



Determination 2013/041

Regarding the issue of a notice to fix for a 16-year-old house with monolithic cladding at 55 Crow Road, Thomsons Crossing, Winton



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 and Assurance, Ministry of Business, Innovation and Employment (“the Ministry”)², for and on behalf of the Chief Executive of the Ministry.

1.2 The parties

1.2.1 The parties to the determination are

- the owner of the house, K Bath (“the applicant”) acting via an agent
- Southland District Council (“the authority”), carrying out its duties as a territorial authority or building consent authority.

1.3 This determination arises from the decision of the authority to issue a notice to fix for a 16-year-old house because it was not satisfied that the building work complied with certain clauses³ of the Building Code (First Schedule, Building Regulations 1992). The authority’s most significant concerns about compliance of the building work relate to the weathertightness of the external wall cladding.

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

² Within this determination, the term “Ministry” includes the predecessors of the Ministry, which are relevant to the background of the subject house; namely, the Building Industry Authority (BIA) and the Department of Building and Housing (DBH).

³ 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 determined⁴ is therefore whether the authority was correct to issue a notice to fix in regard to the wall cladding. In deciding this, I must consider:

1.4.1 Matter 1: The external building envelope

Whether the external cladding to the house (“the cladding”) complies with Clause B2 Durability and Clause E2 External Moisture of the Building Code. The cladding includes the components of the system (such as the solid plaster, the backing sheets, the windows and the flashings, as well as the way the components have been installed and work together. I consider this in paragraph 6.

1.4.2 Matter 2: The durability considerations

Whether the building elements comply with Clause B2 Durability of the Building Code, taking into account the age of the house. I consider this in paragraph 8.

1.5 The notice to fix also cited contraventions of Clauses B1, D1, E3, F2, G4, G12, G13 and H1. The authority has stated that items relating to Clause E2 are more complex than the other identified defects and the applicant restricted the application for this determination to Clause E2. It appears that work is underway in regard to the other clauses and I therefore leave those to the parties to resolve in due course.

1.6 In making my decision, I have considered the submissions from 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 consists of a single-storey detached house with a linked two-storey garage, which is situated on a level rural site in a high wind zone moderated by established trees. The house is fairly complex in plan and form and assessed as having a moderate weathertightness risk.

2.2 Construction is generally conventional light timber frame, with concrete foundations and floor slab, monolithic wall claddings, aluminium joinery and profiled metal roofing. The 35° pitch gable roofs have eaves and verge projections of about 450mm; a low pitch veranda and two bay windows are without eaves.

2.3 The specification calls for H3 treated bottom plates with remaining framing to be H1. Given the date of construction in 1996, I consider that the framing is likely to be treated in accordance with the specification, but I am unable to determine the particular level and type of treatment that is described as ‘H1’ in the specification. I therefore consider that the wall framing of this house, excluding the bottom plates, is unlikely to be treated to a level that will provide resistance to fungal decay.

2.4 The wall cladding

2.4.1 The cladding is a monolithic cladding system described as stucco over a solid backing. In this instance it consists of 4.5mm thick fibre-cement sheets fixed through the building wrap directly to the framing timbers, and covered by a slip layer of building wrap, solid plaster reinforced with wire mesh and a flexible paint coating. The windows are recessed by about 140mm back from the face of the stucco.

⁴ Under sections 177(1)(b) and 177(2)(f) of the Act

- 2.4.2 The expert exposed underlying construction (see paragraph 5.4.2) and it appears that fibre-cement backing sheets, mesh reinforcing and the first two plaster coats were applied to reveals prior to window installation, with flashings installed over the second/flanking coat of plaster. Windows are installed, with flanges overlaying inner edges and the final finish coat of plaster concealing outer edges of the flashings.

3. Background

- 3.1 On 27 June 1996 the authority issued building consent No. 96/0535 under the Building Act 1991. The consent conditions included the requirement for ‘foundation, drainage, preline and completion inspections.’
- 3.2 Although I have seen no copies of the authority’s inspection records, handwritten notes indicate that preline inspections were carried out during August and September 1996 and a wood burner was installed in March 1997.

3.3 The recessed windows

- 3.3.1 In a letter to the builder dated 25 July 1996, the authority attached technical information and details from the manufacturer of the backing sheets to the stucco system and noted that these did not include recommendations for the recessed windows proposed for the house. The authority stated that:
- Of particular concern is the weatherproofing of internal and external corners formed by the [proprietary] sill, jamb and head when recessing the windows approximately 140mm inside the line of the exterior cladding.
- 3.3.2 The authority asked the builder to contact the manufacturer and to
- ...provide construction details of their recommendations for our records. This information will be required before the [authority] can approve fitting of the exterior cladding.
- 3.3.3 The handwritten inspection notes include an entry dated 20 August 1996 stating:
- To flash completely around recess windows. [The cladding manufacturer’s representative] sent down standard brochure which didn’t really have a relevant detail but advised them to ensure galv flashing all around recessed windows.
- 3.4 It appears that the house was substantially completed by April or May 1997, but no final inspection was requested. In a pro-forma letter to the applicant dated 26 November 1999, the authority noted that formal advice of completion and a final inspection were needed before a code compliance certificate could be issued.
- 3.5 It appears a final inspection was carried out in July or August 2000 because the authority issued a notice to rectify⁵ dated 2 August 2000. I have not seen a copy of the inspection record, but I note that the notice to rectify did not identify any weathertightness defects and was restricted to non-compliance with Clause D1 ‘in that the handrail provided does not provide continuous support over the length of the stair.’

⁵ The equivalent of a notice to fix under the Act.

3.6 The 2013 final inspection

- 3.6.1 The authority carried out an inspection on 25 February 2013, which identified 14 items requiring attention and produced a 'photo file' of defects identified during the inspection, which included the matters considered in this determination.
- 3.6.2 In regard to Clauses E2 and B2, the authority identified (in summary)
- lack of clearances to the interior floor level
 - lack of clearances to the bottom of the stucco cladding
 - lack of visible flashings to windows and doors
 - lack of clearances above the apron flashings
 - lack of control joints to stucco
 - cracks in the stucco to the garage wall.
- 3.6.3 The inspection also identified items relating to compliance with other clauses of the Building Code, which are not considered in this determination (see paragraph 1.5).

3.7 The notice to fix

- 3.7.1 In a letter to the applicant dated 6 March 2013, the authority referred to the final inspection and attached a notice to fix also dated 6 March 2013 together with 'example photographs' taken during the inspection. The authority described items requiring attention and noted that some of the items in the notice
- ...are relatively minor in nature and can be easily resolved. The E2 External Moisture items are more complex, particularly the compliance confirmation of the flashing systems for the recessed windows and the variation in omitting the head and sill flashings to the opening in the stucco plaster cladding system.
- 3.7.2 The accompanying notice to fix identified a number of Building Code clauses that the building work was not in compliance with, including Clause E2 and the items outlined in paragraph 3.6.2. In regard to the apparent lack of window flashings, the notice stated:
- There was also correspondence forwarded to your builder on 25 July 1996 requesting consultation with [the manufacturer's representative] of the time about the recessed window internal corner flashing detail and to provide confirmation of [the proposed flashings] back to [the authority]. Because this information was not provided and the apparent omission [of] head and sill flashings, weathertightness and long term durability of the recessed window junctions cannot be determined.
- 3.8 The applicant engaged the agent, who is also an LBP, to assist in resolving the issues raised by the authority and some remedial work was subsequently carried out.
- 3.9 The Ministry received an application for a determination on 5 April 2013.

4. The submissions

- 4.1 The applicant provided copies of
- consent drawings and specification
 - the building consent

- a summary of some of the authority's inspections
- the final inspection record
- the notice to fix dated 6 March 2013
- some correspondence from the authority
- various structural calculations, producer statements and other information.

4.2 The authority acknowledged the application but made no submission.

4.3 A draft determination was issued to the parties on 11 June 2013. The draft was issued for comment and for the parties to agree the date when the house complied with Building Code Clause B2 Durability.

4.4 Both parties accept the draft without further comment and agreed with the date proposed in the draft determination of 1 May 1997 as the date when compliance with Clause B2 was achieved.

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 Building Surveyors and inspected the house on 21 May 2013, providing a report completed on 28 May 2013. The parties were provided with a copy of the report on 29 May 2013.

5.2 General

5.2.1 The expert noted that the scope of his investigation was to assess compliance with Clause E2 of the subject items in the notice to fix. The expert observed that construction generally appeared to accord with the consent drawings, apart from minor differences not material to the scope of his report.

5.2.2 The expert described the construction quality as 'very good', with the house appearing to be built in accordance with good trade practice at the time of construction. The exterior appeared well maintained apart from minor blemishes and damage, with no 'visible evidence of spalling, flaking or other defects typically observed in association with saturated framing or plaster'.

5.2.3 The expert inspected the interior of the house, taking non-invasive moisture readings, and no evidence of moisture was noted. Invasive moisture testing was carried out at areas identified in the notice; with moisture readings of 12% and 13% at an exposed window, 9% below the apron flashing of a bay window, and all drillings dry and sound. The expert also noted that there had been rain in the preceding few days.

5.3 The stucco cladding

5.3.1 The expert noted cracks at the backing sheet joints to the west wall of the garage, resulting from stress when a vehicle had driven into the wall. Elsewhere, the stucco appeared to be in sound condition, with only minor hairline cracking visible. The expert considered this 'noteworthy given it was first built 16 years ago'. The expert noted that some maintenance was needed to repair the garage cracks and to seal and paint other hairline cracks.

5.3.2 The expert also considered it possible that control joints had been installed under the finish coats of plaster, with one likely control joint observed. Given the lack of cracking to the cladding, the expert did not consider that further investigation to locate joints was necessary.

5.4 Windows

5.4.1 Although window head reveals did not incorporate a drip edge, the expert noted that windows are sheltered by the deep recess and the eaves, which provide good deflection protection from the weather. (I also note that the plaster surface is rough, which will restrict water from tracking across the underside of the reveal.)

5.4.2 The expert selected an exposed window on the west elevation as a representative sample to undertake destructive investigation of underlying construction and to assess whether leaking has occurred. The expert removed three sections of plaster from the head, sill and jamb of the window and noted that

- metal flashings were installed beneath the top plaster coat and extended behind the window flanges at the head, jamb and sill of the window
- the head flashing drains into the top channel of the window, then onto the jamb flashings
- the top channel appears well sealed to prevent water penetrating into the wall, with no evidence of elevated moisture levels or damage to framing
- moisture readings are 12% and 13% in the trim stud and sill plate, despite rain against that window in the preceding few days.

5.5 Apron flashings

5.5.1 The expert noted that the bay windows incorporate small hipped roofs, with steep pitches and no gutters. The upper stucco butts against the apron and the bottom of the flashing has a 'turnout diverter', which appeared to be well sealed to provide 'a suitable rainwater diversion'.

5.5.2 The expert took invasive moisture readings and removed a small section of plaster around the apron flashing turnout nearest to the northwest corner and noted that

- the underlying building wrap and fibre-cement backing were dry and free from mould, moisture or other signs of deterioration
- the flashing upstand showed no signs of corrosion or water staining
- moisture readings into framing directly below the turnout were 9%, with dry and 'clean' drillings.

5.6 Ground clearances

5.6.1 The expert noted that some work had been undertaken in response to the notice to fix, which included

- lowering garden levels
- lowering paving at the northeast corner

- installation of a proprietary channel to the bottom of the stucco to provide a drip edge.

5.6.2 The expert noted that areas where plaster butts against paving are now restricted to the verandas at the entry and along the north elevation. Given the 2m deep recesses, the well-drained paving and the lack of any evidence of moisture, the expert considered that the lack of clearances were acceptable in these locations.

5.7 Conclusion

5.7.1 The expert concluded that the 'most likely leak locations' of the building envelope had been inspected and investigated and there was no evidence of moisture penetration currently or over the past 16 years.

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 in a high wind zone moderated by local shelter
- the house is two-storeys-high in part
- the house is fairly complex in plan and form, with wall to roof junctions
- the stucco cladding is fixed directly to the framing
- the external wall framing may not be treated to a level that provides sufficient resistance to decay if it absorbs and retains moisture

Decreasing risk

- there are deep verandas and roof overhangs to shelter most of the walls.

6.2.2 Using the E2/AS1 risk matrix to evaluate these features, the elevations are assessed as having moderate risk rating. If details shown in the current E2/AS1 were adopted to show code compliance, a drained cavity would be required for the stucco cladding although this was not a requirement for solid plaster over rigid backings at the time of installation.

6.3 Weathertightness performance

6.3.1 Taking account of the expert's report, the stucco cladding appears to have been installed in accordance with good trade practice at the time, with no evidence of moisture penetration into the walls.

6.3.2 I note that the solid plaster section of the consent specification called for compliance with NZS3604:1990, which specified the inclusion of control joints in plastered walls beyond 4m high or wide. With regard to the lack of visible evidence that these have been installed, I note that

- the expert observed one probable control joint and other joints may be concealed beneath the top plaster coat
- the stucco appears to have been installed according to good trade practice onto framing above rigid concrete foundations and floor slab and all drying shrinkage in the plaster and supporting framing would have occurred during the early part of the period since construction
- some minor cracking is to be expected in response to environmental factors such as imposed temperature and moisture effects, wind, earthquake forces and seasonal movements
- the stucco shows no signs of significant cracking or associated moisture entry after more than 16 years, which may be due either to the inclusion of control joints below the top coat of plaster or an indication that the stucco is adequate despite their omission.

6.3.3 Notwithstanding that the fibre-cement backing sheets are fixed directly to timber framing, thus inhibiting drainage and ventilation behind the stucco, I note certain factors that assist the performance of the cladding in this case:

- The stucco cladding is generally installed according to good trade practice and has been well maintained.
- After more than 16 years, there is no evidence of moisture penetration.

6.4 Weathertightness conclusion

6.4.1 I consider the expert's report establishes that the current performance of the building envelope is adequate because there is no evidence of moisture penetration into the framing. Consequently, I am satisfied that the house complies with Clause E2 of the Building Code.

6.5 The durability of the stucco cladding

6.5.1 The building work is also required to comply with the durability requirements of Clause B2. Clause B2 requires that a building continue to satisfy all the objectives of the Building Code throughout its effective life, and that includes the requirement for the stucco cladding to remain weathertight for a period of 15 years from the date a code compliance certificate is issued.

6.5.2 However, if that 15 year period commenced from the date of substantial completion in early 1997, the cladding has already met the durability requirements of the Building Code. Notwithstanding that, the expert's report on the quality of construction and the current condition of this house satisfies me that given on-going maintenance the stucco will remain weathertight for some years to come,.

6.5.3 I therefore conclude that a modification of the building consent to the effect that Clause B2.3.1 applies from the substantial completion date in early 1997 instead of from the time the code compliance certificate is issued will result in the house being

brought into compliance with Clause B2 of the Building Code. I address such a modification in paragraph 8.

- 6.5.4 It is emphasised that each determination is conducted on a case-by-case basis. Accordingly, the fact that a particular cladding system has been established as being code-compliant in relation to a particular building does not necessarily mean that the same cladding system will be code-compliant in another situation.

6.6 Maintenance of the stucco cladding

- 6.6.1 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. The Ministry has previously described these maintenance requirements, including examples where the external wall framing of the building may not be treated to a level that will resist the onset of decay if it gets wet (for example, Determination 2007/60). In the case of this particular house, I note that the expert has reported that the stucco cladding now requires some maintenance.
- 6.6.2 Although a modification of the durability provisions to allow the provisions to commence from the date of substantial completion in 1997 means that the stucco cladding has already fulfilled its durability requirements, the expected life of the building as a whole is considerably longer than the minimum life required by the Building Code for the stucco cladding and careful maintenance should continue.

7. The notice to fix

- 7.1 Taking into account the expert's comments, the following table summarises my conclusions on items relating to weathertightness in the notice to fix dated 6 March 2013 referring also to related paragraphs within this determination:

Notice to fix		Expert's report	My conclusions	Paragraph references
	Summarised requirements			
E2	External Moisture			
	Lack of clearances to interior floor level - under verandas - other areas	Sheltered and well drained Clearances now increased No evidence of past moisture	Adequate in circumstances Adequate	Paragraph 5.6
	Lack of clearances to bottom of stucco: - under verandas - other areas	Sheltered and well drained Clearances now increased No evidence of past moisture	Adequate in circumstances Adequate	Paragraph 5.6
	Lack of flashings to windows	Flashings present behind top coat of plaster Head junction sheltered No evidence of moisture	Adequate in circumstances	Paragraph 5.4
	Lack of clearances to apron flashings	No evidence of moisture	Adequate in circumstances	Paragraph 5.5
	Lack of control joints	No evidence of cracking from movement Invasive investigation not warranted	Adequate in circumstances	Paragraph 5.3.2 Paragraph 6.3.2

- 7.2 Although I am satisfied that the house now complies with Clause E2 of the Building Code, I note that some recent remedial work was carried out in response to the notice to fix. I am of the view that that the items relating to Clause E2 are compliant, however I consider that the authority made an appropriate decision to issue the notice to fix at the time the notice was issued in respect of other items requiring remedial work.

Matter 2: The durability considerations

8. Discussion

- 8.1 There are 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 in 1997.
- 8.2 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).
- 8.3 These durability periods are
- 5 years if the building elements are easy to access and replace, and failure of those elements would be easily detected during the normal use of the building
 - 15 years if building elements are moderately difficult to access or replace, or failure of those elements would go undetected during normal use of the building, but would be easily detected during normal maintenance
 - the life of the building, being not less than 50 years, if the building elements provide structural stability to the building, or are difficult to access or replace, or failure of those elements would go undetected during both normal use and maintenance.
- 8.4 In this case the delay since the completion of the building raises concerns that many elements of the building are now well through or beyond their required durability periods, and would consequently no longer comply with Clause B2 if a code compliance certificate were to be issued effective from today’s date. However, I have not been provided with any evidence that elements did not comply with Clause B2 in early 1997.
- 8.5 It is not disputed, and I am therefore satisfied, that all the building elements complied with Clause B2 on 1 May 1. This date has been agreed between the parties (refer paragraph 4.4).
- 8.6 In order to address these durability issues when they were raised in previous determinations, I sought and received clarification of general legal advice about waivers and modifications. That clarification, and the legal framework and procedures based on the clarification, is described in previous determinations (for example, Determination 2006/85). I have used that advice to evaluate the durability issues raised in this determination.
- 8.7 I continue to hold that view, and therefore conclude that
- (a) the authority has the power to grant an appropriate modification of Clause B2 in respect of all the building elements, if requested by an owner
 - (b) it is reasonable to grant such a modification, with appropriate notification, as in practical terms the building is no different from what it would have been if a code compliance certificate for the building work had been issued in 1997.

9. The decision

9.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the cladding to the house complies with E2 of the Building Code, and Clause B2 given a modification of Clause B2.3.1 as described in this determination; accordingly the authority was incorrect to issue a notice to fix including those items related to Clause E2.

9.2 However, taking account of the recent remedial work I also determine that the authority's decision to issue the notice to fix dated 6 March 2013 in respect of other items was correct, and I confirm the authority's decision.

9.3 I also determine that:

(a) all the building elements installed in the house, apart from items rectified in response to the notice to fix complied with Clause B2 on 1 May 1997.

(b) the building consent is hereby modified as follows:

The building consent is subject to a modification to the Building Code to the effect that, Clause B2.3.1 applies from 1 May 1997 instead of from the time of issue of the code compliance certificate for all the building elements.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 15 July 2013.

John Gardiner

Manager Determinations and Assurance