

## Determination 2008/1

### Determination regarding a code compliance certificate for a house with monolithic cladding at 42 Bartholomew Drive, Hamilton



#### 1. The matter to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004<sup>1</sup> (“the Act”) made under due authorisation by me, John Gardiner, Manager Determinations, Department of Building and Housing (“the Department”), for and on behalf of the Chief Executive of that Department. The applicants are the owners of the house Mr and Mrs Robinson (“the applicants”), and the other party is the Hamilton City Council (“the territorial authority”).
- 1.2 This determination arises from the decision of the territorial authority to refuse to issue a code compliance certificate for a 12-year-old house because it is not satisfied that the building work complies with the Building Code<sup>2</sup> (First Schedule, Building Regulations 1992).
- 1.3 I note that in a letter dated 8 August 2007 the territorial authority has stated that, as a matter of recently introduced policy, it will not issue code compliance certificates for

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<sup>1</sup> The Building Act 2004 is available from the Department’s website at [www.dbh.govt.nz](http://www.dbh.govt.nz).

<sup>2</sup> The Building Code is available from the Department’s website at [www.dbh.govt.nz](http://www.dbh.govt.nz).

outstanding building consents issued under the Building Act 1991 (refer paragraph 3.5). The territorial authority has not stated which, if any, clauses of the building code are in dispute; and I address this matter further in paragraphs 9.9 and 9.10.

1.4 Given the lack of information about which, if any, clauses of the building code are in dispute regarding this house, I take the view that the matters for determination are:

**1.4.1 Matter 1: The cladding**

Whether the cladding as installed on the house (“the cladding”) complies with Clause E2 “External Moisture” of the Building Code. By “the 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.

**1.4.2 Matter 2: The remaining code clauses**

Whether the building work complies with the remaining relevant clauses of the Building Code.

**1.4.3 Matter 3: The durability considerations**

Whether the elements that make up the house comply with Building Code Clause B2 “Durability”, taking into account the age of the building work.

1.5 In making my decision, I have considered the submissions of the parties, the report of the independent expert commissioned by the Department to advise on this dispute (“the expert”), and the other evidence in this matter. I have evaluated this information using a framework that I describe more fully in paragraph 6.1.

1.6 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 that is situated on an elevated flat site, which is in a low wind zone for the purposes of NZS 3604<sup>3</sup>. The house is two storeys in part, with 3 bedrooms in the upper level. The construction of the house is conventional light timber frame, with a ground floor concrete slab, monolithic cladding and aluminium windows. The house is fairly complex in plan and form, with 35° pitch profiled metal hipped roofs. The upper level roof extends down over the garage area in the southeast corner, and the remaining ground floor projections have lean-to roofs against the upper walls. Eaves and verge projections are generally 600 mm or more, except for the upper south wall and a corner “box” window to the north east corner of the ground floor, which have no eaves.

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<sup>3</sup> New Zealand Standard NZS 3604:1999 Timber Framed Buildings

- 2.2 The expert observed no evidence as to timber treatment and the specification states that “timber shall be treated to the standard required by the relevant standards for the purpose for which it is intended”. Given the date of construction during 1995 and the lack of other evidence, I consider that the external wall framing is unlikely to be treated.
- 2.3 The cladding system on the building is what is described as monolithic cladding, and is specified as 7.5 mm thick fibre-cement sheets fixed through the building wrap to the framing, and finished with an applied textured coating system. I have received no evidence of producer statements or warranties for the cladding.

### 3. Background

- 3.1 The territorial authority issued a building consent (No. 95/891) on 20 June 1995 for the house, which seems to have been completed by the end of 1995. The building consent would have been granted under section 34 of the Building Act 1991. I have received no records of this consent or of any inspections undertaken during construction.
- 3.2 An inspection was carried out 1999 and, in a letter to the applicants dated 8 November 1999, the territorial authority noted that a stair handrail and laundry tub were still to be completed and stated:

Upon satisfactory completion of the project, a Code Compliance Certificate will be issued which is normally a requirement should you ever want to sell your property, which would also avoid any delays should a proposed purchaser request a Land Information Memorandum from Council.

- 3.3 I am not aware of further correspondence between the parties until 2005, when the territorial authority followed up the matter in a letter to the applicants dated 17 October 2005. The territorial authority noted that no advice had been received with regard to completion of the outstanding work despite “several inspections” and, if the items had been completed, a “Code of (*sic*) Compliance inspection” could be arranged.
- 3.4 There appears to have been no response to the above letter until the applicants wrote to the territorial authority on 3 August 2007, noting that they wished to resolve code compliance matters and the two items requiring completion (refer paragraph 3.2) were ready to be inspected.
- 3.5 In a letter to the applicants dated 8 August 2007, the territorial authority responded to the applicants’ letter, making no reference to the requested final inspection of the house and stating:

We advise that Council recently introduced a policy that covers Building Consents issued under the Building Act 1991 and reads as follows:

Code compliance certificates will not be issued for outstanding building consents where the building consent was issued prior to the Building Act 2004. When you make an application for a code compliance certificate . . . it will be refused and you will be advised of the following options

- You can apply to the Department of Building and Housing to make a determination the Council issue the CCC. Council is bound by the outcome of the determination and will act accordingly.
- Or you may obtain a building report from an independent expert that Council will lodge with the property file.

I have responded to this matter in paragraphs 9.8 and 9.9.

3.6 On 29 August 2007, the Department received an application for a determination from the owners. The Department sought further information, which was received on 3 September 2007.

## **4. The submissions**

4.1 In the letter to the Department dated 22 August 2007 that accompanied the application the applicant stated:

The Hamilton City Council has refused to issue a "Code of Compliance Certificate" on the above dwelling due to the time since construction.

4.2 The applicant forwarded copies of:

- the consent drawings and specification
- the correspondence with the territorial authority
- various other statements and information.

4.3 The territorial authority made no submission.

4.4 Copies of the submissions and other evidence were provided to each of the parties. Neither party made any further submissions in response to the submission of the other party.

4.5 The draft determination was sent to the parties on 5 November 2007. The draft was issued for comment and for the parties to agree a date when the building elements, excluding those matters requiring rectification, complied with Building Code Clause B2 Durability.

4.6 Both parties accepted the draft and agreed that compliance with Clause B2 was achieved on 1 December 1995.

## **5. The expert's report**

5.1 As discussed in paragraph 1.5, I engaged an independent expert to provide 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 house on 8 October 2007, and furnished a report that was completed on 12 October 2007. The expert noted that the "general workmanship has been of good quality", with satisfactory roof flashings and good quality cladding

(except for the defects outlined in paragraph 5.5). The expert noted that the house generally conformed to the consent drawings.

5.3 The expert noted that the windows were face-fixed, with adequate metal head flashings, no sill or jamb flashings, and the coating applied after the window installation. The expert removed a small section of cladding at the jamb to sill junction of a window and noted that no seals had been installed and a small fillet of sealant had been applied at the outer edge of the flange. I accept that this window is typical of similar situations around the building.

5.4 The expert inspected and took non-invasive moisture readings throughout the interior of the house and noted no evidence of moisture penetration. The expert took 14 invasive moisture readings through the cladding at high risk locations and 7 readings were between 8% and 13%. The expert also removed a small section of cladding where moisture was evident below the bottom of an apron flashing on the south elevation. Elevated readings were recorded as follows:

**South elevation**

- 31% in the bottom plate below the garage apron flashing, with damp timber and decay apparent at the cut-out adjacent to the flashing
- 20% in the bottom plate of the garage wall
- 20% in the bottom plate adjacent to the gas hot water cylinder
- 20% below the jamb to sill junction of the office window

**West elevation**

- 29% below an apron flashing
- 21% in the bottom plate of the garage wall

**East elevation**

- 22% in the soffit beneath the apron flashing at the entry.

Moisture levels that vary significantly after cladding is in place generally indicate that external moisture is entering the structure.

5.5 Commenting specifically on the wall and roof cladding, the expert noted that:

- the clearance from the bottom of the cladding to the ground or paving is insufficient around the garage and entry walls
- there are no vertical control joints in the upper and lower walls, where the dimensions of most walls exceed the 5.4m limit for these joints recommended by the manufacturer
- there are no flashings or jointers in the high raked walls to the garage, where the horizontal joints have been filled and coated
- some of the backing sheet joints line up with window and door jambs, resulting in joint cracks in some areas
- there is no underlying Inseal or sealant between the Harditex and the window jamb flanges, with the coating applied following the joinery installation, and no drainage gap provided at the sills

- the gas hot water cylinder is unflushed and unsealed, with gaps allowing water penetration into the wall
- there are no kickouts at the bottom of the apron flashings, with gaps, unsealed fibre-cement, and moisture penetration apparent in some areas (evidence of decay was also observed at the cut-out)
- the ends of gutters and fascias are embedded into the plaster coating below the apron flashings
- the downpipe from the upper roof discharges onto the lower roof and lacks a spreader.

## 5.6 Other relevant code clauses

5.6.1 The expert also assessed compliance with other relevant building code clauses, and made the following comments:

- **B1 Structure**

No evidence of non-compliance was observed.

- **E1 Surface Water**

The ground slopes away from the house and no evidence of non-compliance was observed.

- **E3 Internal moisture**

All wet area finishes appear satisfactory.

- **G1 Personal Hygiene**

Spaces and facilities are appropriate, with adequate provision for cleaning and protection against food contamination.

- **G4 Ventilation**

Ventilation appears satisfactory, and no evidence of non-compliance was observed.

- **G7 Natural Light**

The house has adequate provision of natural light.

- **G8 Artificial Light**

The house has adequate provision of artificial light.

- **G12 Water supplies**

No evidence of non-compliance was observed.

- **G13 Foul Water**

All fixtures appear to be satisfactory and no evidence of non-compliance was observed.

- **H1 Energy Efficiency**

Fibreglass wall insulation was observed in the ceiling space (where visible). No evidence of non-compliance was observed.

5.7 A copy of the expert's report was provided to each of the parties on 22 August 2007.

## 6. Evaluation for code compliance

### 6.1 Evaluation framework

6.1.1 I have evaluated the code compliance of these additions by considering the following two broad categories of the building work:

- The weathertightness of the external building envelope (Clause E2) and durability (Clause B2 in so far as it relates to Clause E2).
- The remaining relevant code requirements.

In the case of this building work, weathertightness considerations are addressed first.

6.1.2 In evaluating the design of a building and its construction, it is useful to make some comparisons with the relevant Acceptable Solutions<sup>4</sup>, 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 are written conservatively to 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 one or more other provisions to compensate for that in order to comply with the Building Code.

6.1.3 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<sup>5</sup> (for example, Determination 2004/1) relating to cladding and these factors are also used in the evaluation process.

6.1.4 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 low wind zone

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<sup>4</sup> 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](http://www.dbh.govt.nz).

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

- is two storeys high in part
- is fairly complex in plan and form
- has monolithic cladding that is fixed directly to the framing
- has eaves and verge projections greater than 600 mm above most walls
- has no attached decks
- has external wall framing that is not treated to a level that provides resistance to the onset of decay if the framing absorbs and retains moisture.

6.2.2 The house has been evaluated using the E2/AS1 risk matrix. The risk matrix allows the summing of a range of design and location factors applying to a specific building design. The resulting level of risk can range from 'low' to 'very high'. The risk level is applied to determine what claddings can be used on a building in order to comply with E2/AS1. Higher levels of risk will require more rigorous weatherproof detailing; for example, a high risk level is likely to require a particular type of cladding to be installed over a drained cavity.

6.2.3 When evaluated using the E2/AS1 risk matrix, the weathertightness features outlined in paragraph 6.2.1 show that all elevations of this house demonstrate a moderate weathertightness risk rating. I note that, in order to comply with the current E2/AS1 provisions, the monolithic cladding on this building would require a drained cavity.

### **6.3 Weathertightness performance: exterior cladding**

6.3.1 Generally the cladding appears not to have been installed in accordance with good trade practice and, in some respects, not in accordance with the manufacturer's instructions. Taking account of the expert's report, I conclude that remedial work is necessary in respect of the following:

- the inadequate clearance below the cladding around the garage and entry
- the lack of vertical control joints in upper and lower walls over 5.4 m in length
- the lack of adequate horizontal joints in the high raked walls to the garage
- the backing sheet joints in line with some window and door jambs
- the cracks to the cladding
- the inadequate window jamb seals and the lack of sill drainage gaps
- the inadequate weatherproofing of the gas hot water cylinder
- the inadequate weatherproofing at the bottom of the apron flashings and the embedded ends of the gutters and fascias
- the lack of a spreader to the downpipe discharging onto the lower roof.

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 house has roof overhangs that provide good shelter above most walls
- the moisture penetration appears to be limited to areas where defects have been identified.

6.3.3 I consider that these factors help compensate for the lack of a drained cavity and can assist the building to comply with the weathertightness and durability provisions of the Building Code.

#### **6.4 Evaluation of other code requirements**

6.4.1 Based on the expert's comments as outlined in paragraph 5.6.1, there appears to be no evidence of any lack of compliance with other relevant clauses of the Building Code.

6.4.2 Based on the expert's assessment of visible components of the building together with the other documentation, I consider that the house is likely to comply with the provisions of the remaining relevant code clauses.

### **Matter 1: The cladding**

#### **7. Discussion**

7.1 I consider the expert's report establishes that the current performance of the cladding is not adequate because it is allowing water to penetrate the building at several locations at present. Consequently, I am satisfied that the building work does not comply with Clause E2 of the Building Code.

7.2 In addition, the building work 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 intended life, and that includes the requirement for the house to remain weathertight. Because the cladding faults on the house are likely to continue to allow the ingress of moisture in the future, the house does not comply with the durability requirements of Clause B2. I have given further consideration to the question of B2 compliance under Matter 3 of this determination.

7.3 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 becoming and remaining weathertight and in compliance with Clauses B2 and E2.

7.4 I emphasise that each determination is conducted on a case-by-case basis. Accordingly, the fact that particular cladding systems have been established as being code compliant in relation to a particular building does not necessarily mean that the same cladding systems will be code compliant in another situation.

- 7.5 Effective maintenance of claddings is important to ensure ongoing compliance with Clauses B2 and E2 of the Building Code and is the responsibility of the building owner. The Department has previously described these maintenance requirements, including examples where the external wall framing of the building may not be treated to a level that will resist the onset of decay if it gets wet (for example, Determination 2007/60).

## **Matter 2: The remaining code clauses**

### **8. Discussion**

- 8.1 Based on the expert's assessment of visible components of the building together with the other documentation, I am satisfied that the building complies with the provisions of the remaining relevant code clauses.

## **Matter 3: The durability considerations**

### **9. Discussion**

- 9.1 There are concerns about the durability, and hence the compliance with the building code, of certain elements of the building taking into consideration the age of the building work completed in 1995. However I have not been supplied with evidence that the territorial authority carried out a final inspection in 1995 to verify compliance with Clause B2 at that time.
- 9.2 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).
- 9.3 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.
- 9.4 In this case the delay between the commencement of the building work and the applicant's request for a code compliance certificate has raised concerns with the territorial authority that various elements of the building are now well through their required durability periods and would consequently no longer comply with Clause B2 if a code compliance certificate were to be issued effective from today's date.

- 9.5 It is not disputed, and I am therefore satisfied that all the building elements complied with Clause B2 on 1 December 1995. This date has been agreed between the parties, refer paragraph 4.6.
- 9.6 In order to address these durability issues when they were raised in previous determinations, I sought and received clarification of general legal advice about waivers and modifications. That clarification, and the legal framework and procedures based on the clarification, is described in previous determinations (for example, Determination 2006/85). I have used that advice to evaluate the durability issues raised in this determination.
- 9.7 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 house is no different from what it would have been if a code compliance certificate for the building work had been issued in 1995.
- 9.8 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.
- 9.9 The territorial authority has stated that, as a matter of policy, it will not issue code compliance certificates for outstanding building consents issued under the Building Act 1991 (refer paragraph 3.5). This does not accord with my reading of the Act. Section 436 of the Act applies to building work carried out under a building consent granted under section 34 of the former Act, and therefore applies in this case. Section 436 requires that applications for code compliance certificates must be “considered and determined as if this Act had not been passed”.
- 9.10 The territorial authority did not inform the applicants as to which, if any, clauses of the building code were in dispute, did not issue a notice to fix and has made no submission with regard to this determination. In failing to do so, the territorial authority has not provided any evidence to the applicants, or to me, as to why it believes the house is not code compliant. That is not a satisfactory response. The applicants should have been given specific advice about the reasons for the refusal and, if necessary, issued with a notice to fix. The applicants could then either act on that advice and/or the notice to fix.

## **10. The decision**

- 10.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the cladding does not comply with Clauses E2 and B2 of the Building Code, and that the items listed in paragraph 6.3.1 are not code-compliant. Accordingly, I confirm the territorial authority’s decision to refuse to issue a code compliance certificate.

10.2 I also determine that:

(a) all the building elements installed in the building, apart from the items that are to be rectified as described in this determination, complied with Clause B2 on 1 December 1995.

(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 1 December 1995 instead of from the time of issue of the code compliance certificate for all building elements constructed under the original building consent except those items to be rectified as described in Determination 2008/1 and contained in the notice to fix arising from the determination.

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

10.3 The territorial authority should now issue a notice to fix that requires the owners to bring the building into compliance with the Building Code, incorporating the defects listed in paragraph 6.3.1 and referring to any further defects that might be discovered in the course of rectification. The notice to fix should not specify how those defects are to be fixed. That is a matter for the owner to propose and for the territorial authority to accept or reject.

10.4 I would suggest that the parties adopt the following process to meet the requirements of paragraph 10.3. Initially, the territorial authority should issue the 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 15 January 2008.

John Gardiner  
**Manager Determinations**