

Determination 2006/10

Refusal of a code compliance certificate for a building with a “monolithic” cladding system at 189 Vaughans Road, Albany, 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 applicant is the North Shore City Council (“the territorial authority”) and the other party is the owner, Mr J Haworth (“the owner”). The application arises because the territorial authority has not issued a code compliance certificate for this 5-year-old 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, columns, and beams 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.
- 1.3 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 large two-storey house with some single storey extensions situated on a slightly sloping site, which is in a high wind zone in terms of NZS 3604: 1999 “Timber framed buildings”. The external walls are conventional

timber framing built on either concrete ground floor slabs or intermediate timber framed walls. The external walls are clad with two types of monolithic cladding. The ground floor is clad with Hebel “PowerPanel” linings and the first floor with Plaster Systems Ltd “New Generation” polystyrene linings. The house shape is of a complex form with segmental connecting areas. The pitched roofs at two main levels have hip, valley, and wall-to-roof junctions. The eaves projections are 300mm and 900mm wide. The flat roofs over the segmental transition areas have a painted torched-on bitumen-type membrane and monolithic-clad parapet walls.

- 2.1.2 The house has four separate timber-framed balconies at the first floor level, each of which has a metal and glazed balustrade and a full roof overhang over it. One of the two smaller balconies is situated adjacent to the study, and the other, which has a curved exposed perimeter, is adjacent to bedroom 2. A larger balcony is situated adjacent to bedrooms 3 and 4, and this is constructed partially over a living space. The fourth balcony surrounds three sides of the master bedroom. A flat roof is constructed over the paved areas outside the living room and a similar roof with a curved exposed edge is situated outside the dining room. These roofs have small monolithic-clad parapet surrounds. The balconies, the projecting roofs, and the flat roofs are supported on either concrete blockwork or monolithic-clad timber-framed columns and on monolithic-clad timber-framed beams.
- 2.1.3 A large portico with a curved roof is constructed outside the main entrance and this is supported on steel columns encased by tapered solid concrete. I note that this differs from the consented plans, which show columns with polystyrene solid plastered surrounds. Two of the columns extend upwards to support a roof overhang above the portico and these extensions are sheathed in copper.
- 2.1.4 The builder informed the independent expert commissioned by the Department to inspect the house (“the expert”) that he was sure that almost all the framing timber is untreated and the invoices produced by the builder confirm this.
- 2.1.5 The cladding system to the external walls, columns and beams of the house is what is described as monolithic cladding. The cladding to the lower-level walls consists of 65mm to 70mm thick aerated concrete “Hebel” panels fixed directly onto 35mm deep zinc-plated profiled battens horizontally fixed directly to the framing or plywood bracing panels over the building wrap. The upper-level walls are clad with generally 60mm “Thermaclad” back-grooved polystyrene panels fixed directly to the framing over the building wrap. On the south elevation the upper cladding panels are 100mm thick and cladding to the curved parapet is 20 mm thick. Both the lower and upper level and the parapet claddings are finished with a 6-7mm thick Plaster Systems Ltd textured coating. Plastered polystyrene bands are planted onto the linings at various locations. I note that the consented drawings showed the upper-level external wall cladding and parapet cladding to be “Hardibacker” with a solid plaster application. The lower-floor cladding is also shown as having a solid plaster finish.
- 2.1.6 Eighteen columns have steel column cores surrounded by 60 mm polystyrene clad timber framing and six upper-level columns are timber-framed with 7.5mm Harditex linings. All these columns are finished with textured coatings.

2.1.7 CSR Building Products issued a 25-year “New Zealand Guarantee” dated 10 June 2003 in respect of the “Hebel” products used on the house. Plaster Systems Ltd issued a producer statement for the materials and installation of the “Thermaclad” system applied to the house.

2.2 Sequence of events

2.2.1 The territorial authority issued a building consent on 30 January 2001 based on a certificate dated 12 January 2001 by A1 Building Certifiers Ltd (“the building certifier”).

2.2.2 The building certifier carried out various inspections during the construction process and passed the pre-lining building inspection on 13 July 2001. In a letter to the owner dated 1 February 2002, the building certifier stated that a final inspection of the property had been carried out on 29 January 2002. The building certifier noted that certain items required attention before a final code compliance certificate could be issued. These included the provision of producer statements for the various claddings and the cladding coating system.

2.2.3 In a certificate issued by the building certifier and dated 12 January 2001, it was noted:

“Exclusions: COUNCIL TO COMPLETE INSPECTIONS.”

2.2.4 According to the territorial authority, the building certifier handed the file for the project back to the territorial authority without any final inspections being completed. The territorial authority states that it was not requested to carry out final inspections until May 2003.

2.2.5 The territorial authority carried out a visual inspection on 20 December 2004. It noted that there were cracks in the “Hebel” panels and that there were some non-complying ground levels.

2.2.6 In a letter to the owner dated 12 August 2005, 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 also noted that the inspection process for monolithic claddings had changed since the time that the building consent for the house was processed. The territorial authority listed certain weathertightness risk factors identified with the building, together with a list of defects and other requirements for compliance. It also stated that, due to the uncertainties, 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.

2.2.7 The territorial authority did not issue a notice to fix as required under section 164 of the Act.

2.2.8 The territorial authority applied for a determination on 2 September 2005.

3 The submissions

3.1 In a letter accompanying the application dated 2 September, the territorial authority set out a short summary of events and noted that the matter of doubt is:

Whether the installed cladding systems comply with clauses B2 and E2 of the Building Code.

3.2 The territorial authority supplied copies of the:

- building plans and specifications
- consent documentation
- inspection records
- correspondence with the owner
- various producer statements.

3.3 General Manukau Enterprises Ltd forwarded information to the Department concerning the roofing and decking products applied on the house.

3.4 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.

3.5 The owner unconditionally accepted the draft determination. In a submission dated 23 January 2006 the territorial authority accepted the draft determination but said that paragraphs 8.3 and 8.4, regarding the contents of the notice to fix, appeared to be contradictory. However, the territorial authority said it would follow the recommendations in paragraph 8.4.

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 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 claddings of the building on 21 and 27 October 2005 and furnished a report that was completed on 31 October 2005. The expert noted that there were numerous signs of good quality workmanship on the house and that the textured coating is of a good standard. The expert considered that no control joints were necessary in the high-level cladding for a building with the dimensions of the house in question. The expert also noted that the 35mm cavity behind the “Hebel” panels does not allow for drainage or ventilation.
- 5.2 The expert cut away small sections of the coating to expose typical window jamb and sill junctions of a window, and the inter-storey horizontal joint on the south elevation. The inspections revealed that there are full perimeter flashings at the upper-level cladding. I accept that the locations opened are typical of similar locations around the building. The expert also noted that the joinery in the “Hebel” cladding stood out well outside the timber framing.
- 5.3 During the first site visit, which occurred after heavy rain, the expert took non-invasive moisture readings and identified areas where the cladding was obviously soaked. Readings taken a week later indicated that most of the moisture had dissipated. Approximately 40 further invasive moisture readings were taken through the cladding at locations where one or more risk factors were present, and the following elevated readings were noted:
- 19% (at four locations), 20% (at three locations), 23% (at three locations), 24% (at three locations), 32% (at two locations), and 40% at the south elevation
 - 14% to 24%, 17% to 24%, and 22% at the north elevation.
- 5.4 Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure. The expert did not find any obvious decay anywhere but considered that the 40% reading at the south elevation was an area of concern in this respect.
- 5.5 The expert made the following specific comments on the cladding.
- The joints between the “Hebel” panels are filled with unreinforced proprietary plaster and there is cracking at quite a few of these joints, especially at the external corners.

- There is cracking to some of the sill reveals to the north elevation of the house.
- There is a bulge in the decorative strip above the garage door opening, the “Hebel” panel has moved away from the framing, and there is a crack in the cladding at this location.
- There are no drip edges installed to the soffits outside the workshop and at the garage door opening.
- There is a lack of drainage where the curved parapet meets the top of a column adjacent to the front door.
- There is no flashing at the horizontal junction of the upper-level and lower-level claddings, instead, there is a 20 mm gap between the two types of cladding.
- The base of the “Hebel” cladding is buried at both sides of the garage door opening.
- Some of the column cladding is buried below the level of the gardens.
- There are no capillary breaks between the back of the “Harditex” lining to the columns but the expert observed that this does not appear to be a problem.
- The masonry retaining wall outside the kitchen returns hard against the cladding.
- The cappings on the curved parapet walls lack cross-falls.
- The powder coating to the balcony balustrades is failing at some locations.
- Some of the penetrations through the cladding are poorly sealed and some light fittings are moving away from the cladding.

5.6 The expert also noticed that the paint on the torched-on membrane to the segmental flat roofs is peeling off. The expert also had concerns regarding the durability of the Zinalume edging to some of the balcony decks.

5.7 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 two storeys high
- has four balconies, one of which is constructed partially over a living space
- is complex in plan and form, and has two different cladding materials, parapets and some complex roof to wall junctions
- has 300mm and 900mm eaves projections, which together with the roof and balcony extensions, provide good protection to the cladding below them
- has back grooved monolithic cladding which is fixed directly to the framing at the upper-level and monolithic cladding that is fixed over horizontal battens at the lower-level
- has external wall framing that is not treated, so has no level of 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 a large number of junctions, edges and penetrations are not well constructed. These areas are all as described in paragraph 5.5 and in the expert's report as being the:

- joints between the "Hebel" panels being filled with unreinforced proprietary plaster and the cracking at quite a few of these joints
- cracking to some of the sill reveals to the north elevation of the house
- bulge in the decorative strip above the garage door opening where the "Hebel" panel has moved away from the framing and the cladding has cracked at this location
- lack of a drip edge to the soffits outside the workshop and at the garage door opening
- lack of drainage where the curved parapet meets the top of a column adjacent to the front door

- lack of a flashing at the horizontal junction of the upper-level and lower-level claddings
- base of the “Hebel” cladding being buried at both sides of the garage door opening
- column cladding being buried below the level of the gardens
- lack of a capillary break between the back of the “Harditex” lining to the columns
- masonry retaining wall outside the kitchen returning hard against the cladding
- lack of cross-falls to the cappings on the curved parapet walls
- powder coating to the balcony balustrades failing at some locations
- poorly sealed penetrations through the cladding and the light fittings moving away from the cladding.

6.3.2 Notwithstanding the fact that the backing sheets are fixed directly to the timber framing or on non-draining horizontal battens, 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 eaves projections and roof and balcony extensions provide good protection to the cladding below them
- The upper cladding is grooved on the back, which gives this area of cladding some drainage capability.

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

6.3.4 I note that all elevations of the building 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 monolithic claddings is not adequate because they are 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 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 also the expert's comment regarding the peeling paint to the membrane on the flat roofs and the durability of the Zinalume edging to some of the balcony decks. I consider that these items that can be dealt with during regular maintenance procedures, however, the paint to the flat roofs may only be a cosmetic issue.
- 7.5 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, 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.
- 7.6 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.
- 7.7 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 systems as installed do 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 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 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 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 14 February 2006.

John Gardiner
Determinations Manager