Department of Building and Housing
Te Tari Kaupapa Whare

Determination 2011/042

Refusal to issue a code compliance certificate for a 16-year-old house with monolithic cladding at 10 Worsley Way, Tauranga

1. The matters to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004[1] ("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 applicants are the owners JW and SR Still ("the applicants") 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 applicants' wish to receive a code compliance certificate for the house; however the authority has stated that is not satisfied that the house complies with certain clauses[2] of the Building Code (First Schedule, Building Regulations 1992). I take this to indicate that the authority would refuse to issue a code compliance certificate if a formal application was made. The authority's concerns about the compliance of the building work relate to its weathertightness and durability.

[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 determined[3] is therefore whether the authority is correct in the proposed exercise of its powers to refuse to issue a code compliance certificate. In deciding this, I must consider:

1.3.1 Matter 1: The external envelope

Whether the external envelope of 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 wall cladding, the windows, the roof cladding and the flashings), as well as the way the components have been installed and work together. (I consider this matter 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 matter in paragraph 7.)

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.

2. The building work

2.1 The building work consists of a two storey house which is situated on a sloping site in a high wind zone for the purposes of NZS 3604[4]. Construction is generally conventional light timber frame, with a concrete slab and timber foundation piles, monolithic wall cladding, aluminium joinery and profiled metal roofing. The house has a moderate to high weathertightness risk (see paragraph 6.2).

2.2 The house is relatively simple in plan but includes some high risk features such as a flat roof with perimeter parapet walls and a liquid applied membrane lined internal gutter along one elevation.

2.3 The monolithic cladding consists of face fixed texture painted 7.5mm fibre-cement sheet face fixed through the building wrap to the framing.

2.4 An enclosed deck on the west elevation extends out above the garage door and is partly situated above two bedrooms. The balustrade is part aluminium balusters and part monolithic-clad with a top-fixed steel handrail. Monolithic-clad columns extend up from the balustrade to support the roof which covers the deck. The deck is surfaced with tiles over a membrane floor.

2.5 The expert was unable to identify whether the exterior timber framing was treated, but noted that given the date of construction it was likely to be Boron treated Radiata pine or Douglas Fir. Given the date of construction of the house from 1994 to 1995, I consider the external wall framing to the house could possibly have been treated to H1.2.

[3] Under sections 177(1)(b) and 177(2)(d) of the Act
[4] New Zealand Standard NZS 3604:1999 Timber Framed Buildings

3. Background

3.1 The authority issued a building consent (No. 94/738) on 26 May 1994 under the Building Act 1991, with construction taking place during 1994 to 1995. I have not seen a copy of the consent.

3.2 The authority carried out various inspections during construction, including pre-line inspections in July and August 1994. A 'Final/Plumbing' and drainage inspection was carried out by the authority on 3 October 1994, which passed. It appears that no final inspection was called for after that date.

3.3 There appears to have been no further action taken until the applicants sought to sell the house and realised that a final inspection had not been completed and that it did not have a code compliance certificate.

3.4 The Department received an application for determination on 28 February 2011.

4. The submissions

4.1 The applicants included a covering letter providing some background to the issue and forwarded copies of the drawings and specification and the authority's inspection summary.

4.2 In a letter received on 2 March 2011, the authority noted that 'the applicant has not requested a final inspection to gain a Code Compliance Certificate'. The authority went on to consider that 'the dwelling is constructed of what is now considered high risk construction methods on that basis [the authority] is unable to confirm that the dwelling continues to comply with Building Code Clauses B2 and E2.' I have taken this to indicate that the authority would refuse to issue a code compliance certificate if a formal application was made (refer paragraph 1.2).

4.3 A draft determination was issued to the parties for comment on 6 April 2011. The authority accepted the draft without comment.

4.4 The applicants accepted the draft, and in an email dated 14 April 2011 reiterated their statement that they had not known of the lack of a final inspection and that they considered the house was built to comply with the standards at the time of construction.

5. The expert's report

5.1 As mentioned in paragraph 1.4, I engaged an independent expert, who is a member of the New Zealand Institute of Building Surveyors, to assist me. The expert inspected the house on 28 March 2011, providing a report dated 4 April 2011.

5.2 General

5.2.1 The expert noted that the house as constructed was largely in accordance with the consent drawings. The expert also noted that although the cladding system was well aligned it is not fixed in accordance with the manufacturer's specifications.

5.3 Moisture levels

5.3.1 The expert inspected the interior of the house, noting that non-invasive moisture content readings provided no evidence of moisture ingress. The expert carried out invasive moisture testing to 23 areas considered to be at high risk of moisture penetration, recording readings from 15% to 34% as follows:

Windows

- 21% at the top right hand side of the entrance window (west elevation)
- 26% at the lower right hand side of the (right) bedroom window
- 20% at the lower right hand side of the (left) bedroom window
- 24% in the bottom plate on the left hand side of (left) bedroom window
- 23% below the right hand side of the bathroom window
- 23% below the left hand side of the dining room window
- 19% below the left hand side of the kitchen window

The deck

- 15% below the deck balustrade to south wall junction
- over 80% and decay evident in:
    - the bottom plate at the left hand side of the balustrade on the south elevation
    - the framing timber to the bottom of the deck on the west elevation
- over 80% with soft drillings in:
    - the bottom plate of the balcony, left of the overflow, on the west elevation
    - the bottom plate to the right hand side of the balustrade on the north elevation
- 34% in the bottom plate at the junction of the balustrade to the north wall

Other

- 18% in the top left corner of the garage south elevation
- 16% in the bottom left hand corner of the garage south elevation
- over 80% with soft drillings to the top right hand side of the bedroom on the north elevation
- 32% in the bottom plate to the left hand side of the kitchen north elevation
- 23% with decay present at the bottom right hand side of the kitchen east elevation
- 20% in the bottom plate to the kitchen east elevation
- 22% at the bottom right hand side corner of the laundry
- 18% at the bottom left hand side of the laundry door
- 25% in the bottom plate at the left hand side of the en-suite

I note that moisture levels that vary significantly generally indicate that external moisture is entering the structure and further investigation is required and that readings over 40% indicate that the timber is saturated and decay will be inevitable over time. I also note that the moisture testing was carried out in summer; and higher readings would be expected during wetter periods.

5.4 The cladding

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

- there are several locations where ground clearance is inadequate
- no control joints are evident in walls exceeding 5.4m
- there is some cracking evident in the cladding
- the internal gutter has insufficient slope to avoid water ponding and this will compromise the long term durability of the membrane

Flashings

- there is inadequate sealing of the aluminium joinery behind the facings
- sill trays were not installed
- head flashings do not extend 30mm past the frame
- cladding joints are not 200mm from window openings
- parapet wall cap flashings are level and rely on silicone sealant
- there is no apparent flashing fitted to the electrical meter box and it appears to rely on silicone sealant only for waterproofing

Penetrations

- some penetrations rely on silicone sealant for waterproofing
- the balustrade top is level and handrail penetrations are top fixed

The deck

- there is severe water ingress and consequent damage to framing timbers which will require extensive remedial work.

5.5 The expert concluded that the building work did not comply with the Building Code, nor did it meet the manufacturer's specifications or industry trade standards

5.6 A copy of the expert's report was provided to the parties on 4 April 2010.

5.7 I note the findings in the expert's report show very high moisture content readings and decay evident in the framing timber to the deck and balustrade. I leave it to the authority's discretion whether it wishes to inspect the deck and deck barrier with regard to giving notice under section 124(1). I note that these structural concerns will otherwise be addressed through the notice to fix as described in paragraph 8.1.

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 storied
- it is located in a high wind zone
- there is an enclosed upper deck, located partly above habitable spaces and partly cantilevered
- the walls have monolithic cladding fixed directly to the framing
- although fairly simple in plan, there are some complexities in the design
- the external wall framing is unlikely 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 one elevation of the house demonstrates a moderate weathertightness risk rating and the remaining a high risk rating. I note that, if the details shown in the current E2/AS1 were adopted to show code compliance, the 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 of this house.

6.3 Weathertightness performance

6.3.1 It is clear from the expert's report that the cladding is unsatisfactory in terms of its 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 5.4.1 require rectification.

6.3.2 Considerable work is required to make the walls weathertight and durable. Further investigation is necessary, including the systematic survey of all risk locations, to determine causes and the 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 in the timber framing. Consequently, I am satisfied that the house does not comply with Clause E2 of the Building Code. In addition, given the extent of non-compliance with Clause E2 the extent of any damage to the structural framing needs investigation to determine the buildings' ongoing compliance with Clause B1 Structure.

6.4.2 The building envelope 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.

6.5 I consider that final decisions on whether code compliance can be achieved for this 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 also of 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 causes, extent, level and significance of the timber decay to the untreated framing. Once that decision is made, the chosen remedial option should be submitted to the authority for its approval.

6.6 I note that the Department has produced a guidance document on weathertightness remediation[5]. I consider that this guide will assist the owner in understanding the issues and processes involved in remediation work to the cladding, and in exploring various options that may be available when considering the upcoming work required to the 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 1995.

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.

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

[5] 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. What is to be done now?

8.1 The authority should issue a notice to fix that requires the owners to bring the house into compliance with the Building Code, identifying the defects listed in paragraph 5.4.1 and referring to any further defects that might be discovered in the course of investigation and rectification, 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 As referred to in paragraph 5.7, I leave it to the authority's discretion whether it wishes to inspect the deck and deck barrier with regard to giving notice under section 124(1). I note that these structural concerns will otherwise be addressed through the notice to fix as described above.

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 applicants 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. That proposal should follow the investigations described in paragraph 6.5. 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 Clauses E2 and B2 of the Building Code and accordingly, I confirm the proposed exercise of the authority's powers 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 9 May 2011.

John Gardiner
Manager Determinations