



## Determination 2014/001

# The refusal to issue a code compliance certificate for a 10-year-old house with metal and monolithic claddings at 3 Baxter Way, Karori, Wellington



### 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 and Assurance, Ministry of Business, Innovation and Employment (“the Ministry”), for and on behalf of the Chief Executive of the Ministry.
- 1.2 The parties to the determination are
  - the owners of the house, S and S Dykes (“the applicants”), acting via the registered architect for the house (“the architect”)
  - Wellington City 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 refuse to issue a code compliance certificate for a 10-year-old house because it was not satisfied that the building work complied with certain clauses<sup>2</sup> of the Building Code (First Schedule, Building Regulations 1992). The authority’s concerns about the compliance of the building work relate to the weathertightness of the exterior claddings.
- 1.4 The matter to be determined<sup>3</sup> is therefore whether the authority was correct to refuse to issue a code compliance certificate for the house. In deciding this, I must consider whether the external wall claddings (“the claddings”) comply with Clause B2 Durability and Clause E2 External Moisture of the Building Code that was in force at the time the consent was issued. The claddings include the components of the systems (such as the flush-finished fibre-cement and the profiled metal wall claddings, the windows and the flashings), as well as the way components have been installed and work together.

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

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

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

## 1.5 Matters outside this determination

- 1.5.1 The authority issued a notice to fix following its first final inspection in 2009. Items in that notice were subsequently resolved and are not included as current concerns of the authority. This determination therefore does not consider that notice to fix.
- 1.5.2 The authority has also noted that the owners may apply for a modification of the durability requirements to allow durability periods to commence from the date of substantial completion in February 2003. I therefore leave this matter to the parties to resolve in due course (see also paragraph 4.7).

## 1.6 The evidence

- 1.6.1 In order to make this determination I have considered whether there is sufficient evidence to establish that the elements identified by the authority comply with the Building Code that was in force at the time the consent was issued. I address this question in paragraph 5.
- 1.6.2 In making my decision, I have considered the submissions from the parties, and the report of a consultant commissioned by the Ministry to carry out a visual inspection (“the consultant”), and the other evidence in this matter. I consider there was sufficient evidence available to allow me to reach a conclusion as to whether the subject building work complies with the Building Code.

## 2. The building work

- 2.1 The building work consists of a two-storey detached house situated on a steep east-sloping site in a very high wind zone<sup>4</sup> for the purposes of NZS 3604<sup>5</sup>. The main entrance and garage door face the road to the northwest, with living areas on the ground floor and bedrooms in the upper level. The house is fairly simple in plan and form and is assessed as having a moderate weathertightness risk.
- 2.2 Construction is generally conventional light timber frame, with specifically engineered driven concrete pile foundations and steel floor beams, monolithic and profiled metal wall claddings, and aluminium windows. The curved low-pitched profiled metal roof has no eaves or verge overhangs. However, the upper level oversails the monolithic cladding by about 400mm on the northwest and southwest elevations.
- 2.3 Two decks with open balustrades extend to the southeast from each floor. The lower deck has spaced timber decking over steel and timber floor framing. The upper deck is situated partly over the lower living areas and the sloping deck floor has a liquid-applied reinforced membrane applied over a plywood substrate.

## 2.4 Wall claddings

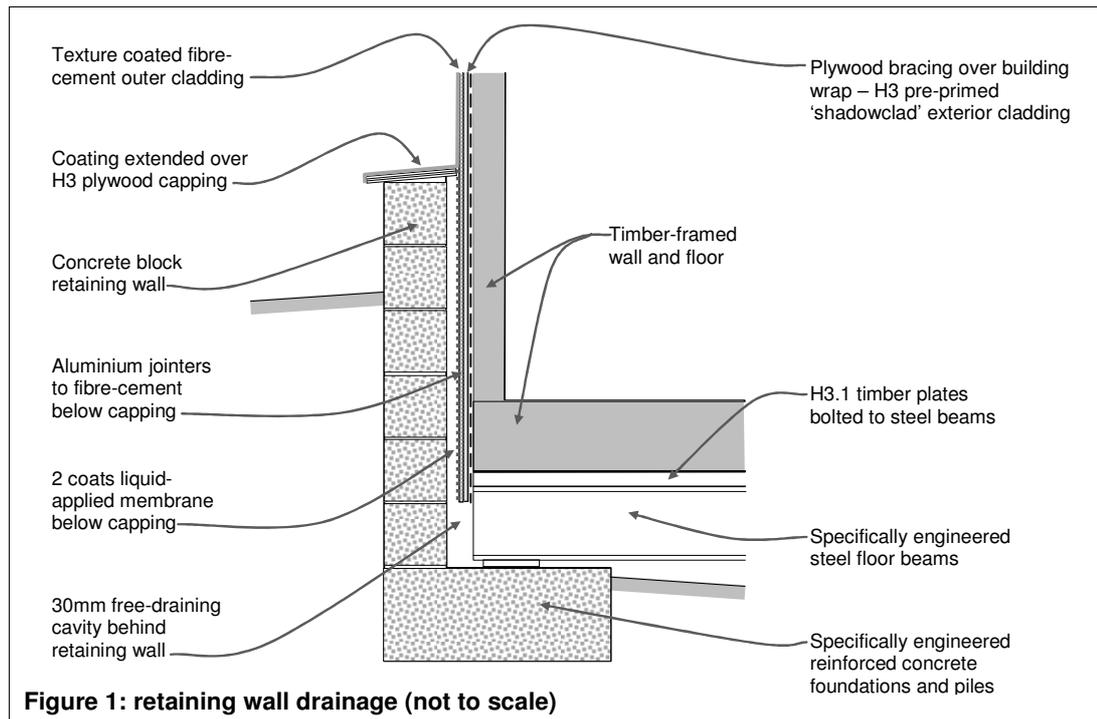
- 2.4.1 The exterior wall framing is fully sheathed with a substrate of pre-primed H3 plywood fixed through the building wrap to the framing. The plywood bracing is a proprietary V-grooved product which is commonly used as a weatherproof exterior wall cladding and therefore in this case provides an additional moisture defence underlying the outer wall claddings.

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<sup>4</sup> According to the engineers bracing calculations

<sup>5</sup> New Zealand Standard NZS 3604:1999 Timber Framed Buildings

- 2.4.2 The upper walls are clad in horizontal corrugated steel, which is fixed through the plywood sheathing and the building wrap directly to the framing timbers with proprietary folded metal flashings at corners, windows, and other junctions.
- 2.4.3 The lower walls are clad in a form of monolithic cladding, which is a proprietary flush-finished fibre-cement cladding system consisting of 7.5mm thick fibre-cement sheets fixed through the plywood sheathing and the building wrap directly to the framing and finished with an applied textured coating system.
- 2.4.4 The northwest corner to the lower level includes a low concrete block retaining wall, isolated from the exterior wall by more than 30mm, which provides a drainage gap to allow moisture to escape into the ventilated subfloor area as indicated in Figure 1:



- 2.5 The architect has stated that the external wall framing is H1 treated. However, given the lack of evidence and the date of framing in 2002, I am unable to determine the particular level and type of treatment described as 'H1'; the wall framing of this house may not be treated to a level that will provide resistance to fungal decay.

### 3. Background

- 3.1 On 18 July 2001 the authority issued a building consent (No. SR89892) under the Building Act 1991. The consent conditions included a schedule of required inspections during construction, including pre-line and pre-coating inspections. The conditions also required the engineer 'to supervise construction of specific design elements' and to provide a Producer Statement – PS4 – Construction Review.

### 3.2 Construction

- 3.2.1 The authority carried out the following inspections during construction:

- Footings on 9 October 2001
- Subfloor and pre-clad on 7 January 2002, with the inspection record noting '12mm shadowclad to exterior walls'

- Pre-clad framing and bracing on 14 February 2003, with the record noting requirements for the monolithic and corrugated steel cladding
- Pre-line plumbing on 14 February 2003
- Post-clad on 25 February 2003, with the record noting remedial work required for plasterboard linings and (for the monolithic cladding) ‘vertical joints at openings to be flexible sealed as a vertical control joint as advised by the manufacturer’.

3.2.2 Various documentation was provided, including:

- a statement dated 14 February 2003 from the window manufacturers noting that the joinery installation had been inspected and complied with its ‘approved details’
- the roofing company’s producer statement dated 14 May 2003 for the metal cladding, the metal roofing and the deck membrane
- the engineer’s Producer Statement – PS4 – Construction Review dated 10 June 2003 for the foundations and subfloor framing.

3.2.3 Construction was substantially completed and the house was occupied in early 2003, but finishing work was not completed until 2009.

### 3.3 The first final inspection

3.3.1 The applicants requested a final inspection on 26 June 2009 and the authority inspected the house on 26 August 2009. During its final inspection, the authority also took more than 40 non-invasive moisture readings of the exterior walls and compared these to a reading taken from an internal wall. Readings were taken beneath exposed windows, below deck to wall junctions and in walls behind the retaining wall, with the inspection record noting that all ‘readings appeared to be within the range indicating there were no moisture ingress issues.’

3.3.2 In a letter to the applicants dated 9 October 2009, the authority identified items requiring attention before it could consider a code compliance certificate. In response to the authority’s concerns, remedial work was undertaken over the next few years and additional documentation was obtained.

3.3.3 In a letter to the authority dated 7 March 2012, the architect outlined work carried out in response to the authority’s concerns and requested a re-inspection of the house. The items are categorised and summarised in Table 1.

**Table 1: Final inspection on 26 August 2009**

Category	Authority’s concerns	Architect’s comments	Clauses
<b>Monolithic cladding</b>	Balustrade fixings penetrate cladding	Altered and side-fixed	B2,E2
	Lack of cladding clearance to timber decking	Sufficient for maintenance	
	Some cladding not coated	Cladding to be re-coated	
	Unknown vertical control joints	Control joint to be installed when cladding re-coated	
	Meter board not weatherproof	Cladding to be re-coated	
	Hairline cracks	Cladding to be re-coated	
	Gaps at window flanges	No significant gaps Inspected during construction No evidence of moisture	
<b>Other exterior</b>	Soffit linings unsealed	Completed	B2,E2
	Unfilled/unsealed fascia boards	Completed	

<b>claddings</b>	Roof pipes uncapped	Completed	
	Upper deck balustrade fixings not per drawings	Altered and side-fixed	
	Window weathertightness in corrugated cladding	Installed by known applicator No evidence of moisture	
<b>Interior</b>	Unrestrained hot water cylinder	Completed	B1
	Handrails to lower stairs	Completed	F4
<b>Retaining wall</b>	Method of weatherproofing concrete block retaining wall to be verified		B2,E2
<b>Required documents</b>	Electrical certificate	Provided	
	As-built drainage plan	Provided	
	As-built external deck	Provided	
	Applicator statement for maintenance of deck membrane	Membrane re-coated Statement provided	
	Applicator statement for maintenance of textured coating to monolithic cladding	Cladding to be re-coated	
	Statement on condition and durability of wood burner		
<b>Timber retaining wall</b>	Site retaining wall not in drawings Engineer's statement on surcharge Lack of barriers to wall and steps	Engineer's letter provided. No surcharge on wall.	

### 3.4 The second final inspection

- 3.4.1 The authority re-inspected the house on 20 March 2012 and wrote to the architect on 28 March 2012, noting that some of the items identified in its letter of 9 October 2009 had been addressed but further matters needed 'to be resolved to the [authority's] satisfaction before a [code compliance certificate] can be considered'.
- 3.4.2 In an email to the authority dated 30 May 2012, the architect provided additional information, noted the additional work being undertaken and commented on the authority's remaining concerns as categorised and summarised in Table 2.

**Table 2: Reinspection on 20 March 2012**

Category	Authority's concerns	Architect's comments	Clauses
<b>Exterior claddings</b>	Lack of weatherproofing to vents	Work being carried out	B2,E2
	Balustrade fixings penetrate cladding	Altered and side-fixed	
	Lack of cladding clearance to timber decking	Gap provided as per E2/AS1 Deck sheltered by overhang	
	Some cladding not coated	Cladding to be re-coated	
	Unknown vertical control joints	Cladding to be re-coated Joint to be confirmed by re-coating applicator	
	Gaps at window flanges	No significant gaps Inspected during construction No evidence of moisture	
	Method of weatherproofing concrete block retaining wall to be verified	Details, photographs and explanations provided	
	Lack of clearance from paving to cladding		
	Window weathertightness in corrugated cladding to be reviewed	Installed by known applicator No evidence of moisture	
<b>Other items</b>	Fixings to lower timber deck	Stainless steel joist hangars being fixed to joists	B1
<b>Required documents</b>	Application for durability modification, with owners' statement confirming awareness	To be provided when work completed	
	Evidence of wall and ceiling insulation	Invoices attached	
	Engineer's statement on side-fixed balustrades	To be provided when	

		additional strengthening complete	
	Statement confirming [waterproofing product] suitable for fibre- cement behind retaining wall	Manufacturers statement and BRANZ report provided	
	Applicator statement for textured coating to monolithic cladding	Cladding to be re-coated - materials and application statements to be provided	
	Statement on condition and durability of wood burner	To be provided	

3.4.3 The additional work was completed and documentation provided, including the engineer's specification, calculations and producer statement for the balustrade design. Replacement of the cladding coating was postponed until the summer season, with removal of the original coating and the application of a new 3-coat textured coating system that was completed by 15 March 2013.

### 3.5 The third final inspection

3.5.1 In an email to the authority on 17 April 2013, the architect advised that all outstanding items had been completed and requested a re-inspection; noting that:

The monolithic cladding has been completely redone including all joints and a written Warranty has been supplied by approved Applicator together with a Warranty from the Product supplier.

The balustrade has been completed in strict accordance with the Engineers design and calculations.

SS joist hangars have been installed as identified.

3.5.2 The authority re-inspected the house on 1 May 2013 and the authority's 'site report' noted the following (in summary):

- statement provided which confirmed good condition of wood burner
- workmanship and application warranty provided for new coating
- stainless steel joist hangars fitted as required.

3.5.3 In a letter to the architect dated 14 May 2013, the authority noted that some items identified in its letter of 28 March 2012 had been addressed but further matters needed to be resolved to the authority's satisfaction before a code compliance certificate could be considered.

3.5.4 Despite the work carried out to the house, including a new coating to the flush-finished fibre-cement cladding, the authority maintained its position on many items identified in previous correspondence, including the following (in summary):

- joinery junctions in corrugated cladding
- structural confirmation of balustrade alterations
- the flush-finished fibre-cement cladding system
- weatherproofing of the wall behind the concrete block retaining wall.

3.5.5 The authority stated that it was 'still not satisfied that the requirements of the Building Code are being met' and suggested that a building surveyor's report on the exterior cladding could be provided or a determination be sought on the matter.

3.6 Ministry received an application for a determination on 18 September 2013.

## 4. The submissions

### 4.1 The applicants' submission

- 4.1.1 The architect provided a detailed submission on behalf of the applicants, which set out the background to the dispute and explained the efforts made to satisfy the authority's requirements since the first final inspection in October 2009. The architect explained that the flush-finished fibre-cement cladding had been completely recoated, including raking out all joints, priming of the backing sheets and the application of a 'full new three coat system'.
- 4.1.2 The architect responded to the authority's letter of 14 May 2013, as follows:

**Table 3: Reinspection on 1 May 2013**

Item	Per authority's letter of 14 May 2013	Architect's response
1	Lack of weatherproofing to vent	Vent sheltered by 400mm overhang of upper floor and proprietary cover installed
2	Application for durability modification	To be submitted when dispute resolved
3	Owners' statement confirming awareness	To be submitted when dispute resolved
4	Window weathertightness in corrugated cladding to be reviewed	No reason for destructive investigation as: <ul style="list-style-type: none"> <li>• Installed per manufacturer's instructions</li> <li>• Installer approved by manufacturer</li> <li>• Moisture readings were all low</li> </ul>
5	Engineer's statement on side-fixed balustrades	Engineer's Producer Statement – PS1 – Design dated 22 June 2012 provided on 1 May 2013
<b>Flush-finished fibre-cement cladding</b>		
6	Lack of cladding clearance to deck balustrade	Washers separate handrail from metal cladding
	Lack of cladding clearance to timber decking	Only applies to deck depth of 1200mm Length of deck has 12mm drainage gap, with cladding providing drip edge into subfloor area. Deck is sheltered by enclosed upper deck above.
	Unsealed bottom edges to fibre-cement	Bottom edges well below enclosed spaces, with no sign of deterioration
	Method of weatherproofing concrete block retaining wall to be verified	Clear separation of retaining wall from house wall Fibre-cement sheets coated with [proprietary waterproofing product] [Ply] bracing under fibre-cement provides secondary weatherproof layer All exterior framing is H1 treated
7	Cladding applicator to verify installation of vertical control joints	Appropriate warranties provided for completely new 3-coat textured coating system

- 4.1.3 The architect considered that the building envelope had been brought into full compliance with Clauses E2 and B2 of the Building Code, with all previous items identified by the authority attended to and all required documentation provided as requested. The continuing lack of resolution lead the architect to conclude that the applicants and the authority were 'at an impasse with no possibility of reaching an agreement' in regard to obtaining a code compliance certificate for the house.
- 4.1.4 The applicants forwarded copies of
- some of the drawings
  - correspondence with the authority
  - photographs and sketches of various elements
  - various producer statements, certificates, warranties and other information.

- 4.2 The authority made no submission in response to the application for determination, but forwarded a CD-Rom which contained some additional documents pertinent to this determination including:
- the building consent, with the consent drawings and specifications
  - the inspection records
  - various certificates, producer statements, warranties and other information.
- 4.3 Copies of the submissions and other evidence were provided to each of the parties.
- 4.4 A draft determination was issued to the parties for comment on 2 December 2013.
- 4.5 The applicants accepted the draft without further comment in a response received on 9 December 2013.
- 4.6 The authority accepted the draft, but requested the determination include a statement regarding the modification to the effect that Clause B2.3.1 applies from 14 February 2003 instead of from the time of issue of the code compliance certificate.
- 4.7 I note in response to the authority's submission that the authority is fully aware that an authority, following the appropriate application from the owner, has the power to grant a modification to the Building Code requirements of an existing building consent without a determination, so that the durability periods in Clause B2.3.1 commence from when the work was substantially complete and not from the date the code compliance certificate is issued. This matter has been canvassed in many previous determinations involving the authority (refer also to the article titled 'Modification of durability periods' in Codewords Issue 39, August 2009<sup>6</sup>). I therefore leave this to the parties to action in due course.

## 5. Grounds for the establishment of code-compliance

- 5.1 In order for me to form a view as to the code-compliance of the building work, I established what evidence was available and what could be obtained considering that some elements are not able to be cost-effectively inspected.
- 5.2 In the case of this house, I observe that
- the records and correspondence indicates
    - the authority carried out satisfactory inspections during construction and the engineer provided a producer statement for construction review of the footing and subfloor
    - the joinery manufacturer confirmed acceptance of the installation of windows and doors in the corrugated steel cladding
    - the applicants attended to all outstanding items identified by the authority during its inspections of 2009 and 2012 and provided all documentation required
    - in order to alleviate any concerns raised by the authority about maintenance of the monolithic cladding, the cladding coating was completely replaced with a new 3-coat system, with warranties provided
    - the deck membrane was given a 'maintenance topcoat' in 2010 in accordance with the manufacturer's recommendations and the standard of membrane installation was confirmed as satisfactory

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<sup>6</sup> Codewords articles are published by the Ministry and are available on the Ministry's website at [www.dbh.govt.nz/codewords-index](http://www.dbh.govt.nz/codewords-index)

- the authority has raised no concerns about current moisture levels in the timber framing, with non-invasive moisture readings low and consistent
  - the structural engineer has provided information and a producer statement for the alterations to the upper deck balustrades
  - since the first final inspection in 2009, the house has experienced severe earthquake and storm forces, which are expected to have tested the building envelope's weathertightness performance.
- 5.3 Taking account of the above and in the absence of any evidence to the contrary, I take the view that I am entitled to rely on the architect's statements that the authority carried out sufficient satisfactory inspections during the construction of elements that are now hidden.
- 5.4 A condition for this reliance is that there should be corroboration of the impression given by the evidence. A visual inspection of accessible components can supply this and provide reasonable grounds for me to form a view on whether this house as a whole complies with the Building Code that was in force at the time the consent was issued.

## 6. The site inspection

- 6.1 In order verify the impression given by the evidence the Ministry's consultant visited the house on 14 November 2013 to carry out a visual inspection. The consultant furnished a report dated 14 November 2013 which was forwarded to the parties on 2 December 2013.

### 6.2 General

- 6.2.1 The consultant inspected the interior of the house, noting that
- the house appeared to have been built to a good standard and has been well maintained
  - the interior appeared to be very dry throughout, with 'no cracking, creasing, bulging, mould growth or other signs of moisture' on linings and trim
  - there was no swelling, joint cracks or other signs of moisture in the customwood architraves and reveals to window and doors
  - there was no evidence of moisture damage on linings directly behind the exterior retaining wall.
- 6.2.2 The consultant also inspected exterior wall claddings, noting that
- the flush-finished fibre-cement walls appear to be straight and fair, with the new textured coating evenly applied and no signs of cracking, swelling or movement in underlying backing sheets
  - windows in the monolithic walls are face-fixed over the backing sheets, with metal head flashings, sealed jamb flanges and drainage gaps under sill flanges
  - the metal cladding appears to have been competently installed by an experienced applicator and includes proprietary flashings commonly used for corrugated cladding installed at that time
  - windows within the metal cladding appear satisfactory, with proprietary metal sill and head flashings that extend above the jamb flashings

- the re-coated deck membrane appears in good condition, with no signs of ponding or moisture penetration.

6.3 The consultant also commented as follows on the matters raised by the authority after its third final inspection (see Table 3):

**6.3.1 Item 1: the extract vent cover**

- the vent cover is a proprietary uPVC fitting and the surround has been silicon-sealed to the monolithic cladding
- the cover is sheltered under the 400mm overhang of the upper floor
- providing the sealant is maintained, the cover is will remain weathertight

**6.3.2 Items 2 and 3: the durability modification**

The architect and applicants have already informed the authority that an application and accompanying statement will be submitted to the authority when the remaining matters are resolved (see Table 2). The authority has proposed the date of 14 February 2003; that being the date the authority has recorded as the cladding having been installed.

**6.3.3 Item 4: the joinery installation in the metal cladding**

Joinery installation appears to be satisfactory and destructive investigation to verify weatherproofing is not considered necessary because windows and doors

- include proprietary formed flashings at heads, jambs and sills
- are installed in accordance with good trade practice at the time of installation
- show no evidence of moisture ingress on the inside reveals and trim
- appear to be satisfactorily weatherproofed.

**6.3.4 Item 5: the side-fixed balustrades**

The alterations to the upper deck balustrade appear to be satisfactory, with the posts side-fixed and additional strengthening carried out in the form of additional posts. The engineer's design specifications and calculations have been provided, along with a Producer Statement – PS1 – Design dated 22 June 2012.

**6.3.5 Item 6: the monolithic cladding**

The flush-finished fibre-cement cladding is in good condition and appears to be sufficiently weatherproof. The following considers concerns raised by the authority:

- Cladding clearance to deck balustrades:
  - washers separate the balustrades from the cladding
  - there is no sign of associated moisture penetration
  - the underlying plywood cladding provides additional protection
- Cladding clearance to timber decking:
  - the decking along the length of the lower deck includes a drainage gap
  - there is no sign of dirt or debris blocking the gap
  - although decking at the end of the 1.2m deep deck butts against the cladding, the junction is sheltered beneath the upper floor overhang
  - the underlying plywood cladding provides additional protection
  - the deck to floor junctions are not subject to the prevailing nor'westerlies, so are not routinely subject to rainwater

- the drip edges in the subfloor area below are dry, with no signs of moisture damage
- Unsealed bottom edges to fibre-cement backing sheets:
  - the only unsealed edges appear to be below the lower deck
  - the above appear dry, with no signs of moisture damage
  - the sub-floor area is very open and dry
  - the underlying plywood cladding provides additional protection against moisture reaching the framing
- Weatherproofing of concrete block retaining wall:
  - the wall extends from the front door around the west corner and about 4.5 metres along the southwest wall
  - the concrete block face is about 250mm beyond the face of the monolithic cladding above, which indicates a drainage gap of more than 30mm behind the wall
  - H3 plywood forms the sloping sill and end plates over the wall and gap
  - the coating extends over the sealed plywood, with junctions well sealed
  - any moisture penetrating into wall/plywood junctions will drain down the gap to dissipate within the open and dry subfloor area below
  - moisture penetrating through the retaining wall would also drain down the gap and dissipate within the subfloor area
  - pre-primed proprietary plywood was used as bracing, providing an additional layer of cladding underlying the fibre-cement backing sheets
  - in the above circumstances, the framed house wall behind the concrete block retaining wall is likely to remain weathertight
- Control joints to flush-finished fibre-cement cladding:
  - vertical control joints are recommended to be installed at 5.4m centres, so would be expected on the 10.7m northwest and 7m southwest walls
  - a possible joint was observed above the northwest garage door jamb, but there is no evidence that appropriate control joints have been installed
  - in 11 years since construction, all shrinkage in timber framing will have occurred, and performance will be governed by environmental factors
  - the concrete pile and steel beam floor structure appears rigid, with no signs of movement cracks to interior linings
  - although the new coating system was only applied in March 2013, the region has experienced severe earthquakes and storms since then, with no signs of movement or cracks to the cladding as a result of those forces
  - the underlying plywood cladding provides additional protection
  - taking into account the above circumstances, the lack of specific evidence of control joints is acceptable.

6.4 The consultant concluded was that the items progressively identified by the authority appear to have been satisfactorily attended to and there is no evidence to suggest that the as-built work does not comply with the Building Code that was in force at the time the consent was issued.

## 7. Weathertightness

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 This house has the following environmental and design features, which influence its weathertightness risk profile:

#### Increasing risk

- the house is in a very high wind zone
- there are no eaves or verges to shelter the upper cladding
- there are two decks attached to the building, with the upper enclosed deck partly situated over lower living areas
- the walls have monolithic and metal cladding 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

- the two-storey house is simple in form, with few complex junctions
- some of the lower wall cladding is sheltered by upper floor overhangs
- an additional weatherproof layer of plywood cladding underlies the direct-fixed wall claddings.

7.2.2 Using the E2/AS1 risk matrix to evaluate these features, the elevations are assessed as having a moderate weathertightness risk rating. If details shown in the current E2/AS1 were adopted to show code compliance, a drained cavity would be required for all elevations. However, this was not a requirement at the time of construction in 2001/2002.

### 7.3 Weathertightness performance

7.3.1 Taking account of the consultant's report and the architect's submission, the claddings appear to have been installed in accordance with good trade practice and the standards at the time, with no evidence of moisture penetration into the walls.

7.3.2 With regard to the lack of evidence that control joints have been installed in the textured fibre-cement clad walls beyond 5.4m long, I note the following:

- the cladding appears to have been installed according to good trade practice onto framing braced with a full layer of plywood sheathing and supported on rigid structure of concrete pile foundations and steel floor beams
- interior linings show no signs of cracking after some 11 years, indicating the structure's rigidity and lack of movement experienced over that time
- all drying shrinkage in supporting framing would have occurred during the early part of the period since construction and some minor cracking is expected in response to seasonal movements along with wind and earthquake forces
- although the textured coating is recently applied, significant wind and earthquake forces were experienced since its installation with no signs of

cracking; which may be due either to the inclusion of control joints below the coating or an indication that the cladding is adequate despite their omission.

- 7.3.3 I also note the consultant's conclusions in regard to the other items identified by the authority (see paragraph 6.3), and accept that these areas are adequate in these particular circumstances.
- 7.3.4 Notwithstanding that the wall claddings are fixed directly to timber framing, thus inhibiting drainage and ventilation behind the cladding, I note certain factors that assist the performance in this case:
- The wall claddings are installed according to good trade practice and have been well maintained.
  - The underlying pre-primed plywood bracing is a proprietary product used as a cladding system, so provides additional defence against moisture penetration.
  - After 11 years, there is no evidence of moisture penetration into framing.
- 7.3.5 I note that an application will be made to the authority for a modification of the durability requirements to allow durability periods to commence from the date of substantial completion in February 2003.

#### **7.4 Weathertightness conclusion**

- 7.4.1 The consultant's report together with the architect's submission provides me with reasonable grounds to conclude that the current performance of the claddings is adequate because they are preventing water penetration at present, and also that there are no cladding faults likely to allow moisture ingress for the remaining durability period. Consequently, I am satisfied that the house complies with Clauses E2 and B2 of the Building Code that was current at the time the consent was issued.
- 7.4.2 It is emphasised that each determination is conducted on a case-by-case basis. Accordingly, the fact that particular cladding systems have been established as being code-compliant in relation to a particular building does not necessarily mean that the same cladding systems will be code-compliant in another situation.
- 7.4.3 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).

## **8. The decision**

- 8.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the external building envelope complies with Clauses B2 and E2 of the Building Code that was current at the time the building consent was issued, and accordingly I reverse the authority's refusal to issue a code compliance certificate.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 21 January 2014.

John Gardiner  
**Manager Determinations and Assurance**