



## Determination 2015/029

### Regarding the issue of a notice to fix and the refusal to issue a code compliance certificate for 11-year-old alterations to a 1970s solid timber house at 86 Koneburn Road, Waimanu



#### 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 current 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 owner of the house, D Wood (“the applicant”) acting through the builder of the alterations (“the builder”)
  - Southland District Council (“the authority”), carrying out its duties as a territorial authority or building consent authority.
- 1.3 This determination arises from the decisions of the authority to issue a notice to fix and to refuse to issue a code compliance certificate for 11-year-old alterations to an existing house because it was not satisfied that the alterations complied with certain clauses<sup>2</sup> of the Building Code (First Schedule, Building Regulations 1992). The authority’s concerns about the compliance relate to the weathertightness and durability of the exterior wall cladding.

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

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

1.4 The matter to be determined<sup>3</sup> is therefore whether the authority was correct to issue the notice to fix and to refuse to issue the code compliance certificate. In deciding this matter, I must consider whether the exterior wall cladding to the house complies 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 wall cladding includes the components of the system (such as the monolithic overlay wall cladding, the underlying original aluminium faced solid wall planks and the windows) as well as the way components have been installed and work together.

## 1.5 Matters outside this determination

1.5.1 The notice to fix stated that the building work did not comply with Clauses E2 and B2 of the Building Code and items identified in the notice were limited to the matter outlined above. This determination does not address other clauses of the Building Code or other areas of the original house.

1.5.2 I note that the owner will be able to apply to the authority for a modification of the durability provisions to allow the durability periods specified in Clause B2.3.1 to commence from the date of substantial completion in 2004. I leave this matter to the parties to resolve in due course.

1.6 In making my decisions, I have considered the submissions of the parties and the reports of the two experts commissioned by the Ministry to advise on this dispute (“the experts”) and the other evidence in this matter.

## 2. The building work

2.1 The building work consists of alterations to a simple single-storey detached house situated on an exposed rural site in a high wind zone for the purposes of NZS 3604<sup>4</sup>. The house is simple in plan and form and its weathertightness risk is assessed as low.

### 2.2 The original house

2.2.1 The original house was constructed during the 1970s and was a traditional proprietary solid wood system, with aluminium-faced timber plank walls, timber pile foundations and single-glazed aluminium windows.

2.2.2 The skillion gable roof retains the pressed metal tile roofing, with exposed timber sarking internally. Roof overhangs are about 600mm overall, with angled braces that tie roof corners back to the walls. The particular solid wall construction was chosen for its ability to withstand high wind forces and also for its transportability.

2.2.3 However, the external building envelope construction proved to have limited insulation value. When planning a small office addition in 2004, the owners decided to also replace the original windows with double glazed units and to insulate the original solid plank walls at the same time.

### 2.3 The 2004 alterations

2.3.1 The 2004 alterations consisted of:

- a small conventional timber-framed addition to the east, with monolithic wall cladding and a pressed metal tile gable roof (“the addition”)
- new aluminium double-glazed windows to the addition and the original house

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

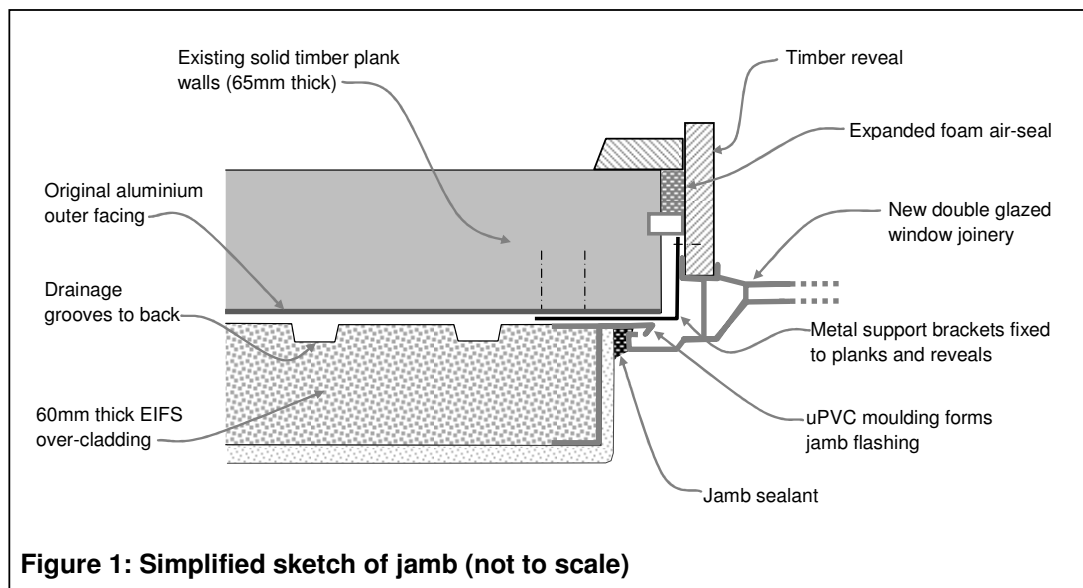
<sup>4</sup> New Zealand Standard NZS 3604:1999 Timber Framed Buildings

- EIFS<sup>5</sup> wall cladding (“the EIFS cladding”) installed over the solid timber plank walls.

## 2.4 The EIFS cladding

2.4.1 The wall cladding is a form of monolithic cladding system known as EIFS. In this instance, the proprietary system consists of 60mm polystyrene backing sheets with vertical grooves in the back of the sheets, to which a proprietary mesh-reinforced plaster system has been applied. The system includes purpose-made flashings to windows, edges and other junctions.

2.4.2 In the case of the addition, the EIFS system is fixed directly to the framing over the building wrap. In the case of the original house, EIFS is installed over the solid wall planks, with the new aluminium double glazed windows installed as shown in Figure 1.



2.5 Given the date of construction in the 1970’s, I consider the solid timber planks to external walls of the original house would have been boron-treated to a level that would provide resistance to fungal decay. The second expert was unable to verify the treatment of framing used in the small office addition.

## 3. Background

### 3.1 The consent documentation

3.1.1 The builder applied for the building consent on 20 January 2004, with the application describing the proposed work as:

Replace windows.

Turn deck into office and reclad 60mm grooved [proprietary EIFS cladding].

The authority apparently expressed some concern as to whether overlaying the EIFS could create an internal moisture problem and the EIFS manufacturer wrote to the authority on 1 April 2004 confirming that, when correctly installed, the cladding ‘would not create or increase the risk of moisture damage resulting from condensation’.

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

3.1.2 The authority issued building consent No. BLD2626701 to the original owner/builder of the house on 6 April 2004 under the Building Act 1991 (“the former Act”). The consent conditions listed required inspections, which included:

..prior to application of plaster/coating system, to view placement of the opening flashings and fixings specified by the cladding system supplier.

3.1.3 Although occupiers of the house during 2004 recalled that a final inspection was ‘organised after the property was plastered’ and understood that all matters were complete, the authority has no records of inspections for the building work.

3.1.4 In a letter to the owners dated 3 September 2014, the authority noted that no code compliance certificate had been issued for the work and attached an application form. This was completed and submitted on 11 September 2014.

### **3.2 The notice to fix**

3.2.1 The authority carried out a final inspection of the alterations and a subsequent inspection on 9 October 2014, which included taking non-invasive moisture readings through the cladding. The authority provided the applicant with annotated photographs taken during the inspection.

3.2.2 The authority issued a notice to fix on 20 October 2014, which stated that the building work did not comply with the Building Code in regard to Clauses B2 and E2 of the Building Code and outlined the work required to remedy the areas of contravention or non-compliance as follows:

1. There is a circular dent in the wall cladding at the rear of the house at the gable end (west) which has elevated moisture reading behind.
2. The plaster system has not been completed behind the spouting at the end of the office extension.
3. A cover flashing has been omitted between the window units of the bathroom and the WC.
4. There has been cover battens omitted to joints in the eave linings of the office extension.

3.2.3 The notice also recorded the elevated moisture readings at window sills and around the dent in the cladding, and identified ‘other potential moisture entry points’ at the base of angle braces from corners of the roof overhang.

3.2.4 The authority noted that a determination could be sought and concluded:

Due to the above deficiencies and the elevated moisture readings noted in several locations behind the cladding system the [authority] is refusing the Code of Compliance (sic). The cladding system needs to be assessed by a recognised weathertightness expert with any remedies necessary designed to be put forward to [the authority] for consideration.

### **3.3 Subsequent correspondence**

3.3.1 In an email to the authority dated 4 November 2014, the applicant responded to the notice to fix, including the following comments (in summary):

- The addition of the EIFS cladding and the new windows was ‘solely for insulation’ to the original house, which had no insulation at all.
- The original weatherproof cladding with its metal facing is still under the EIFS, and the house remains weathertight, with no leaks since installation and the house is now much warmer.

- Inspections were paid for at the time and the authority's inspector visited the site several times 'as he had difficulty to comprehend the purpose of the cladding – pure insulation as the house had and still has the original weather proof cladding'.
- The repairs identified in the notice to fix are minor and the dent is due to a recent accident with a ladder, with nothing to do with compliance.
- The house is now much warmer, with no condensation problems since the EIFS and double-glazed windows were added.

3.3.2 The authority responded on 5 November 2014 noting that weathertightness had to be assessed 'at the time of our final inspection' and elevated moisture readings caused concerns.

3.4 The Ministry received an application for a determination on 20 January 2014.

## **4. The submissions**

4.1 In a brief statement, the applicant outlined the background to the alterations and explained how solid wood construction had been chosen for its ability to withstand high winds as well as its 'transportability aspect', added that it was 'always meant only as a temporary house'. However the uninsulated house had proved very cold during winters in the 400m altitude, with 'ice on the windows or riverlets of water running down the walls when attempting to heat the house.'

4.2 The applicant provided copies of:

- the consent documentation
- the notice to fix dated 20 October 2014
- photographs of the original house
- the authority's photographs of the alterations
- correspondence with the authority.

4.3 The authority made no submission.

4.4 A draft determination was issued to the parties for comment on 21 May 2015.

4.5 In responses received on 25 and 29 May respectively, the authority and the applicant both accepted the findings in the draft determination without any further comment.

## **5. The first expert's report**

5.1 As mentioned in paragraph 1.6, I engaged two independent experts to assist me. Both experts are members of the New Zealand Institute of Building Surveyors.

### **5.2 General**

5.2.1 The first expert inspected the house on 26 February 2015, providing a report completed on 2 March 2015. The expert noted that the scope of his inspection was to assess and provide an opinion about the items identified in the notice to fix by assessing the weathertightness of the EIFS cladding and windows.

5.2.2 The expert noted that the cladding had been in place for more than 10 years and appeared generally in good condition, with penetrations and window junctions ‘well sealed.’ Given regular appropriate maintenance, the expert anticipated ‘no significant ongoing durability or external moisture issues.’

5.2.3 Due to the solid wall construction, the expert did not carry out invasive moisture testing. However, he observed no signs of moisture penetration in the interior, and no elevated non-invasive readings indicating moisture in the solid plank construction.

### 5.3 The authority’s identified concerns

5.3.1 The expert inspected and assessed the items and areas identified by the authority (see paragraph 3.2). The expert commented as follows (in summary):

- Damage at the west wall (item 1):
  - the dent has been satisfactorily repaired
- Unfinished plaster at the end of the office gutter (item 2):
  - the gutter has been removed and shortened to clear adjacent cladding
  - the plaster is completed, but was not yet painted
- Omitted cover flashing between south windows (item 3):
  - a colour-coated metal strip flashing has been installed
  - the flashing underlaps the head flashing and extends down to the sill
- Lack of cover battens to office addition soffits (item 4):
  - uPVC jointers have been installed to cover junctions in the soffit linings
- Window junctions:
  - there are no visible signs of cracks or movement in the plaster
  - the crack to the sill/jamb corner of the reveal has been sealed
  - drilling at jamb and sill confirmed that uPVC flashings were installed
  - the authority’s elevated non-invasive moisture readings coincided with nail head locations as identified by magnets
  - there are no elevated non-invasive moisture readings in the solid timber plank wall, when taken from the inside
- Angle brace penetrations:
  - there are no differential movement cracks between the brace and EIFS
  - non-invasive moisture readings below the braces are not elevated
  - monitoring and maintenance should prevent future risk of moisture.

5.4 The Ministry provided copies of the first expert’s report on 1 April 2015 and explained that a second expert had been engaged to carry out invasive moisture testing from the inside to verify the performance of the EIFS cladding.

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

6.1 The second expert inspected the house on 18 April 2015, providing an addendum report completed on 12 May 2015. The expert noted that his report was to be read in conjunction with the first expert's report as his inspection aimed to provide further information on:

- the window installation into the solid plank walls
- internal signs of moisture penetration at brace penetrations through the EIFS.

6.2 The expert noted that the EIFS cladding was 'generally straight and fair of finish' with well sealed penetrations. Windows appeared 'well fitted and well flashed' and the expert considered construction was finished to 'an acceptable trade practice.'

6.3 Although the EIFS cladding appeared well maintained, the expert noted that the roof and eaves were due for maintenance. However, these are not part of the alteration work considered in this determination.

6.4 The expert observed the roof to wall junction of the office roof with the original gable end wall, noting that the junction has some shelter from the 580mm deep verge overhang, which is about 1 metre above the bottom of the apron flashing.

### **6.5 The window installation**

6.5.1 The expert attached a copy of the proprietary EIFS cladding sill flashing detail that should have applied in 2004 when the cladding was installed. The detail shows uPVC jamb and sill flashings (as confirmed by the first expert), with soakers installed under the jamb/sill flashing junction. The expert noted that those soakers are blue in colour.

6.5.2 The expert noted:

- the new windows appear to be supported from metal brackets fixed to the back of timber reveals and the front face of framing or the solid wood planks
- fixings appeared satisfactory because applying force to the joinery frames resulted in no differential movement between frame and wall
- removal of jamb architraves to the addition window allowed invasive moisture readings of 10% to 12% to be taken in the timber framing.

6.5.3 The expert also removed jamb and sill architraves at corners of the west bedroom windows to allow invasive investigation. Cutting away short sections of the aluminium plank jointer exposed the underlying construction and allowed invasive moisture testing close to window flashings. At the cut-outs, the expert observed:

- the expanded foam air seal
- the back of the blue jamb/sill soakers
- 12% to 13% moisture readings taken close to the back of the flashings.

### **6.6 The roof brace penetrations**

6.6.1 The first expert had reported no visual indications of moisture penetration at the brace penetrations (see paragraph 5.3.1), with low non-invasive moisture readings recorded. The second expert also noted no other visual indications of moisture problems, either internally or at the bottom of the walls externally.

- 6.6.2 In order to confirm the current weathertightness of the wall penetrations, the second expert took invasive moisture readings using probes inserted into the solid wood planks from the inside; directly under penetration locations and at floor level.
- 6.6.3 The expert took readings below each of the brace/EIFS junctions, noting that all invasive readings in the solid wood planks were ‘well within a safe range, indicating no recent moisture ingress.

## **6.7 Outcome**

- 6.7.1 The second expert concluded that his destructive investigations and invasive moisture testing revealed ‘no indications of any past or present moisture ingress’; concluding that the EIFS cladding system as installed is performing satisfactorily and:

...the monolithic cladding is satisfying the mandatory functional and requirements of Clause B2 and E2 External Moisture of the NZ Building Code.

- 6.8 The second expert’s addendum report was forwarded to the parties on 12 May 2015.

## **7. The legislative framework**

- 7.1 The building consent was issued in 2004 under the former Act. If a code compliance certificate had been applied for on completion, the authority would have considered that application under Section 43(6) of the former Act. However, as the applicant applied for the code compliance certificate in 2014, the transitional provisions of the current Act apply. Section 436 of the current Act states that the application must be considered as if the former Act had not been passed, which includes the requirement for the authority to issue a code compliance certificate only if it ‘is satisfied that the building work concerned complies with the building code that applied at the time the building consent was granted’.
- 7.2 In order to determine whether the authority correctly exercised its power in refusing to issue the code compliance certificate and issuing a notice to fix, I must consider whether the particular items of building work in dispute comply with the associated clauses of the Building Code that applied at the time the consent was granted in 2004.

## **8. The code compliance of the cladding**

- 8.1 I note that an application can be made to the authority for a modification of durability requirements to allow durability periods to commence from the date of substantial completion in 2004. Although that matter is not part of this determination (see paragraph 1.5.2), I have taken the anticipated modification into account when considering the weathertightness performance of the claddings as the EIFS claddings have already performed for more than 10 years of the 15 years required.

### **8.2 The addition**

- 8.2.1 The addition has EIFS cladding fixed directly into the timber framing. Taking account of the experts’ reports, I am satisfied that the cladding, including the junctions with the original house walls, is performing satisfactorily.



### **8.3 The original walls**

- 8.3.1 The original solid wood walls remain in place beneath the EIFS cladding and the potential for, and consequences of deterioration of these timber planks due to moisture ingress therefore need to be considered.
- 8.3.2 The original walls in the house provided both a structural and a cladding function. If the overlay cladding had not been installed, the solid timber walls would continue to have a durability requirement to remain compliant for the life of the building, being not less than 50 years. At the time the consent for the alterations was issued in 2004, the walls would already have been more than 30 years old.
- 8.3.3 The solid planks are covered with aluminium facings which, despite cosmetic deterioration apparent from photographs taken before the over-cladding installation, appear to have protected the underlying timber from moisture penetration and damage. The two experts saw no evidence of damage resulting from past moisture penetration through the original walls and windows prior to 2004.

### **8.4 Weathertightness performance**

- 8.4.1 The EIFS cladding is fixed directly to the solid timber walls, with no evidence of a building wrap installed. However, the drainage grooves to the back face of the polystyrene and the underlying aluminium facing will provide some degree of drainage and drying. As the solid timber planks are boron-treated, these should be able to withstand moisture long enough to allow repairs to the outer cladding to take place. However, maintaining the EIFS cladding will be important to reduce future risks of moisture damage to the underlying solid timber walls.
- 8.4.2 The following summarises factors that I consider to be relevant to these alterations:
- The owners' decision to over-clad the walls and to replace the original windows was with the aim of reducing heat loss from the poorly insulated house, rather than the result of any weathertightness failures.
  - The original solid timber walls and windows had been performing satisfactorily for more than 30 years prior to the alterations, with no evidence of any moisture penetration into the walls or through the windows.
  - The experts' non-invasive and invasive investigations show no evidence of moisture penetration into the original solid walls or into window junctions.
  - In comparison with the original windows, the new windows (see Figure 1) include head, jamb and sill flashings within the EIFS system and can be expected to achieve at least the same level of protection to the junctions.
- 8.4.3 Taking account of the above observations and the nature of the building work as alterations, I am satisfied that the over-cladding and the new window junctions provide weathertightness and durability to at least the same extent as before the alteration. I am therefore able to conclude that this building work complies with Clauses E2 and B2 to the extent required by the current Act.
- 8.5 Taking account of the experts' reports, the cladding to the framed office extension and to the original solid wood walls appears to have been installed in accordance with acceptable trade practice and the manufacturer's instructions at the time of installation.

## **8.6 Weathertightness conclusion**

- 8.6.1 I consider the experts' reports establish that the current performance of the building envelope is adequate because there is no evidence of moisture penetration into the timber framing and the solid timber walls. Consequently, I am satisfied that the EIFS cladding currently complies with Clause E2 of the Building Code.
- 8.6.2 The building envelope is also required to comply with the durability requirements of Clause B2, which requires a building to satisfy all the objectives of the Building Code throughout its effective life, and that includes the requirement for the house to remain weathertight. The durability requirements of Clause B2 include a requirement for EIFS claddings to remain weathertight for a minimum of 15 years.
- 8.6.3 The EIFS cladding is now more than 10 years old, with no evidence of past moisture penetration or defects that may allow future penetration given 'normal' maintenance. I am therefore satisfied that the EIFS cladding also complies with the durability requirements of Clause B2 to remain weathertight for a further minimum 5 years.
- 8.6.4 It is emphasised that each determination is conducted on a case-by-case basis. Accordingly, the fact that a particular cladding system has been established as being code compliant in relation to a particular building does not necessarily mean that the same cladding system will be code compliant in another situation.
- 8.6.5 Effective maintenance of claddings is important to ensure ongoing compliance with Clauses B2 and E2 of the Building Code and is the responsibility of the building owner. The Ministry has previously described these maintenance requirements (for example, Determination 2007/60).

## **8.7 The notice to fix**

- 8.7.1 At the time of the final inspection of the house, I am satisfied that the cladding did not comply with the Building Code in all respects. However, the experts' reports satisfy me that some of the items identified in the notice were adequate at the time of inspection and also that the remaining items have since been remedied. I therefore consider that the notice should now be withdrawn.

## **9. The decision**

- 9.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the building work carried out under Building Consent BCD2626701 now satisfies Clauses E2 and B2 of the Building Code, and accordingly I reverse the issue of the notice to fix and I reverse the authority's refusal to issue a CCC.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 5 June 2015.

John Gardiner  
**Manager Determinations and Assurance**