



## Determination 2010/134

### Refusal to issue a code compliance certificate for a 7-year old house with monolithic cladding at 77F Goodall Street, Hillsborough, Auckland



#### 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.

1.2 The parties to the determination are

- the owner, K White (“the applicant”),
- Auckland City Council (“the authority”)<sup>2</sup>, carrying out its duties as a territorial authority or building consent authority.

I also consider that Master Build Services Limited (“the builder’s guarantee company”) and Jennian Homes Limited, the master franchise holder to the builder, as persons with an interest in the matter.

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<sup>1</sup> The Building Act, Building Code, Compliance documents, past determinations and guidance documents issued by the Department are all available at [www.dbh.govt.nz](http://www.dbh.govt.nz) or by contacting the Department on 0800 242 243.

<sup>2</sup> After the application was made, and before the determination was completed, Auckland City Council was transitioned into the new Auckland Council. The term “authority” is used for both.

- 1.3 This determination arises from the authority's decision to refuse to issue a code compliance certificate for a 7-year-old house because it is not satisfied that the building work complies with certain clauses<sup>3</sup> of the Building Code (First Schedule, Building Regulations 1992). The authority's primary concerns about the compliance of the building relate to the weathertightness of the cladding. I note the applicant has referred to two items relating to weathertightness raised by the authority in the notice to fix and the letter accompanying the notice to fix issued for the house (refer to paragraph 3.3).

The matter to be determined<sup>4</sup> is therefore whether the authority was correct to refuse to issue a code compliance certificate for the building work. In deciding this, I must consider whether the external envelope of the house ("the external envelope") complies with Clause B2 Durability and Clause E2 External Moisture of the Building Code. The external envelope includes the components of the systems (such as the fibre-cement sheet cladding, the windows, the roof tiles and the flashings), as well as the way the components have been installed and work together.

- 1.4 In making my decision, I have considered the applicant's submission, the record of correspondence between the parties, the report of the expert commissioned by the Department to advise on this dispute ("the expert"), and other evidence in this matter.

## 2. The building work

- 2.1 The building work consists of a detached house which is two-storeys high over five levels (including an internal double garage), and which is situated on a steeply sloping site in a zone 1 corrosion zone and a medium wind zone for the purposes of NZS 3604<sup>5</sup>. Construction is conventional light timber framing, with pile foundations and concrete block retaining walls, suspended timber ground floors in the living areas of the house and a suspended concrete slab floor in the garage.
- 2.2 The roof is generally gable in style with nominal pitches of 35° and 15°, and is clad with long-run, coated corrugated steel sheeting. The near-horizontal entrance canopy is clad with a 1.0mm butyl rubber membrane. The joinery is aluminium throughout. The exterior walls are clad with fibre-cement sheets direct fixed to the framing over a synthetic building wrap, with flush finished joints and a spray-applied texture coating finish.
- 2.3 The expert was unable to determine whether the external wall framing timber was treated, however given the date of construction I consider the external wall framing is unlikely to be treated to a level that would provide resistance to decay.

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<sup>3</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.

<sup>4</sup> Under sections 177(1)(b) and 177(2)(d) of the Act

<sup>5</sup> New Zealand Standard NZS 3604:1999 Timber Framed Buildings

### 3. Background

- 3.1 The authority issued a building consent for the house (No. B/2001/3615291). No building work was carried out under the initial consent, and it was subsequently cancelled by the authority. Substantial changes were made to the building's proposed floor layout and the authority issued a further building consent for the house (No. B/2002/3601261) on 7 March 2002 under the Building Act 1991.
- 3.2 The authority carried out two final inspections on 28 March 2003 and 11 July 2005. I have not seen the records of any other inspections for this building. The building failed the first final inspection, although no details were recorded, and it also failed the second final inspection because there was 'not enough documentation available'.
- 3.3 In January 2006, the authority subsequently identified non-complying issues with the building work which resulted in the issuing of a notice to fix for the building on 20 March 2006. A number of non-compliance issues were detailed in the notice to fix; in respect of the matters with which this determination is concerned, these included:
- Item 2.2 c (subsequently referred to as Item 12 in the letter from the authority to the applicant dated 5 March 2010)  
The junction between the bottom edge of the window joinery and the wall cladding is to have a sill flashing installed and the junction is to remain open. This junction has been sealed and no sill flashing appears to have been installed.
  - Item 2.5 (subsequently referred to as Item 13 in the letter from the authority to the applicant dated 5 March 2010)  
Drainage and Ventilation: the construction methods used in this building do not allow the water to drain away. There is only limited ability for air circulation in the wall framing to ensure that damp timber can dry out.
- 3.4 Extensive correspondence then took place between June 2006 and June 2010 between the authority, the applicant, the builder's guarantee company and the master franchise holder about the issues raised by the authority in the notice to fix.
- 3.5 In a letter to the applicant dated 5 March 2010, the authority noted that following a site inspection on 24 February 2010 and a subsequent peer review process, the council remained unable to grant compliance for the building. In the letter, the authority stated that:
- [t]he main issue regarding the external cladding ... was discussed, although the cladding appears to be well coated etc it is the direct fixing of the cladding and whether the cladding system is performing that is the council's main concern.
- 3.6 Specifically regarding items 12 and 13 in the letter of 5 March, the authority clarified the matters from the notice to fix as follows:
- the detail of the joinery/cladding areas needs investigating to determine whether metal sill flashings have been installed 'with the ends turned up to be effective', as per the fibre-cement manufacturer's instructions (item 12)
  - the external cladding must be investigated (possibly involving invasive testing) to determine whether the building envelope is performing and whether moisture has entered the building or not.

3.7 In an email to the applicant dated 9 April 2010, the builder's guarantee company stated that, concerning items 12 and 13 of the notice to fix,

... from the legal advice we have received, you may seek a waiver from the [authority] for the exterior durability of the cladding/sill flashings in order to obtain a [code compliance certificate]. Our understanding is that council will backdate [code compliance certificate] to the date the dwelling was practicably complete [sic], and in our view we cannot see any impediment on [the authority] to agree with this action as the dwelling has been standing for 7 years with no physical evidence of structural failure or failure of the cladding.

3.8 In an email to the applicant dated 12 April 2010 the authority confirmed that the notice to fix stands because the authority was not satisfied there were reasonable grounds to consider 'that the building is and will continue to perform throughout its intended life'. The authority also stated that '[t]he building is non-compliant, it does not comply with the Building Code'.

3.9 The Department received an application for a determination on 14 September 2010.

#### **4. The submissions**

4.1 The applicant provided copies of:

- the consent drawings and specifications and the building consent approval
- the authority's two final inspection summaries and the notice to fix
- a timeline of events
- correspondence between the parties.

4.2 The authority acknowledged the application for a determination in a letter dated 20 September 2010, and attached information regarding the property as held on the authority's file.

4.3 The draft determination was issued to the parties and persons with an interest for comment on 3 November 2010. On 12 November 2010, the authority accepted the draft determination without comment. The persons with an interest made no response.

4.4 The applicant did not accept the draft determination. In a letter to the Department, dated 21 November 2010, the applicant noted some items that required amendment and raised the following points, in summary:

- The applicant reiterated her earlier position that the horizontal control joints were inadequate.
- The applicant wanted the determination to note the expert's comment that '[a]lthough seven years is the beginning of the timeframe for maintenance (*sic*), the deterioration was greater than would be expected, and suggests inferior products were used ...
- there is no need for a modification of Clause B2, as the building is not completed. The durability periods should commence when the work 'is

completed, inspected, and approved and a [code compliance certificate] issued’.

4.5 In response to the applicant’s submissions in paragraph 4.4 and 5.6, I note the following:

- Under the Act, I am required to gather sufficient evidence in order to decide whether the authority’s decision with respect to the refusal to issue the code compliance certificate was correct. While the expert has not carried out a comprehensive investigation of the building, the expert’s report is sufficient to satisfy the decision I am required to make under the Act.
- I acknowledge the applicant’s comments about the horizontal control joints, but accept the expert’s opinion that these are adequate in this instance. However, I accept the applicant’s opinion that had the cladding been installed correctly it would not require maintenance to the extent it does.
- The applicant has referred to a possible repair methodology (refer paragraph 5.6). The costs and benefits associated with various repair options will inform an owner about the method used. I note that the extent of non-compliance cannot be determined until a thorough investigation has been undertaken by a competent and suitably qualified person.
- I acknowledge the applicant’s comments about Clause B2. The authority included Clause B2 as one of its concerns in the notice to fix. In my view this is a legitimate concern, and the process to address this as set out in the draft determination is also valid. I therefore encourage the applicant to apply for the relevant modification, in conjunction with the completion of the remedial work.

I have taken the applicant’s comments into account and amended the determination as I consider appropriate.

## **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 house on 28 September 2010 and provided a report that was completed on 7 October 2010.

### **5.2 General**

5.2.1 The expert was also unable to confirm whether construction details and the cladding material complied with drawn details, as these were either not provided with the consent plans or were unclear.

### **5.3 Moisture levels**

5.3.1 The expert inspected the interior of the house and noted the following evidence of moisture ingress:

- mould, mildew and swollen plasterboard below the corner windows of bedroom one, and splits/failed paint in the sill linings

- mould and efflorescence on the lower floor toilet wall
- light mould or mildew on the entrance and west wall of the formal living room
- heavy mildew or mould on the ensuite bathroom ceiling.

5.3.2 The expert took thirteen invasive moisture readings in the exterior walls at areas considered at risk, and noted the following elevated readings and signs of moisture:

- 72% and 57% in the sill and bottom plate of the east elevation south end master bedroom window, with the sill plate wet and black, and with black mould on the building wrap, swollen plasterboard, and mouldy trim
- 22% in the bottom plate of the master bedroom east elevation north end window, with water damage evident on the sill trim
- 18% in the sill plate of the bathroom window, and a very high non-invasive moisture reading for the plasterboard below the sill.

The expert considered the installation of the windows at the locations observed 'was clearly inadequate, and ... that other windows in the house installed in the same way may also fail in the future'.

5.3.3 I note that moisture readings above 18%, or which vary significantly, generally indicate that moisture is entering the structure and further investigation is needed and that readings of over 40% indicate that the wood is saturated, and that decay of the timber will be inevitable over time.

5.3.4 The expert removed the decorative expanded polystyrene band at the sill of the lounge window on the south elevation to expose the sill and jamb detail. The expert observed that water had evidently reached the back of the band where it was soiled.

5.4 Commenting specifically on the external envelope, the expert noted that:

#### **Ground clearance**

- there is insufficient ground clearance at the entrance and at the garage where the base of the cladding is at or below paving level

#### **Door and window flashings**

- the windows and doors were fitted with coated aluminium head flashings, but without sill flashings, although this was required by the cladding manufacturer, as noted on the consent drawings
- given the evidence of moisture ingress beneath the selected invasive-tested windows, there is 'reasonable concern that the other windows and doors, installed in the same way, may also fail in the future'

#### **The roof and clearance from cladding edge to roofing**

- there was no seal between the apron or the barge flashing and the door frame above the lower floor toilet, which has probably caused the water damage evident at this location
- there is also a risk of water ingress behind the cladding at the entry canopy where the butyl membrane and the fibre-cement sheet cladding meet and water is ponding in one area

- the roof underlay does not consistently reach the gutter
- although there appeared to be adequate roof drainage generally, spreaders have not been fitted to the downpipes that discharge onto the lower level roofs

### **The cladding**

- a number of cracks were evident in the fibre-cement sheets at various locations on each elevation
- some of the vertical fibre-cement sheet joints are, contrary to manufacturers' technical information, aligned with or close to window opening which is a likely cause of the leaks evident at these locations
- the vertical control joint on the south elevation does not appear to provide adequate provision for movement, as evidenced by cracking of the fibre-cement sheets on either side of the joint
- no clearance has been provided between parts of the deck and deck stairs and the cladding
- some uPVC corner mouldings have detached
- there were no window sill flashings, and there was evidence that window sealing was defective down the jambs under the polystyrene bands
- a defective junction between the apron flashing and the door - possibly in conjunction with defective waterproofing of a retaining wall.

5.5 A copy of the expert's report was provided to the parties on 14 October 2010.

5.6 The applicant responded to the expert's report in a submission dated 31 October 2010. The applicant submitted, in summary, that:

- The expert's report did not include all the faults in the house, such as other areas prone to mould, sheet layout that were incorrect, and sealant applied behind sills to the aluminium joinery preventing drainage.
- It was submitted that the sheet joints are inadequate. A manufacturer's representative observed there were 'insufficient horizontal control joints'.
- The cracks to the cladding are not a 'maintenance issue'. Had the cladding been correctly installed no cracks would be evident. The cladding's performance should not now need to rely on sealant.
- It was accepted that all windows should be removed and sill flashings should be installed. A 'retrofit was in order with flashings installed'. It was agreed that the lack of window flashings was a 'major issue'.

## **Matter 1: The external envelope**

### **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 house has the following environmental and design features which influence its weathertightness risk profile:

### Increasing risk

- the house has two storeys
- the house has 200mm eaves on most elevations, and no eaves above bedroom 3, the ground floor toilet, and the family room bay window
- the house plan and form is fairly complex
- the house has some complex roof to wall junctions

### Decreasing risk

- the house is sited in a medium wind zone
- the house has no decks or balconies on the upper levels.

6.2.2 When evaluated using the E2/AS1 risk matrix, these features show that the house has a high weathertightness risk rating. I note that if the details shown in the current E2/AS1 were adopted to show code compliance, the fibre-cement sheet cladding would require a drained cavity. However, I also note that a drained cavity was not a requirement of E2/AS1 at the time of construction.

## 6.3 Weathertightness performance

6.3.1 It is clear from the expert's report that the external envelope is unsatisfactory in terms of its weathertightness performance. This has resulted in moisture penetration and possible decay to the framing. Taking into account the expert's report, I conclude that the areas outlined in paragraph 5.3.4 require investigation and rectification.

6.3.2 Remedial work is required to make the building's external envelope weathertight and durable. The inadequate weatherproofing of many joints and junctions has contributed to a systemic failure, and considerable work is required to make the external envelope weathertight and durable. Further investigation is necessary, including the systematic survey of all risk locations, to determine causes and full extent of moisture penetration, timber damage and the repairs required. The extent of any damage to the structural framing needs investigation to determine the building's compliance with Clause B1 Structure.

6.3.3 In respect of the item 2.2c on the notice to fix (refer to paragraph 3.3), I note the expert observed that there was clear evidence of moisture penetrations at windows (refer paragraph 5.3.2). I consider it necessary to investigate and repair any damage at the windows as part of the work necessary to make the window openings, and similar junctions, weathertight.

## 6.4 Conclusion

6.4.1 I consider the expert's report establishes that the current performance of the external envelope is not adequate because there is evidence of moisture penetration and



consequently, I am satisfied that the external envelope does not comply with Clause E2 of the Building Code (refer to paragraph 5.3.2 and 5.3.4).

- 6.4.2 In addition, the building work is also required to comply with the durability requirements of Clause B2. Clause B2 requires that a building continue 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 faults to the external envelope are likely to continue 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 I consider that final decisions on whether code compliance can be achieved by either remediation or re-cladding, or a combination of both, can only be made after a more thorough investigation of the external envelope and the condition of the underlying timber framing. This will require a careful analysis by an appropriately qualified expert, and should include a full investigation of the extent, level and significance of the timber decay to the framing. Once that decision is made, the chosen remedial option should be submitted to the authority for its approval.
- 6.4.4 I note that the Department has produced a guidance document on weathertightness remediation<sup>6</sup>. I consider that this guide will assist the owner in understanding the issues and processes involved in remediation work to the cladding in particular, and in exploring various options that may be available when considering the upcoming work required to the house
- 6.4.5 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).

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

- 7.1 The notice to fix should be modified in accordance with the findings of this determination, identifying the items listed in paragraph 5.3.4 and referring to any further defects that might be discovered in the course of investigation and rectification. The notice to fix should not specify how those defects are to be fixed, as that is for the owner to propose and for the authority to accept or reject. It is important to note that the Building Code allows for more than one means of achieving code compliance.
- 7.2 I suggest that the parties adopt the following process to meet the requirements of paragraph 7.1. Initially, the authority should revise and reissue the notice to fix. The applicant should then produce a response to this in the form of a detailed proposal for the house as a whole, produced in conjunction with a competent and suitably qualified person, as to investigation, and the rectification or otherwise of the specified matters. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.

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<sup>6</sup> External moisture – A guide to weathertightness remediation. This guide is available on the Department's website, or in hard copy by phoning 0800 242 243

## **8. The decision**

- 8.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the external building envelope does not comply with Clauses E2 and B2 of the Building Code, and accordingly I confirm the authority's decision to refuse to issue a code compliance certificate.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 21 December 2010.

John Gardiner  
**Manager Determinations**