



Determination 2010/017

Determination regarding the code compliance of the timber board and batten cladding to a house at 40A Martin Road, Waihi



1. The matters to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004¹ (“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, D Mangino (“the applicant”), acting through the builder of the house, and the other party is the Hauraki District 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 issue a notice to fix and refuse to issue a code compliance certificate for a 4-year-old house because it was not satisfied that the wall cladding as installed to the house complied with certain clauses² of the Building Code (First Schedule, Building Regulations 1992).

¹ The Building Act, Building Code, Compliance documents, past determinations and guidance documents issued by the Department are all available at www.dbh.govt.nz or by contacting the Department on 0800 242 243.

² 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 determined³ is therefore whether the authority's decisions to issue a notice to fix and to refuse to issue a code compliance certificate were correct. In making these decisions, I must therefore consider whether the timber board and batten cladding to the house ("the cladding") complies with Clause B2 Durability and Clause E2 External Moisture of the Building Code. The cladding includes the timber boards and battens, the windows, the fixings and flashings, as well as the way the components have been installed and work together.
- 1.4 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. I have evaluated this information using a framework that I describe more fully in paragraph 6.1.

2. The building work

- 2.1 The building work consists of a simple single-storey detached house on a level site in a low wind zone for the purposes of NZS 3604⁴. Construction is generally conventional light timber frame, with a concrete slab, concrete block foundations, timber board and batten cladding, aluminium windows and a profiled metal gable roof.
- 2.2 The gable roof changes from 33° pitch to lower pitches to the north and south sides of the building. Eaves and verges are of about 400mm, except at the north entry veranda. A clear awning forms a lean-to against the west elevation.
- 2.3 The cladding is a system of vertical timber weatherboards known as 'board and batten'. In this instance it generally consists of 250mm x 25mm H3 treated boards fixed directly through the building wrap to the framing. The vertical joints between the boards are covered with 75mm x 25mm battens. The rough-sawn boards and battens are uncoated and have 3mm x 3mm weather-grooves.
- 2.4 The expert noted no evidence as to timber treatment of the framing. However, given the date of construction in 2005, I consider that the wall framing is likely to be treated in accordance with the requirements at that time.
- 2.5 The house is assessed as having a low weathertightness risk (refer paragraph 6.2)

3. Background

- 3.1 The authority issued a building consent (No. 22701) on 6 December 2004 under the Building Act 1991 and carried out various inspections during construction.
- 3.2 **The notice to fix**
- 3.2.1 Following an inspection of the cladding, the authority issued a notice to fix dated 18 May 2005, which stated that the:

³ Under section 177(b)(i) and (iv) of the Act

⁴ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

...board and batten exterior cladding has not been fixed or profiled in accordance with NZ standards or the Building Consent...

3.2.2 In order to 'remedy the contravention or non-compliance', the notice required that:

The cladding is to be removed and the building reclad with a cladding system that complies with the NZ Building Code, or re-profile and re-fix existing board and batten cladding. No exterior wall lining can be installed until recladding has been completed.

3.2.3 The builder subsequently wrote to the authority thanking it for allowing the interior lining to proceed and advising that a determination would be sought in regard to the compliance of the board and batten cladding.

3.3 I have seen no records of further correspondence until the house was sold to the applicant in January 2007 and the builder requested a final inspection of the house.

3.4 **The final inspection**

3.4.1 The authority carried out a final inspection on 26 January 2007 and the 'site instruction notice' identified a list of outstanding items.

3.4.2 The uncompleted items relating to the cladding were listed as:

Ground level to be 150mm to paved areas & 225mm to unpaved ground.

Cover battens not covering the board joints enough.

Replace all split boards in cladding.

3.4.3 In a letter to the applicant dated 2 February 2007, the authority stated that:

Fixings of board and battens are not to NZS 3604 clause 11.5.2.4

Boards are starting to split, thus not meeting E2/AS1 and B2/AS1

...the grade of timber is not No1 or higher as there are areas where the knots are over sized

The cladding is not sealed thus allowing ... potential ... moisture ingress.

As no application for a determination on the cladding had been received, the authority noted that the notice to fix dated 18 May 2005 had not been complied with and concluded 'considering the above [authority] will not be issuing a [code compliance certificate] for this Building Consent.

3.5 The Department received an application for a determination from the builder on behalf of the owner on 14 September 2009 and sought further information, which was received on 12 November 2009.

4. **The submissions**

4.1 The applicant forwarded copies of:

- the drawings
- the building consent
- the final inspection records

- some of the correspondence with the authority.
- 4.2 The authority acknowledged the applicant's submission, but made no submission in response.
- 4.3 A draft determination was issued to the parties for comment on 2 February 2010. The authority accepted the draft without comment.
- 4.4 The applicant accepted the draft but in a submission to the Department received on 22 February 2010 the following was noted:
- It was disputed that there were any departures from 'NZS 3604 and BRANZ guidelines'.
 - The notice to fix was incorrect in that the fixing of boards this wide was not detailed in either the relevant New Zealand Standard or the building consent.

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 22 December 2009 and provided a report that was completed on 18 January 2010.
- 5.2 The expert noted that the house generally appeared to accord with the consented drawings and specifications except for the relocation of the front entrance door and the omission of a laundry window.
- 5.3 The expert noted the general standard of workmanship as 'below average', with the cladding 'poorly fixed' and the boards cracked and warped.
- 5.4 The expert noted that the windows are face fixed against the boards, with metal head flashings and no sill flashings. Timber facings butt against edges of the jamb and sill flanges, with the head flashing extending over the jamb facings. The expert removed the timber facing at the sill of a window, noting that 'poorly applied' silicon sealant to the gaps between boards appeared to be the only protection against moisture penetration. The expert also removed a batten above the window head, and noted that the up-stand of the head flashing overlapped the building wrap. I accept that the areas exposed by the expert are typical of similar areas elsewhere in the building.
- 5.5 The expert inspected the interior of the house, taking numerous 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. No evidence of elevated moisture levels was noted.

NZS 3604 requirements

- 5.6 The expert noted the following relevant NZS 3604 requirements related to board and batten wall claddings (in summary):

Clause 11.5.2.1

- Boards shall be a maximum of 200mm wide.
- Boards and battens shall have 6mm square weather-grooves, located so that the grooves coincide when fixed (I note that BRANZ⁵ recommends 9mm square weather-grooves for rough-sawn boards).

Clause 11.5.2.4

- Boards and battens shall be fixed with a single nail in the middle.

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

5.7.1 General

- there is insufficient clearance from the bottom of the cladding to the ground and paving in some areas
- some penetrations through the cladding are poorly sealed
- the meter box lacks a head flashing
- a barge flashing is missing above the laundry

5.7.2 Flashings to the windows

- the upstands of the head flashings overlap the building wrap
- the sills have inadequate sealant and splits in the boards

5.7.3 Boards and battens

- the boards and battens do not comply with NZS 3604 insofar as:
 - boards are from 250mm to 300mm wide
 - weathergrooves are 3mm x 3mm and do not coincide
 - boards and battens are fixed with nails to the edges
- batten cover over the boards is insufficient, with some weathergrooves exposed
- the uncoated boards have many knots and are severely cracked and warped in some areas, with some full depth cracks in boards and splits at edge fixings.

5.8 A copy of the expert's report was provided to the parties on 18 January 2010.

6. Weathertightness

6.1 The approach in determining whether building work is weathertight and durable and is likely to remain so, is to examine 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.

⁵ BRANZ Good Practice Guide Timber Cladding

6.2 **Weathertightness risk**

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

Decreasing risk

- the house is in a medium wind zone
- the house has a simple single-storey form
- some walls have brick veneer cladding over a drained and vented cavity
- there are eaves and verge projections to provide some shelter to most walls
- the board and batten cladding provides some capacity for drainage at the joints
- the external wall framing is likely to be treated to a level that provides resistance to decay if it absorbs and retains moisture.

6.2.2 When evaluated using the E2/AS1 risk matrix, these features show that all elevations of the house demonstrate a low weathertightness risk rating. The house would not require a drained cavity if the details shown in the current E2/AS1 were adopted to show code compliance.

6.3 **Weathertightness performance**

6.3.1 Generally the board and batten cladding has not been supplied and installed in accordance with good trade practice and NZS 3604. Although there is no evidence of moisture penetration in the four years since construction, the expert has identified significant material and installation defects which have already resulted in premature deterioration of the cladding.

6.3.2 Taking account of the expert's comments noted in paragraphs 5.6 and 5.7, I am of the opinion that the deterioration of the cladding will continue, with the numerous and widespread defects leading to a significant reduction in the durability of the cladding and premature failure.

6.4 **Weathertightness conclusion**

6.4.1 I consider the expert's report establishes that the current performance of the cladding is adequate because it is preventing water penetration through the claddings at present. Consequently, I am satisfied that the house complies with Clause E2 of the Building Code.

6.4.2 However, 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 The cladding faults to the house are significant and widespread. Due to the systemic nature of these defects, I am unable to conclude that the faults identified in the

expert's report can be satisfactorily rectified and the cladding brought into compliance with Clause B2.

- 6.4.4 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 cladding. This will require further analysis by a competent and suitably qualified person. Once the decision to remediate or re-clad or a combination of both is made, the chosen remedial option should be submitted to the authority for its approval.

7. What is to be done now?

- 7.1 Although I am satisfied that the authority made an appropriate decision to issue a notice to fix, I consider that the notice to fix does not fully address the defects in the cladding. The notice to fix should be modified and reissued to the owner to take account the findings of this determination. The re-issued notice will identify the areas listed in paragraph 5.7, and refer to any further defects that might be discovered in the course of investigation and rectification. The re-issued notice will not specify how those defects are to be fixed. That is a matter for the owner to propose and for the authority to accept or reject.
- 7.2 I suggest that the parties adopt the following process to meet the requirements of paragraph 7.1. Initially, the authority should re-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.

8. The decision

- 8.1 In accordance with section 188 of the Building Act 2004, I hereby determine that:
- the board and batten cladding does not comply with Clause B2 of the Building Code, insofar as it relates to Clause E2
 - the authority is to modify the notice to fix, dated 18 May 2005, to take account of the findings of this determination
- 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 2 March 2010.

John Gardiner
Manager Determinations