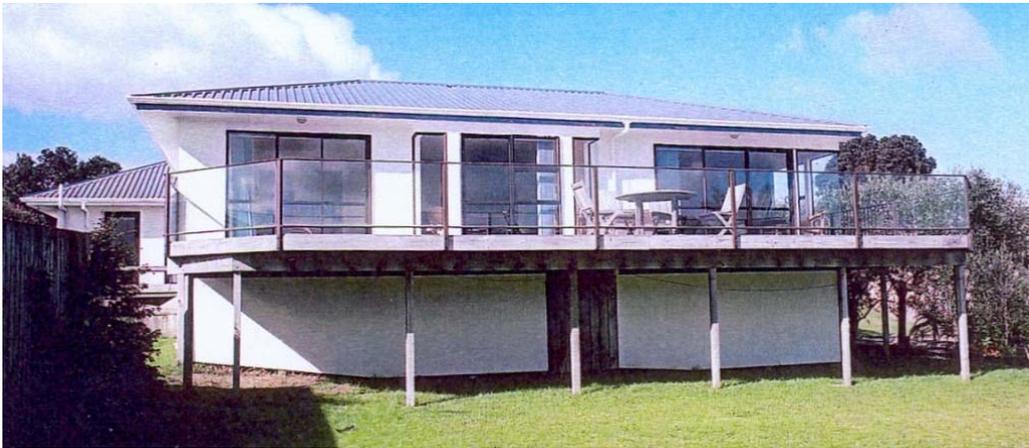


Determination 2006/106

Refusal of a code compliance certificate for a house with a monolithic cladding system at 39 North West Anchorage, Omaha



1 The matter 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 (“the Department”), for and on behalf of the Chief Executive of that Department. The applicants are the joint owners Mr and Mrs J A Reid (“the owner”), and the other party is the Rodney District Council (“the territorial authority”). The application arises from the refusal by the territorial authority to issue a code compliance certificate for an 11-year-old house and garage, unless changes are made to their monolithic cladding systems.
- 1.2 The matter 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 and garage (“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 house and a separate 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 single storey with a full-enclosed basement and the timber-framed ground floor is supported on poles and concrete block retaining walls. The house is of an L-shape on plan with the roof having hip and valley junctions. The exterior walls are of conventional light-timber frame construction and are sheathed with monolithic cladding. The eaves have 600mm projections except for some isolated locations where the projection is 100mm. A large timber-framed close-boarded deck is constructed along the west elevation and this also returns down the south elevation. The deck is supported on timber posts and beams, has a metal and glazed balustrade and is accessed by a stairway with a timber handrail. The main roof is extended over the entrance and this extension is supported on two timber posts. I note that the consented plans show monolithic-clad timber-framed balustrades to this deck.
- 2.1.2 The garage is single storey with a concrete ground floor slab and is of a simple shape on plan with the roof having hip junctions. The exterior walls are of conventional light-timber frame construction and are sheathed with monolithic cladding. The eaves have 600mm projections. A timber-framed close-boarded deck is constructed between the garage and the house and this has a timber handrail and two sets of access steps.
- 2.1.3 The expert commissioned by the Department to inspect the cladding (“the expert”, see para 5.1) removed a sample from the external wall framing and a subsequent analysis of the sample showed that the timber was not treated.
- 2.1.4 The cladding system to the exterior walls is what is described as monolithic cladding and consists of 7.5mm fibre-cement backing sheets fixed directly to the framing over the building wrap, to which a sponge finish plaster system has been applied. The plaster is finished with a paint coating system. As noted by the territorial authority, the territorial authority has not been officially notified of the change from the “Insulclad” cladding described on the consented plans to the fibre-cement cladding that has been applied to the house.

2.2 Sequence of events

- 2.2.1 The territorial authority issued a building consent on 19 April 1994.
- 2.2.2 The territorial authority wrote to the owner on 15 August 1996, noting that as there was no record of the completion of the building the owner was requested to contact the territorial authority to arrange to close off the consent. The territorial authority in a letter to the owner dated 19 June 1997 stated that as there had been no response to their previous letter the territorial authority now considered that the building consent had lapsed.

- 2.2.3 The owner wrote to the territorial authority on 21 July 1997, requesting the territorial authority to extend the building consent for a further 12 months. On 17 April 1998, the territorial authority approved a revised set of plans for the project.
- 2.2.4 The territorial authority carried out various inspections during the course of construction, and passed the post-line inspection on 9 April 1999.
- 2.2.5 The territorial authority carried out a visual inspection on 15 October 2003. In a letter to the owner dated 16 October 2003, the territorial authority stated that following that inspection, it had noted that 11 items required attention. The items specific to the cladding were the completion of the exterior painting and the sealing and retexturing of all cracks in the cladding.
- 2.2.6 The territorial authority carried out a further inspection on 29 March 2004 and in a letter to the owner dated 30 March 2004, the territorial authority required the cladding penetrations to be sealed and the painting to be completed. The territorial authority also requested a report from a BRANZ accredited advisor as to the condition of the cladding. The territorial authority noted that all direct fixed monolithic claddings would be individually assessed to establish their condition and compliance with the Building Code. It also reserved the right to issue further requisitions as required to bring the consent to a satisfactory conclusion.
- 2.2.7 The owner wrote to the territorial authority on 28 April 2004, querying why the territorial authority had not “signed off” the property. The territorial authority advised the owner on 3 May 2004 that the consent had been forwarded to the territorial authority’s Manager Building Control.
- 2.2.8 In response to the owner’s concern about the consent, the territorial authority wrote to the owner on 23 July 2004 stating that a further inspection could take place in early August 2004.
- 2.2.9 The territorial authority commissioned a consultant (“the consultant”) to inspect the cladding. This inspection was undertaken on 3 September 2004 and the subsequent report identified certain defects in the installed cladding. The report also noted that the territorial authority had not been informed of the change from the consented “Insulclad” cladding to the “Harditex” cladding that had been installed. The report stated that there was no record of the cladding having been inspected. The consultant was of the opinion that the James Hardie’s installation manual issued in July 1998 applied to the cladding on both the house and the garage. The highest moisture readings obtained in the building were 23.4% to 43.8% in the area of the ensuite. The consultant considered that the house did not comply with the Building Code and was of the opinion that the cladding should be removed and the building re-clad. In addition, the exposed galvanised structural fixings to the house should be upgraded to meet the durability requirements of the Building Code. The report had a set of photographs attached illustrating some of the defects recorded by the consultant.
- 2.2.10 The territorial authority issued a Notice to Rectify dated 27 September 2004. The “Particulars of Contravention” attached to the Notice repeated the issues raised by the consultant in his report. In addition, the territorial authority noted that any defective timber identified during any re-cladding process had to be replaced.

2.2.11 The owner applied for a determination on 30 May 2005.

3 The submissions

3.1 The owner stated that the matter of doubt or dispute related to the territorial authority's contention that the cladding was not code compliant. The owner noted that the builder was adamant that he had complied with the manufacturer's instructions and that there was no evidence of dampness or of moisture leaking into the building.

3.2 The owner provided copies of:

- the building plans and specifications
- the building consent information and some of the territorial authority's inspection documentation
- the correspondence with the territorial authority.

3.3 The territorial authority noted that the matter of doubt or dispute was the territorial authority's refusal to issue a code compliance certificate until the issues raised in the Notice to Rectify were addressed.

3.4 The territorial authority provided copies of:

- the Notice to Rectify
- the consultant's report.

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.

3.6 A copy of the draft determination was sent to the parties for comment on 14 November 2005. Both parties accepted the draft. There was some delay with the applicant's response due to the other action being taken with respect to the weathertightness performance of the building.

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 The cladding is not currently certified under section 269 of the Act, nor was it accredited under section 59 of the Building Act 1991. At the time the consent was issued for this house (April 1994), neither the "Insulclad" cladding system described in the consent application, nor the fibre-cement sheet system actually installed, was

approved as an acceptable solution under the Building Act 1991. The use of fibre-cement sheet over building wrap and fixed directly onto the studs in a low risk building (see para 6.5) is an acceptable solution in the latest edition of E2/AS1, approved under section 22 of the Act, which came into effect on 1 February 2005. I am therefore of the opinion that the cladding system on the house can be considered to be an Acceptable Solution.

4.3 In several previous determinations, the Department has made the following general observations about Acceptable Solutions and alternative solutions, which in my view remain valid in this case.

- 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 (see paragraph 2.1.3) inspected the cladding of the building on 29 July 2005 and furnished a report that was completed on 8 August 2005. The expert noted that the texture and paint indicate that the cladding is well coated over the larger exposed walls but that some of the construction details do not allow for the finishing and coating of the cladding to be complete. The expert made the following comments regarding the cladding:

- the base of the cladding is too close to the paving, the ground, or the decks at some locations
- the layout and installation of some of the backing sheets on the west elevation of the house is faulty and there are some unsealed joints at this location
- there is some cracking evident in the face of the wall cladding and adjacent to the jambs of the external joinery units at some locations
- some of the crack repairs that have already been undertaken are not effective
- there are no vertical or horizontal control joints installed in the cladding
- there is insufficient overlap at the base of the cladding around the garage
- the head flashings over the external joinery units of the house have insufficient end projections past the frames and the cladding is poorly finished over these flashings
- there are no head flashings installed to the external joinery units of the garage and over the house entry door

- there is no sealant applied to the jambs of the external joinery units
- the basement wall cladding to the south elevation of the house is not flashed or sealed against the deck boundary joist
- the cladding is not sealed at some locations where it adjoins the decks
- some penetrations through the cladding, including the meter box, which is rusting, are not effectively sealed.

5.2 The expert took non-invasive readings through the interior linings of the exterior walls and elevated readings were recorded at three locations, one of which was due to a leaking pipe connection. The expert also took further invasive readings at exterior areas of the cladding and obtained the following elevated readings.

For the house:

- 21% (at two locations), 23%, and 28% at the north elevation
- 21% (at four locations) and 36% at the south elevation
- 22% (at two locations), 24%, 26% (at two locations), 28% (at two locations), and 40% (at two locations) at the west elevation.

For the garage:

- 20%, 23%, 28% (at two locations), 30%, and 32% at the north elevation
- 24% and 26% at the east elevation
- 20%, 24% (at three locations), and 26% at the west elevation.

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 some of the west elevation and north elevation deck timber joists and bearers are decayed. Some connector and bolt hardware to the north elevation joists is missing. Water staining is also evident on the particleboard flooring of the dining room and lounge

5.5 Copies of the expert's report were provided to each of the parties. The owner responded by letter dated 10 September 2005. The owner had been in touch with the builder of the house who said he met the specifications that were current "at that date." I take that to mean "at the time of construction." The owner said the specifications quoted in the expert's report did not come into force until three months later.

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 the weathertightness characteristics, I find that the house and garage:

- generally have 600mm wide eaves extensions that provide good protection to the cladding areas below them
- are in a very high wind zone
- are single storey
- are of a fairly simple shape on plan
- have a deck constructed between them
- have external wall framing that is not treated, so is ineffective in resisting decay if it absorbs and retains moisture.

6.2.2 I also find that the house has a large elevated deck to two elevations

6.3 Weathertightness performance

6.3.1 I find that the cladding in general does not appear to have been installed according to good trade practice. As a result, there are a number of identified defects, set out in paragraph 5.1 and in the expert's report, which have contributed to the moisture penetration already evident in several locations in the external walls of both the house and the garage and to the decay evident in the deck support timbers.

6.3.2 The expert has pointed out the decay and lack of connections to the deck framing timbers. I recommend that the territorial authority fully investigate the condition of the decks to establish what remedial work should be undertaken to ensure their continuing structural viability. This matter should be treated as urgent considering the damage already evident in the deck structure. The territorial authority should also set out its requirements regarding the upgrading of the exposed galvanised structural fixings to the house.

- 6.3.3 I note that all elevations of both buildings demonstrate a low 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 cladding is inadequate because it has not been installed according to good trade practice, and is allowing water penetration into the framing of both the house and the garage at several locations at present. In particular, it demonstrates the key defects listed in paragraph 5.1. I have also identified the presence of a range of known weathertightness risk factors in this design. The presence of the risk factors on their own is not necessarily a concern, but they have to be considered in combination with the significant faults identified in the cladding system. It is that combination of risk factors and faults that indicate that the structures do not have sufficient provisions that would compensate for the lack of a drained and ventilated cavity. Consequently, I am not satisfied that the cladding system as installed complies with clause E2 of the Building Code.
- 7.2 In addition, the buildings are 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 both the house and the garage to remain weathertight. Because the cladding faults in these buildings are allowing the ingress of moisture at present, neither of them complies 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 a competent and suitably qualified person.
- 7.4 Effective maintenance of claddings (in particular of monolithic cladding) is important to ensure ongoing compliance with clauses B2 and E2 of the Building Code and is the responsibility of the building owner. Clause B2.3.1 of the Building Code requires that the cladding be subject to “normal maintenance”, however, that term is not defined in the Act.
- 7.5 I take the view that normal maintenance is that work generally recognised as necessary to achieve the expected durability for a given building element. With respect to the cladding, the extent and nature of the maintenance will depend on the

material, or system, its geographical location and level of exposure. Following regular inspection, normal maintenance tasks should include but not be limited to:

- Where applicable, following manufacturers' maintenance recommendations
- Washing down surfaces, particularly those subject to wind-driven salt spray
- Re-coating protective finishes
- Replacing sealant, seals and gaskets in joints.

7.6 As the external wall framing of this building is untreated, periodic checking of its moisture content should also be carried out as part of normal maintenance.

7.7 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 to both the house and the garage 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 issued a Notice to Rectify. A new 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 dictate how the defects described in paragraph 5.1 are to be remedied. That is for the owner to propose and the territorial authority to accept or reject.

8.3 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.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 9 November 2006.

John Gardiner
Determinations Manager