



Determination 2009/25

Determination regarding pinus radiata weatherboards on an addition to a house at 13 Kotuku Street, Waitakere



1. The matter 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, S Narayan (“the applicant”), and the other party is the Waitakere City Council (“the authority”) carrying out its duties and functions as a territorial authority or building consent authority.
- 1.2 The matter for determination is whether the authority was correct in its decision to refuse to issue a code compliance certificate for a 1-year-old addition to a house because it is not satisfied that the weatherboard cladding complies with certain clauses of the Building Code² (First Schedule, Building Regulations 1992).
- 1.3 I take the view that the matter for determination is whether the weatherboards as installed to the addition (“the cladding”) comply with Clause B2 Durability and

¹ The Building Act 2004 is available from the Department’s website at www.dbh.govt.nz.

² The Building Code is available from the Department’s website at www.dbh.govt.nz.

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.

Clause E2 External Moisture. By “the cladding as installed” I mean the components of the system (such as the weatherboards, the fixings, the flashings and the joints), as well as the way the components have been installed and work together.

- 1.4 I note that the parties have raised no matters relating to other building elements, and this determination is restricted to the weatherboard cladding system.
- 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. I have evaluated this information using a framework that I describe more fully in paragraph 7.1.

2. The building

- 2.1 The building work consists of a 2-storey addition to a 1950’s single-storey house, which is situated on a gently sloping site in a low wind zone for the purposes of NZS 3604³. Construction is generally conventional light timber frame with a concrete slab and foundations to the garage with timber piles elsewhere, timber weatherboard cladding and aluminium windows. The addition is larger than the original house and is fairly simple in form, with a hipped roof that has eaves projections of 600mm.
- 2.2 The wall cladding is bevel back weatherboards, with metal soakers at the corners and timber scribes at the window jambs. The weatherboards are pre-primed finger-jointed radiata pine, which are fixed through the building wrap directly to the framing and painted with an acrylic paint coating.
- 2.3 The specification calls for the timber weatherboards to comply with NZS 3602⁴. The expert was unable to confirm the treatment of the weatherboards, but considered that they were likely to be H3.1 LOSP treated. The applicant has supplied a copy of the invoice from the timber supplier, which notes the weatherboards as “H3”. Given the evidence, and the date of construction in 2006, I accept that the weatherboards are treated to H3.1.

3. Background

- 3.1 The authority issued a building consent (No. COM-2004-3578) for the addition in, or shortly after, March 2005.
- 3.2 The work was undertaken between October 2005 and March 2007. In the order of 10 requests for amendment to the building consent were made during the course of the work.
- 3.3 Following a final inspection, the authority wrote to the applicant on 2 May 2007 and provided a list of 15 outstanding items that required ‘correcting before the inspection can be passed’. The list included the requirement to:

Provide 25mm minimum lap to weatherboards.

³ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

⁴ New Zealand Standard 3602:2003 Timber and wood-based products for use in building

- 3.4 It appears that the builder subsequently engaged a property inspection company (“the inspection company”), which advised on various aspects of the cladding. After providing a ‘moisture ingress thermal imaging report’ on 11 December 2007 (which I have not seen), the inspection company re-inspected the addition on 11 March 2008 and reported that most items had been rectified and there were no signs of elevated moisture levels.
- 3.5 According to the applicant, all the items identified by the authority in its letter of 2 May 2007 have now been attended to, except for the requirement to provide a minimum lap to the weatherboards as outlined in paragraph 3.3.
- 3.6 I am not aware of further correspondence between the parties, but it appears that the authority remains unwilling to accept the weatherboard cladding.
- 3.7 The Department received an application for a determination on 2 October 2008 and sought further information, which was received on 19 November 2008.

4. The submissions

- 4.1 Within the application form, the applicant stated that a determination was sought in relation to the refusal of the authority to issue a code compliance certificate due to ‘the weatherboard work done on the extension’.
- 4.2 The applicant forwarded copies of:
- some of the consent drawings and part of the specification (but nothing relevant to the supply or installation of the weatherboards)
 - an invoice from the weatherboard supplier
 - the letter from the authority dated 2 May 2007
 - a page from the inspection company’s report showing window photographs
 - the letter from the inspection company to the builder dated 11 March 2008.
- 4.3 The authority supplied a copy of:
- some building consent documentation
 - details of the inspection records.
- 4.4 The draft determination was issued to the parties on 30 January 2009. The applicant accepted the draft without comment.
- 4.5 The authority accepted the draft subject to amendment it wished to see made. In particular it wished the following text be added to the determination’s conclusion:
- That in respect of clause E2 of the building code, the installation of the weatherboard does not currently comply with building consent ... or otherwise does not meet clause E2 ... However, were works undertaken so as to meet the manufacturer’s specifications, then compliance with E2 may be able to be achieved.

In addition the authority said:

Any notice to fix ... will address this matter as it is currently a failure to comply with the consent. As noted in the determination ... these failings will eventually lead to the total failure to comply with E2.

- 4.6 In response I note that section 94 of the Act requires an authority to issue a code compliance certificate if the requirements of the building consent have been met, subject to certain conditions. I do not believe reference to manufacturer's specifications is appropriate unless these have been detailed in the building consent. I have amended the determination accordingly.

5. The legislation and the Compliance Documents

- 5.1 The relevant sections of B2 include (my emphasis added):

PERFORMANCE

B2.3.1 *Building elements* must, with only normal maintenance, continue to satisfy the performance requirements of this code for the lesser of the *specified intended life* of the *building*, if stated, or:

- (a) ...
- (b) 15 years if:
 - (i) Those *building elements* (*including the building envelope*, exposed plumbing in the subfloor space, and in-built chimneys and flues) are moderately difficult to access or replace, or
 - (ii) ...
- (c) ...

- 5.2 The relevant sections of E2/AS1 are:

9.4 Timber Weatherboards

9.4.3.1 Fixings

Fixings shall comply with Tables 20 and 24.

9.4.4 Horizontal Weatherboards

9.4.4.1 Horizontal laps

Laps shall be:

- a) 32 mm for non-rebated bevel-back boards, or
- b) ...

6. The expert's report

- 6.1 As discussed in paragraph 1.5, I engaged an independent expert to provide an assessment of the condition of those building elements subject to the determination. The expert is a member of the New Zealand Institute of Architects.
- 6.2 The expert visited the house on 8 December 2008 and furnished a report that was completed on 8 December 2008. The expert noted that his inspection was limited to the installation of the weatherboards on the addition, with no other aspect of the construction assessed.

- 6.3 The expert noted that the boards were 136mm x 18mm pre-primed finger-jointed bevel back weatherboards which were direct fixed to the framing. The expert noted that the weatherboards had been installed to a “reasonable line”, with satisfactory galvanised steel soakers at the corners and a uniform paint system applied.
- 6.4 The expert noted that the windows and doors were face-fixed over the weatherboards, with metal head flashings and timber scribes at the jambs.
- 6.5 The expert removed a nail from the west elevation and noted that it was a 50 x 1.87mm gun nail, which was corroding at the head. The builder advised the expert that the boards had been double nailed. I accept that the nail removed is typical of other fixings elsewhere in the weatherboard cladding.
- 6.6 The expert inspected the interior linings behind the weatherboards, taking non-invasive moisture readings, and noted no evidence of elevated moisture levels. The expert took 2 invasive readings through the weatherboards on the more exposed west elevation; below the sill to jamb junction of an upper level window and at the bottom of the garage door jamb. Both moisture readings were below 10%.
- 6.7 Commenting specifically on the weatherboards, the expert noted that:
- the horizontal laps to the boards are a minimum of 19mm, compared with the 32mm lap described in E2/AS1
 - because of the reduced lap, the anti-capillary grooves are not aligned, and the bottom of the groove in the lower board is exposed by up to 2mm in some areas, which allows rainwater to enter the groove
 - the weatherboards are fixed with 50 x 1.87mm nails in lieu of the 75 x 3.15mm hot-dipped (same term as E2/AS1) galvanised nails described in E2/AS1
 - some of the nails were proud of, or not punched below, the board surface and were corroding, with rust stains apparent
 - the timber scribes at the window jambs are not sealed to the aluminium joinery, leading to a risk of moisture penetration at the jambs.
- 6.8 A copy of the expert’s report was provided to the parties on 11 December 2008.
- 6.9 The authority responded to the application and the expert’s report in a letter to the Department dated 28 January 2009. The authority set out the background to the dispute. The authority said the building consent did not specify how the weatherboards were to be installed but noted that the consent required the cladding to meet the requirements of ‘*Building Code clauses B2 and E2 and NZS 3604:1999 clause 11*’. No reference was made to compliance with the Compliance Document E2/AS1.
- 6.10 The authority submitted that the weatherboards did not comply with either Clause E2 or B2, but it accepted that if the boards were re-fixed with the correct galvanised nails then compliance with B2 would be achieved. The authority did not believe compliance with Clause E2 would be achieved until the weatherboards were installed ‘to meet the manufacturer’s recommendations’.

7. Evaluation for code compliance

7.1 Evaluation framework

7.1.1 I have evaluated the code compliance of this addition with respect to the following:

- The weathertightness of the weatherboards (Clause E2).
- The durability of the weatherboards (Clause B2).

7.1.2 In evaluating the design of a building and its construction, it is useful to make some comparisons with the relevant Acceptable Solutions⁵, which will assist in determining whether the features of this house are code compliant. However, in making this comparison, the following general observations are valid:

- Some Acceptable Solutions cover the worst case, so that they may be modified in less extreme cases and the resulting alternative solution will still comply with the Building Code.
- Usually, when there is non-compliance with one provision of an Acceptable Solution, it will be necessary to add some other provision to compensate for that in order to comply with the Building Code.

7.2 Evaluation of weatherboards for E2 and B2 Compliance

7.2.1 The approach in determining whether building work is weathertight and durable and is likely to remain so, is to apply the principles of weathertightness. This involves the examination of 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. The Department and its antecedent, the Building Industry Authority, have also described weathertightness risk factors in previous determinations⁶ (for example, Determination 2004/1) relating to cladding and these factors are also used in the evaluation process.

7.2.2 The addition to this house has the following environmental and design features which influence its weathertightness risk profile:

Features increasing risk

- the addition is 2-storey high
- the walls have timber weatherboards fixed directly to the framing
- an open timber deck is attached to the upper level

Features decreasing risk

- the building is situated in a low wind zone
- the addition is fairly simple, with limited complex junctions
- the roof has eaves of more than 600mm deep

⁵ An Acceptable Solution is a prescriptive design solution approved by the Department that provides one way (but not the only way) of complying with the Building Code. The Acceptable Solutions are available from The Department's Website at www.dbh.govt.nz.

⁶ Copies of all determinations issued by the Department can be obtained from the Department's website.

- the external wall framing is treated to a level effective in resisting decay if it absorbs and retains moisture.

7.2.3 When evaluated using the E2/AS1 risk matrix, the weathertightness features outlined in paragraph 7.2.2 show that all elevations of the house demonstrate a moderate weathertightness risk rating. I note that, if the details shown in E2/AS1 were adopted to show code compliance, the weatherboard cladding on this house would not require a drained cavity if it incorporated the requirements of E2/AS1 as outlined below.

7.3 Comparison with E2/AS1

7.3.1 The relevant section of E2/AS1 calls for horizontal non-rebated rusticated weatherboards to be installed in the following manner:

Fixings: to be 75 x 3.15mm hot-dipped jolt head galvanised nails with 35mm minimum framing penetration and a fixing pattern of:

Single fixing 10mm above lower board, through both thicknesses.

Horizontal overlaps: 32 mm.

7.3.2 In the case of the cladding to this addition, I make the following observations:

- The weatherboards are direct-fixed bevel back weatherboards with a paint finish.
- The horizontal lap is 19mm, with the anti-capillary grooves not aligned.
- The weatherboards are double-nailed with 50 x 1.87mm nails.

7.4 Compliance with Clause B2

7.4.1 Under Clause B2 the cladding is required to be durable for a period of 15 years with normal maintenance. In this instance the cladding includes the weatherboards, the fixings, and other components that make up the cladding system.

7.4.2 It is clear from the expert's report that the fixings are already deteriorating, and will not be sufficiently durable to meet the 15-year requirement.

8. Discussion

8.1 Taking into account the expert's report, I am satisfied that the weatherboard cladding has not been installed in accordance with the requirements of the building consent, nor in accordance with good trade practice.

8.2 However, I consider the expert's report establishes that the current performance of the weatherboard system on the addition is adequate because it is currently preventing water penetration into the building. Consequently, I am satisfied that the weatherboard system complies with Clause E2 of the Building Code.

8.3 However, the weatherboards are also required to comply with the durability requirements of Clause B2. The faults in the installation of the weatherboards that are now evident show a failure to meet the requirements of Clause B2, and these

faults will worsen with time leading to a failure of Clause E2. I consider the weatherboards do not comply with Clause B2.

- 8.4 The expert has identified systemic defects in the cladding installation as outlined in paragraph 6.7. I consider that fixing these defects is likely to require the removal and re-installation of the weatherboards using the methodology outlined in paragraph 7.3.1.
- 8.5 I note that compliance is likely to have been achieved had the weatherboards been installed in accordance with the building consent as this shows the overlap of the weatherboards and the alignment of the anti-capillary grooves.

9. What is to be done?

- 9.1 A notice to fix should be issued that requires the owners to bring the weatherboards into compliance with the requirements of the building consent.

10. The decision

- 10.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the weatherboard cladding to the addition does not comply with the building consent nor with 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 3 April 2009.

John Gardiner
Manager Determinations