



Determination 2013/019

Regarding the refusal to issue a code compliance certificate for a 10-year-old house with monolithic cladding at 43 Waimanu Bay Drive, Te Atatu Peninsula, Waitakere City



1. The matters to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004¹ (“the Act”) made under due authorisation by me, John Gardiner, Manager Determinations and Assurance, Ministry of Business, Innovation and Employment (“the Ministry”), for and on behalf of the Chief Executive of the Ministry.
- 1.2 The parties to the determination are
 - the owners of the house, M and J Lloyd (“the applicants”)
 - Auckland 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 clauses² of the Building Code (First Schedule, Building Regulations 1992). The authority’s concerns regarding compliance of the building work relate primarily to the weathertightness of the wall claddings.
- 1.4 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 whether the

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

² 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 section 177(2)(d) of the Act

external building envelope of the house complies with Clause B2 Durability and Clause E2 External Moisture of the Building Code that was current at the time the consent was issued. The building envelope includes the components of the systems (such as the monolithic cladding, the windows, the roof claddings and the flashings), as well as the way components have been installed and work together. I also consider another concern raised by the authority; namely, the compliance of some upper level windows with Clause F4 Safety from Falling.

1.5 Matters outside this determination

- 1.5.1 I note that the owners may apply to the authority for a modification of the durability provisions for the 10-year-old house to allow the specified periods to commence from the date of substantial completion in March 2003. I therefore leave this matter to the parties to resolve once the house has been made code-compliant.
- 1.5.2 I note that the authority raised two other minor items identified during its final inspection, which have not been assessed during the investigation of this house (see paragraph 5.10). I therefore leave those items to the parties to resolve and this determination is limited to the matters described in paragraphs 1.4 and 1.4.
- 1.6 In making my decision, I have considered the submissions of the parties, the report of the expert commissioned by the Ministry to advise on this dispute (“the expert”) and the other evidence in this matter.

2. The building work

- 2.1 The building work consists of a detached house which is two-storeys-high in part and is situated on a level site in a high wind zone for the purposes of NZS 3604⁴. Construction is generally conventional light timber frame, with specifically designed concrete rib foundations and floor slab, monolithic and block veneer claddings, and aluminium joinery. The 30° pitch pressed metal tile roofs have eaves and verges that vary from about 400mm to 600mm.
- 2.2 A timber framed deck, with spaced timber decking and monolithic-clad balustrades, extends from the upper floor master bedroom. The deck and adjacent timber pergola are supported on timber posts clad in flush-finished fibre-cement and block veneer.
- ### **2.3 The wall claddings**
- 2.3.1 The primary wall cladding is a proprietary form of monolithic cladding system, which consists of 7.5mm thick fibre-cement sheets fixed through the building wrap to the framing, and finished with an applied textured coating system.
- 2.3.2 Concrete block veneer forms a continuous band beneath ground floor windows. The block veneer rises to about 600mm above floor slab level, with a sloping block ‘sill’ beneath the flush-finished fibre-cement cladding above. The block veneer to the base of the clad posts supporting the deck and pergola extends to the same height.

⁴ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

2.4 Timber treatment

- 2.4.1 The expert forwarded six timber samples to a testing laboratory for analysis, and the analysis confirmed that bottom plate samples from ground floor walls and the deck balustrade were treated to the equivalent of H3.1 and the deck posts were CCA treated to an equivalent of H4 or H5. Given this evidence, I consider that the deck/balustrade framing and the ground floor bottom plates are treated.
- 2.4.2 No treatment was detected in the samples from the upper floor framing, although the report noted that this could be due to the framing being LOSP-treated. However, given the date of framing installation in 2002 and the lack of other evidence, I consider that the remaining wall framing is unlikely to be treated.

3. Background

- 3.1 On 9 July 2002, the authority issued a building consent (No. ABA 20021912) under the Building Act 1991.
- 3.2 The authority carried out various inspections during construction, including fibre-cement cladding inspections in November 2002, pre-line inspections in January 2003, block veneer in February 2003 and final inspections in March and April 2003. The inspection record notes that surveyor's and engineers' statements were the only items remaining outstanding, but there is no record that these were provided.
- 3.3 The applicants did not realise that no code compliance certificate had been issued until they prepared to sell the house September 2012. The builder wrote to the authority on the owners' behalf on 28 September 2012, noting that 'it appears that some of the original Certificates have either gone missing or not been received'. The builder attached copies of the required documentation and asked the authority to 'process these certificates and issue the [code compliance certificate] as soon as possible'.
- 3.4 The builder applied for a code compliance certificate on the applicants' behalf on 21 November 2012.

3.5 The authority's refusal to issue a CCC

- 3.5.1 It appears that the authority inspected the house on 3 December 2012, although I have not seen a record of that inspection. In a letter to the applicants dated 11 December 2012, the authority stated:

Following the site inspection and subsequent 'peer review' process, [the authority] could not be 'satisfied on reasonable grounds' that building works comply with the NZ Building Code in a number of areas.

- 3.5.2 The authority listed its 'areas of concern', as follows (in summary):

- Roof areas:
 - lack of kick out flashings
 - roof/wall junctions and apron flashings
 - spouting clearance
 - no roof access to sight chimney flashings

- Wall claddings:
 - cracks
 - penetrations
 - inter-cladding junctions
 - lack of horizontal control joints
 - vent cowling⁵
- Windows and doors:
 - unknown flashings
 - lack of drainage gap above head flashings
- Deck
 - flat monolithic top to balustrade
 - balustrade to wall junctions
- Other areas:
 - lack of restrictors to bath and ensuite windows
 - shower/wall junction leaking⁵.

3.6 The Ministry received an application for a determination on 9 January 2013.

4. The submissions

4.1 In a letter to the Ministry dated 4 January 2013, the applicants explained that they only realised the house did not have a code compliance certificate when the property was listed for sale in September 2012 and ‘a LIM Report was organised’. The applicants understood that, as the house was completed in March 2003 ‘the property no longer complies with some of the areas of concerns identified’ by the authority.

4.2 The applicants forwarded copies of:

- the consent drawings, specification and other documentation
- the inspection summary
- letters from the authority
- various producer statements and other information.

4.3 The authority forwarded a CD-Rom, entitled ‘Property File’, which contained some additional documents pertinent to this determination including:

- the building consent
- correspondence with the applicants and the builder
- various certificates, producer statements, warranties and other information.

4.4 A draft determination was issued to the parties for comment on 3 April 2013.

4.5 Both the applicants and authority accepted the draft without further comment in responses received on 15 and 16 April 2013 respectively.

⁵ Not investigated or considered in this determination

5. The expert's report

5.1 As mentioned in paragraph 1.6, I engaged an independent expert to assist me. The expert is a member of the New Zealand Institute of Architects and inspected the house on 5 March 2013, providing a report completed on 22 March 2013. A copy of the report was forwarded to the parties on 2 April 2013.

5.2 General

- 5.2.1 The expert noted that the standard of overall workmanship was 'good in most areas', with cladding 'reasonably straight and fair' and roof flashings generally 'fixed competently'. However the expert also noted that there were some 'defects and failures to comply' with the manufacturer's instructions current at the time of installation.
- 5.2.2 The expert noted that the only significant variation from the consent drawings appeared to be the installation of a flush-finished top to the deck balustrade in lieu of the timber capping shown in the consent drawings.
- 5.2.3 The expert removed a section of the horizontal inter-storey band and was able to observe that a horizontal control joint had been installed, which appeared to accord with the manufacturer's detail.

5.3 Windows and doors

- 5.3.1 Joinery is face-fixed, with metal head flashings and no sill flashings. The expert compared the installation with the manufacturer's details current at the time of installation, noting the following:
- no drainage gap is provided above the head flashing
 - jamb flanges are fitted tight against the cladding with a fillet of sealant at the edge and no seals behind jamb flanges
 - block veneer butts against jamb flanges of full height ground floor units
 - a projecting textured polystyrene 'sill' may impede drainage from sill flanges
 - the details showed sill flashings, described as providing long term protection.
- (I note the omission of sill flashings for face-fixed aluminium windows was common practice at the time of installation.)
- 5.3.2 The expert also noted that the arched window to bedroom 3 lacked stop ends to the curved head flashing to deflect any water reaching the rear of the flashing back to the outside (see paragraph 5.5.1).

5.4 The deck and pergola

- 5.4.1 The spaced timber decking is supported on a ribbon board spaced off the cladding by about 8mm, with the texture coating continuous behind. The expert observed no sign of deterioration of deck joists. The adjacent timber pergola was also supported on a similar ribbon board spaced off the cladding.

- 5.4.2 The expert removed a small section of cracked sealant from the balustrade/wall junction; observing continuous texture coating to the wall behind the junction. Providing the sealant joint was repaired and remained sound, the expert considered this would provide adequate protection of the junction.

5.5 Moisture levels

- 5.5.1 The expert inspected the interior, observing that external wall linings were generally ‘free from mould or other signs of moisture ingress.’ All non-invasive moisture readings were low, but evidence of moisture was noted in the form of

- rusted carpet fixings:
 - below the arched window in bedroom 3
 - below the bottom of the apron flashing in the ground floor study
- a split north jamb reveal to entrance door glazing adjacent to the block veneer.

- 5.5.2 The expert also took invasive moisture readings using long probes from the inside at areas considered at-risk. The expert recorded readings between 10% and 17%, but noted that his inspection followed a long period of dry summer weather and moisture levels would be expected to rise during wetter seasons.

5.6 Destructive investigations

- 5.6.1 The expert took six timber samples for analysis and removed small sections of cladding (“the cut-outs”) at some locations to investigate the underlying construction. Samples were taken at the following areas:

- Sample 1 (Cut-out A): bottom plate beside the west garage doors
- Sample 2 (Cut-out B): bottom plate to the south garage wall
- Sample 3: bottom plate to deck balustrade
- Sample 4: the deck post adjacent to sample 3
- Sample 5 (Cut-out C): beneath the west inter-storey band
- Sample 6 (Cut-out D): bottom plate under the jamb to sill junction of the west upper floor arched top window.

- 5.6.2 At Cut-out B to the bottom plate above the south retaining wall to the garage, the expert noted water staining to the particle board sarking.

- 5.6.3 At Cut-out C at the end of the apron flashing beneath the inter-storey junction on the study wall, the expert observed apparent decay in the framing.

- 5.6.4 At Cut-out D under the jamb to sill junction of the west upper floor arched top window, the expert observed rusted carpet fixings.

5.7 Decay analysis

- 5.7.1 The laboratory report dated 19 March 2013 noted that testing of the samples for treatment indicated:

- Samples 1, 2 and 3: tributyl tin treated to an equivalent of H3.1.

- Sample 4: copper chrome arsenate (CCA) treated to the equivalent of H4 or H5.
- Samples 5 and 6: no preservative detected, but could be LOSP treated.

5.7.2 Sample 5 of framing under the bottom of the apron flashing contained 'early stages of soft rot and suspected incipient brown rot', and replacement is generally recommended for untreated framing.

5.7.3 The remaining samples contained 'prolific fungal growths' across the entire depth 'suggestive of growth over a prolonged period', but 'no structurally significant decay was detected'. However these could be 'on the periphery of more seriously affected framing' and the report concluded 'it is important to establish the limits of fungal infection and/or decay and establish the causes, and apply appropriate remediation'.

5.8 Commenting specifically on the external envelope, the expert noted:

- invasive moisture testing of at-risk areas during winter is recommended to confirm the cladding performance of associated details
- some mitres to block veneer flashing lack rivets and joints are opening

Windows and doors

- windows and doors lack seals under the jamb flanges and there is no anti-capillary gaps between head flashings and the upper cladding
- some junctions of jamb flanges with block veneer are unsealed
- the arched window head flashing lacks stop ends to deflect any water reaching the back of the flashing to the outside, with evidence of moisture below

The deck

- there is insufficient clearance of the decking from the textured cladding
- the flat top of the deck balustrade lacks a capping, with evidence of past moisture penetration into the balustrade framing

The roofs

- the bottom of apron flashings lack kickouts to divert water into the gutters, with evidence of moisture penetration and decay in the framing below
- there is no spreader to a downpipe discharging onto the living room roof
- there is no cladding clearance at the end of the chimney membrane flashing
- maintenance is required to:
 - minor fine cracks to the cladding
 - deteriorating sealants to balustrade/wall junctions
 - deteriorating sealants to cladding penetrations
 - the unsealed hole at the block flashing/entrance glazing junction
 - separating laps to some membrane flashings.

5.9 The expert made the following additional comments:

- Although the eastern end of the south elevation is 6.2m, which exceeds the 5.4m limit recommended for the inclusion of vertical control joints, there is no sign of cracking as a result of associated movement.

- Although there are no saddle flashings at the balustrade/wall junctions, the wall cladding and coating is continuous behind the junction and sealant should provide adequate protection provided it is well-maintained.
- Although the meter box lacks a head flashing, it is in a sheltered position and there was no visual evidence of moisture penetration.

5.10 On completion of his assessment of the house, the expert also commented as follows on the 'areas of concern' listed in the authority's letter (see paragraph 3.5.2):

Items per authority	Expert's comments	Relevant paragraphs
Roof areas		
Kickouts to apron flashings	Repairs required	Paragraph 5.8
Roof/wall junctions and apron flashings	Flashings adequate except for lack of kickouts	Paragraph 5.2.1 Paragraph 5.8
Spouting clearance	No locations where spouting penetrates cladding or coating	
Spreaders to downpipes	One spreader lacking	Paragraph 5.8
Flashing around chimney	Flashing inspected – no clearance at ends	Paragraph 5.8
No roof access	Accessible by standard extension ladder	
External cladding		
Cracks in cladding	Minor cracks – maintenance required	Paragraph 5.8
Penetrations	Maintenance required	Paragraph 5.8
Joinery flashings	Repairs required	Paragraph 5.8
Inter-cladding junctions	Generally adequate Some repairs required	Paragraph 5.8
Lack of horizontal control joints	Generally adequate	Paragraph 5.2.3
Vent cowling	Not investigated	Paragraph 1.5.2
Aluminium joinery		
Unknown joinery flashings Lack of drainage gap at head flashings	Repairs required	Paragraph 5.3 Paragraph 5.8
Deck		
Flat top to balustrade	Repairs recommended	Paragraph 5.8
Balustrade/wall junctions	Adequate in circumstances	Paragraph 5.9
Other areas		
Restrictors to bath and ensuite windows	Repairs required Also applies to bedroom 3 window	
Shower/wall junction leaking	Not investigated	Paragraph 1.5.2

6. Weathertightness

6.1 The evaluation of building work for compliance with the Building Code and the risk factors considered in regards to weathertightness have been described in numerous previous determinations (for example, Determination 2004/1).

6.2 Weathertightness risk

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

Increasing risk

- the house is generally two-storeys-high
- the house is in a high wind zone
- the house is moderately complex in plan and form
- there are two different wall claddings, with inter-cladding junctions
- there is an attached pergola and an upper deck with clad balustrades
- the monolithic cladding is fixed directly to the framing
- external wall framing is not all treated to a level that provides resistance to decay if it absorbs and retains moisture

Decreasing risk

- roof overhangs provide some shelter to wall claddings on most walls.

6.2.2 Using the E2/AS1 risk matrix to evaluate these features, the elevations are assessed as having a moderate weathertightness to high 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 of the house. However, this was not a requirement at the time of construction.

6.3 Weathertightness performance

6.3.1 Despite currently low readings, moisture testing of framing followed an unusually dry summer and I concur with the expert's opinion that moisture levels are likely to be significantly higher during wetter seasons. Taking the results of decay analysis of the timber samples into account, I am satisfied that this house is not weathertight and does not comply with Clause E2.

6.3.2 Although claddings have generally been installed in accordance with good trade practice and with the manufacturers' instructions at the time of construction, the expert's report leads me to conclude that remedial work is necessary in respect of the areas identified in paragraph 5.8.

6.3.3 I also note the expert's comments in paragraph 5.9, and accept that the areas described are adequate in these particular circumstances.

6.4 Weathertightness conclusion

- 6.4.1 I consider the expert's report establishes that the current performance of the building envelope is not adequate because there is evidence of past moisture penetration into the framing, with decay identified in one area. I am therefore satisfied that the house does not comply with Clause E2 of the Building Code.
- 6.4.2 In addition, the building envelope is 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 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 Because the identified cladding faults occur in discrete areas, I am able to conclude that satisfactory rectification of the items outlined in paragraph 5.8 will result in the external envelope being brought into compliance with Clauses B2 and E2 of the Building Code.
- 6.4.4 The expert has identified various defects resulting from a lack of maintenance. 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 (for example, Determination 2007/60).
- 6.5 I also note the expert's comments of the lack of window restrictors to three upper windows, and I am therefore satisfied that the house does not comply with Clause F4 of the Building Code.

7. What happens next?

- 7.1 A notice to fix should be issued that requires the owners to bring the building work into compliance with the Building Code, identifying the items listed in paragraph 5.8 and 6.5, 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 stipulate directly how the defects are to be remedied and the house brought to compliance with the Building Code. That is a matter for the owners to propose and for the authority to accept or reject.
- 7.2 I would suggest that the parties adopt the following process to meet the requirements of paragraph 7.1. Initially, the authority should issue the notice to fix. The owner should then produce a response to this in the form of a detailed proposal, based on further investigation as necessary and produced in conjunction with a competent person with suitable experience in weathertightness remediation as to the rectification or otherwise of the specified issues. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.

8. The decision

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

- the external building envelope does not comply with Clauses E2 and B2 of the Building Code that was current at the time the consent was issued
- some upper level windows do not comply with Building Code Clause F4

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

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 24 April 2013.

John Gardiner
Manager Determinations and Assurance