



## Determination 2012/003

# Regarding the refusal to issue a certificate of acceptance for alterations to a house with monolithic cladding at 3/8 Pupuke Road, Hillcrest, Auckland

### 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”)<sup>2</sup>, for and on behalf of the Chief Executive of the Ministry.

1.2 The parties to the determination are:

- the building owner, S Bosley (“the applicant”) acting through a building consultant (“the consultant”)
- 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 certificate of acceptance for alterations to a house, because it is not satisfied that the building work complies with certain clauses<sup>3</sup> of the Building Code (First Schedule, Building Regulations 1992). Concerns about compliance of the house relate to the weathertightness and durability of the replaced cladding and the durability of the underlying framing (see paragraph 2.4).

1.4 The matter to be determined<sup>4</sup> is therefore whether the authority was correct to refuse to issue a certificate of acceptance for the building work carried out without consent. In deciding this, I must consider whether the altered external building envelope of the house (“the re-cladding work”) complies with Building Code Clauses B1 Structure, B2 Durability and E2 External Moisture. The re-cladding work includes the monolithic cladding system, the underlying timber framing, the associated windows, the adjacent existing wall and roof claddings and the flashings, as well as the way the components have been installed and work together.

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<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> After the application was made, and before the determination was completed, the Department of Building and Housing was transitioned into the Ministry of Business, Innovation and Employment. The term “the Ministry” is used for both.

<sup>3</sup> In this determination, unless otherwise stated, references to sections are to sections of the Act and clauses are to Building Code clauses.

<sup>4</sup> Under sections 177(1)(b) and 177(3)(b) of the Act

1.5 This determination is limited to the re-cladding work, including the durability of the original and replaced timber framing within and under the re-clad walls. Except where they intersect with the re-cladding work, this determination does not include the following elements:

- any interior alterations
- the timber deck added to the west of the house
- the glazing and roofing enclosing the original deck over the garage
- the original unaltered external timber framing
- the original wall and roof claddings not altered during the re-cladding work.

1.6 In making my decision, I have considered the applicant's submission, 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 and background**

2.1 The building work consists of alterations to a detached house situated on an east-sloping site in a medium wind zone for the purposes of NZS 3604<sup>5</sup>. The house is fairly simple in plan and form and has a medium weathertightness risk.

### **2.2 The existing house**

2.2.1 The original house was built in 1987, with a partial basement set into the slope of the site. The basement has a concrete slab, concrete block foundations, and concrete block walls, with some timber framed walls to the eastern end. The upper level is conventional light timber frame, with concrete block foundations, a timber-framed subfloor, monolithic wall cladding and aluminium windows.

2.2.2 The original metal tile gable roof has no eaves or verge overhangs, except above some recessed walls. On the east elevation, an enclosed deck was originally situated above the basement garage. At some stage, that deck was enclosed with glazed walls and a flat membrane roof. Prior to the 2006 alterations, all timber-framed walls were clad in direct fixed flush-finished fibre-cement.

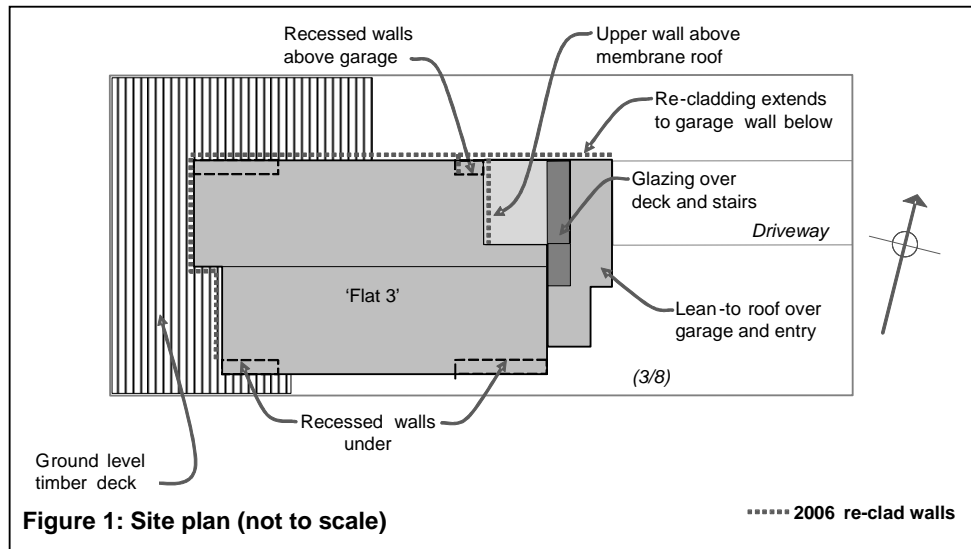
2.2.3 The expert noted that framing he was able to observe in the subfloor area was a mix of H4 and H1 boron-treated timber. Given the age of the original house, I consider that the original wall framing was boron-treated.

### **2.3 The 2006 alterations**

2.3.1 It appears that moisture problems in some walls lead to some cladding being replaced in 2006. The applicant's builder believing that the work was 'like for like' and therefore would not require a building consent. Wall cladding was removed from the north and west walls and the upper east wall of the living room as shown in Figure 1.

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



- 2.3.2 Some repairs were carried out to damaged timber framing and new monolithic cladding was installed. At about the same time, a large ground-level free-draining timber deck was installed around the western end of the house and some alterations were made to the interior: these items are not considered in this determination.
- 2.3.3 The replacement wall cladding consists of consists of 7.5 mm thick fibre-cement sheets fixed through 20mm timber battens and the building wrap to the framing, and finished with an applied textured coating system. The H3 treated cavity battens form a cavity between the cladding sheets and the building wrap.
- 2.3.4 Construction photographs and the expert's observation from within the subfloor indicate that new framing installed during repairs was H3.1 treated. According to the applicant, when the original cladding was removed:
- All defective timber was identified and cut out of the building frame – at least one meter beyond the decayed area. All remaining timber still in place was thoroughly treated with 2 coats of [a] preservative treatment.
- 2.3.5 In 2011, the consultant was engaged to assist in resolving the status of the 2006 alterations; and drawings of the re-cladding work were prepared. In a letter to the authority dated 31 August 2011, the consultant explained the situation, attached the drawings and construction photographs taken during the re-cladding work, and applied for a certificate of acceptance on the applicant's behalf.
- 2.4 The authority inspected the re-clad walls on 7 November 2011 and, in a letter to the consultant dated the same day, the authority refused to issue a certificate of acceptance. The authority gave its reasons as:

...failure to comply has been demonstrated in respect to the following Building Code clauses:

Building Code clause	Description of Building Work
E2	Cracks are visible to plaster junctions
B1	Replacement of Structural elements cannot be confirmed
B2	Installation of specified systems <sup>6</sup> has not been observed

<sup>6</sup> I take the reference to the 'specified system' to mean the proprietary cladding system used in this instance.

- 2.5 The Ministry received an application for a determination on 9 March 2012. Approval for an export to carry out invasive moisture testing on the re-clad walls on behalf of the Ministry was not received until 5 June 2012.

### **3. The submissions**

- 3.1 The consultant made no submission with the application but provided copies of:
- construction photographs of the re-cladding work
  - drawings of the re-cladding work dated August 2011
  - non-invasive moisture readings dated 7 March 2012
  - the letter from the authority dated 7 November 2011.
- 3.2 The authority made no submission but provided copies of correspondence with the consultant.
- 3.3 A draft determination was issued to the parties on 27 August 2012. The authority accepted the draft without any further comment.
- 3.4 The consultant responded by way of a letter dated 1 November 2012 and noted that the property had been monitored over a 12 month period using infra-red, deep probe readings and non-invasive moisture meters and that 'no readings were above 20'. (I have not seen a copy of the readings or any report in respect of that monitoring over 12 months other than those readings dated 7 March 2012.)
- 3.5 The consultant agreed that detailing did not comply with the manufacturer's recommendations or in some cases NZS 3604, and noted that those details could be considered as alternative solutions. The consultant also commented specifically on details in the expert's report (refer paragraph 4.9.1).

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

- 4.1 As mentioned in paragraph 1.6, I engaged an independent expert to assist me. The expert is a member of the New Zealand Institute of Building Surveyors and inspected the house on 11 July 2012; providing a report dated 6 August 2012.

#### **4.2 General**

- 4.2.1 The expert described the overall standard of workmanship as 'reasonable', with the wall cladding 'in a good condition with generally straight lines with no apparent bulges or indentations' and window flashing installation 'generally tidy'.
- 4.2.2 The expert noted that the work differed from the as-built drawings as follows:
- The upper east living room and lower north garage walls have been re-clad.
  - Cladding details in the drawings appear to be copies of E2/AS1 details and vary in a number of respects from the as-built details.

### **4.3 The 2006 cladding**

4.3.1 The expert inspected the cladding system from the outside and from the sub-floor; comparing it with the manufacturer's instructions of November 2004 and noting:

- the backing sheet layout accorded with recommendations
- control joints were installed within the recommended spacings and locations
- penetrations were sealed satisfactorily
- the textured coating appeared in good order.

4.3.2 There are no eaves above most of the north walls and when the cladding was replaced, a metal flashing was installed which extends from the gutter fascia over the top of the new cavity. The expert lifted back the flashing overlap to the cladding, noting that tops of the backing sheets were unsealed with no joints filled. Lifting barge flashing overlaps revealed a similar lack of sealing and jointing.

4.3.3 The expert scraped off a small area of coating over a joint; observing that the underlying mesh appeared to be similar to that used for plaster board linings, with strength lower than the mesh recommended by the manufacturer. Scraping away texture at an external corner also revealed no sign of the uPVC corner moulding.

4.3.4 By observing control joints from below, the expert noted that they did not accord with the manufacturer's instructions. Various other aspects of the installation were observed that also did not accord with the manufacturer's instructions (see paragraph 4.7).

### **4.4 Windows and doors**

4.4.1 The expert observed that windows and doors were face-fixed against backing sheets, with metal head flashings, no sill flashings, and projecting decorative polystyrene mouldings planted at the head and sill. The expert removed small sections of polystyrene from the kitchen window to investigate the head, jamb and sill details.

4.4.2 The expert noted that mouldings were glued onto fibre-cement sheet, with the coating applied over but no mesh applied. The head moulding butted against the downturn of the head flashing, covering the drainage gap. The expert confirmed that sealant was applied between the backing sheets and the jamb flanges. However the backing sheets had not been sealed prior to joinery installation, with unsealed fibre-cement beneath window flanges.

### **4.5 The condition of the framing**

4.5.1 The expert observed the condition of framing visible from within the subfloor area, noting the following:

- At areas near the re-clad north wall around the kitchen area, new LOSP-treated floor joists and new particle board flooring had been installed
- At other locations along the north wall, water-stained flooring and damaged floor joists had not been replaced during the 2006 repairs.
- Damaged sections of original floor joists and bearers adjacent to new timber showed that replacement had not extended a metre past damaged timber.

- Some areas had missing or degraded underfloor foil.
- 4.5.2 The expert also removed an electrical outlet adjacent to where decayed particles were found beside the north ranchslider sill (see paragraph 4.6.3), noting no colour change or odour that would suggest any application of site-applied timber preservative.
- 4.5.3 The expert also studied the builder's construction photographs, noting that these generally supported his observations as:
- most wall framing and the outer floor joists were replaced with what appears to be green-tinted H3.1 LOSP-treated timber
  - some original framing appears water-stained and damaged, with no evidence of site-applied timber preservative.

#### **4.6 Moisture levels**

- 4.6.1 The expert inspected the interior of the house and noted no sign of moisture. Although there were elevated non-invasive moisture readings at several door sills, low probe readings indicated that those non-invasive readings were not reliable.
- 4.6.2 The expert took invasive probe moisture readings and extracted six timber samples at window and door sills on the north and west elevations. All readings were below 12%, and the expert concluded that no moisture was currently entering the structure. The expert also observed that drillings into new framing 'were sound, had green colouration and a slight LOSP odour'.
- 4.6.3 However, decayed particles were apparent in samples 1 and 4, which had been taken from original framing at the following locations:
- the east end of the ranchslider sill on the north wall of the dining area
  - the south end of the full-height windows on the west wall of the dining area.
- 4.7 Commenting specifically on the re-cladding work, the expert noted that:

##### **The original framing and flooring**

- there is evidence of decay in and around the original wall framing, where timber was not replaced during the 2006 repairs
- there is no evidence that site-applied timber preservative was applied to timber adjacent to areas of replaced framing
- flooring is degraded adjacent to the north wall, where flooring was not replaced during the 2006 repairs – and under-floor insulation is missing or damaged

##### **The 2006 wall cladding**

- there is minor cracking on both the north and west elevations, which may relate to a low strength joint mesh used
- control joints do not accord with the manufacturer's instructions; with no double battens, unsealed sheets edges and a gap greater than 8mm
- corner details, lack of sealing to fibre-cement and the type of joint mesh do not accord with the manufacturer's instructions

- there is unsealed fibre-cement at edges, behind window flanges and under barge and fascia flashings
- planted polystyrene mouldings at the windows have no mesh under the coating, with cracks apparent at some junctions with the walls
- mouldings at window heads butt against window flashing downturns, with no drainage gap to allow moisture to escape from the upper cavity
- there are insufficient drainage gaps between timber decking and cladding, with debris blocking the gap that allows moisture to wick into the fibre-cement

#### **Junctions with roofing**

- there is unsealed fibre-cement and unfinished joints under the barge and fascia flashings, with indications of moisture wicking into the fibre-cement
- there is unsealed fibre-cement and unfinished joints under the overlap of the new metal flashing at the top of the cladding under the original gutter
- the original roof underlay does not extend to the face of the fascia behind the gutter, risking moisture penetration behind the upstand of the added flashing covering the new cladding and cavity
- the liquid-applied membrane over the garage at the recessed living room wall terminates in a metal flashing that directs moisture behind the cladding.

4.8 A copy of the expert's report was provided to the parties on 24 August 2012.

#### **4.9 The consultant's submission to the expert's report**

4.9.1 The consultant's submission of 1 November 2012 (refer paragraph 3.4) referred to details in the expert's report and submitted that

- there is nowhere in the expert's report 'that clearly shows moisture ingress or decay'
- the expert made note of decayed timber under the floor, but that joist is approximately 600mm from the ground and on an exterior wall 'in the middle of winter which would quite obviously absorb a high humidity'
- the water staining referred to (in photograph 9 of the expert's report) was the result of leakage from a shut-off valve that has recently been replaced
- the plate on the east side of the west ranchslider on the north wall had been replaced and the different colours of timber are from the skirting and not decay in the framing
- the timber preservative was applied; there would be no odour after a few days and is only applied to remaining (not new) timber
- damp and decayed timber definitely smells
- the timber lintel referred to is Douglas Fir and not Pine and is a darker colour by nature

The consultant also queried the accuracy of the type of moisture meter used by the expert.

4.10 On 26 November 2012 I forwarded the consultant's submission to the expert for comment. The expert responded by letter dated 20 December 2012 commenting (in summary):

- In regards to moisture ingress and decay: the building appears to be functioning well and though some higher moisture readings were obtained these may be attributed to calibration to untreated framing; however decay was observed in samples and there is clear evidence of decayed framing and flooring.
- Evidence observed in the sub floor is typical of that found where water entry has occurred from the exterior face rather than the leaking tap, and the decay is a result of water entry over years and not from a short-term leak.
- In regards to the meter used for non-invasive readings; little weight was put on the readings and in light of the other evidence the conclusion was that the claddings are in general keeping moisture away from the structural framing.
- The drilling sample was kept free of contamination by drillings from the skirting and linings. Also the builder's photograph shows framing had not been replaced and the stud has clear decay at the bottom portion.
- Agreed that the odour from the timber preservative dissipates quickly, however it does discolour materials and there was no evidence of this on the framing or interior linings as would be expected when properly applied.

## 5. Discussion

### 5.1 The refusal to issue a certificate of acceptance

5.1.1 At the time the re-cladding work was undertaken, the builder apparently considered that the work was 'like for like' and therefore would not require a building consent. Schedule 1 of the Act sets out building work for which consent is not required and 1(a) describes like for like repairs or maintenance; exceptions to this include the repair or replacement of 'any component or assembly that has failed to satisfy the provisions of the Building Code for durability, for example, through failure to comply with the external moisture requirements of the Building Code...'. Accordingly the re-cladding work is not exempt building work under Schedule 1. I note this is not disputed by the applicant.

5.1.2 The consultant applied for a certificate of acceptance for the work on the applicant's behalf and the authority refused that application due to concerns about the weathertightness and durability of the work, including of the underlying structure.

5.1.3 Section 96 of the Act makes provision for the issue of a certificate of acceptance in certain circumstances; one of these is where 'a building consent was required but not obtained<sup>7</sup>'. In these circumstances an authority may, on application, issue a certificate of acceptance, but only if it is satisfied 'to the best of its knowledge and belief' that the work complies with the Building Code.

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<sup>7</sup> Section 96(1)(a)(ii) of the Act



## 5.2 The compliance of the re-cladding work

- 5.2.1 In the case of the unconsented alterations to this house, the expert's inspection of the accessible components, the construction photographs and the other evidence has provided grounds for me to form a view that the 2006 re-cladding work does not comply with the Building Code.
- 5.2.2 In particular, the evidence has satisfied me that the underlying and adjacent timber framing and flooring was not adequately repaired during the re-cladding work. While some cladding defects identified by the expert may be able to be rectified or may be acceptable in the circumstances, the condition of the timber framing has significant implications for the structural performance and durability of the associated walls.

## 5.3 Conclusion

- 5.3.1 Although there is no evidence of moisture penetration into the timber framing at present and I am satisfied that the 2006 re-cladding currently complies with Clause E2 of the Building Code, the building envelope is also required to comply with the durability requirements of Clause B2, which includes the requirement for the house to remain weathertight. Because the cladding faults identified in paragraph 4.7 will allow moisture ingress in the future, the re-cladding work does not comply with the durability requirements of Clause B2.
- 5.3.2 Timber framing associated with the re-cladding work is also required to comply with durability requirements of Clause B2, which in this case is not less than 50 years because the framing provides structural stability to the house, is difficult to access or replace, and failure would go undetected during both normal use and maintenance. I am of the view that the re-clad walls do not comply with Clause B2 insofar as it applies to Clause B1.
- 5.3.3 Final decisions on how code compliance can be achieved can only be made after a more thorough investigation of the re-clad walls and of the condition of the underlying timber framing. This requires a careful analysis by an appropriately qualified expert, and should include a full investigation of the damage to the underlying framing, with the chosen remedial option submitted to the authority for its approval.
- 5.4 I note that the Ministry has produced a guidance document on weathertightness remediation<sup>8</sup>. I consider that this guide will assist the owner in understanding the issues and processes involved in remediation work to the cladding, and in exploring various options that may be available when considering the upcoming work required to the house.

## 6. What happens next?

- 6.1 The authority may issue a notice to fix that requires the owner to bring the re-cladding work into compliance with the Building Code, including the defects identified in paragraph 4.7, but not specifying how those defects are to be fixed. It is not for a notice to fix to specify how the defects are to be remedied and the building

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<sup>8</sup> Weathertightness – Guide to remediation design. This guide is available on the Ministry's website, or by phoning 0800 242 243

brought to compliance with the Building Code. That is a matter for the owner to propose and for the authority to accept or reject.

- 6.2 Alternatively the authority may elect to deal with the matter via a notice issued under section 99A of the Act.
- 6.3 The applicant can then produce a response, to either the notice to fix or the notice issued under section 99A, in the form of a detailed proposal produced in conjunction with a competent and suitably qualified person, as to the investigation and rectification or otherwise of the matters.
- 6.4 That proposal should allow for specific investigation and appropriate repair as necessary of the areas identified in paragraph 4.7, including appropriate testing and repair of the timber framing and flooring associated with the re-clad walls.
- 6.5 Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.

## **7. The decision**

- 7.1 In accordance with section 188 of the Building Act 2004, I hereby determine that:
- the re-cladding work carried out in 2006 does not comply with Building Code Clause B2 insofar as it applies to Clause E2
  - the timber framing and flooring associated with the re-cladding work carried out in 2006 does not comply with Building Code Clause B2 insofar as it applies to Clause B1

and accordingly, I confirm the authority's decision to refuse to issue a certificate of acceptance for the building work that was carried out without consent.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 28 January 2013.

John Gardiner  
**Manager Determinations and Assurance**