



## Determination 2010/87

### Refusal to issue a code compliance certificate for a 10-year-old house at 91 Kulim Avenue, Otumoetai, Tauranga



#### 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 applicant is the owner of the house, PG and J Craig Family Trust (“the applicants”), acting through an agent, and the other party is the Tauranga 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 a 10-year-old house because it was not satisfied that it complied with certain clauses<sup>2</sup> of the Building Code (First Schedule, Building Regulations 1992). The authority’s primary concerns about the compliance of the house relate to the weathertightness and durability of the external envelope.

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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> 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. In making this decision, I must consider:

**1.3.1 Matter 1: The external envelope**

Whether the external claddings to the house (“the claddings”) comply with Clause B2 Durability and Clause E2 External Moisture of the Building Code. The claddings include the components of the systems (such as the monolithic cladding, the stone veneer, the windows, the roof cladding and the flashings), as well as the way the components have been installed and work together. (I consider this in paragraph 6.)

**1.3.2 Matter 2: The durability considerations**

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

1.4 I note a building certifier inspected the construction of this house on the authority’s behalf. The company ceased operating as a building certifier in 2005, but continued operating under a different name to provide inspection services for the authority, acting as the authority’s agent. In this determination, the building certifier and subsequent inspection company are therefore referred to as “the authority’s contractor”.

1.5 In making my decision, I have considered the submissions of the parties, the report of the expert commissioned by the Department to advise on this dispute (“the expert”) and the other evidence in this matter.

## **2. The building work**

2.1 The building work consists of a large detached house situated on a flat coastal site in a high wind zone for the purposes of NZS 3604<sup>4</sup>. Construction is generally conventional light timber frame with some specifically engineered elements and has a concrete slab, concrete block foundations, monolithic and stone wall claddings, aluminium windows and bituminous shingle roof cladding. The house is assessed as having a high weathertightness risk (refer paragraph 6.2).

2.2 The two-storey house is complex in plan and form, with a two-storey high central section and complex roof to wall junctions. The 50° pitch multi-level roof has hips and gables, with dormer windows to the upper level and lean-to roofs over lower walls. Eaves and verges vary from about 300mm to 400mm, except for parapets above the arch-topped dormer windows and some veranda areas to the ground floor.

2.3 The expert noted that the framing visible within roof spaces appeared to be untreated and I have not been provided with any evidence from the parties in this regard. Given the date of construction in 1999 to 2000 and the lack of other evidence, I consider that the wall framing is untreated.

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<sup>3</sup> Under section 177(b)(i) of the Act (prior to 7 July 2010)

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

## 2.4 The wall claddings

- 2.4.1 The cladding system to most of the walls is a form of monolithic cladding system known as EIFS<sup>5</sup>. In this instance, the proprietary cladding system consists of 60mm polystyrene backing sheets fixed directly to the framing over the building wrap, to which a mesh-reinforced plaster system has been applied. The system includes purpose-made flashings to windows, edges and other junctions.
- 2.4.2 The north and west elevations include some areas of decorative stone veneer. The walls to a projecting gable at the northwest corner are clad completely in the stone, while elsewhere the stone veneer is restricted to bands below the window sills. The stone is adhered to backing sheets of 7.5mm fibre-cement, which are fixed directly to the framing over the building wrap.

## 2.5 The decks

- 2.5.1 There are three upper level decks with tiled membrane floors. Two of these are recessed within the lower roof slope; and have EIFS cladding to the deck side of the balustrade, a timber plate capping and a metal handrail fixed into the top of the timber capping.
- 2.5.2 The third deck is cantilevered and extends from the north wall of the master bedroom. This deck has monolithic-clad balustrades to the ends and open metal balustrades between. The metal handrail extends over the clad balustrades and is fixed to the timber capping.

## 3. Background

- 3.1 The authority issued a building consent (No. 991040) on 13 May 1999 under the Building Act 1991, with construction commencing the same month.
- 3.2 The authority's contractor carried out twelve inspections during construction on behalf of the authority, including pre-line building inspections on 18 January and 15 February 2000. The last inspection carried out was a pre-line plumbing inspection on 17 February 2000.
- 3.3 Although the inspection summary recorded no further inspection, a note was added on 9 March 2006, which stated:
- Owner rang re no final inspections. Said they had some leaks. Advised he get a report done by [a named property inspection company] and take it from there (new consent for any remedial work required).
- 3.4 During the expert's inspection of the house, he was informed that the roof had been recently completely replaced and the house had been repainted (see paragraph 5.2.2). I assume that this work was related to the 'leaks' noted above, although I have no information regarding the extent of remedial work carried out at that time.

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<sup>5</sup> Exterior Insulation and Finish System

- 3.5 I have received no copies of any correspondence between the parties, but it appears that the authority refused to inspect the building and to issue a code compliance certificate.
- 3.6 I do not believe that this is acceptable. It is important that should an owner be declined a code compliance certificate, they be given clear reasons why, either through a letter or the issuing of a notice to fix. This requirement is set out in section 95(a) of the Act. The owners can then choose to act on those reasons or to apply for a determination if they dispute them.
- 3.7 The Department received an application for a determination on 29 April 2010.

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

- 4.1 The applicants forwarded copies of:
- the drawings and specification
  - some other consent documentation
  - the building consent
  - photographs of the exterior of the house.
- 4.2 In a letter to the Department dated 30 April 2010, the authority acknowledged the application, and stated that it had refused to issue a code compliance certificate because:
- ...the building is of a complex design, has a face fixed cladding, complex junctions. The dwelling was inspected by a private building certifier and [the authority] has never visited the site and as such is unable to establish that the dwelling continues to comply with Clause B2 Durability and E2 Weathertightness of the NZ Building Code.
- 4.3 The draft determination was issued to the parties for comment on 2 August 2010. Both parties accepted the draft without comment.

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

- 5.1 As mentioned in paragraph 1.5, 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 8 June 2010 and provided a report that was completed on 29 June 2010.

##### **5.2 General**

- 5.2.1 The expert noted that the house generally appeared to accord with the consent drawings and specifications.
- 5.2.2 The expert noted that the overall standard of workmanship appeared to be 'generally good' except for the items outlined in paragraph 5.7, with the cladding 'well fixed and aligned' and the roof flashings 'tidy and effective'. The expert understood that the house had 'recently been completely re-roofed' and the walls repainted.

- 5.2.3 The expert considered that control joints were not required for the dimensions of EIFS cladding used on this house, noting that the cladding finish appeared satisfactory with no signs of cracking.

### **5.3 Windows and doors**

- 5.3.1 Windows and doors in the EIFS cladding are recessed, with decorative polystyrene borders and metal head flashings. The expert noted that resistance felt when inserting probes through the cladding indicated that uPVC jamb and sill flashings had been installed. The expert saw no sign of moisture penetration related to the windows in the EIFS cladding and considered that flashings in these areas were performing adequately.
- 5.3.2 Windows and doors in the walls clad full-height with stone appeared to have been face-fixed over the fibre-cement backing sheets, with no seals behind jamb flanges. The expert noted that 'minimal sealant beads' had been applied as fillets to flange edges.
- 5.3.3 In an area of wall between windows, the expert removed a small section of plaster at the junction of the EIFS with the stone sill, noting that a uPVC flashing had been installed over the polystyrene backing sheets and under the plaster. I accept that this area is typical of other similar junctions; meaning that there is no cover to the stone sill at windows or at inter-cladding junctions between windows.

### **5.4 Moisture levels**

- 5.5 The expert inspected the interior of the house, taking non-invasive moisture readings, and noted no evidence of moisture. The expert also took invasive moisture readings through internal linings at areas considered at risk, such as below windows and roof junctions and beside doors and recorded one elevated reading (included below).
- 5.6 A further 11 invasive readings were taken through the cladding, and the following elevated readings of internal and external readings were noted:
- 22% below the east dormer window to the master bedroom foyer
  - decay in the framing behind the full-height stone veneer at the sill to the north dining room window
  - 29 % and 43% in the bottom plate behind the stone cladding to the north conservatory, with severe decay in the framing at the stone to EIFS junction at the sill above
  - 21%, at the balustrade capping to wall junction in the north west deck
  - 18% in the bottom plate of the balustrade to the cantilevered north deck
  - 18% in the bottom plate under the west bay window to the guest lounge
  - 24% in the bottom plate to the south wall of bedroom 3.

5.7 Commenting specifically on the claddings, the expert noted that:

**General**

- clearances from the bottom of the EIFS cladding to the adjacent paving are inadequate in some areas
- the junctions of the EIFS with the stone cladding are not weatherproof, with the underlying flashing overlapping the polystyrene backing sheets and not extending over the stone sills

**The windows and doors**

- where windows are installed above the part-height stone cladding, window sills and jamb/sill junctions are not weatherproof, with high moisture levels and decay apparent in the framing
- the windows installed within the full-height stone cladding are not weatherproof, with high moisture levels and decay apparent in the framing
- the decorative polystyrene borders above windows lack any fall and are cut around fascias at the upper level dormer windows

**The tiled decks**

- the EIFS cladding to the deck balustrades and walls butt directly against the deck tiles, with no clearance provided
- door stops have been fixed through the deck tiles and underlying membrane
- the timber cappings to the deck balustrades lack underlying saddle flashings and rely on sealant at the junctions with the walls, with elevated moisture levels in the framing below
- at the cantilevered deck, there is no drip edge provided; and the junction of the open metal balustrade to the clad balustrade is not weatherproof, with timber facings extending below the deck tiles.

5.8 The expert made the following additional comments:

- Although there is only 30mm step down to the tiled floors of the decks, the deck membrane appears to provide sufficient protection with no evidence of associated moisture penetration.
- Although the metal handrails are fixed directly into the top of the timber capping, the fixings appear to be sufficiently sealed, with no evidence that moisture is reaching the balustrade framing.

5.9 The expert concluded that the full extent of weathertightness defects could not be established without a full survey including destructive testing and decay analysis. However he considered that moisture levels and defects found during his investigation were ‘sufficiently widespread to cause serious concern’ about ‘wood decay and consequent premature deterioration of the framing timbers’.

5.10 A copy of the expert’s report was provided to the parties on 30 June 2010.

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

##### Increasing risk

- the house is two storeys high in part and in a high wind zone
- the house has a complex roof form, with various levels and dormer windows
- the dormer walls have no eaves or verges to shelter the cladding
- two decks, with clad balustrades, are recessed within slopes of lower roofs
- an enclosed cantilevered deck extends from the upper level
- the walls have EIFS and stone 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

- there are limited eaves and verge projections to shelter most of the walls.

6.2.2 When evaluated using the E2/AS1 risk matrix, these features show that all elevations of the house demonstrate a high weathertightness risk rating. I note that, if the details shown in the current E2/AS1 were adopted to show code compliance the wall claddings on this house would require a drained cavity. However, I also note that drained cavities were 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 wall claddings are unsatisfactory in terms of their weathertightness performance, which has resulted in moisture penetration and decay to some of the framing. Taking into account the expert's report, I conclude that the areas outlined in paragraph 5.7 require rectification. However, I also accept the expert's opinion that defects may not be limited to those areas.

6.3.2 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.

## 6.4 Weathertightness conclusion

- 6.4.1 I consider the expert's report establishes that the current performance of the building envelope is not adequate because there is evidence of moisture penetration and decay to the untreated timber framing. Consequently, I am satisfied that the house does not comply with Clause E2 of the Building Code. In addition, the extent of any damage to the structural framing needs investigation to determine the buildings' compliance with Clause B1 Structure.
- 6.4.2 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 effective life, and that includes the requirement for the house to remain weathertight. Because the cladding faults on the house 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 I consider that final decisions on whether code compliance can be achieved for the house by either remediation or re-cladding, or a combination of both, can only be made after a more thorough investigation of the cladding 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 this house.

## 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 house during 2000.
- 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 In previous determinations (for example Determination 2006/85) I have taken the view that a modification of this requirement can be granted if I can be satisfied that the building complied with the durability requirements at a date earlier than the date of issue of the code compliance certificate, that is agreed to by the parties and that, if there are matters that are required to be fixed, they are discrete in nature.

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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



- 7.4 Because of the extent of further investigation required into the claddings, the timber framing, and therefore the house's structure; and the potential impact of such an investigation on the external envelope, I am not satisfied that there is sufficient information on which to make a decision about this matter at this time.

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

- 8.1 A notice to fix should be issued that requires the owner to bring the house into compliance with the Building Code, including the defects listed in paragraph 6.3.1, but not specifying how those defects are to be fixed. It is not for the notice to fix to specify how the defects are to be remedied and the building 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 In addition, the notice to fix should include the requirement for a full investigation of the wall claddings, into the full extent of cladding defects and decay in the timber framing, referring also to the need for invasive testing and removal of sections of cladding to determine the full extent of possible defects. The notice should also refer to the need for laboratory testing of framing samples to establish the full extent and structural significance of decay to the framing.
- 8.3 I 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 applicant 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 matters. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.

## **9. The decision**

- 9.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the external envelope does not comply with Clause E2 and Clause 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 17 September 2010.

John Gardiner  
**Manager Determinations**