

Determination 2007/46

Refusal of a code compliance certificate for a building with stone veneer and monolithic cladding systems at 45 Viewmount Street, Nelson



1. The matters 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 applicant is the owner, Mr Muir (“the applicant”), acting through an agent, Mr Hislop of Building Solutions Ltd (“the consultant”); and the other party is the Nelson City Council (“the territorial authority”).
- 1.2 The matter for determination is the territorial authority’s decision to refuse to issue a code compliance certificate for a house because it was not satisfied that it complied with clause B2 “Durability” and E2 “External Moisture” of the Building Code² (First Schedule, Building Regulations 1992).

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 matters to be determined are whether:
1. the cladding as installed to the walls of the building (“the cladding”) complies with clause E2 (see sections 177 and 188 of the Act). By “the 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.
 2. the elements that make up the building work comply with clause B2, taking into account the age of the building work.
- 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. As regards the cladding, I have evaluated this information using a framework that I describe more fully in paragraph 6.1.
- 1.5 In this determination, unless otherwise stated, references to sections are to sections of the Act and references to clauses are to clauses of the Building Code.

2. The building

- 2.1 The building work consists of a detached house situated on a sloping northwest-facing site, which is in a high wind zone for the purposes of NZS 3604³. The house is two storeys high in part, with a basement garage, entrance and office beneath the western half. Construction of the basement level is specifically engineered, with a concrete slab, concrete and concrete block foundations, retaining walls and other walls, structural steel framing and suspended proprietary concrete slab floors to the upper level. The main level of the house is conventional light timber frame construction, with aluminium windows, stone veneer and monolithic wall cladding. The house shape is fairly simple in plan, with a single-level 20° pitch profiled metal hipped roof that incorporates a small upper area of flat membrane roofing, two glazed areas and deep eaves projections of about 900mm overall above all walls. A timber retaining wall is set into the slope beside a path alongside the south elevation.
- 2.2 The suspended concrete floors step down to provide a cantilevered concrete floor deck along the full length of the north elevation. A continuous 100mm concrete upstand is provided at the outer edges of the deck, which supports a timber-framed and monolithic-clad balustrade with top-mounted metal handrails.
- 2.3 I have received no evidence about the treatment of the timber wall framing and I therefore consider that the external wall framing is unlikely to be treated. However, I note that untreated timber framing may be used in conjunction with a stone veneer installed over a drained and ventilated cavity. The consultant has provided evidence that the timber to the deck balustrade is H3 treated.

³ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

- 2.4 The cladding system to the south elevation and to the deck balustrades is a monolithic cladding system described as stucco over a solid backing. In this instance it consists of 4.5 mm fibre-cement “Hardibacker” sheets, which are covered by a slip layer of building wrap, metal-reinforced 20mm thick solid plaster and a flexible paint coating. The remaining walls are “Oamaru” stone veneer over a 40mm drained and ventilated cavity.

3. Sequence of events

- 3.1 The territorial authority issued building consent number 970723 on 7 July 1997 and undertook various inspections during construction, including a preline inspection on 7 December 1998. The last inspection was recorded on 26 August 1999, which noted that the stucco preparation, building wrap and flashings were complete.
- 3.2 It appears that the owner continued to work on the house until the end of 2004, and no further inspections were carried out until the applicant requested a code compliance certificate in August 2005. The territorial authority carried out a final inspection on 26 August 2005, and the inspection record shows all items ticked as “checked and approved”, except for the stucco cladding. The record noted “very tidy, well built and durable material home.”
- 3.3 During the final inspection, the territorial authority noted the construction of an unauthorised timber retaining wall, and the owner engaged the consultant to prepare a report on that matter. (I note that this matter has not yet been resolved, but also note that it does not form part of the dispute between the parties and will therefore not be considered further in this determination.)
- 3.4 In a letter to the applicant dated 24 April 2006, the territorial authority explained that it would not issue a code compliance certificate as the age of the house presented a problem with regard to the durability provisions of the building code, noting:
- As it is now approximately nine years since construction commenced, it would not be appropriate for this period to be added to the durability time frames identified in the New Zealand Building Code. Nelson City Council therefore cannot be satisfied on reasonable grounds that the work now meets all the requirements of the building code, especially B2 durability and E2 external moisture.
- 3.5 The territorial authority did not issue a notice to fix as required under section 164(2) of the Building Act 2004.
- 3.6 The consultant wrote to the territorial authority on behalf of the applicant on 26 June 2006, and attached the applicant’s summary recording the progress on construction of the house from the commencement of siteworks in May 1998 to the completion of final finishing work in December 2004. The consultant noted that a code compliance certificate could not have been requested until 2005, and asked the territorial authority to reconsider the matter. It appears that no response was received.
- 3.7 On 28 August 2006 the Department received an application for a determination from the owner.

4. The submissions

4.1 In a letter accompanying the application (and within the application), the consultant explained his involvement with the project and noted that the territorial authority had identified B2 and E2 as the only issues of concern, appearing to accept compliance with all other aspects of the building code. The consultant concluded:

It appears a property owner who undertakes completion of the building project over a prolonged period, for whatever reason, is unfairly treated by Council. Council failed to pre-warn the homeowner that a protracted building process would ultimately place the issue of the Code Compliance Certificate in jeopardy, as has transpired in this situation.

4.2 The applicant forwarded copies of:

- some of the consent drawings and specification
- some of the consent documentation
- some of the inspection records
- the correspondence with the territorial authority
- various other statements.

4.3 Copies of the applicant's submission were provided to the territorial authority which made no submission in response.

4.4 A copy of the draft determination was sent to the parties on 11 December 2006. The draft was issued for comment and for the parties to agree a date when all the building elements installed in the house complied with Building Code Clause B2 Durability.

4.5 The consultant responded to the draft determination in a letter to the Department dated 21 December 2006. The consultant submitted supplier invoices showing that the timber to the balustrade framing was H3 treated. I have amended the determination accordingly.

The consultant also submitted a chronology of dates when various stages of the work were completed and provided copies of diary entries as verification. The consultant submitted that compliance with B2 was achieved in June 2003 as this was the date the deck handrail (refer paragraph 2.2) was completed.

4.6 The territorial authority responded to the draft determination in an email dated 12 March 2007. The territorial authority submitted that compliance was achieved sometime between when the applicant moved into the house (6 March 1999) and the plastering of the exterior (December 1999). Consequently, the territorial authority submitted that compliance with B2 was achieved on 31 December 1999.

4.7 Subsequent communication between the Department and the parties resulted in the consultant agreeing that compliance with B2 was achieved on 31 December 1999.

5. The expert's report

- 5.1 As discussed in paragraph 1.4, I engaged an independent expert capable of providing an assessment of the condition of those building elements subject to the determination. The expert is a member of the New Zealand Institute of Building Surveyors.
- 5.2 The expert inspected the claddings of the building on 5 and 10 October 2006, and furnished a report that was completed on 10 October 2006. The expert noted that the construction workmanship was generally of a very good standard and, apart from some isolated areas, it was “apparent that consideration has been given to flashings and sealing to prevent water entry”. The expert also noted that the house was very well maintained, recent repairs to cracks in the concrete deck topping were satisfactory, penetrations appeared well-sealed and clearances below the claddings were adequate. The expert noted no visible evidence that control joints had been installed in the solid plaster.
- 5.3 The expert noted that the recessed windows and doors in the stucco incorporated metal head flashings, while the window head flanges in the stone veneer were satisfactorily sealed behind the steel lintel angles. The expert removed a sill block in the veneer, and noted that adequate malthoid flashings were installed at the jambs and sills. The expert drilled holes in the stucco cladding at the jambs and sills of a window, and noted metal jamb flashings. I accept that the locations opened are typical of similar locations around the building.
- 5.4 The expert took non-invasive moisture readings through interior linings of exterior walls throughout the house, and noted no elevated readings. The expert took invasive moisture readings through the external wall claddings (under windows, balustrade tops and in bottom plates) and the highest reading was recorded at 16%.
- 5.5 Commenting specifically on the cladding the expert noted that:
- the edge of the small area of flat membrane roof is lifting in one area, and there is an area of minor damage to the membrane
 - there is no back flashing at the junction of the stucco balustrades with the stone veneer cladding and, while the wall framing is protected by the veneer cavity, additional protection is needed to protect the balustrade framing
 - the stucco has been carried down over the concrete deck upstand to the concrete deck floor, with no anti-capillary gap to prevent moisture from “wicking” through the plaster to the framing
 - there are several isolated shrinkage cracks in the stucco.
- 5.6 The expert made the following additional comments:

- The window sills in the stucco lack sill flashings, but are currently weathertight and protected beneath 900mm deep roof overhangs on the sheltered side of the house. The very limited risk involved in this situation would be outweighed by the risk of damage involved in retro-fitting flashings at this stage.
- While there is no gap or back flashing at the junction of the stucco with the lower concrete retaining wall, the stucco overlaps the concrete with a satisfactory drip edge, and the junction is currently weathertight and protected beneath 900mm deep roof overhangs on the sheltered side of the house.
- While the handrails are fixed through the stucco top of the deck balustrades, the fixings are well sealed, the balustrade framing is fully wrapped in “Equus” membrane, and there is no evidence of moisture penetration into the framing.

5.7 A copy of the expert’s report was provided to each of the parties on 17 October 2006.

5.8 The consultant responded to the expert’s report in a letter to the Department dated 25 October 2006, expressing his concern with regard to the expert’s comment that the report was unlikely to provide a full list of defects due to the limited nature of the inspection and noting that the comment appeared to imply that further defects may be discovered. I consider that the expert’s report, with the other information submitted, has provided sufficient evidence to allow me to reach the conclusion outlined in paragraph 7.3.

Matter 1: The Cladding

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

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.

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 determinations⁵ (for example, Determination 2004/1) 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 these characteristics I find that this house:

- is built in a high wind zone
- is a maximum of two storeys high
- is fairly simple in plan and form
- has a concrete deck with timber-framed monolithic clad balustrades
- has eaves of about 900mm (including gutters) over all walls
- has some walls with monolithic cladding fixed directly the framing that is
- has some external wall framing, installed in conjunction with monolithic cladding, that is unlikely to be treated to a level that will provide resistance to the onset of decay if the framing absorbs and retains moisture.

- 6.2.2 When evaluated using the E2/AS1 risk matrix, all elevations of this house 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 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, taking account of the expert's opinion, I consider remedial work is necessary in respect of the following:

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

- The edge of the small area of flat membrane roof is lifting in one area, and there is an area of minor damage to the membrane.
- There is no back flashing at the junction of the stucco balustrades with the stone veneer cladding and, while the wall framing is protected by the veneer cavity, additional protection is needed to protect the balustrade framing.
- The stucco has been carried down over the concrete deck upstand to the concrete deck floor, with no anti-capillary gap to prevent moisture from “wicking” through the plaster to the framing.
- There are several isolated shrinkage cracks in the stucco.
- Any other building elements associated with the above that are consequently discovered to be in need of rectification.

6.3.2 I note the expert’s additional comments in paragraph 5.6, and accept that these features are adequate in the particular circumstances described.

6.3.3 I also note that the expert was unable to visually verify that control joints had been installed in the solid plaster walls. However, given the requirements in the specification, the territorial authority’s inspection of the plaster at the “scratch coat” stage (refer paragraph 3.1), the lack of significant cracking after 7 years, and the good workmanship apparent in the cladding, I am prepared to accept that it is likely that adequate control joints have been installed in the solid plaster. Alternatively, if adequate control joints have not been installed, the fact that the stucco cladding has been used only on the sheltered elevation of the house may have assisted it to perform reliably.

6.3.4 Notwithstanding the fact that the stucco over a slip-layer over a rigid backing 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 demonstrates good workmanship and is installed to good trade practice.
- The house has deep eaves projections over all walls, which provide very good protection to the cladding below them.
- The stucco cladding is limited to one sheltered elevation of the building.
- The cladding is currently preventing moisture penetration into the framing.

6.3.5 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 building, and accordingly, that the wall claddings do comply with clause E2 at this time.
- 7.2 However, the house 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 I conclude that, because the faults 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 will result in the building remaining weathertight and in compliance with clause B2. I have given further consideration to the question of B2 compliance under issue 2 of this determination.
- 7.4 I emphasise 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 Effective maintenance of claddings (in particular of monolithic claddings) 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.
- 7.6 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.
- 7.7 Some of the external wall framing of this house is installed in conjunction with monolithic cladding. As this framing is not 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.

Matter 2: The durability considerations

8. Discussion

- 8.1 The territorial authority has concerns about the durability, and hence the compliance with the building code, of certain elements of the building, taking into consideration the completion date of the building in 1999.
- 8.2 I have received no evidence of what inspections were undertaken by the territorial authority following a stucco inspection on 26 August 1999, and it appears that the work was substantially completed during 1999.
- 8.3 The relevant provision of clause B2 of the Building Code requires that building elements must, with only normal maintenance, continue to satisfy the performance requirements of the Building Code for certain periods (“durability periods”) “from the time of issue of the applicable code compliance certificate” (clause B2.3.1).
- 8.4 These durability periods are:
- 5 years if the building elements are easy to access and replace, and failure of those elements would be easily detected during the normal use of the building
 - 15 years if building elements are moderately difficult to access or replace, or failure of those elements would go undetected during normal use of the building, but would be easily detected during normal maintenance
 - the life of the building, being not less than 50 years, if the building elements provide structural stability to the building, or are difficult to access or replace, or failure of those elements would go undetected during both normal use and maintenance.
- 8.5 It is not disputed, and I am therefore satisfied that all the building elements installed in the house, apart from items that have to be rectified as described in paragraph 6.3.1, complied with clause B2 on 31 December 1999. This date has been confirmed by the applicant and the territorial authority, refer paragraph 4.7.
- 8.6 In order to address these durability issues, I sought some clarification of general legal advice about waivers and modifications. I have now received that clarification and the legal framework and procedures based on this clarification are described in previous determinations (for example, Determination 2006/85) and are used to evaluate the durability issues raised in this determination.
- 8.7 I continue to hold that view, and therefore conclude that:
- (a) The territorial authority has the power to grant an appropriate modification of clause B2 in respect of all the building elements.
 - (b) It is reasonable to grant such a modification, with appropriate notification, because in practical terms the building is no different from what it would have been if a code compliance certificate had been issued in 1999.

8.8 I strongly recommend that the territorial authority record this determination and any modifications resulting from it, on the property file and also on any LIM issued concerning this property.

9. The decision

9.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the cladding on the building 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 determine that:

(a) all the building elements installed in the house, apart from the items that are to be rectified, complied with clause B2 on 31 December 1999

(b) the building consent is hereby modified as follows:

The building consent is subject to a modification to the Building Code to the effect that, clause B2.3.1 applies from 31 December 1999 instead of from the time of issue of the code compliance certificate for all building elements except those elements which have been altered or modified as set out in Determination 2007/46.

(c) once the defects set out in paragraph 6.3.1 of this determination have been fixed to its satisfaction, the territorial authority is to issue a code compliance certificate in respect of the building consent as amended.

9.3 I note that the territorial authority has not issued a notice to fix as required by section 164(2). A notice to fix should be issued that requires the applicants to bring the building into compliance with the Building Code, identifying the defects listed in paragraph 6.3.1, but not specifying how those defects are to be fixed. That is a matter for the applicants 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 paragraph 9.3. Initially, the territorial authority should issue the new notice to fix. 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 3 May 2007.

John Gardiner
Manager Determinations