are also five areas of low-pitched roofing with parapet wall surrounds. Two of these extend over the entrances and are supported on timber posts. The exterior walls are of conventional light-timber frame construction built on concrete or timber-framed floors and are sheathed with monolithic cladding. Apart from one gable end, there are no eaves or verge projections.

- 2.1.2 A small balcony is constructed over a habitable space at the first-floor level and a larger balcony is constructed over a habitable space and into the roofline at the upper-floor level. Both balconies have monolithic-clad timber-framed balustrades with metal handrails set into them. A timber-framed close-boarded deck with access steps and a timber handrail is constructed adjoining the dining area.
- 2.1.3 I have not received any information confirming the treatment, if any, of the external wall framing timbers. It is therefore likely that the external wall framing is not treated.
- 2.1.4 The cladding system to the exterior walls is what is described as monolithic cladding and consists of a 60mm polystyrene “Styroplast” system fixed directly to the framing over the building wrap, to which a polymer-modified plaster system has been applied. The internal faces and tops of the balcony balustrades are lined with fibre-cement in lieu of polystyrene. The external joinery units are recessed into the cladding and plaster-coated polystyrene bands have been added at sill level.
- 2.1.5 Styroplast Systems Ltd provided a 15-year “Materials Components Guarantee” and a 5-year “Workmanship Guarantee” for the cladding system, both dated 11 May 2004. Both guarantees excluded, amongst other requirements, damage caused by defective building structure or hydrostatic pressure.

2.2 Sequence of events

- 2.2.1 The territorial authority issued a building consent on 24 April 2002. The conditions attached to the consent noted that the Plaster System was to be installed strictly in accordance with the manufacturer’s instructions.
- 2.2.2 The territorial authority carried out various inspections throughout the construction of the house. The territorial authority passed the pre-line building inspection on 5 August 2002. The house did not pass the final building inspection undertaken by the territorial authority on 9 December 2003. The “Field Sheet” relating to this inspection noted:

Monolithic Cladding confirmation req’d before issue of CCC L.O.T.I.
- 2.2.3 The territorial authority did not issue a Notice to Rectify as required by section 43(6) of the Building Act 1991.
- 2.2.4 The owner applied for a determination on 19 April 2005.

3 The submissions

- 3.1 The owner under the “matter of doubt or dispute” noted that the territorial authority refused to issue a code compliance certificate after inspecting and approving the building work. The owner stated that despite the fact that the home was not leaking, the territorial authority considered that it had the potential to do so.
- 3.2 The owner provided copies of:
- the building plans
 - the Styroplast Systems Ltd’s guarantees
 - two pages of sketches detailing aspects of the cladding
 - two warranties relating to the butyl-rubber membranes.
- 3.3 In a letter to the Department dated 10 May 2005, the territorial authority referred to the building consent, the dates that work commenced, and when the final inspection was carried out. The territorial authority noted that the cladding was installed without a cavity and that due to changed inspection procedures, it was unable to be satisfied, on reasonable grounds, that the cladding was code compliant.
- 3.4 The territorial authority provided copies of:
- the building consent
 - the inspection “Field Sheets”
 - a set of photographs depicting the building.
- 3.5 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 22 of the Act or section 49 of the Building Act 1991 that cover the cladding. 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 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.
- 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 report on the cladding. The expert inspected the cladding on 12, 28, and 29 July 2005 and furnished a report that was completed on 16 August 2005. The expert noted that the cladding finishes generally appear flat, with acceptable straightness and symmetry of vertical and horizontal lines. However, there are variances in the textured plaster finish at some locations. The penetrations, junctions and transitions are generally neatly formed. The expert questioned the overall standard of workmanship and finishing and was not confident about the performance of many details that had not been subject to invasive examination. The expert removed the cladding at various locations to expose details at the external joinery units and at various joints and junctions. I accept that the details exposed by these inspections are representative of other similar locations throughout the building. The expert made the following specific comments regarding the cladding:

- horizontal and vertical expansion joints as required by the manufacturer are not installed in the cladding to the west section of the south facing wall
- the base of the cladding lacks a drip edge and this omission allows water to track along the closure strip
- there is a crack at the junction of the parapet wall and the roofing at the south end of the east elevation
- the base of the cladding is too close to the paving, the ground, or the decks at some locations
- the tops to the parapet walls lack adequate cross-falls and cracks have formed in the plaster coating. The expert observed that even if the butyl-rubber membrane extends over the tops of the parapets, its efficiency is likely to have been compromised by the fibre-cement board fixings penetrating it
- some of the junctions between parapet walls and adjacent walls and roofs are ineffectively formed

- the ends of the apron flashings are vulnerable to water entry and there are sealant delaminations and gaps adjacent to the lead apron flashings at some locations
- the cladding is sealed onto the head flashings of the exterior joinery units allowing water to soak into the cladding at the ends of the flashings
- the sill and jamb flashings of the exterior joinery units are only 40mm deep and are likely to direct water into the cladding. The sill flashings lack turn-ups and no sealant is identified at the internal corner of the jamb flashings
- there is no soaker installed to the northwest corner window sill mitre.
- the south elevation deck timbers are fixed hard against the cladding and the flashing installed at this location is not effective
- the penetrations through the cladding lack uPVC flanges.

5.2 The expert took 45 moisture readings in the exterior wall framing and elevated readings were recorded at three locations. These were:

- 19.0% above the garage door
- 20.0% at the east elevation parapet
- 27.4% at the south elevation deck boundary joist. The expert also noted that this joist had become wet during recent rainfall.

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

5.4 The expert also noted that there was a loose verge tile to the north face gable.

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

6 Discussion

6.1 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 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:

- lacks eaves and verge extensions that would provide protection to the cladding areas below them. However, some protection is given by the roofs over the entrances
- is in a very high wind zone
- is maximum three-storeys high
- is of a fairly complex shape on plan
- has two high-level balconies that are constructed over habitable spaces
- has one lower-level deck
- has external wall framing that is not likely to be treated, so is not resistant to decay if it absorbs and retains moisture.

6.3 Weathertightness performance

6.3.1 Generally, the cladding appears to have been installed according to passable trade practice, 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:

- the lack of horizontal and vertical expansion joints to the west section of the south facing wall
- the lack of a drip edge to the base of the cladding
- the crack at the junction of the parapet wall and the roofing at the south end of the east elevation
- the base of the cladding being too close to the paving, the ground, or the decks at some locations
- the lack of adequate cross-falls to the tops of the parapet walls and the cracks that have formed in the plaster coating at these locations
- the ineffectively formed junctions between parapet walls and adjacent walls and roofs, the vulnerable ends of the apron flashings, and the sealant delaminations and gaps adjacent to the lead apron flashings at some locations
- the cladding being sealed onto the head flashings of the exterior joinery units
- the lack of turn-ups to the sill flashings of the exterior joinery units, and the lack of sealant at the internal corner of the jamb flashing. I note that saddle flashings are a requirement to the ends of the sill flashings

- the lack of a soaker to the northwest corner window sill mitre
- the south elevation deck timbers being fixed hard against the cladding
- the lack of uPVC flanges to the penetrations through the cladding.

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 appears to have been generally installed according to good trade practice this can assist the house to comply with the weathertightness and durability provisions of the Building Code.

6.3.3 The expert has noted that the jamb and sill flashings are only 40mm wide. I find that this is in accordance with the manufacture's recommendations, provided that the flashings and the adjoining reveal are fully protected by means of a waterproofing compound.

6.3.4 I note that two elevations of the building demonstrate a medium weathertightness risk rating and the remaining two elevations demonstrate a very high risk 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 identified with this cladding occur in discrete areas, I can conclude that satisfactory rectification of the items outlined in paragraph 6.3.1, together with the verge tile defect, 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, repainting, replacing sealants, and so on. As it is likely that the external wall framing is not 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 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 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, together with the verge tile defect, 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.
- 8.3 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 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 suitably qualified 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.

- 8.5 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 25 January 2006.

John Gardiner
Determinations Manager