

Determination 2006/41

Refusal of a code compliance certificate for a building with a “monolithic” cladding system at 134J Rangatira Road, Birkenhead, North Shore City



1 The dispute to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004¹ (“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 applicants are the owners, Mr and Mrs Tohill (“the applicants”), and the other party is the North Shore City Council (“the territorial authority”).
- 1.2 The dispute for determination is whether I am satisfied on reasonable grounds that the territorial authority’s decision to decline to issue a code compliance certificate on a 4-year-old house is correct. The territorial authority declined the application because it was not satisfied that the monolithic cladding as installed on the building

¹ The Building Code and the Building Act 2004 are available from the Department’s website at www.dbh.govt.nz.

complied with clauses B2 “Durability” and E2 “External Moisture” of the Building Code (First Schedule, Building Regulations 1992). By “the monolithic cladding as installed” I mean the components of the system (such as the backing materials, 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 considered the submissions of the parties, the report of the independent expert commissioned by the Department to advise on this dispute (“the expert”), and the other evidence in this matter. I have evaluated this information using a framework that I describe more fully in paragraph 6.1.
- 1.4 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 house situated on a steeply sloping excavated site, which is in a very high wind zone in terms of NZS 3604². The split-level house is a maximum of three storeys high. The external walls are conventional timber framing built on either concrete floor slabs or timber framed floors. Where the ground floor is timber framed, this is supported on pole foundations. The house shape is of a relatively complex form with pitched roofs at several levels that generally have perimeter parapet walls and wall-to-roof junctions. There are only minimal eaves projections. The external walls are clad with a painted textured-finish fibre-cement cladding and plastered polystyrene trims are planted onto the cladding at the horizontal floor joints and the window sills. The parapets also have projecting and shaped polystyrene cappings.
- 2.1.2 A triangular bay window is cantilevered out at the upper floor bedroom 1 and this has a flat roof constructed over it. A small cantilevered flat roof is constructed over the main entrance. Two small separate timber-framed decks are situated at the ground and first floor levels and a large timber-framed deck is constructed around three elevations at the first floor level. The decks are supported by timber posts and beams and have glazed balustrades.
- 2.1.3 The specification calls for the wall framing to be H1 treated, but does not describe the level of such treatment. The expert is of the opinion that framing actually used is untreated and I have not received any correspondence confirming the treatment, if any, of the wall framing.
- 2.1.4 The cladding system to the external walls and to the tops of the parapets of the house is what is described as monolithic cladding. This cladding consists of 7.5mm thick “Harditex” fibre-cement panels fixed directly to the framing over the building wrap. The panels are finished with a plaster and paint “Future Proof Texture System”.

² New Zealand Standard NZS 3604:1999 Timber Framed Buildings

- 2.1.5 Future Proof Industries Ltd issued a producer statement dated 19 April 2004 covering its texture system which warranted the paint and plaster products for a period of 10 years. The warranty excluded damage caused by faulty workmanship by other builders or subcontractors, or by building movement, etc.
- 2.1.6 I note that the plans indicate that the cladding was to be “Insulclad” with a sponge finished plaster application and that the balcony balustrades were to be constructed in timber. There are also other minor deviations from the submitted plans. The territorial authority has requested that the applicants’ supply amended plans for these changes.

3 Sequence of events

- 3.1 The territorial authority issued a building consent on 19 December 2001.
- 3.2 Approved Building Certifiers Ltd (“the building certifier”) undertook regular inspections and the external lining inspection was signed off on 13 November 2002. A final building re-check was signed off on 11 March 2004.
- 3.3 The territorial authority carried out a final building inspection on 11 May 2004, which approved the external cladding items. However, the “Building Officers Field Memorandum” relating to that inspection noted:
- Seal edge of Harditex to apron flash[ing] once cut height on all flat roof to wall junctions.*
- 3.4 The territorial authority carried out a specific weathertightness inspection on 26 October 2005 and noted a number of items that required attention.
- 3.5 In a letter of 25 November 2005, the territorial authority advised the applicants that a code compliance certificate would not be issued. It also noted that detailed inspections of face-fixed monolithic cladding systems were now more rigorous. In relation to the cladding, the territorial authority also described:
- risk factors
 - a list of identified defects
 - other requirements for compliance.
- 3.6 The Department received the applicants’ application for a determination on 19 January 2005.

4 The submissions

4.1 The applicants supplied copies of the:

- building plans and specifications
- consent documentation
- building surveyor's inspection checklist
- the producer statement for the plaster and paint coating system.

4.2 The territorial authority made a submission dated 3 March 2006, which included:

- a short summary of events
- matters of doubt as to whether the installed wall cladding complied with clauses E2 and B2 of the Building Code.

4.3 The territorial authority also supplied copies of their:

- inspection records
- 25 November 2005 letter to the applicants.

4.4 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.

4.5 A copy of the draft determination was forwarded to the parties for comment on 2 May 2006. The territorial authority accepted the draft.

4.6 The applicant accepted the draft on 9 May 2005 but made the following submission in respect of paragraph 5.1, which previously said:

The expert noted that the general fixing and finish to the cladding is poor and that the applicants had recently repainted the cladding.

In response the applicants advised:

As the owners of the property & its only occupants, to my knowledge the Cladding has never been repainted. [Contractors] were instructed to carry out minor work on the cladding as we were unsatisfied with the plaster finish in some areas but the entire house has never been repainted.

4.7 I have amended paragraph 5.1 to take this submission into account.

5 The expert's report

- 5.1 The expert inspected the claddings of the building on 13 and 16 March 2006 and furnished a report that was completed on 24 March 2006. The expert noted that the general fixing and finish to the cladding is poor.
- 5.2 The expert cut away small sections of the coating to expose the sheet jointing, the mid floor junction, the base of the cladding and a parapet crack line. The expert also removed a section of the polystyrene window sill trim. I accept that the details revealed by this inspection are typical of similar locations around the building.
- 5.3 The expert took non-invasive moisture readings and some higher readings were recorded. Further invasive moisture readings were taken and readings above 18% were recorded at many locations throughout the building. Moisture levels above 18% after the cladding is in place generally indicate that external moisture may be entering the structure through the cladding. Of particular concern are the 8 locations where the readings exceeded 40% because the readings clearly indicate significant moisture entry, which has, and will, result in decay.
- 5.4 The expert found evidence of soft brown wet timber at locations where the cladding was cut away or drilled for intrusive inspections and also observed trapped moisture and fungi growth where the sill projection was removed.
- 5.5 The expert made the following specific comments on the monolithic cladding:
- the cladding sheet joints are incorrectly formed at some locations
 - the cladding is poorly plastered at some areas
 - the plaster is cracked at various locations including the top sides of the parapet walls
 - the cladding lacks vertical control joints and the horizontal joints are inadequately constructed
 - the cladding at some locations has inadequate ground clearances at its base
 - there is no moisture break at the base of the cladding where it adjoins the foundation walls
 - the paint coating is not complete behind one west elevation lounge room door
 - the junction between the window sills and the planted polystyrene trim is inadequately sealed
 - window jambs are inadequately sealed against the cladding
 - there is an incomplete area of finish and a suspect flashing detail to the roof junction above the laundry and there is no flashing break at this location

- the deck ribbon boards are fixed directly against the face of the cladding and there are no flashings or spacers installed at these locations
- there is no moisture break where the cladding adjoins the front entry canopy roof
- the roofing membrane to the entrance canopy and above the corner bay window has not been turned down over the fascia boards
- some penetrations through the cladding are inadequately sealed.

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

6 Evaluation for code compliance

6.1 Evaluation framework

6.1.1 In evaluating the design of a building and its construction, it is useful to make some comparisons with the relevant Acceptable Solution,³ in this case E2/AS1, which will assist in determining whether the named features of this house are code compliant. However, in making this comparison, the following general observations are valid:

- 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 may be necessary to add some other provision to compensate for that in order to obtain compliance with the Building Code.

6.1.2 The approach in determining whether building work is weathertight and durable and is likely to remain so, is to apply the principles of weathertightness. This involves the examination of the overall design of the building, the surrounding environment, the detailed 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 Department and its antecedent, the Building Industry Authority, have also described weathertightness risk factors in previous determinations (refer to Determination 2004/1 *et al*)⁴ relating to cladding and these factors are also considered in the evaluation process.

6.1.3 The consequences of a building demonstrating a high weathertightness risk is that building solutions that comply with the Building Code will need to be more robust. Conversely, where there is a low weathertightness risk, the solutions will need to be

³ An Acceptable Solution is a prescriptive design solution approved by the Department that provides one way, but not the only way, of complying with the Building Code. The Acceptable Solutions are available from the Department's website at www.dbh.govt.nz.

⁴ Copies of all determinations issued by the Department can be obtained from the Department's website.

less robust. In any event, there is a need for both the design of the cladding system and its installation to be carefully carried out.

6.2 Weathertightness risk

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

- is situated in a very high wind zone
- has only minimal eaves projections to protect the cladding
- is of a relatively complex shape on plan
- has three external decks
- has some external framing timber that has shown that it is not resistant to decay once it becomes wet.

6.2.2 When evaluated using the E2/AS1 risk matrix, these weathertightness features show that all elevations of the building demonstrate a high weathertightness risk rating. 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.

6.3 Weathertightness performance

6.3.1 It is clear from the expert's report that the cladding installed on the house is unsatisfactory in terms of its weathertightness risk and performance perspectives and considerable work is required to make the building code compliant. The high levels of moisture ingress at several locations and the initial signs of decay found in some of the associated framing are major concerns. Further investigation is urgently required to ensure that the structural integrity of the affected elements has not been compromised.

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 in at several locations. I conclude that the cladding system on the building does not comply 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 in this building are allowing the ingress of moisture at present, the house does not comply with the durability requirements of clause B2.
- 7.3 I find that, because of the extent and apparent complexity of the faults that have been identified with this cladding, I am unable to conclude, with the information available to me, that remediation of the identified faults, as opposed to partial or full re-cladding, could result in compliance with clause E2. I consider that final decisions on whether code compliance can be achieved by either remediation or re-cladding, or a combination of both, can only be made after a more thorough investigation of the cladding. This will require a careful analysis by an appropriately qualified expert. Once that decision is made, the chosen remedial option should be submitted to the territorial authority for its comment and approval. If the territorial authority chooses to reject the proposal, then the applicants are entitled to seek a further Determination on whether the proposed remedial work will led to compliance with the requirements of clauses E2 and B2.
- 7.4 I note that, once the building has been made compliant with the Building Code, 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 owners. 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 at least some of the external wall framing is untreated, I would recommend that periodic moisture content measurement be carried out to all areas of the external cladding.
- 7.5 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 20 of the Building Act 1991, I hereby determine that the monolithic cladding system as installed does not comply with clauses B2 and E2 of the Building Code, and accordingly confirm the territorial authority’s decision to refuse to issue a code compliance certificate.
- 8.2 I note that the territorial authority has not issued a Notice to Rectify or a notice to fix. The territorial authority should now issue a notice to fix, and the applicants are 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 applicants 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 applicants should then produce a response to this in the form of a technically robust proposal, produced in conjunction with an 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.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 18 May 2006.

John Gardiner
Determinations Manager