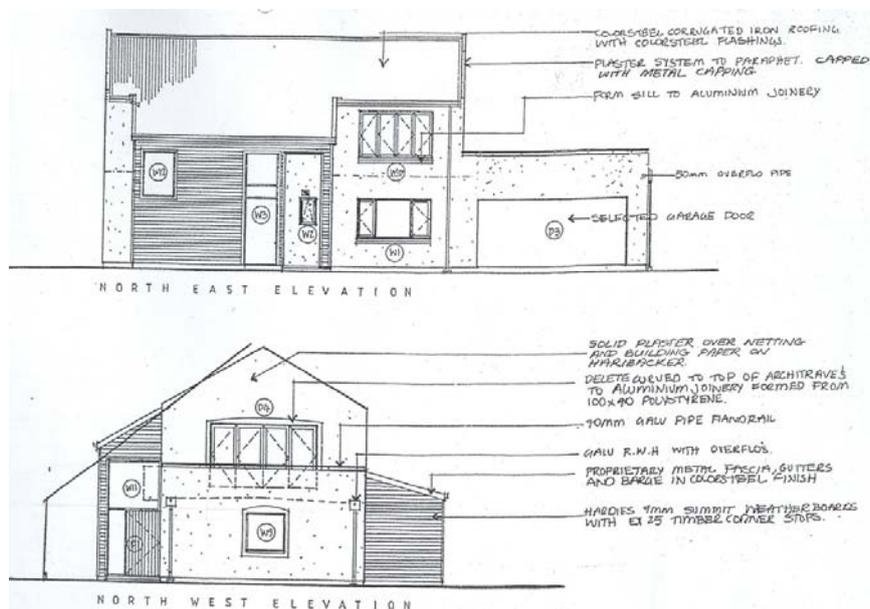


Determination 2006/74

Refusal of a code compliance certificate for a building with a monolithic cladding system at 2E Clairmont Heights, Nelson



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 applicant is the owner, Ms Van Gosliga (“the applicant”), and the other party is the Nelson City Council (“the territorial authority”).
- 1.2 The dispute for determination is whether the territorial authority’s decision to decline to issue a code compliance certificate for a 2-year-old house because it was not satisfied that the monolithic cladding complied with clauses B2 “Durability” and E2 “External Moisture” of the Building Code² (First Schedule, Building Regulations 1992) is correct.

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

² The Building Code is available from the Department’s website at www.dbh.govt.nz.

- 1.3 The question to be determined is whether I am satisfied on reasonable grounds that the wall cladding as installed to the external walls of the building (“the cladding”), complies with the Building Code (see sections 177 and 188 of the Act). By “the wall cladding as installed” I mean the components of the system (such as the backing materials, the flashings, the joints and the coatings) as well as the way the components have been installed and work together.
- 1.4 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. I have not considered any other aspects of the Act or the Building Code.

2. The building

- 2.1 The building work consists of a two-storey detached house, with an attached single storey garage, which is situated on a flat site in a low wind zone in terms of NZS 3604³. The house shape is fairly simple, but includes several complex features and intersections. Construction is conventional light timber frame, with concrete foundations and aluminium windows. The two-storey portion of the house has a 30° profiled metal gable roof with monolithic clad parapets at each end and a lower level lean-to on the southwest elevation. The roof extends over a projecting bay to the northeast, into which the main entrance is recessed. The house has fibre cement weatherboard cladding to the projecting bay and lean-to, with monolithic wall cladding to the remaining walls. There are no verge projections, and eaves projections are provided by the gutters only. A large tiled deck sits above the garage to the northwest, with the garage walls extending up to form the monolithic clad deck balustrades.
- 2.2 The specification makes no reference to timber treatment, although the consent drawings note deck and balustrade framing as “H3 timber”. I have received no other written evidence as to the treatment, if any, of the external wall framing timber. Based on this evidence, I consider that the external wall framing is unlikely to be treated.
- 2.3 The cladding is a monolithic cladding system described as stucco over a solid backing. In this instance it consists of 4.5mm “Hardibacker” sheets fixed directly to the framing timbers, and covered by a slip layer of building wrap, metal-reinforced 20mm thick solid plaster (specified as a “Rockcote Literock Plaster system”) and a flexible multi-coat paint coating.
- 2.4 I have seen no evidence of producer statements or warranties for the cladding.

³ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

3. Sequence of events

- 3.1 The territorial authority issued a building consent on 21 January 2003, based on a building certificate (dated 16 October 2002) issued by Prime Building Compliance Ltd (“the building certifier”) for the purposes of gaining a building consent.
- 3.2 The building certifier carried out all inspections during the course of construction including a “plaster inspection” on 21 September 2003, which noted “Ensure minimum 15° slope to handrail top and control joints every 4m.”
- 3.3 The building certifier carried out the final inspection on 16 February 2004, with subsequent recheck inspections of outstanding items on 19 April 2004 and 8 July 2004. The list of outstanding items shows most items ticked as completed on 2 September 2004. It appears that the construction was substantially complete by December 2004, and tenants occupied the house from January 2005.
- 3.4 In a facsimile to the applicant dated 19 November 2004, the building certifier noted that the truss design certificate was the only outstanding documentation required for the issue of the code compliance certificate.
- 3.5 On 10 January 2005 the building certifier sent what appears to be a pro-forma letter to the applicant, which explained that recent changes to building regulations had limited certifiers’ scopes of approval for claddings. The letter noted that the project could be affected if a code compliance certificate was not issued before March 2005, and that:

As these limitations may affect this Building Consent, we ask that you contact us to discuss what documentation/inspections are required for possible issue of Code Compliance.

- 3.6 It appears that amendments to the wall claddings shown in the consent drawings had been made without the building certifier advising the territorial authority, and that some delays were experienced in completing the documentation necessary to allow a code compliance certificate to be issued.
- 3.7 The building certifier issued a new building certificate dated 14 March 2005 and an amended scope of engagement that excluded “Exterior cladding outside scope of E2/AS1 (solid plaster over rigid backing)” – and handed the project to the territorial authority for completion of wall cladding inspections.
- 3.8 In a letter to the applicant dated 16 March 2005, the building certifier advised that all documentation had been supplied to the territorial authority for completion of inspections.
- 3.9 In a letter to the applicant dated 23 March 2005, the territorial authority explained that, in order to be satisfied that a building complied with the building code, it needed to inspect work as it progressed and therefore:

As we have not been engaged to carry out any inspections of the work prior to that work being completed Nelson City Council cannot be satisfied on reasonable grounds that the

work complies with the code and therefore will not be in a position to issue a Code Compliance Certificate.

The territorial authority also noted that the house was considered to have a high weathertightness risk, and suggested that a determination be sought on the code compliance of the exterior cladding.

- 3.10 In a letter to the applicant dated 10 May 2005, the building certifier supplied a copy of the approved amended plans for the house, noting that the solid plaster cladding complied with the building code at the time of the building consent and that:

As a result of the weathertightness issues which have surrounded the industry over the last few years Councils are looking closely at cladding materials prior to issuing CCC's.

The NCC may want to inspect the exterior cladding and this could highlight areas of concern. I have looked at the plans and believe it would be prudent to install a metal capping to the balcony wall and reinstall the handrail using side fixings. In saying that, the Council may not have any concerns.

- 3.11 The building certifier's approval as a building certifier expired on 25 November 2005.
- 3.12 The territorial authority did not issue a notice to fix as required under section 164(2) of the Building Act 2004, and I am not aware of any further communication that may have taken place between the applicant and the territorial authority.
- 3.13 The applicant's application for a determination was received by the Department on 13 March 2006.

4. The submissions

- 4.1 In notes included in the application, the applicant described the subject of the determination as the code compliance of the "exterior cladding", and noted that:

Prime Building Compliance Ltd forgot to sign code of compliance and forgot to advise Nelson City Council of amendments to property at 2E Clairemont Heights during construction.

- 4.2 The applicants forwarded copies of:

- some of the building plans and consent documentation
- some of the inspection records
- the final building certificate
- the correspondence from the building certifier
- the letter from the territorial authority
- various technical information, producer statements and other statements.

- 4.3 The territorial authority made no submission.

- 4.4 A copy of the applicant's submission was provided to the territorial authority, which made no submission in response.

5. The expert's report

- 5.1 The expert inspected the claddings of the building on 19 April 2006, and furnished a report that was completed on 24 April 2006. The expert noted that "generally the building appears to be sound and true and workmanship is generally of a good standard", but that some areas showed insufficient consideration of flashings and moisture penetration. The expert noted that penetrations were generally well-sealed, cladding clearances to paved areas were adequate and metal head flashings to windows and doors appeared satisfactory. The expert noted that, although there was no clear evidence of vertical control joints, some vertical cracking to the plaster had occurred in areas where control joints would be expected, which indicated the likely presence of vertical control joints within the plaster.
- 5.2 The expert scraped away a small section of plaster at the sill to jamb junction of a window to examine the installation. I accept that the location opened is typical of similar locations around the building.
- 5.3 The expert took non-invasive moisture readings through interior linings of exterior walls throughout the house, and noted no elevated readings. Invasive moisture readings were taken through the external wall cladding, and readings of 24% to 26% were recorded in the timber framing below the top of the deck balustrade.

Moisture levels above 18% recorded after the 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:
- although it appears likely that adequate vertical control joints have been provided, there are no visible signs or cracks in the stucco which would indicate that horizontal interstorey control joints (as shown in the drawings) have been provided
 - there are isolated cracks and hairline cracking in the stucco in some locations
 - the opening up of the stucco at the window sill to jamb junction showed no evidence that sill and jamb flashings have been installed
 - the window jambs in the fibre cement weatherboards have been poorly sealed with compressible foam, which is unpainted with the building wrap showing in some locations
 - the deck balustrade appears to have a metal flashing installed under the plaster, which has not been effective in preventing moisture penetration as elevated moisture levels were noted in the balustrade framing below. The screw fixings of the handrail are rusting, which indicates moisture penetration at the fixing penetrations through the top of the balustrade

- a membrane joint lap in the deck gutter is lifting, and the membrane is poorly dressed into the rainwater head – with no adhesive, and loose membrane apparent
- there is no provision for overflow drainage provided to the deck or the rainwater heads
- the hose tap penetration, the light fittings and the extract grilles through the stucco and the weatherboards on the southeast elevation are unsealed
- the bottom of the apron flashings lack kickouts, and are poorly weatherproofed with gaps showing in some locations
- some predrilled holes in flashings and roofing are not adequately sealed, and there is a general over-reliance on sealants for weatherproofing.

5.5 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 Solution⁴, in this case E2/AS1, which will assist in determining whether the 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.
- 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.

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 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 Department and its antecedent, the Building Industry Authority, have also described weathertightness risk factors in previous determinations (refer to Determination 2004/1 *et al*) relating to cladding and these factors are also used 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 may be less

⁴ 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.

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 these characteristics I find that the building:

- is built in a low wind zone
- is a maximum of two storeys high
- is fairly simple in plan and form
- has parapets at gable ends and eave projections provided only by gutters
- has an enclosed deck, with monolithic clad balustrades, situated above the garage
- has monolithic cladding which is fixed directly to the framing
- has external wall framing that is unlikely to be treated, so providing no resistance to the onset of decay if the framing absorbs and retains moisture.

6.2.2 When evaluated using the E2/AS1 risk matrix, these weathertight features show that all elevations of the building demonstrate a high weathertightness risk. 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 Generally the cladding appears to have been installed in accordance with reasonable trade practice, but some junctions, penetrations and edges are not well constructed. These areas are as described in paragraph 5.4 and in the expert's report as being the:

- possible lack of horizontal control joints
- cracking to the cladding
- lack of sill and jamb flashings to windows in the stucco cladding
- poor weatherproofing of the jambs to windows in the weatherboard cladding
- top fixing of the handrails and inadequate weatherproofing of the top of the deck balustrade
- the membrane laps in the deck gutter and flashing of the rainwater heads
- lack of overflows to the deck and rainwater heads

- lack of sealing of the extract grilles, light fittings and hose tap
- lack of kickouts and poor weatherproofing of the bottom of the apron flashings
- inadequate sealing of holes in flashings and roofing in some locations.

6.3.2 Notwithstanding the fact that the backing sheets behind the stucco are fixed directly to the timber framing, thus inhibiting drainage and ventilation behind the cladding, I have noted certain compensating factors that assist the performance of the cladding in this particular case:

- The cladding appears to have been installed to reasonable trade practice.
- The house is a fairly simple, two-storey building, with a limited number of complex junctions and penetrations
- With the exception of the deck balustrade the house has proven to be weathertight to date.

6.3.3 I consider that these factors help compensate for the lack of a ventilated cavity and can assist the building 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 satisfied that the cladding system as installed 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 on the building are likely to allow the ingress of moisture 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 should be expected to result in the building becoming and remaining weathertight and in compliance with clauses B2 and E2.

7.4 I note that effective maintenance of 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 in the Act.

- 7.5 As the external wall framing of this building is likely to be untreated, periodic checking of its moisture content should also 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.
- 7.8 Finally, I consider that the cladding will require on-going inspection, maintenance and moisture monitoring to ensure its continuing code compliance.

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 become 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 will consequently result in the house being weathertight and in compliance with clauses B2 and E2. Work to correct these items may expose additional associated defects that are not yet apparent. All rectification work is to be completed to the approval of the territorial authority.
- 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 a 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 detailed 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 21 August 2006.

John Gardiner
Determinations Manager