



## Determination 2011/109

### Refusal to issue code compliance certificates for alterations under two building consents to a house at 668 Weedons Road, Christchurch



#### 1. The matters to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004<sup>1</sup> (“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 of the house, M and S Ryan (“the applicants”) and the other party is the Selwyn District Council (“the authority”), carrying out its duties as a territorial authority or building consent authority.

#### 1.2 The reason for the determination

1.2.1 This determination arises from the decision of the authority to refuse to issue code compliance certificates for alterations and additions to a house undertaken under two building consents in 1993 and 2009. The refusals arose because:

- the building work undertaken in 1993 (“the 1993 alterations”) experienced moisture problems related to the external wall cladding and the upper floor bathroom
- a new building consent was issued in 2009, which included removing and replacing the wall cladding to the addition (“the 2009 remedial work”), and the authority is not satisfied that:

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<sup>1</sup> The Building Act, Building Code, Compliance documents, past determinations and guidance documents issued by the Department are all available at [ww.dbh.govt.nz](http://ww.dbh.govt.nz) or by contacting the Department on 0800 242 243.

- elements remaining from the 1993 alterations comply with the internal moisture and durability provisions of the Building Code, considering the age of those elements
- the 2009 remedial work complies with certain clauses<sup>2</sup> of the Building Code (First Schedule, Building Regulations 1992).

1.3 The matter to be determined<sup>3</sup> is whether the authority correctly exercised its powers in refusing to issue code compliance certificates for the 1993 alterations and the 2009 remedial work. In deciding this matter, I must therefore consider:

**Matter 1: The code compliance of the 2009 remedial work**

- 1.3.1 The authority is concerned that sill flashings installed as part of the 2009 remedial work do not comply with the weathertightness provisions of the Building Code. I also take the view that these components cannot be addressed in isolation from the window installation, which in turn must be considered as part of the external wall cladding system as a whole.
- 1.3.2 I therefore must consider whether the autoclaved aerated concrete (“AAC”) veneer system (“the cladding”) as installed in 2009 to the exterior walls of the 1993 addition complies with Clause E2 External Moisture and Clause B2 Durability of the Building Code. I consider this matter in paragraph 7.

**Matter 2: The code compliance of the 1993 alterations**

- 1.3.3 The authority also expressed concerns about Clause E3 Internal Moisture, which I take to refer to the tiling to the upper level bathroom (refer paragraph 3.1.4), and Clause B2 Durability (refer paragraph 3.3.2), which I take to mean the potential damage to the timber framing arising from water ingress that occurred prior to the 2009 remedial work. Compliance with Clause B2 insofar as it relates to the condition of the original framing timber is therefore considered as part of matter 2 (refer paragraph 8).
- 1.3.4 I have also considered whether the remaining building elements in the 1993 alterations comply with Building Code Clause B2 Durability taking into account the ages of the building work. I consider this matter in paragraph 8.3.

**Matter 3: The authority’s decision**

- 1.3.5 In making my decision on the exercise of the authority’s powers, I must consider the grounds on which the authority based its decision to refuse to issue the code compliance certificate, and whether the decision to refuse to issue the code compliance certificate was correct. I consider this matter in paragraph 9.
- 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, and the other evidence in this matter.

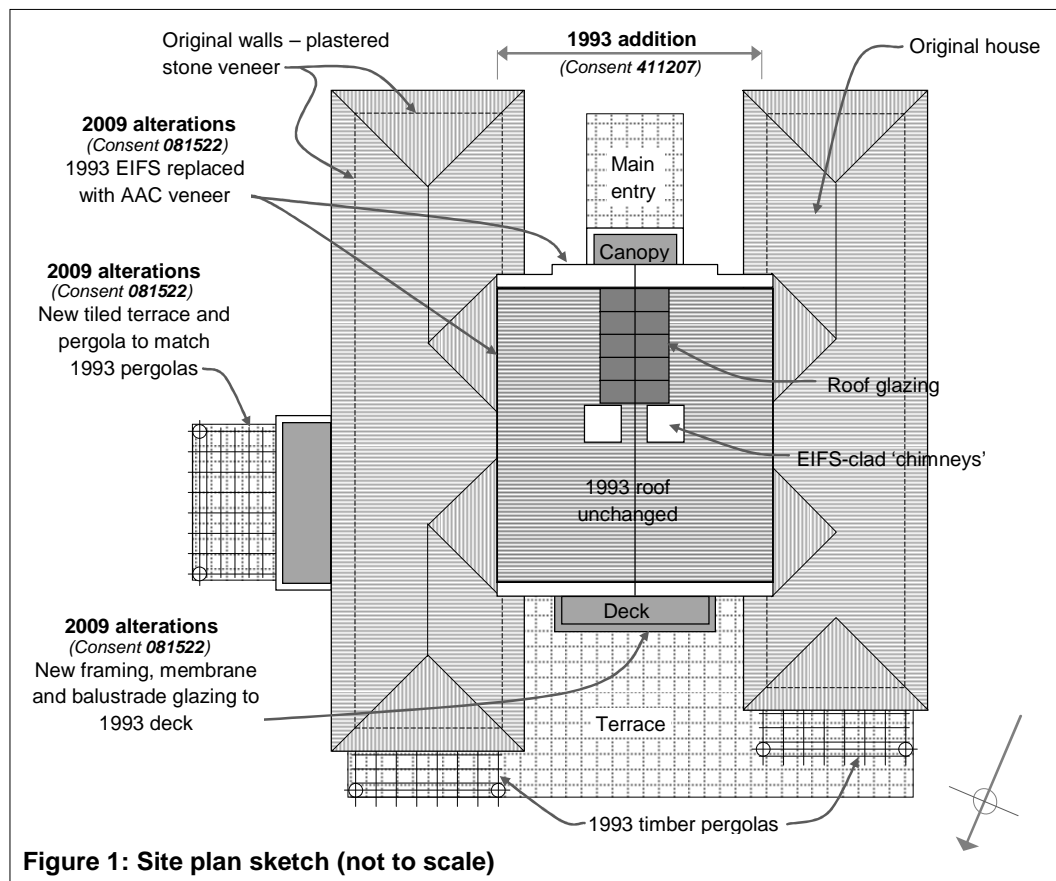
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<sup>2</sup> In this determination, unless otherwise stated, references to sections are to sections of the Act and references to clauses are to clauses of the Building Code.

<sup>3</sup> Under section 177(1)(b) and 177(2)(d) of the Act.

## 2. The building work

2.1 The building work consists of alterations to a detached house situated on a large level rural site in a high wind zone for the purposes of NZS 3604<sup>4</sup> that is moderated by tall trees that surround the site. The original house appears to have been built as a single-storey building with stone veneer cladding, aluminium windows, and metal roofing. The alterations are shown in Figure 1:



2.2 Construction is generally conventional light timber frame, with concrete foundation walls, suspended timber floors, plastered masonry veneer to original retained walls, AAC veneer to additions, profiled metal roofing and aluminium windows. The altered house is fairly complex in plan and form and is assessed as having a high weathertightness risk (refer paragraph 7.2.2).

### 2.3 The building consents

2.3.1 The building work considered in this determination is covered by the following two building consents (both of which remain open):

- Consent No. BC 411207 (“the 1993 alterations”) issued on 16 August 1993 for additions and alterations to the house
- Consent No. BC 081522 (“the 2009 remedial work”) issued on 26 January 2009 for re-cladding the 1993 addition, along with minor alterations and

<sup>4</sup> New Zealand Standard NZS 3604:1999 Timber Framed Buildings

additions. An amendment (081522A) was subsequently issued to cover the change in position of a solid fuel heater.

## 2.4 The 1993 alterations

2.4.1 As shown in Figure 1, and as based on the drawings of the existing house included in the 2009 consent drawings, the 1993 alterations appear to have included:

- a two-storey addition to the south, with the new gabled-roof upper floor continued over the central part of the original house to provide:
  - a paved entry and flat membrane canopy from the new south wall and a foyer, with a void to roof glazing in the extended ground floor
  - a ‘drawing room’ in the original north ground floor and three bedrooms and a bathroom in the new upper level
  - an upper north deck, with membrane floor and metal balustrades
  - EIFS<sup>5</sup> wall cladding to the new walls and gable-end parapets and two framed EIFS-clad ‘chimneys’
- a bay window extension to the dining area on the east elevation and two timber pergolas over a large paved terrace along the north elevation.

2.4.2 Given the 1993 alterations were erected in about 1994, the framing is likely to be boron-treated. I therefore consider that this framing was treated to a level that provided some level of resistance to fungal decay.

## 2.5 The 2009 remedial work

2.5.1 As shown in Figure 1, the 2009 remedial work included:

- in regard to the 1993 EIFS wall cladding:
  - removal of all wall cladding, with framing replaced where necessary
  - new metal flashings installed to the top of the parapet framing
  - AAC veneer system installed to walls
  - liquid-applied membrane applied over the tops of parapet walls
- in regard to the upper north deck:
  - replacement of deck membrane and substrate
  - new deck framing to provide falls to existing downpipe
  - existing metal balustrade raised and toughened glass added
- addition of a timber pergola and paved terrace to the east bay window.

### The AAC veneer system

2.5.2 The veneer system is a proprietary monolithic cladding system, with 50mm thick AAC panels fixed to H3.2 timber ‘cavity spacers’ that are fixed through a 4.5mm thick fibre-cement rigid air barrier to the framing. The AAC panels are finished with a proprietary mesh-reinforced plaster and paint system.

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<sup>5</sup> Exterior Insulation and Finish System

2.5.3 The AAC backing panels are a proprietary lightweight concrete material, which are fixed to the timber battens with stainless steel screws. The 40mm x 40mm x 200mm high spaced battens have slopes to tops and bottoms and form a 40mm cavity between the backing panels and a rigid air barrier board (“RAB”).

2.5.4 The AAC veneer system includes purpose-made flashings to windows, edges and other junctions and the manufacturer’s technical manual dated January 2008 includes the following requirements and features:

- proprietary vents at 1.5m centres installed to the bottom of cladding
- proprietary flashings and mouldings to be used at window junctions.

### Windows and doors

2.5.5 The simplified sketches in Figure 2 contrast details in the manufacturer’s technical manual (A) with 2009 consent drawings (B) and the as-built installation (C), and highlights variations between the details. The following descriptions provide references in brackets to the significant areas of difference.

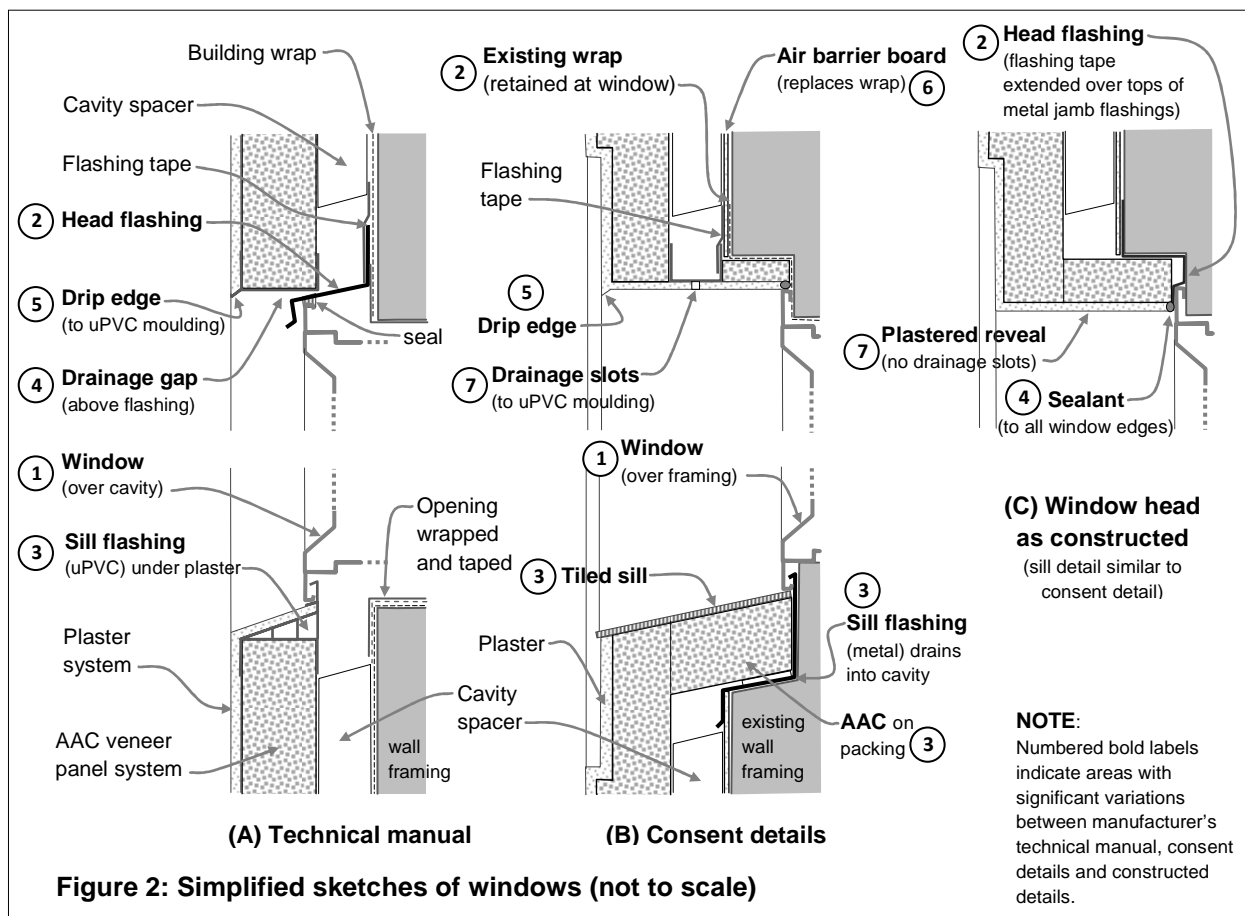


Figure 2: Simplified sketches of windows (not to scale)

2.5.6 The technical manual provides details for recessed windows (A), which show:

- window units installed in line with the cavity (1 above) being recessed into the cladding by approximately 50mm
- drained metal head flashings bridging the cavity (2)

- plastered uPVC mouldings that form the base of a sloping sill, with an upstand behind the sill flange and a turndown over the AAC backing panel (3)
- drainage gaps above the head flashing and beneath the sill flanges (4)
- uPVC base mouldings above the head, incorporating drip edges (5).

2.5.7 The consent drawings show ‘standard’ windows (B) with:

- window units installed towards the interior side of the wall framing, with windows faced-fixed onto 50mm wide timber trimming the opening (1)
- windows being recessed into the cladding by approximately 250mm
- no head flashings and a uPVC cavity closer draining the cavity above (7)
- concealed sloping metal sill flashings, with upstands under window flanges, turndowns over the RAB and tiled AAC forming a sloping sill (3)
- metal jamb flashings from behind jamb flanges, extended to overlap the RAB.

2.5.8 Construction photographs supplied by the applicants (and confirmed by the authority’s inspection records) show a window installed with:

- metal-faced flashing tape wrapped over the timber lintel, extended over the trim and overlapped onto the window head flange (2)
- metal jamb and sill flashings installed and overlapping the RAB (3)
- window flanges sealed against plaster (4).

2.5.9 The cladding manufacturer provided a specific statement confirming that the cladding system was installed to its ‘specifications as set out in the technical manual’ The manufacturer also provided a general producer statement dated 15 September 2009, which confirmed that the AAC panel veneer system will meet the relevant sections of the Building Code if installed in accordance with the manual.

### **3. Background**

#### **3.1 The 1993 alterations**

3.1.1 The authority issued a building consent for the 1993 alterations (No. BC 411207) on 16 August 1993 under the Building Act 1991 (“the former Act”). The 1993 alterations were substantially completed by about June 1994. It appears that moisture problems arose shortly after completion, but the applicants were ‘not in a position to remedy these’.

3.1.2 In a pro-forma letter dated 20 July 2000, the authority asked for information on the status of the building work. The same letter was sent on 13 September 2000; this time attaching an interim code compliance certificate. This certificate appears to contradict the accompanying letter, as it suggests some form of prior inspection, while the letter implies a lack of information about the progress of the building work. The interim code compliance certificate states that it was issued:

...in respect of all work satisfactorily inspected to date.

Further building work is required to be completed and inspected as per the original Building Consent inspection conditions. Please refer to the most recent inspection

notice, which will detail any required rectification work. Outstanding work may also be summarised below. When all works are completed the building owner is required to notify [the authority] so a further inspection (if required) can be arranged to ensure compliance.

When all building works approved under the Building Consent comply, a full Code Compliance Certificate will be issued.

3.1.3 In 2002, the applicants contacted the authority to explain why they had not notified the authority of completion of the building work and, in a letter dated 25 September 2002, noted:

... by the time the building was at a stage where it was ready for its code compliance certificate we had begun to experience problems with some of the construction.

Try[ing] to sort these problems out has been a very slow and drawn out process and has still not reached a satisfactory outcome...

3.1.4 On 6 December 2002, the authority visited the house to ‘determine the extent of problems as outlined in owners’ letter’. The authority photographed the building work and noted evidence of many defects and leaks, including (in summary):

- multiple cracks in the EIFS cladding
- flaking and damaged plaster
- signs of leaking windows
- the interior floor of the dining bay window below exterior paving level
- leaks from the upper bathroom tiling
- lack of fall to the upper north deck
- blocked subfloor vents to some original foundation walls.

3.1.5 The authority issued a notice to rectify<sup>6</sup> (which I have not seen) on 19 December 2002. On 30 October 2003, the applicants advised the authority that repair work would be carried out during 2004. Subsequently the upper bathroom was stripped out and refurbished but the work was not inspected.

3.1.6 An application for a building consent for the remedial work was not made until 20 November 2008, some six years after the authority’s site visit (and fourteen years after completion of the EIFS installation).

3.1.7 No final code compliance certificated has been issued in respect of the 1993 alterations.

## **3.2 The 2009 remedial work**

3.2.1 The authority issued a building consent for the 2009 remedial work (No. BC 081522) on 26 January 2009 under the Act (I have not seen the attached conditions); and carried out the following inspections (which passed):

- RAB and window flashings on 24 April 2009 (noting taped corners)
- cavity battens on 6 May 2009 (noting battens fixed as per instructions)

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<sup>6</sup> The equivalent of a notice to fix under the current Act

- pre-plaster on 14 May 2009 (noting satisfactory fixing, flexible corner joints, ‘vermin cavity striping being completed’, and window, door and parapet flashings in place).

3.2.2 Various producer statements and guarantees were provided for

- the AAC panel veneer system (dated 15 September 2009)
- the proprietary plaster system (dated 20 July 2009)
- the solid fuel heater installation (dated 1 April 2010).

3.2.3 The authority inspected the completed alterations on 28 March 2011. The inspection record does not identify any defects or unfinished items (apart from the need for a solid fuel heater producer statement) and requested a ‘completed code compliance application for processing’. The inspection sheet records various items as being confirmed by the builder including ‘all flashings to exterior joinery and to parapet installed as per [consent drawings]’

### **3.3 The authority’s refusal to issue code compliance certificates**

3.3.1 The applicants applied for a code compliance certificate and the authority responded on 19 April 2011, stating that it could not issue code compliance certificates.

3.3.2 In regard to the 1993 alterations, the authority noted that its refusal was due to:

- almost 18 years passing since substantial completion
- despite prompting, the owners had not applied for a code compliance certificate
- when a site visit was made in 2002, the external envelope was already about eight years old; and cladding and moisture problems were identified.

The authority therefore considered it had no reasonable grounds to be satisfied that:

...the building work complies with Clauses E2, E3 and B2 of the Building Code and that the building elements will continue to satisfy the durability provisions.

3.3.3 In regard to the 2009 remedial work, the authority noted that its refusal was due to a review that identified:

...the window sill flashings that drain into the cavity do not comply with the Building Code. Neither do they comply with the [AAC veneer system manufacturer’s] technical manual; notwithstanding the producer statement from [the manufacturer] dated 15 September 2009 confirming that the work complies.

3.4 The Department received an application for a determination on 31 May 2011.

## **4. The submissions**

4.1 The applicants’ submission, dated 26 May 2011, briefly summarised the background to the situation and the delay to the completion of the 1993 alterations. The applicants noted that ‘problems with the construction appeared quickly, but at that stage we were not in a position to remedy these’, explaining that



In 2009 we were in a position to fix our house. This involved removing all the polystyrene and plaster from the addition, and taking that part of the house back to the framing and starting again.

4.2 The applicants provided copies of:

- the interim code compliance certificate for the 1993 alterations, dated 13 September 2000
- the consent drawings for the 2009 remedial work
- the building consent and inspection records for the 2009 remedial work
- some correspondence from the authority
- various producer statements, guarantees and other information.

4.3 The authority made a submission in a letter to the Department dated 7 June 2011, which summarised the background of the two building consents. The authority also referred to its site visit and photographs on 6 December 2002, the notice to rectify issued on 19 December 2002, and the extended length of time before repairs were undertaken; concluding that its opinion ‘remains as it was expressed in the letter dated 19 April 2011 (refer paragraph 3.3).

4.4 The authority provided copies of:

- a letter from the applicant dated 25 September 2002
- the site visit record dated 6 December 2002, with attached photographs.

4.5 The Department sought further clarification from the authority on the reason stated for refusing to issue a code compliance certificate for the 2009 remedial work (refer paragraph 3.3.3), as this contrasted with the satisfactory inspection of the remedial work carried out on 28 March 2011. The authority responded on 17 June 2011, stating that it reached its position because

An inspector who was processing the Code Compliance Certificate application did not agree with the results of the final inspection ... and noted that the Code Compliance Certificate cannot be issued because the window sill flashings that drain into the cavity do not comply with the Building Code.

4.6 The Department also queried the authority’s assessment of the condition of the framing installed under the 1993 alterations. The authority responded that, at the time of the first inspection of the 2009 remedial work

...the building was already enclosed with the wrap board and [the inspector] was unable to see the condition of the framing, therefore we cannot be satisfied that the hidden elements comply with the Building Code.

## 5. The draft determinations

5.1 A draft determination was issued to the parties on 20 September 2011. The draft was issued for comment and for the parties to agree on dates when the alterations completed under the 1993 consent, excluding any matters that require rectification, complied with Building Code Clause B2 Durability. The parties agreed that

compliance with Clause B2 was achieved on 1 July 1994, and the applicants accepted the draft without comment.

- 5.2 The authority responded to the draft determination in a letter dated 12 October 2011. The authority did not accept the draft and made a number of detailed comments. The authority continued to have concerns about the condition of the hidden elements that it did not inspect during construction. In addition the authority said:

The authority considered when reviewing the [code compliance certificate] that it may have issued the [building] consent in error. Can the authority now deduce that it was correct in issuing the consent with the flashing draining into the cavity?

The authority has for some years now, as part of its best practice approach and the accreditation process, been peer reviewing code compliance certificates prior to issue.

The [Department] ... seems of a view that if an inspector states, or as in this case, fails to state something, it must be code compliant. This is illogical and appears contradictory to the [Department's] own published guidance ...

- 5.3 I amended the determination as I considered appropriate and issued the second draft determination to the parties for comment on 17 November 2011. My response to the above comments was contained in paragraph 9.

- 5.4 In a letter to the Department dated 29 November 2011, the authority noted that while it accepted the second draft determination it wished to make the following comments:

[6.3.1] The authority is not aware that the expert has undertaken any invasive moisture tests. The experts report dated 9 August 2011, specifically noted that the applicant had refused to allow any invasive testing. This comment also contradicts comments made in paragraphs [7.4.2, 7.3.1 and 8.1.1].

[9.4] The paragraph reads 'the authority did require this inspection' should this read the authority did not require this inspection.

- 5.5 In a letter to the Department dated 5 December 2011, the applicants accepted the draft determination in principle. The applicants also commented as follows:

In regard to 3.3.3 – it amazes me that the authority can make such a statement after their inspector signed that part of the project off.

In regard to [6.2.7] – there are metal cappings on the parapet as detailed on the plans – page 5 detail 12/4.

The applicants were also of the view that there are other ways to check the state of the 1993 framing without using invasive methods and that they feel penalised by not being able to remedy the obvious faults earlier.

- 5.6 I have taken the above responses into account and I have amended the determination accordingly.

## **6. The expert's report**

### **6.1 General**

- 6.1.1 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 and inspected the house on 29 June and 2 August 2011, providing a report on 9 August 2011.
- 6.1.2 At his first visit, the expert discussed the need for invasive investigation and testing. However, the applicants refused to give permission as the authority had passed the flashings during construction of the 2009 alterations. The expert was therefore restricted to visual observation of the building work. In a visual inspection of the interior and exterior the expert observed no evidence of current moisture penetration.
- 6.1.3 The expert was informed that the re-cladding work included replacement of decayed framing.
- 6.1.4 The expert noted that overall construction quality appeared to be of a 'good standard applicable at time of construction'. The new AAC cladding appeared 'generally of a good standard, lines true and straight, surfaces uniform and consistent in texture'. Cladding clearances were satisfactory, and junctions with roofs were 'well formed'.

### **6.2 The external envelope**

#### **The recessed windows**

- 6.2.1 The expert noted that the recessed windows were not installed in accordance with the manufacturer's details, with no visible head and sill flashings and the windows sealed against the reveals with sealant. Construction photographs showed the installation of flashings within the cavity (refer paragraph 2.5.8).
- 6.2.2 Although consent drawings showed slots in the head reveal to allow drainage from the cavity, the expert noted that these were not provided. The drip edge formed in the head reveal shown in the drawings was also not provided, although the expert considered that, given the depth of the reveal, the windows were somewhat protected and that water was unlikely to reach the window head junction.

#### **The deck**

- 6.2.3 The expert noted that the step down to the deck was about 100mm, and deck to wall junctions appeared satisfactory. Metal balustrade posts were mounted onto membrane-covered blocks that sit on the edge upstand, with rubber washers to the bolt fixings. The deck membrane covers the upstand and turns down the outer edge.
- 6.2.4 Although the consent drawings show an aluminium angle fixed over the deck edge, the expert observed a flat metal strip side-fixed and sealed to the membrane turn-down to create a drip edge at the soffit. The expert scraped sealant away from the strip to soffit junction; observing the membrane edge and water droplets from water trapped between the membrane and the edge strip.

## The roof

- 6.2.5 The expert noted that short lengths of roofing indicated that cladding from the original house was re-used on the addition. The expert observed that apron flashings at roof to wall junctions were 'tidy and sealed'. The edge detail to the entry canopy membrane included the same edge strip as the deck edge and would also trap water.
- 6.2.6 The expert noted that parapet to roof junctions appeared 'well formed', with satisfactory clearances and apron flashings, but no cappings to the wide flat parapet tops. (I note that the consent drawings indicate a liquid-applied membrane applied to the AAC surface, below the plaster and the parapets slope at 21°.)

## Conclusion

- 6.2.7 Based on his observations, the expert made the following comments on the external envelope:
- Although the AAC cladding appraisal states that the system is comparable to brick veneer, there is insufficient ventilation of the cavity.
  - Any moisture entering walls above windows will be trapped in the cavity at head reveals, with no means of escaping to the outside.
  - The sealant at window sill flanges will not allow any moisture entering the window junctions to drain to the outside.
  - There are no cappings provided to the wide flat tops of the parapet walls.
  - Metal edge strips to the entry canopy and the deck trap water against the membrane downturn, with moisture apparent at the deck edge.
- 6.2.8 Given the lack of approval for invasive moisture testing and investigations, the expert was unable to confirm compliance with Clause E2, although his opinion was that 'the building is unlikely to be leaking at this time'. However, he considered that the additions included 'constructed details which have the potential to leak and cause damage given the absence of any provision to allow moisture to drain to the exterior'. The expert therefore recommended that:
- ...the cladding manufacturer provides comment in respect of the details that are in variance with its technical literature that presently compromise the system's drained and vented cavity.

## 6.3 The upstairs bathroom

- 6.3.1 The expert undertook a further visit on 9 September 2011 to inspect the upstairs bathroom in respect of compliance with Clause E3 Internal moisture. The expert noted that the work to the bathroom was of a good standard and visual observations showed no evidence of non-compliance with Clause E3.
- 6.3.2 The applicants advised the expert that as grouting had become loose following earthquake activity the bathroom floor is to be replaced. The applicants also commented that the installation of the water proofing had been carried out with care due to the previous failure as a consequence of poor installation.

## 6.4 The expert's reports

- 6.4.1 A copy of the expert's first report was provided to the parties on 10 August 2011. The expert's addendum report on the bathroom, dated 12 September 2011, was provided to the parties on 14 September 2011.

## 7. Matter 1: The code compliance of the 2009 remedial work

- 7.1 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).

### 7.2 Weathertightness risk

- 7.2.1 These alterations have the following environmental and design features, which influence their weathertightness risk profile:

#### Increasing risk

- the house is in a high wind zone
- the two-storey central addition has parapet walls and complex roof junctions
- the additions have no roof projections to shelter the cladding
- there is an enclosed deck attached to the upper level

#### Decreasing risk

- the walls are clad with AAC veneer installed over a cavity
- the external wall framing is likely to be treated to a level that provides some resistance to decay if it absorbs and retains moisture.

- 7.2.2 Using the E2/AS1 risk matrix to evaluate these features, the elevations of the alterations are assessed as having a high weathertightness risk rating.

### 7.3 Weathertightness performance

- 7.3.1 It is clear from the expert's report that there are some areas (primarily the junctions with the external joinery) where the AAC veneer cladding system has not been installed in accordance with the manufacturer's instructions. Though this of itself does not mean that the cladding system is not compliant, I note that as the expert was not able to carry out invasive moisture testing there is insufficient evidence to establish performance. Taking into account the expert's report and the lack of invasive investigation, I therefore conclude that further investigation and/or remedial work is necessary in respect of:

- the moisture levels and condition of the 1993 wall framing (particularly in the parapet and adjacent the external joinery)
- the edge strip to the deck and entry canopy
- the lack of drainage of the cavity above the recessed windows

- the lack of drainage under the window sill flanges (if elevated moisture levels are detected).

7.3.2 With regard to the parapet tops, the applicants have noted that the metal under-flashing shown at detail 12/4 on sheet No 5 of the consented plans was installed. As this detail was apparently approved by the authority at the building consent stage, I am prepared to accept the parapet as being code-compliant in this regard.

## 7.4 The window sill flashings

7.4.1 With regard to the authority's concern about the sill flashing discharging into the drained cavity behind the AAC panels, I make the following observations:

- The authority approved the sill flashing system when it issued the consent for the 2009 remedial work (see Figure 2 and paragraph 2.5.7).
- Construction photographs indicate that sill flashings are installed in accordance with the consent (refer Figure 2 and paragraph 2.5.8) and the authority inspected and passed the installation of those flashings during construction (see paragraph 3.2.1).
- Providing the cavity to the AAC panel veneer system is ventilated, its expected performance can be compared to masonry veneer with a plastered finish.
- The current Acceptable Solution E2/AS1<sup>7</sup> provides details for masonry veneer window installation that include a sill flashing that turns down over the building wrap within the cavity, with a kickout to the bottom.
- The installed sill flashing turns down over the RAB into the AAC cavity, with a kick-out to direct moisture away from the RAB (see Figure 2).

7.4.2 However, I note that the expert was not given the opportunity to verify the performance of the flashings by undertaking invasive moisture tests of the timber framing. While I can take the features of the above into account, I am unable to make a decision regarding compliance of the sill flashings with the Building Code at this time: I discuss a suitable methodology that can be used to determine compliance in paragraph 7.5.3.

## 7.5 Conclusion

7.5.1 The expert's report could not establish whether the current performance of the building envelope is adequate due to insufficient evidence in the form of invasive moisture testing. Without this evidence, I cannot be satisfied that the 2009 alterations comply with Clause E2 of the Building Code.

7.5.2 In addition, 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 alterations to remain weathertight. Because the cladding details (identified in paragraph 7.3.1) may allow the ingress of moisture in the future, the building work does not comply with the durability requirements of Clause B2.

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<sup>7</sup> Compliance Document for Clause E2 External Moisture, E2/AS1, Third Edition including amendment 4, effective from 1 May 2008 until the close of 31 January 2012

- 7.5.3 Reasonable grounds to consider the house has been brought into compliance with building Code Clauses E2 and B2 will require:
- satisfactory investigation and rectification of items outlined in paragraph 7.3.1
  - a satisfactory systematic survey of high risk locations to confirm the condition of the existing timber framing as described in paragraph 8.1.2.
- 7.5.4 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).

## **8. Matter 2: The code compliance of the 1993 alterations**

### **8.1 The condition of the original timber framing**

- 8.1.1 The expert was not able to carry out invasive moisture testing and investigation of this building work. Without a systematic survey of the 'at risk' locations to the building envelope, I am unable to be satisfied that the new cladding is weathertight and that the 1993 framing is compliant.
- 8.1.2 I note that moisture testing can be undertaken without disturbing the exterior cladding, by using long moisture probes inserted from the interior to measure moisture content in the framing timbers. This process also allows laboratory analysis of the drillings to determine the current condition of the framing timbers (paragraph 7.5.3 also refers).

### **8.2 Compliance with Clause E3**

- 8.2.1 I accept the opinion of the expert and conclude that the upstairs bathroom complies with Clause E3 Internal moisture.

### **8.3 The durability considerations**

- 8.3.1 The 2009 building consent was issued for remedial work required to the exterior building envelope, which included removing and replacing the wall cladding installed under the 1993 building consent. As well as raising other concerns addressed in Matter 1, the authority also refuses to issue a code compliance certificate for the 1993 construction because of the age of the 1993 building consent.
- 8.3.2 Based on the letter of the authority dated 19 April 2011 it appears that, with the exception of building elements remediated in 2009 and the upper bathroom tiling, the authority did not have concerns about the compliance of the remainder of the 1993 building work, other than in respect of its durability given the age of the building work (see paragraph 3.3.2) completed in about 1994.
- 8.3.3 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).

8.3.4 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.

8.3.5 In this case the delay since the completion of the 1993 alterations has raised 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 code compliance certificates were to be issued effective from today’s date. However, apart from the exterior building envelope, I have not been provided with any evidence that elements did not comply with Clause B2 in 1994.

8.3.6 It is not disputed, and I am therefore satisfied that all the building elements installed in the consent issued for the 1993 alterations, under consent 411207, modified as described in paragraphs 10.4 to 10.5, complied with Clause B2 on 1 July 1994. This date has been agreed between the parties, refer paragraph 5.1.

8.3.7 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.

8.3.8 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 code compliance certificates for the building work had been issued in 1994.

8.3.9 I strongly suggest 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.



## 9. Matter 3: The authority's decision

9.1 The 2009 remedial work was completed under the Act. Section 49 of the Act requires an authority to issue a building consent

if it is satisfied on reasonable grounds that the provisions of the building code would be met if the building work were properly completed in accordance with the plans and specifications ...'.

Section 94 of the Act states:

- (1) A building consent authority must issue a code compliance certificate if it is satisfied, on reasonable grounds,—
  - (a) that the building work complies with the building consent ...

9.2 These provisions of the Act therefore required that the building consent properly describe the proposed work to establish compliance with the Building Code, and that the authority then satisfied itself that the completed work was undertaken in accordance with the details shown in the consent. The provisions are to ensure that the means by which compliance is to be achieved is established before construction commences; and enables the inspection of building work to ensure that it has been completed as detailed in the approved consent documents.

9.3 The 2009 consent consisted of remedial work to a building that was known to be experiencing water ingress. It was important therefore that the 2009 remedial work, as described in the consent documentation, consider the condition of the existing timber framing, including appropriate assessment of the framing, as well as paying particular attention to the detailing and construction of the new external envelope.

9.4 The assessment of the original framing was a crucial step in remediation process. It is my view that the list of required inspections for the work should have included a specific inspection of the framing by the authority, allowing the appropriate action to be taken at that time. No inspection of the framing by the authority was completed during construction. The authority did not require this inspection at the time of construction, nor did it require any framing to be exposed to enable this inspection to be completed. Instead it has required verification of the condition of the timber framing after its review for the code compliance certificate.

9.5 The authority has referred to guidance issued by the Department in respect of a 'final paper-based review' before the issue of a code compliance certificate (refer paragraph 5.2). In my view that guidance cannot be taken to mean that such a review provides an opportunity to revisit decisions previously made by an authority, but instead ensures that the requirements arising from such decisions made have been properly completed.

9.6 I note also that the authority did not identify matters of non-compliance, other than the sill flashings, that the expert has observed were not installed in accordance with the either the consent or the manufacturer's installation instructions.

9.7 While the authority's decision to refuse to issue a code compliance certificate for either of the consents was correct, I do not consider it correctly exercise its powers in

doing so because the 2009 consent does not appear to have been granted in accordance with section 49(1) of the Act, nor did the authority correctly identify the reasons for the refusing the code compliance certificate for the 2009 consent in accordance with section 95A of the Act

## **10. What is to be done now?**

- 10.1 A single notice to fix should be issued that requires the owners to bring the alterations into compliance with the Building Code, identifying the investigations and defects identified in paragraphs 7.3.1 and 7.5.3, and refer to any further defects discovered in the course of investigation and remediation. The notice should not specifying how those 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.
- 10.2 I suggest that the parties adopt the following process to meet the requirements of paragraph 10.1. The applicants should produce a response to the notice to fix 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.
- 10.3 Once the matters set out in paragraphs 7.3.1 and 7.5.3 have been completed to its satisfaction, the authority can issue a code compliance certificate in respect of the 2009 building consent.
- 10.4 Given that the 2009 remedial work was undertaken under a new building consent, the building consent issued for the 1993 alterations will need to be amended to exclude building elements completed under the consent issued for the 2009 remedial work.
- 10.5 The amendment must clearly exclude the building elements for which remedial work was carried out under the 2009 building consent, and also exclude any other elements that are found to require remedial work that may be discovered in the course of the required investigations.
- 10.6 Following the modification of the 1993 building consent (refer paragraph 8.3) the authority will then be able to issue a code compliance certificate in respect of the amended and modified 1993 building consent.

## **11. The decision**

### **The 2009 remedial work**

- 11.1 In accordance with section 188 of the Building Act 2004, I hereby determine that:
- there is insufficient evidence to establish on reasonable grounds that the building work under consent BC 081522 complies with Clause B2 Durability, and E2 External moisture, and accordingly I confirm the authority's decision to refuse to issue a code compliance certificate

- the authority incorrectly exercised its powers in its decision to refuse to issue a code compliance certificate as described in paragraph 9.7 of this determination.

### **The 1993 alterations**

11.2 In accordance with section 188 of the Building Act 2004, I hereby determine that

- the building work under consent BC 411207 complies with Clause E3 Internal moisture
- there is insufficient evidence to establish on reasonable grounds that the building work under consent BC 411207 complies with Clause B2 Durability

and accordingly I confirm the authority's decision to refuse to issue a code compliance certificate.

11.3 I also determine that:

- (a) Building consent BC 411207 is to be amended to exclude the building elements remediated under building consent BC 081522.
- (b) All the building elements installed under consent BC 411207, amended as above, complied with Clause B2 on 1 July 1994.
- (c) Building consent No. BC 411207 shall be 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 July 1994 instead of from the time of issue of the code compliance certificate for all the building elements, with the exception of the items identified in paragraph 7.3.1 as described in Determination 2011/109 and the elements remediated under Building Consent No. BC 081522.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 21 December 2011.

John Gardiner  
**Manager Determinations**