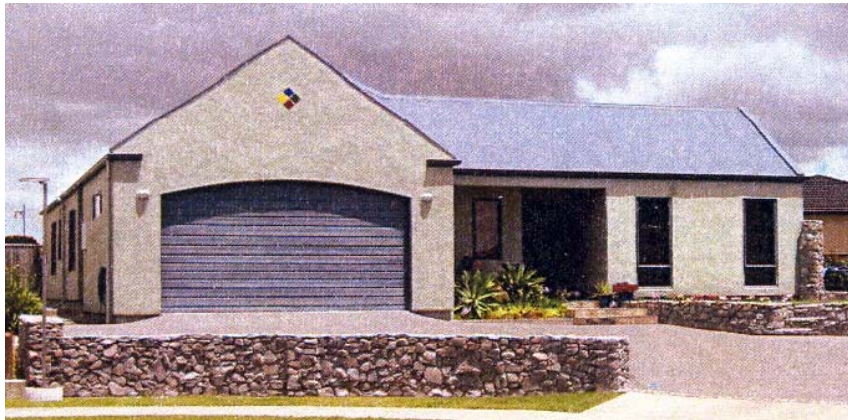


Determination 2010/018

Refusal to issue a code compliance certificate for a 7-year-old house with monolithic cladding at 11 The Croft, Havelock North



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 K Page (“the applicant”), who was also the builder of the house, and the other party is the Hastings 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 refuse to issue a code compliance certificate for a 7-year-old house because it was not satisfied that it complied with certain clauses² of the Building Code (First Schedule, Building Regulations 1992).
- 1.3 The matter to be determined³ is therefore whether the authority was correct to refuse to issue a code compliance certificate. In deciding this, I must consider:

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.

³ Under sections 177(b)(i) of the Act

1.3.1 Matter 1: The external envelope

Whether the external claddings to 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 claddings 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 When refusing to issue a code compliance certificate for the house, the authority also questioned compliance with Clause B1 Structure (see paragraph 3.4); the reasons given all related to weathertightness defects. I have therefore taken the view that concerns regarding ‘structural integrity’ are limited to possible consequential damage to the structure under Building Code Clause B1.3.4(a) as a result of moisture penetration through the external envelope into the timber framing via the identified defects, which are covered within Matter 1.

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 6.1.

2. The building work

2.1 The building work consists of a single-storey detached house, which is situated on a flat site in a medium wind zone for the purposes of NZS 3604⁴. Construction is generally conventional light timber frame, with a concrete slab, monolithic wall cladding, aluminium windows and profiled metal roofing.

2.2 The house is reasonably simple in plan and form, with a 35° pitch gable roof that has parapets at the gable end walls and no eaves. A low-pitched membrane roof, with a parapet to the southern edge, forms an infill to the southwest internal corner. The house has a low to moderate weathertightness risk (refer paragraph 6.2).

2.3 The cladding is a monolithic cladding system described as stucco over a solid backing of timber sarking. The sarking consists of 150 mm x 25 mm H3 treated boards installed diagonally and spaced to provide gaps of about 150 mm, which provide some drainage capacity behind the stucco. The sarking is fixed through the building wrap to the framing timbers, and covered by a slip layer of building wrap, metal-reinforced 20mm thick solid plaster and a flexible paint coating.

2.4 The expert was unable to confirm whether the external timber framing was treated, but noted that the exposed timber in the roof space appeared to be a mixture of treated and untreated timber. Given the date of construction in 2002 and the lack of other evidence, I consider that the wall framing is likely to be generally untreated.

⁴ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

3. Background

- 3.1 The authority issued a building consent (No. ABA 2002/0619) in May 2002 under the Building Act 1991. I have not seen a copy of the consent, but I note that the drawings are stamped as approved by the authority on 18 May 2002.
- 3.2 The authority carried out inspections during construction, including framing, insulation and stucco inspections on 16 September 2002. A final inspection was carried out in February 2004 which noted a significant amount of external work yet to be completed. Another final inspection was carried out in March 2005, which recorded eight outstanding items.
- 3.3 No re-inspection was carried out until the applicant requested a code compliance certificate and the authority inspected the house on 9 September 2009.

3.4 The authority's refusal

- 3.4.1 Following the inspection, the authority wrote to the applicant on 14 September 2009, attaching a 'Notice pursuant to Sections 95A & 436 Building Act 2004' ("the refusal notice") and stating that:

This letter is to advise a decision has been made to refuse to issue a Code Compliance Certificate due to a number of issues that have been identified on your dwelling that do not meet the NZ Building Code requirements in regard to weathertightness, structural integrity and durability.

- 3.4.2 The attached refusal notice stated the authority could not be satisfied that the:
- ...dwelling meets or met the requirements of the NZ Building Code that was in force at the time the building consent was issued in particular B1-Structure, B2-Durability, and E2-External Moisture.

- 3.4.3 The refusal notice also listed reasons for refusing to issue a code compliance certificate, which were associated with the following areas (in summary):

- the parapet to wall and roof junctions (item 1)
- the fascias and barge cappings embedded in the stucco (item 2)
- the stucco plaster over the window head flashings (item 3)
- the cracks in the stucco (item 4)
- the penetrations through the stucco (item 5)
- the inadequate clearances from the ground to interior floor levels (item 6)
- the membrane roof to parapet junction (item 7)
- the roof underlay (item 8)
- the lack of window sill flashings (item 9).

- 3.4.4 The authority also issued a notice to fix with a covering letter, both dated 14 September 2009. In regard to the 'areas of non-compliance and remedy' the notice to fix referred to the items described in the refusal notice.

- 3.5 The Department received an application for a determination on 17 November 2009.

4. The submissions

4.1 The applicant forwarded copies of:

- the consent drawings
- the inspection summary and final inspection record
- the correspondence from 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 on 18 February 2010. The draft was issued for comment and for the parties to agree a date when the house, with the exception of the items to be rectified, complied with Building Code Clause B2 Durability.

4.4 The parties accepted the draft without comment and agreed that compliance with B2 Durability was achieved on 1 January 2004.

5. The expert's report

5.1 As mentioned in paragraph 1.5, 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 21 December 2009 and provided a report that was completed on 7 January 2010.

5.2 General

5.2.1 The expert noted that the house generally appeared to accord with the consent drawings apart from:

- the change in the stucco backing from horizontal sarking to diagonal sarking
- the extension of the gutters around the corners of the gable end walls.

5.2.2 The windows are recessed into the stucco, with metal head flashings. The expert removed a small section of plaster at the sill to jamb intersection of the laundry window, noting that sill trays were installed over the sill framing. However there were no jamb flashings and no sill flashing to direct water to the outside.

5.2.3 The expert also removed a section of parapet capping to observe the underlying construction, noting the spaced timber sarking, the building wrap layers and the stucco with the outer coat of plaster pushed up to the outer edge of the cap flashing.

5.3 Moisture levels

5.3.1 The expert took non-invasive readings to record moisture levels within the plaster of the stucco cladding, and noted readings of over 50% in exposed wall areas compared to about 20% in sheltered walls. This indicated that moisture is being absorbed into the plaster in many areas of exposed cladding.

5.3.2 The expert also took invasive moisture readings through the cladding into the framing at areas identified by the authority, and at other areas considered at risk; and only one elevated moisture level was recorded. This was a reading over 80% in the framing at the bottom of the monolithic-clad column, which is under the parapet at the end of the membrane roof.

5.4 Focussing on the defects identified by the authority in the refusal notice (see paragraph 3.4.3), the expert noted that:

Parapet junctions (item 1)

- the bottom of the apron flashing above the gutter to parapet wall junction between the family room and bedroom 4 lacks a kick-out flashing, with associated moisture and moss indicating moisture in the plaster (other parapets have satisfactory kick-outs)

Fascias and cappings (item 2)

- the fascias and parapet cappings are embedded within the stucco

Window head flashings (item 3)

- the window head flashings are embedded within the stucco

Stucco cracking (item 4)

- apart from at sheltered recesses, there is extensive horizontal, vertical and diagonal cracking to the stucco on all elevations, indicating moisture absorption into the plaster through various defects

Penetrations (item 5)

- the penetration of a TV cable through the stucco is unsealed (other penetrations are satisfactorily sealed)

Parapet to membrane roof (item 7)

- the bottom of the parapet to the membrane roof section is not weatherproof, with an unsatisfactory joint at the capping turndown and gaps at the gutter resulting in moisture penetration into the column framing below.

Roof underlay (item 8)

- Although the underlay is wrinkled and sagging in some areas, with exposed roofing, there is no evidence of any associated moisture damage. The roof has a fairly steep pitch and any condensation on the metal roofing is unlikely to cause damage as it will run down the roof underside to the outside.

Window sills (item 9)

- although there are metal sill trays, there are no jamb flashings or sill flashings to direct moisture to the outside, with cracks at jamb to sill junctions indicating moisture absorption into the plaster.

5.5 In regard to the remaining items identified by the authority, the expert made the following comments:

Ground levels (item 6)

- There is little clearance beside one garage door jamb, but the paving slopes steeply away from that small area. The clearance at the master bedroom is 30mm to 50mm, but this wall is protected by a deep roof overhang. Some other areas of stucco are 80mm above the well-drained paving. There is no evidence of any moisture penetration associated with reduced clearances.

5.6 A copy of the expert's report was provided to the parties on 11 January 2010.

Matter 1: The external envelope

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.

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 has two types of roofing with parapets that include complex junctions
- most walls have no eaves to shelter the cladding
- the external wall framing is unlikely to be treated to a level that provides resistance to decay if it absorbs and retains moisture

Decreasing risk

- the walls have monolithic cladding fixed over spaced diagonal sarking that provides some limited capacity for drainage behind the stucco
- the house is in a medium wind zone
- the single-storey house is fairly simple in plan and form.

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 elevations demonstrate a low a risk rating. I note that, if the details shown in the current E2/AS1 were adopted to show code compliance, the monolithic cladding on this building 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.

6.3 Weathertightness performance

6.3.1 Generally the claddings appear to have been installed in accordance with good trade practice. However, taking account of the expert's comments in paragraph 5.4, I conclude that remedial work is necessary in respect of the wall cladding as follows:

- the lack of a kick-out to the bottom of the apron flashing over the metal roofing to the south of the parapet wall at the edge of the membrane roof section
- the fascias and parapet cappings embedded into the stucco
- the window head flashings embedded into the stucco
- the cracks in the stucco cladding, and apparent lack of control joints
- the lack of weathertightness of the end of the parapet to the membrane roof, including investigation of the moisture penetration into and possible damage to the framing of the monolithic-clad column below
- the lack of jamb and sill flashings to the windows.

6.3.2 Remedial work is also necessary in respect of the damage and sagging to some areas of the roof underlay. I note the expert's comment that the roof has a fairly steep pitch and any condensation on the metal roofing is likely to run down the underside to the outside. However, I consider that the damage and sagging in the underlay allow moisture to be trapped or escape into the roof space. In order to ensure the ongoing performance and durability of the metal roofing and the roofing timbers, I therefore consider it prudent to lift roof panels in order to repair or replace the damaged areas of underlay.

6.3.3 I note that, while 'expansion PVC joints' are shown on the elevations of the consent drawings, there is no evidence that control joints are installed at these locations. The location of the control joints 'as drawn' are also at variance with the requirements of the applicable standard that was in force at the time the work was completed - being NZS 4251⁵. The cracking evident in the as-built work reflects the requirements of NZS 4251. I also note the addition of a third plaster coat after the completion of the initial two coat system may have contributed to the cladding defects (cracking, embedment, etc).

6.3.4 I also note the expert's comments in paragraph 5.5, and accept that these areas are adequate in the particular circumstances.

6.3.5 Notwithstanding the fact that the stucco is fixed over diagonal sarking that will inhibit free drainage and ventilation behind the cladding somewhat, I have noted certain compensating factors that assist the performance of the cladding in this particular case:

- The timber sarking incorporates gaps of about 150 mm between the diagonal boards, which will provide some capacity for drainage behind the stucco.
- The stucco is generally installed according to good trade practice.
- Moisture penetration is limited to an isolated area.

⁵ New Zealand Standard NZS 4251: Solid plastering; Part 1: 1998 Cement plasters for walls, ceilings and soffits

6.3.6 These factors can assist the building to comply with the weathertightness and durability provisions of the Building Code.

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 it is allowing water penetration through the cladding in at least one area at present. Consequently, I am satisfied that the house does not comply with Clause E2 of the Building Code.

6.4.2 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 faults identified in the stucco cladding are widespread in extent but discreet in nature and in my view have not led to a systemic failure of the cladding. I am therefore of the view that satisfactory rectification of the items outlined in paragraph 6.3.1 will result in the stucco cladding being brought into compliance with Clauses B2 and E2.

6.4.4 I am able to conclude that satisfactory rectification of the items outlined in paragraph 6.3.2 will result in the roof cladding being brought into compliance with Clauses B2 and E2.

6.4.5 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 Department 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).

Matter 2: The durability considerations

7. Discussion

7.1 There are also concerns regarding the durability, and hence the compliance with the building code, of certain elements of the house taking into consideration the age of the building work completed during 2003.

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 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.

7.4 It is not disputed, and I am therefore satisfied, that all the building elements complied with Clause B2 on 1 January 2004. This date has been agreed between the parties, refer paragraph 4.4.

7.5 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.

7.6 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.
- (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 towards the end of 2003.

7.7 I strongly recommend that the authority record this determination and any modifications resulting from it, on the property file and also on any LIM issued concerning this property.

8. What is to be done now?

8.1 Although I am satisfied that the authority made an appropriate decision to refuse to issue a code compliance and to issue a notice to fix, I consider that the notice to fix should be modified and reissued to the owner to take account the findings of this determination, identifying the areas listed in paragraphs 6.3.1 and 6.3.2, 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 owner to propose and for the authority to accept or reject.

8.2 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 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.

8.3 Once the matters set out in in paragraph 6.3.1 and 6.3.2 have been rectified to its satisfaction, the authority may issue a code compliance certificate in respect of the building consent amended as outlined in paragraph 7.

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 authority's decision to refuse to issue a code compliance certificate
- the authority is to modify the notice to fix, dated 14 September 2009, to take account of the findings of this determination.

9.2 I also determine that:

- (a) all the building elements installed in the house, apart from the items that are to be rectified, complied with Clause B2 on 1 January 2004.
- (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 January 2004 instead of from the time of issue of the code compliance certificate for all the building elements, except the items to be rectified as set out in paragraph 6.3.1 and 6.3.2 of Determination 2010/018.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 3 March 2010.

John Gardiner
Manager Determinations