



## Determination 2010/045

### Refusal to issue a code compliance certificate for 13-year-old alterations and additions to a house with monolithic cladding at 153 Burswood Drive, Manukau City



#### 1. The matters 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, G and R Crozier (“the applicants”), and the other party is the Manukau City Council (“the authority”), carrying out its duties as a territorial authority or building consent authority.
- 1.2 This determination arises from the decision of the authority to refuse to issue a code compliance certificate for 13-year-old alterations and additions to a house, because it is not satisfied that the building work complies with certain clauses<sup>2</sup> of the Building Code (First Schedule, Building Regulations 1992). Based on correspondence between the parties, the authority’s primary concerns about the compliance of the building work appear to relate to its age and to the weathertightness of the cladding.

<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> 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.

1.3 The matter to be determined<sup>3</sup> is therefore whether the authority was correct to refuse to issue a code compliance certificate for the work. In deciding this, I must consider:

**1.3.1 Matter 1: The cladding**

Whether the cladding as installed on the alterations and additions (“the cladding”) complies with Clause B2 Durability and Clause E2 External Moisture of the Building Code. By “the cladding as installed” I mean the components of the systems (such as the backing materials, the flashings and the coatings), as well as the way the components have been installed and work together. (I consider this matter in paragraph 6.)

**1.3.2 Matter 2: The durability considerations**

Whether the building elements comply with Clause B2 Durability of the Building Code, taking into account the age of the building work. (I consider this matter in paragraph 7.)

1.4 In making my decision, I have considered the applicants’ submission, the reports of the applicants’ building consultant (“the consultant”), the report of the expert commissioned by the Department to advise on this dispute (“the expert”), and other evidence in this matter. I have evaluated this information using a framework that I describe in paragraph 6.1.

## **2. The building work**

2.1 The building work consists of alterations and additions to a single-storey house, which is situated on a flat site in a moderate wind zone for the purposes of NZS 3604<sup>4</sup>. Construction is generally conventional light timber frame, with concrete foundations and floor slabs, monolithic fibre cement sheet cladding, aluminium windows and a concrete tile roof.

2.2 The original house was constructed in 1995 and was issued with a code compliance certificate. The house is fairly complex in plan and form, with the 30° pitch gabled roofs set at varying levels and eaves and verge projections varying from about 300mm to 750mm, including the gutter widths. A continuous horizontal decorative band is planted over the cladding at about 600mm above the bottom of the cladding.

2.3 The alterations and additions were carried out from 1996 to 1997, using cladding and windows to match the existing. The alterations included:

- a study added to the western corner (“the study addition”)
- the conversion of the original double garage into two bedrooms, a small bathroom and a laundry (“the bedroom conversion”)
- the construction of a freestanding garage building with a staggered floor plan, providing two separate garages (“the garage building”).

2.4 The monolithic wall cladding consists of 7.5 mm thick fibre-cement sheets fixed directly through the building wrap to the framing, and finished with a textured coating system.

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<sup>3</sup> Under section 177(b)(i) of the Act

<sup>4</sup> New Zealand Standard NZS 3604:1999 Timber Framed Buildings

- 2.5 The expert noted that the exposed timber framing in the garage building appeared to be untreated. Based on this evidence and the date of construction in 1995 to 1997, I consider that the external wall framing to the original house and the alterations is unlikely to be treated to a level that will provide resistance to fungal decay.

### **3. Background**

- 3.1 The authority issued a building consent for the alterations and additions (No. 96/2218) on 29 May 1996 under the Building Act 1991.

- 3.2 The authority carried out various inspections during construction, which was undertaken in three stages. The inspections included:

- the study addition:
  - foundations and floor slab during June 1996
  - pre-line and gibnail inspections in June 1996
- the bedroom conversion:
  - pre-line and gibnail inspections in August 1996
- the garage building:
  - foundations and floor slab during February 1997
  - preline inspections in April 1997.

Although the building work to the house alterations appear to have been completed by about September 1996 and the garage building by May 1997, no further inspections were called for and the property was sold to the applicants in 2003.

- 3.3 In late 2009, the applicants sought a code compliance certificate, and the authority was asked to carry out a final inspection. A building consultancy company contracted to the authority (“the authority’s contractor”) inspected the alterations on 23 November 2009 and identified various defects and outstanding documentation, including a requirement for a ‘weathertightness report’.

- 3.4 After some work was completed authority’s contractor re-inspected the alterations on 27 January 2010 and the requirement for a weathertightness report from a list of ‘approved’ consultants was again noted. The inspection ‘site notice’ also noted:

Flashings installed on windows  
Bathroom window approved  
Cut off channel installed on right side of garage  
Ground clearance on house approved  
Gully on stormwater approved flows to stormwater.

### **3.5 The weathertightness report**

- 3.5.1 The applicants engaged a consultant to carry out a weathertightness inspection and a report was apparently forwarded to the authority’s contractor (I have not seen a copy of that report).

- 3.5.2 In a letter to the applicants dated 19 February 2010, the authority acknowledged the receipt of that report, noting the consultant had reported:
- The cladding had a ‘complete makeover some three months ago’ so any underlying damage could not be seen.
  - The inspection was visual only, with no invasive moisture testing carried out.
  - Although non-invasive readings were within acceptable levels, clearances of the cladding and inside floor levels were concerning, and sufficient to conclude that the work may not meet the requirements of Clauses E2 and B2.
- 3.5.3 The authority’s contractor noted that the authority had stated that a code compliance certificate would not be issued ‘until all items in question have been resolved’ and advised a determination ‘as the only way forward’.
- 3.5.4 The authority’s contractor advised the applicants to work closely with the consultant ‘for a scope of works to remediate the findings of the determination’, concluding:
- Until the above items have been clarified [the authority] cannot approve compliance for Weathertightness and Durability as required by the NZ Building Code.
- 3.6 Following correspondence with the authority regarding its requirement for a determination, the applicants received an email from the authority dated 25 February 2010, which provided information about amending the durability periods start dates for older building work and on the background to its process for ‘managing the sign off of all historic building consents’, noting:
- Due to major changes around 2002 with regards to weathertightness issues council were required to reassess designs that involved cladding systems that had been installed without a cavity. This resulted in councils requiring additional information which could include weathertightness reports.
- However, because of the age and method of construction of this dwelling we would be recommending refusal of a CCC and the need to apply for a determination...
- 3.7 The Department received an application for a determination on 4 March 2010.

## **4. The submissions**

- 4.1 The applicant made no submission and provided copies of:
- some drawings of the original house and the alteration work
  - the authority’s inspection summary
  - the ‘site notices’ for the final inspections
  - the correspondence with the authority
- 4.2 The authority acknowledged the application but made no submission.
- 4.3 A draft determination was issued to the parties on 7 May 2010. The draft was issued for comment and for the parties to agree dates when the various stages of the house complied with Building Code Clause B2 Durability.

- 4.4 Both parties accepted the draft determination without comment and agreed that compliance with Clause B2 was achieved on 1 June 1997.

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

- 5.1 As mentioned in paragraph 1.4, I engaged an independent expert to assist me. The expert is a member of the New Zealand Institute of Building Surveyors. The expert inspected the alterations and additions on 15 April 2010 and provided a report that was completed on 26 April 2010.

### **5.2 General**

- 5.2.1 The expert noted that the overall quality of construction appeared good. The wall cladding appeared generally 'straight in line and level, evenly and consistently finished and not in need of redecoration' and, except for the item noted in paragraph 5.4, the roof flashings appeared 'tidy and effective'.
- 5.2.2 There was no evidence that vertical control joints had been provided in the original and altered walls of the house, or in the walls of the garage building; where some walls exceeded the 5.4m limit recommended by the cladding manufacturer.

### **5.3 Windows**

- 5.3.1 In the original house and the alteration work, the face-fixed windows and doors have metal head flashings and no sill flashings. I note that this accorded with the cladding manufacturer's instructions at the time of construction.
- 5.3.2 The expert noted that there was some evidence that sealant had been applied behind the jamb flanges prior to application of the textured coating system, but no drainage gaps had been provided above the window head flashings or under the sill flanges.

### **5.4 Surface drainage to the driveway**

- 5.4.1 The expert noted that work had been undertaken to improve cladding clearances around the garage building by lowering ground levels where possible, installing a channel drain in the driveway concrete at the side wall and cutting a rebate at the garage doors. While there was no evidence of ponding, flooding or subsidence from accumulated stormwater, the expert noted that 'the dry season is at its peak.'
- 5.4.2 The expert used a hose to observe water pathways on the driveway, noting that the driveway concrete between the house and garage drains via the channel drain to soakage at the rear of the garage, while coil drains to other walls direct stormwater to further soakage at the rear.

### **5.5 Moisture levels**

- 5.5.1 The expert inspected interiors and took non-invasive moisture readings, noting no evidence of moisture penetration. The expert also noted that there were no signs of apparent moisture ingress or damage in the unlined garages.

- 5.5.2 The expert limited his invasive moisture testing to the exposed framing in the garage building, where moisture readings from 9% to 16% were recorded towards the outer face of the timber.
- 5.5.3 The expert noted that his inspection was during an ‘extended period of dry conditions and the readings may not be reflective of a seasonal range’. I also note that the unlined framing in the garage building would allow any moisture penetrating the cladding to dissipate, which would not occur within the lined areas of the house.
- 5.5.4 Although moisture levels above 18% generally indicate that external moisture is entering the structure, the prolonged dry weather and the range in moisture readings in lined areas indicates that framing in lined areas could exceed 18% during wetter periods.
- 5.6 Commenting specifically on the external envelope, the expert noted that:
- there are no drainage gaps provided at the window sill flanges, to allow any moisture penetrating at jambs to escape to the outside
  - there are insufficient clearances below the flush-finished fibre-cement cladding to the walls of the bedroom conversion (the original garage), with cladding butting against driveway concrete in some areas
  - the cladding above apron flashings to the garage building has insufficient clearance above the apron, allowing water to ‘wick’ into the fibre cement
  - the bottom of the apron flashings has partly formed kickouts that are unlikely to be effective in diverting water away from cladding into gutters.
- 5.7 A copy of the expert’s report was provided to the parties on 29 April 2010.

## **Matter 1: The cladding**

### **6. Weathertightness**

- 6.1 The evaluation of building work for compliance with the Building Code and the risk factors considered in regards to weathertightness have been described in numerous previous determinations (for example, Determination 2004/1).

#### **6.2 Weathertightness risk**

- 6.2.1 The additions and alterations have the following environmental and design features which influence their weathertightness risk profile:

##### **Increasing risk**

- the completed buildings are fairly complex in plan and form with some complex roof to wall junctions
- the buildings have monolithic cladding fixed directly to the framing
- the external wall framing is not treated to a level that provides resistance to decay if it absorbs and retains moisture

### **Decreasing risk**

- the single-storey buildings are in a medium wind zone
- there no attached decks
- the walls have eaves and verges to shelter the cladding.

6.2.2 When evaluated using the E2/AS1 risk matrix, these features show that the elevations of the alterations and additions demonstrate a low weathertightness risk rating. I note that, if the details shown in the current E2/AS1 were adopted to show code compliance, the monolithic cladding would not require a drained cavity.

## **6.3 Weathertightness performance**

6.3.1 Taking account of the expert's report, I conclude that remedial work to the alterations and additions is necessary in respect of:

- the lack of drainage gaps under the window sill flanges
- the lack of clearance at the bottom of the cladding to the driveway concrete at the walls of the bedroom conversion
- the lack of clearances from the upper wall cladding to the apron flashings at the staggered roofs the garage building, and the inadequate kickout at the bottom of those apron flashings.

6.3.2 The expert has noted that no drainage gaps are provided above the window head flashings. However, window heads in the new and altered walls are reasonably well sheltered below eaves and verges, thus reducing exposure to rain. I therefore consider that the window heads are likely to be satisfactory in these circumstances.

6.3.3 I also note the expert's comment regarding the lack of vertical control joints in two walls of the bedroom conversion and two walls in the detached garage that vary between 6 and 7m in length. However, I consider that the lack of control joints to these particular walls is adequate in the following circumstances:

- The wall cladding generally appears to have been installed according to good trade practice and has been in place for about 13 years with no evidence of significant cracking or moisture entry.
- The foundations are concrete and during the period since construction, all drying shrinkage in framing will have likely occurred, and the claddings future performance will be governed solely by response to environmental factors such as imposed temperature and moisture effects, wind, earthquake forces and seasonal foundation movements.

## **6.4 Weathertightness conclusion**

6.4.1 I consider the expert's report establishes that the current performance of the claddings is adequate because they are preventing water penetration through the building envelopes at present. Consequently, I am satisfied that the alterations and additions currently comply with Clause E2 of the Building Code. However I note that the moisture levels may rise during wetter seasons.

- 6.4.2 In addition, the building envelope 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 building work to remain weathertight. Because the cladding faults on the alterations and additions are likely to allow the ingress of moisture in the future, the building work does not comply with the durability requirements of Clause B2.
- 6.4.3 Because the faults identified with the claddings 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 alterations and additions being brought into compliance with Clauses B2 and E2.
- 6.4.4 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 durability considerations**

### **7. Discussion**

- 7.1 The 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 of the building work during 1997.
- 7.2 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).
- 7.3 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.
- 7.4 In this case the delay between the completion of the building work in 1997 and the applicant’s request for a code compliance certificate has raised concerns that various elements of the building are now well through or beyond 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.



- 7.5 It is not disputed, and I am therefore satisfied, that all the building elements complied with Clause B2 on 1 June 1997. This date has been agreed by the parties (refer to paragraph 4.4).
- 7.6 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.
- 7.7 I continue to hold that view, and therefore conclude that:
- (a) the 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 for the house had been issued in 1997.
- 7.8 I strongly recommend that the authority record this determination and any modifications resulting from it, on the property file and also on any LIM issued concerning this property.

## **8. What is to be done now?**

- 8.1 A notice to fix should be issued that requires the owners to bring the cladding of the alterations and additions into compliance with the Building Code, identifying the items listed in paragraph 6.3.1 and referring to any further defects that might be discovered in the course of investigation and rectification, but not specifying how those defects are to be fixed. It is not for the notice to fix to stipulate directly how the defects are to be remedied and the house brought to compliance with the Building Code. That is a matter for the owners to propose and for the authority to accept or reject.
- 8.2 I would suggest that the parties adopt the following process to meet the requirements of paragraph 8.1. Initially, the authority should issue the notice to fix. The applicants 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.
- 8.3 Once the matters set out in paragraph 6.3.1 have been rectified to its satisfaction, the authority shall issue a code compliance certificate in respect of the building consent as amended.

## 9. The decision

9.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the cladding does not comply with B2 of the Building Code, and accordingly confirm the 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 as described in this determination, complied with Clause B2 on 1 June 1997.
- (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 June 1997 instead of from the time of issue of the code compliance certificate for all the building elements, except the items to be rectified as set out in paragraph 6.3.1 of Determination 2010/045.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 31 May 2010.

John Gardiner  
**Manager Determinations**