



## Determination 2013/066

# Regarding the refusal to issue a code compliance certificate due to concerns about compliance of weatherboard fixings to a house at 38 Ostend Road, Waiheke Island



### 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 and Assurance, Ministry of Business, Innovation and Employment (“the Ministry”), for and on behalf of the Chief Executive of the Ministry.

1.2 The parties to the determination are

- the owner of the house, R Beniston (“the applicant”)
- the Auckland City Council (“the authority”), carrying out its duties as a territorial authority or building consent authority.
- the architect of the building (“the architect”), who is a Registered Architect and therefore has the status of a licensed building practitioner under the Building Act<sup>2</sup>.

1.3 This determination arises from the decision of the authority to refuse to issue a code compliance certificate for a 1-year-old house because it was not satisfied that the weatherboard wall cladding complied with certain clauses<sup>3</sup> of the Building Code (Schedule 1, Building Regulations 1992).

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

<sup>2</sup> Registered Architects are under the Registered Architects Act 2005 and are treated as if they were licensed in the building work licensing class Design under the Building (Designation of Building Work Licensing Classes) Order 2010; therefore the architect is considered a party to the determination

<sup>3</sup> In this determination, references to sections are to sections of the Act and references to clauses are to clauses of the Building Code.

- 1.4 The matter to be determined<sup>4</sup> is therefore whether the authority was correct to refuse to issue a code compliance certificate due to concerns regarding the weatherboard fixings. In deciding this, I must consider whether the weatherboard fixing system complies with Clause E2 External Moisture and Clause B2 Durability of the Building Code.
- 1.5 This determination is limited to the weatherboard fixings and does not consider other matters relating to the house.
- 1.6 In making my decision, I have considered the submissions of the parties, the report of the expert commissioned by the Ministry to advise on this dispute (“the expert”) and the other evidence in this matter.

## 2. The building work

- 2.1 The building work considered in this determination consists of the fixings to the weatherboard cladding on the north elevation of a single-storey house situated on a west-sloping coastal site in a high wind zone<sup>5</sup> for the purposes of NZS 3604<sup>6</sup>.
- 2.2 The building is long and narrow with a simple ‘boomerang’ shape and a 10° monopitched roof that falls towards the south. The roof extends to form a 2.1m deep veranda along the north elevation, with full-height glazed doors from each room.
- 2.3 Construction is conventional light timber frame, with pile foundations, direct-fixed cedar weatherboards and profiled metal wall claddings, aluminium joinery and profiled metal roofing.

### 2.4 The weatherboard fixings

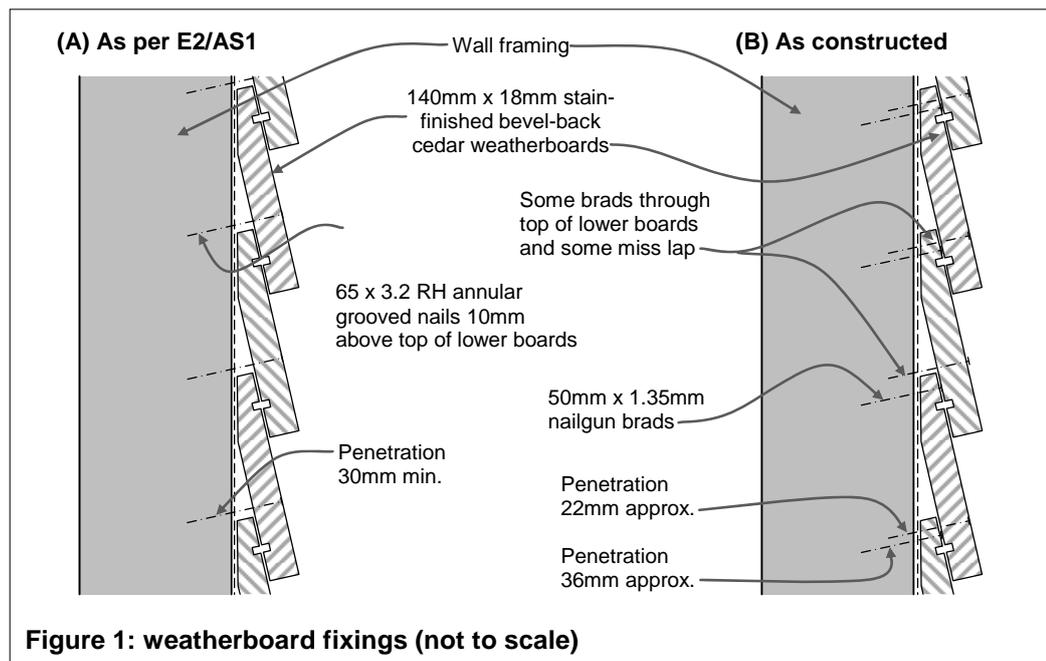
- 2.4.1 The subject weatherboards are limited to the north elevation; the remaining walls are clad with vertical corrugated steel. The same weatherboard fixing system is also used to line the veranda soffit and ceilings to the living room and bathroom. Apart from a 1340mm section adjacent to the wall angle (“the crank”), board lengths range from 340mm to 1000mm, with timber scribes at each end except at the crank.
- 2.4.2 The architect’s as-built sketch submitted to the authority (see paragraph 3.4) indicated two adjacent ‘60mm stainless steel senco pins’, with both penetrating the framing by 40mm. However, the expert’s investigations show that the installed weatherboard fixings are as indicated in the sketch in Figure 1(B).
- 2.4.3 As shown in Figure 1 (over page):
- Sketch (A): the Acceptable Solution E2/AS1 calls for rosehead grooved nails that miss the lower board and penetrate into framing by a minimum of 30mm.
  - Sketch (B): the installed fixings consist of 50mm nail gun brads to the top and bottom of each board, with nails to the top of each board penetrating the framing by about 36mm and the bottom nails penetrating into the framing by about 22mm. Some of the bottom nails penetrate through the top of lower boards while some miss the lap, meaning that each board has 2 or 3 nails.

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

<sup>5</sup> According to the engineer’s calculations

<sup>6</sup> New Zealand Standard NZS 3604: Timber Framed Buildings



### 3. Background

- 3.1 The authority issued a building consent (No. B/2011/6364) on 21 February 2012. I have not seen a copy of the building consent, but the consent drawings are stamped with the consent number and the issue date.
- 3.2 The authority carried out inspections from April to October 2012, with each noted in the authority's summary as a 'pass'. The final inspection was undertaken on 7 December 2012 and the inspection record notes the use of 'pin head nails' to the weatherboards. The record also notes various other changes that required documentation and records the inspection as a 'pass'.
- 3.3 The authority received an application for a code compliance certificate from the applicant on 22 January 2013; the authority requested various producer statements and other documentation.
- 3.4 In an email to the architect dated 20 February 2013, the authority noted that the nail fixing of the cedar weatherboards was an alternative solution to Table 24 of E2/AS1, and requested further information. The architect responded on 21 February 2013; attaching an undated statement and drawing of the as-built weatherboard fixings (refer also paragraph 2.4.1).
- 3.5 Further correspondence followed without resolution and the authority suggested that a determination be sought as it could 'not accept the nailing of your weatherboards with panel pins comply with the Building Code.' The Ministry received an application for a determination on 26 June 2013.

### 4. The submissions

- 4.1 The applicant made a submission dated 17 June 2013, which outlined the background to the situation and noted that 'the architect and builder have used these fixings on various other houses in the past and have not been refused a [code compliance certificate], nor have any problems emerged.'

- 4.2 The applicant forwarded copies of
- a floor plan and elevation of the house
  - the architect's undated statement and drawing of fixings
  - relevant correspondence with the architect and the authority
  - photographs of the house and weatherboards
  - model and photographs of weatherboard fixings
  - photograph of other houses with similar weatherboards.
- 4.3 The authority forwarded a CD-Rom, entitled 'Property File', which contained some additional documents pertinent to this determination including
- the consent drawings
  - the inspection summary
  - various certificates, producer statements and other information.
- 4.4 A draft determination was issued to the applicant and the authority for comment on 3 October 2013 and to the architect on 21 October 2013.
- 4.5 The applicant and the authority accepted the draft without comment in responses received on 14 and 16 October 2013 respectively. The architect provided no response.

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

- 5.1 As mentioned in paragraph 1.6, I engaged an independent expert to assist me. The expert is a member of the New Zealand Institute of Architects. The expert inspected the house on 22 August 2013, providing a report dated 31 August 2013 and which was provided to the applicant and the authority on 3 September and to the architect on 21 October 2013.
- 5.2 The expert noted that his investigation was limited to considering the adequacy of the weatherboard fixings as an alternative solution to the fixings called for in E2/AS1.

### **5.3 The weatherboards**

- 5.3.1 The expert noted that the weatherboards were clear-finished cedar, observing that 'the finished appearance was good with boards finished level to a uniform gauge and with close fitting scribes' that were fixed with 40mm nail gun brads. Nails had been punched, filled and stained to match the boards.
- 5.3.2 Commenting generally on the weatherboard cladding, the expert observed that
- the boards extended in lengths from 340mm to 1000mm between full-height veranda doors, with board ends covered by tight-fitted scribes at door jambs
  - boards adjacent to the crank in the wall had scribes over the door end but not at the crank, and the section to the west of the crank is 1340mm long
  - soffits and living room/bathroom ceilings are lined with the same weatherboard cladding, which is apparently fixed in the same way as the external boards
  - the detail submitted by the architect conflicts with the model of the weatherboards and nail samples submitted with the determination application.

## 5.4 The nail fixings

5.4.1 In order to clarify actual nail fixings used, the builder removed a board to the east of the crank at the request of the expert. The expert assessed the nailing and noted that

- nails are 50mm x 1.35mm stainless steel nail gun brads, with a small head and a smooth shank without grooves
- the board is nailed top and bottom, with the bottom nail to the left penetrating through the lap of the board below.

5.4.2 The expert investigated recommended fixings for cedar weatherboards, noting that

- single nailing into each weatherboard with 65mm x 3.2mm stainless steel or bronze annular ring shank nails that do not penetrate laps is called for by
  - E2/AS1 as an acceptable solution to Clause E2
  - BRANZ Appraisal 663 (2009) as an independent appraisal
  - BRANZ Good Timber Cladding Practice 1997 as good trade practice
  - the manufacturer of the subject weatherboards
- the nail supplier advised that no suitable nails for cedar weatherboards were produced for nail guns as available 90mm x 3.15mm nails would split boards.

5.4.3 Taking the above into account, the expert also noted

- the nail supplier's opinion was that nail gun 50mm brads are generally used as finishing nails as the heads and penetration are too small for fixing boards
- external weatherboards need to resist thermal and moisture effects that can lead to cupping and warping of the boards
- smaller smooth nails small heads are likely to provide insufficient resistance to movement and double nailing boards increases the risk of boards splitting
- the architect's detail does not provide evidence of successful use of this nailing system as the sketch differs significantly from the as-built fixings.

5.4.4 However, the expert also considered mitigating factors in this house, noting that

- the upper walls, the soffits and the ceiling linings will not be routinely exposed to sun or water, so boards will therefore be less likely to cup or warp
- veranda walls are protected by a roof overhang of more than 2m, which will reduce the amount of sun and rainfall against the weatherboards
- the external weatherboards are fixed in short lengths
- except at the crank in the wall, scribes cover the ends of weatherboards and will provide additional support to board ends.

## 5.5 The expert's conclusions

5.5.1 The expert concluded that the nail fixings to the subject external weatherboards are:

...not recommended by the nail supplier, the weatherboard supplier, and clearly provide a significantly less secure fixing than the nails recommended by BRANZ and indicated in E2/AS1.

5.5.2 The expert also considered that the documents provided did not include 'any reliable evidence that the nail used will perform adequately as an alternative solution' and

that there was insufficient information to enable a decision on reasonable grounds that the fixings as proposed in the documentation comply with the Building Code.

## **6. Discussion**

6.1 An Acceptable Solution is a prescriptive design solution that provides only one way of complying with the Building Code. The weatherboard fixing system does not comply with E2/AS1, recommended good trade practice or the manufacturer's instructions. The fixing must be considered as an Alternative Solution, entailing an assessment of the likely performance within the context of this particular house.

6.2 In this instance the weathertightness of the weatherboards is dependent on the features in this house that protect the boards from the weather, features included in the weatherboard system, the workmanship of the installed cladding and the likelihood of failure on the underlying construction. These features can be considered on their merits and independently of the nails as a general fixing system.

### **6.3 Weathertightness performance**

6.3.1 Taking account of the expert's report, I make the following observations on compensating circumstances for this particular house:

- Weatherboards and scribes have been installed using good workmanship.
- The cladding was inspected and approved by the authority during construction.
- The weatherboard walls are sheltered beneath a veranda which limits exposure to rain and direct sunlight.
- The 140mm boards are narrow and installed in short lengths, reducing the likelihood of thermal movement being sufficient to cause significant damage.
- Except at the crank in the wall, additional support is provided at the ends of the boards from tight-fitting scribes, which are side-fixed with 40mm brads at about 250mm centres and unlikely to move.
- Each board has 2 to 3 nails into each stud (depending on how many bottom nails penetrate underlying laps), with the initial nail into the top of each board penetrating the stud by about 36mm (compared to the recommended 30mm).
- The increased number of nails per board together with increased penetration of the top nail is likely to compensate for the smooth shanks and small heads of the nail gun brads.

6.3.2 Taking account of the above, I have reasonable grounds to conclude that the weatherboards installed to ceilings, soffits and most of the exterior walls of this particular house are likely to be satisfactory in these particular circumstances. However, I note that weatherboards adjacent to the crank in the wall are not provided with additional support from timber scribes.

### **6.4 Weathertightness conclusion**

6.4.1 Taking account of the expert's report and my assessment of weathertightness performance, I consider that the following items require further attention:

- additional support to the ends of the weatherboards at the crank in the wall, in a similar manner to that provided by the scribes at the doors

- a detailed proposal accurately showing the actual weatherboard fixings and the proposed additional support to the ends of the boards at the crank in the wall.
- 6.4.2 I consider the expert's report establishes that the authority was not provided with sufficient information to allow it to be satisfied on the compliance of the exterior weatherboard cladding complies with Clauses E2 and B2 of the Building Code.
- 6.4.3 However, due to the mitigating factors that compensate for shortcomings of the weatherboard fixing system, I am able to conclude that satisfactory resolution of the items outlined in paragraph 6.4.1 will result in the weatherboard cladding being brought into compliance with Clause E2 and Clause B2 of the Building Code.
- 6.4.4 It is emphasised that each determination is conducted on a case-by-case basis. Accordingly, the fact that a particular weatherboard fixing system has been established as being code-compliant in a specific instance for a specific house, does not of itself mean that the same system will be code-compliant in other situations.
- 6.4.5 In the case of these particular weatherboards and the potential risk of splitting from the increased number of nails into each board, it will be particularly important to monitor the condition of the weatherboards for signs of deterioration. 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.

## **7. The decision**

- 7.1 In accordance with section 188 of the Building Act 2004, I hereby determine that there is insufficient evidence to be satisfied that the weatherboard fixing system as constructed complies with Building Code Clauses B2 and E2 and accordingly, I confirm the authority's decision to refuse to issue a code compliance certificate for the house.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 4 November 2013.

John Gardiner  
**Manager Determinations and Assurance**