

Determination 2006/100

Refusal of a code compliance certificate for additions to a house with a monolithic cladding system at 1076 Hundred Line Road West, Otautau, Southland



1 The matter 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 (“the Department”), for and on behalf of the Chief Executive of that Department. The applicants are the original owners, Mr and Mrs Pickett acting through their legal advisers, together with the new owner (“the applicants”), and the other party is the Southland District Council (“the territorial authority”). The application arises because the territorial authority declines to issue a code compliance certificate for alterations and additions to a house (“the additions”), unless changes are made to its monolithic cladding system.
- 1.2 The matter for determination is whether I am satisfied on reasonable grounds that the territorial authority’s decision to decline to issue a code compliance certificate for additions and alterations to a house made over 10 years is correct. The territorial authority declined the application because it was not satisfied that the monolithic cladding as installed on the new building work complied with clauses B2

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

“Durability” and E2 “External Moisture” of the Building Code² (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.

2 The building

- 2.1 The building work involves alterations and additions to an existing single-storey house situated on a level site that is in a high wind zone in terms of NZS 3604³. The work was carried out in the following 3 stages:

Stage 1: Kitchen alterations.

Stage 2: Opening out and forming new living area.

Stage 3: Construction of new double garage, entry area, and laundry.

The additions are of a relatively simple shape on plan, and the roofs have hip and valley junctions and 200mm or 400mm eaves projections. There are no decks or balconies attached to the building.

- 2.2 The specification calls for the framing timber to be pressure treated Pinus Radiata. However, the expert took samples from the external wall framing and was of the opinion that the timber used is New Zealand Oregon. Accordingly, based on this report, I accept that the external wall framing is unlikely to be treated to a level that is effective in helping resist decay if it absorbs and retains moisture.
- 2.3 The wall cladding to the timber-framed walls is a monolithic cladding system described as 25mm thick stucco plaster over a solid backing of “Hardibacker” fibre-cement backing sheets fixed through the building wrap directly to the framing timbers. The plaster is finished with two coats of “Dulux Weathershield” paint. I note that this cladding differs from the “Harditex” system indicated on the consented plans. The territorial authority has apparently not commented on this system change.

3 Sequence of events

- 3.1 The territorial authority issued a building consent on 20 November 1996.
- 3.2 According to the original owners, the additions were constructed over a period of 10 years from 1996 with the cladding being installed in 1997 and 2000.

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

³ New Zealand Standard NZS 3604: 1999 Timber framed buildings.

3.3 The territorial authority carried out various inspections during construction, undertaking an overall inspection on 20 February 2006. Following this inspection, the territorial authority wrote to the original owners on 1 March 2006, raising questions regarding the cladding and noting that there were still other items to complete. The territorial authority stated that it was unable to issue a code compliance certificate because of “Durability issues relating to the cladding system installed”.

3.4 The territorial authority issued a notice to fix dated 3 March 2006, which stated that the building work did not satisfy the following provisions of the Building Code:

B2 “Durability” in that the building elements do not meet the provisions B2.1, B2.2, B2.3.1...

E2 “External Moisture” in that the building elements do not meet the provisions E2.3.3, E2.3.5...

The applicants were to either install a cladding system that complied with the requirements of the Building Code or to apply to the Department for a determination.

3.5 The Department received the application for a determination on 1 May 2006.

4 The submissions

4.1 In a letter to the Department dated 20 April 2006, the original owners set out the time sequence for the completion of the additions and described the inspections carried out by the territorial authority. The applicants noted that the territorial authority had not raised issues regarding the cladding during its inspection processes. The applicants were concerned that inspections carried out between 1996 and 2000 had not been formally recorded and took issue with the moisture investigations and inspections carried out by the territorial authority. It was also noted that there had been no evidence of moisture entry over the past 10 years.

4.2 The original owners wrote to the Department on 2 June 2006, noting that they had sold the property and had obligations under a sale and purchase agreement. The new owner was agreeable to the expert inspecting the additions.

4.3 The applicant forwarded copies of:

- the plans and specifications
- the notice to fix
- some correspondence and documentation from the territorial authority
- a letter from the building contractor dated 20 February 2006, describing the cladding and painting systems and noting that there was no evidence of moisture ingress into the additions. The contractor also stated that remedial work, comprising the sealing of the construction joints and around the windows, had been carried out
- a set of photographs showing aspects of the construction process.

- 4.4 Copies of the submissions and other evidence were provided to each of the parties.
- 4.5 The applicants requested an extension of time in which to respond to the expert's report. I accepted this request but, in order to avoid delay, I issued this determination as a draft on 28 August 2006. The applicants wrote to the Department on 19 September 2006, advising that they accepted the draft determination.
- 4.6 The territorial authority also responded on 1 September 2006, stating that while the territorial authority accepted the overall outcome set out in the draft, it still had concerns about the expert's report. The territorial authority basically repeated the issues set out in their letter of 1 August 2006 in this respect.
- 4.7 I have considered the territorial authority's response but in accepting the expert's opinion on the matters raised by the territorial authority I have not amended the conclusions reached in the draft determination.

5 The expert's report

- 5.1 The expert inspected the cladding of the building on 28 June 2006 and furnished a report that was completed on 17 July 2006. The expert was of the opinion that the cladding system had been carried out with appropriate regard to the relevant standard and good practice documentation. The stucco plaster and the paint coating are of a high standard and provide a "dense full acrylic finish", and there is only minor evidence of shrinkage cracking. The expert was of the opinion that the control joints are properly constructed and are adequate for the building work in question. There are no ground clearance concerns and the additions lack penetrations through the cladding and abutments such as balconies or return walls.
- 5.2 The expert removed areas of the plaster to examine the construction. I am prepared to accept that these examples are representative and apply to similar details throughout the additions. The expert also removed a small section of the timber wall framing at two locations and concluded that it was constructed of New Zealand Oregon.
- 5.3 The expert took non-invasive moisture readings through the interior linings of the exterior walls. Higher readings were recorded against the plywood linings of the garage but the expert considered that these were normal taking into consideration the lack of paint finish and the temperature within the garage area. The expert then took two invasive moisture readings into the wall framing through the interior linings and readings of 15% and 20% were recorded.
- 5.4 Invasive reading of 11%, 13% and 14% were obtained into the exterior of the wall framing, and invasive readings of 19% and 23% were recorded at the treated timber garage door facings. The expert concluded that his inspection revealed "no indications of dampness, decay or excessive mould to the interior dwelling surfaces and the whole of the interior appeared dry and sound and free from dampness or major defect".
- 5.5 The expert made the following comments regarding the cladding:
- The head flashings to the exterior joinery units do not extend far beyond the

jamb and there are minor gaps at the ends of the flashings.

- There are gaps between the cladding and the jambs of the exterior joinery units.
- The junctions between the timber garage door jamb facings and the cladding are not sealed.

5.6 Copies of the expert's report were provided to each of the parties on 26 July 2006. The territorial authority responded in a letter dated 1 August 2006 and, in summary, submitted that:

- the relevant documentation indicates that head, sill and jamb flashings are required to the exterior joinery units as are 30mm minimum end projections to the head flashings
- the two-coat plaster system applied to the additions is not in accordance with NZS 4251: Solid Plastering, Part 1
- the junctions between the base of the cladding and the masonry veneer or the paving are inadequate at some locations.

5.7 Following a request from the Department, the expert commented on the territorial authority's response in a letter to the Department dated 14 August 2006. The expert's comments are summarised as follows:

- While the head flashing lacked appropriate jamb overhangs, the remainder of the exterior joinery perimeter junctions were as "accepted and referenced in both the BRANZ Good Stucco Practice document and the Hardies jamb and sill details . . .".
- The plaster cladding system is "a full two-coat plaster with a finish coat and complies with NZS 4251 table 6".
- The ledge formed where the stucco plaster abuts the existing masonry veneer satisfies the requirements of B2 and the junctions between the stucco plaster and the plastered brick veneer are well constructed and fully sealed.

The expert stated that he found no evidence on site to support the territorial authority's concerns.

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 named features of the additions 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)⁵ 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 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 work:

- is situated in a high wind zone
- is single storey and is of a relatively simple shape on plan
- has 200mm and 400mm wide high level eaves projections that provide some protection to the cladding beneath them
- has no decks or balconies
- has external wall framing that is unlikely to be treated to a level that is effective in helping resist decay if it absorbs and retains moisture.

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.

⁵ Copies of all determinations issued by the Department can be obtained from the Department's website.

6.2.2 When evaluated using the E2/AS1 risk matrix, these weathertight features show that all elevations of the building demonstrate a low 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 Generally the cladding appears to have been installed in accordance with good trade practice. However, some junctions are not well constructed, and these are as described in paragraph 5.5 and in the expert's report as being:

- the head flashings to the exterior joinery units not extending far beyond the jambs and the minor gaps at the ends of the flashings
- the gaps between the cladding and the jambs of the exterior joinery units
- the unsealed junctions between the timber garage door jamb facings and the cladding.

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

- Apart from the noted exceptions the cladding is installed to good trade practice.
- The additions are single-storey and of a simple shape on plan.
- The additions have roof projections that provide some protection to the wall cladding areas below them.
- The additions have no decks or balconies.
- There is no evidence of moisture penetration into the walls over a period of 10 years.

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 Discussion

7.1 I consider that the expert's report establishes there is no evidence of external moisture entering the additions, and accordingly, that the monolithic cladding does comply with clause E2 at this time.

7.2 However, 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 additions to remain weathertight. Because the cladding faults on the additions are likely to allow the ingress of moisture in the future, the additions do 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 identified with the cladding system occur in discrete areas, I can conclude that satisfactory rectification of the items outlined in paragraph 5.5 will result in the building remaining weathertight and in compliance with clauses B2 and E2.
- 7.4 It is emphasized 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.
- 7.5 I decline to incorporate any waiver or modification of the Building Code in this determination.

8 Conclusion

- 8.1 In accordance with section 188 of the Act, I determine that the house is weathertight now and therefore the cladding complies with clause E2. However, as there are a number of items to be remedied to ensure it remains weathertight and thus meets the durability requirements of the Building Code, I find that the house does not comply with clause B2. Accordingly, I confirm the territorial authority's decision to refuse to issue the code compliance certificate.
- 8.2 I also find that rectification of the items outlined in paragraph 5.5 to the approval of the territorial authority, along with any other associated faults that may become apparent in the course of that work, will consequently result in the house remaining weathertight and in compliance with clauses B2 and E2.
- 8.3 Effective maintenance of claddings (in particular 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.
- 8.4 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.

- 8.5 As the external wall framing of the new and existing sections of the building is not likely to be treated to a level that will resist the onset of decay if it gets wet, periodic checking of its moisture content should also be carried out as part of normal maintenance.

9 The Decision

- 9.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the building work does not comply with clause B2 of the Building Code, and accordingly confirm the territorial authority's decision to refuse to issue a code compliance certificate.
- 9.2 I also find that rectification of the items outlined in paragraphs 6.3.1 will consequently result in the house remaining weathertight and in compliance with clauses B2. Work to correct these items may expose additional associated defects not yet apparent. All rectification work is to be completed to the approval of the territorial authority.
- 9.3 I note that the territorial authority has issued a notice to fix that also required provision for adequate ventilation, drainage and vapour dissipation. A new notice to fix should be issued requiring the owners to bring the house into compliance with the Building Code. The notice to fix may list the items to be rectified but it should not specify how compliance is to be achieved as this is for the owner to propose and for the territorial authority to accept or reject. It is important to note that the Building Code allows for more than one method of achieving compliance.
- 9.4 I would suggest that the parties adopt the following process to meet the requirements of clause 9.3. Initially, the territorial authority should issue the notice to fix, listing all the items that the territorial authority considers to be non-compliant. The applicant 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 24 October 2006.

John Gardiner
Determinations Manager