MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HIKINA WHAKATUTUKI

Determination 2017/057

Regarding the refusal to issue a code compliance certificate for a 20-year-old house with EIFS wall cladding at 15 Goldrush Lane, Rolleston

Summary

This determination is concerned with the compliance of a 20-year-old house. The determination considers the authority's reasons for refusing to issue the code compliance certificate and whether the house complies with the requirements of the Building Code.

1. The matters to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004[1] ("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, N Barrett ("the applicant")
- Selwyn District 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 the 20-year-old house. The refusal arose because the authority is not satisfied that the building work complies with certain clauses[2] of the Building Code (First Schedule, Building Regulations 1992); in particular in regard to the weathertightness of the external building envelope, given the age of the house.

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

[2] In this determination, 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[3] is therefore whether the authority was correct to refuse to issue a code compliance certificate for the reasons given in its letter dated 21 July 2014 (see paragraph 3.5) and when it confirmed that refusal after unauthorised repairs had been carried out (see paragraph 3.8.2). In deciding this matter and taking into account the repairs, I must consider the following:

(a) Whether the external building envelope of 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 building envelope includes the components of the systems (such as the wall cladding, the windows and the roof cladding) as well as the way the components have been installed and work together. This includes compliance with Clause B1 Structure as it applies to the weathertightness of the house. I consider this in paragraph 7.

(b) Whether other items identified by the authority comply with the relevant clauses of the Building Code that was in force at the time the consent was issued, namely: B1 Structure, C1 Outbreak of fire, E1 Surface Water, E3 Internal moisture, F7 Warning Systems, G4 Ventilation, G8 Artificial Light, G9 Electricity, G13 Foul Water and H1 Energy Efficiency. I consider this in paragraph 8.

1.5 Matters outside this determination

1.5.1 In its site visit report and refusal to issue a code compliance certificate, the authority limited its concerns to items associated with the clauses outlined above, (see paragraphs 3.4 and 3.5). This determination does not address other clauses of the Building Code.

1.5.2 I also note that the owner will be able to apply to the authority for a modification of durability provisions to allow the durability periods specified in Clause B2.3.1 to commence from the date of substantial completion in 1996. Although I leave this matter to the parties to resolve in due course, I have taken the anticipated modification into account when considering compliance.

1.6 The evidence

1.6.1 In making my decision, I have considered:

- the consent documentation and correspondence for the subject building work
- the submissions of the parties, which include:
  - the report of the property inspection company engaged by the applicant to assess the house ("the consultant")
  - the authority's 'site visit report' dated 2 July 2014
- the report of the expert commissioned by the Ministry to advise on this dispute ("the expert")
- the other evidence in this matter.

[3] Under sections 177(1)(b) and 177(2)(d) of the Act

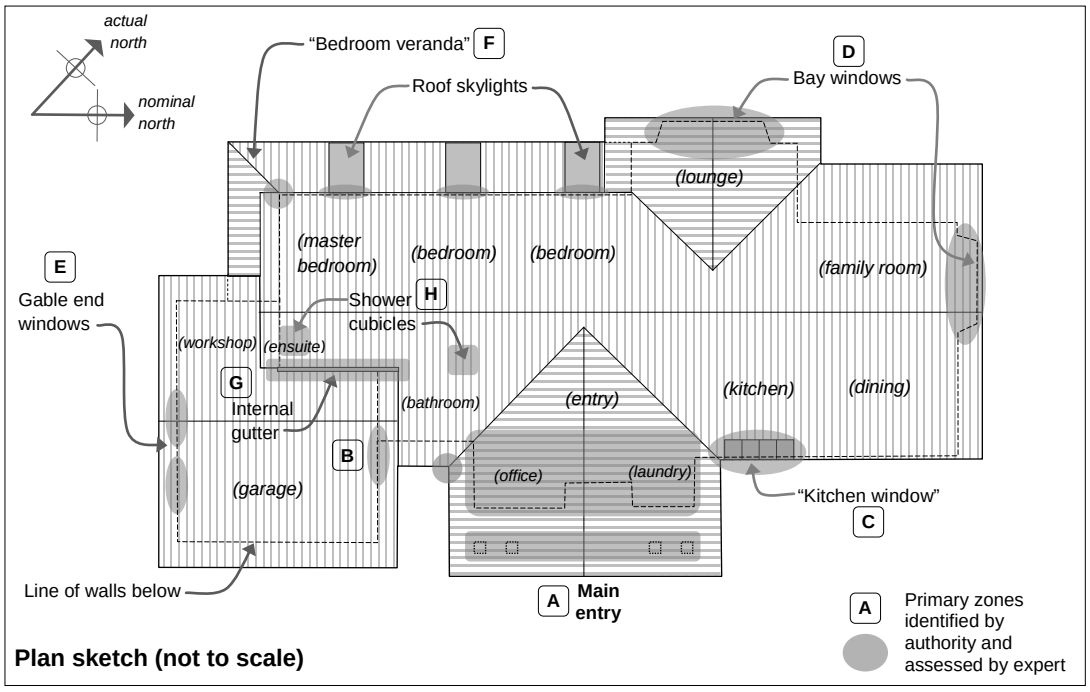
2. The building work

2.1 The building work consists of a detached house situated on a large level site in a high wind zone as described in NZS 3604[4]. The property has no street frontage; vehicle access to Goldrush Lane is via a shared driveway. The expert's report takes the garage and main entry as facing east and this determination follows that convention. The single-storey house is fairly simple in plan and form and is assessed as having a low to moderate weathertightness risk.

2.2 As shown in Figure 1, the house accommodates the following:

- the main entry canopy and foyer in the central area of the east elevation
- to the north of the main entry; a laundry and the family room/dining/kitchen area and lounge opening onto a veranda to the west
- to the south of the lounge, two bedrooms and the master bedroom and ensuite, with the bedrooms opening onto a veranda to the west
- to the south of the main entry; an office and bathroom, with a garage/workshop at the southeast corner.

Figure 1: Approximate plan



2.3 Construction is conventional light timber frame, with a concrete slab and foundations, monolithic wall cladding, profiled metal roofing and aluminium windows. The 30° pitch gabled roof has verge overhangs of about 600mm and eaves of 800mm or greater, except for the east wall to the kitchen/dining area which has no overhang. A 10° pitch veranda extends around the southwest bedrooms ("the bedroom veranda"). Bay windows project from the lounge and family room, with hipped lean-to roofs clad in butyl rubber.

2.4 The wall cladding is a form of monolithic cladding system known as EIFS[5]. In this instance, the proprietary cladding system consists of 40mm polystyrene backing sheets fixed directly to the framing over the building wrap, to which a mesh-

[4] New Zealand Standard NZS 3604:1999 Timber Framed Buildings
[5] Exterior Insulation and Finish System

reinforced plaster system has been applied. The system includes purpose-made flashings to windows, edges and other junctions.

2.5 The expert took eight timber samples from exterior wall framing and forwarded them to a testing laboratory for analysis. The analysis confirmed five samples as equivalent to H1.2, with three decayed samples containing no detectable preservative (likely due to leaching). Given the date of construction in 1996, I consider that the timber framing is likely to be boric treated to a level that will provide some resistance to fungal decay.

3. Background

3.1 The consent documentation

3.1.1 The consent drawings are rudimentary, with minimal description, few specification notes and no expanded details. I have not seen a copy of the consent specification.

3.1.2 The authority issued building consent no. R414387 to the original owners on 20 March 1996 under the Building Act 1991 ("the former Act"). The conditions attached to the building consent for the house listed the inspections required during construction, which did not include any pre-plaster and cladding inspections.

3.2 Construction

3.2.1 The construction of the house commenced in July 1996 and the authority carried out the following inspections:

- Pre-pour foundations and floor slab during July and August 1996.
- Pre-line framing and plumbing on 1 November 1996 (which passed and noted '40mm polystyrene cladding adequately nailed (200 crs) on Flamestop').
- Post-line bracing on 11 November 1996 (which passed).
- Sanitary drainage on 18 December 1996 (which passed).

3.2.2 The house appears to have been substantially completed during 1997[6], although a final inspection was not carried out at that time.

3.3 The 1999 final inspection and interim code compliance certificate

3.3.1 Following a code compliance certificate 'reminder letter' on 5 July 1999, the authority carried out a final inspection on 15 July 1999. The inspection record identified several items requiring attention and noted the following:

> Int check OK
> Ext check OK
> Ceiling check OK
>
> [The wood burner] – The flue to this unit although not appearing dangerous is not installed in accordance with the manufacturers specs. The cut gib board 20mm (min) clear of the outer flue.
> Provide seismic restraints to unit.
>
> (Note – seals around ensuite shower appear to be failing and causing some localised damage

3.3.2 The authority issued an interim code compliance certificate to the original owners on 22 May 2000 under section 43(3) of the former Act. The certificate stated that it was issued 'in respect of part only, as specified in the following particulars, of the

[6] Based on Quotable Value records

building work' under building consent R414387. I note that the only particulars are set out in the following paragraph, which states:

> Further building work is required to be completed as detailed in the most recent building inspection site sheet. When all works are completed the building owner is required to notify [the authority] where a further inspection may be required to ensure compliance. When all building works approved under the above building consent comply, a full Code Compliance Certificate will be issued.

3.4 The 2014 site visit report and interim code compliance certificate

3.4.1 In preparation for the sale of the property, the original owners applied for a code compliance certificate on 25 June 2014. The authority carried out a final inspection of the house on 2 July 2014 to assess the compliance of the house and issued a 'site visit report'.

3.4.2 The report described the house and site, and listed inspections carried out during construction. The report included 92 photographs of purported defects identified during the inspection (identified herein as items 2 to 93) and associated text (identified herein as para. 4.1.1 to 4.7.3 in the report). The report concluded that the following items did not comply with the Building Code (in summary, with the authority's paragraph or photograph item number shown in brackets):

- B1 Structure (including B2):
  - veranda post/beam connections (48)
  - modified purlin at flue (67)
  - cracks to lining joints (para. 4.6.1, 75)
  - crack to workshop floor/wall junction (para. 4.6.2, 76, 77)
- C1 Outbreak of fire:
  - installation of solid fuel heater (para. 4.6.6, 90 to 92)
- E1 Surface Water:
  - butyl rubber internal gutter (54 to 61)
  - top of gulley traps too low and covered with debris (para. 4.7.3, 93)
- E2 External Moisture (including B2):
  - cladding clearances (2 to 4)
  - gutter/wall junctions (5 to 7)
  - kitchen window sill junction – crack and water marks (8 to 11)
  - bay window membrane/wall junctions (12 to 16)
  - lack of head flashings to exposed windows (17, 18)
  - hot water cylinder (HWC) overflow outlet penetration (19 to 21)
  - screws through cladding (22)
  - missing or dislodged seals to bay (23 to 27)
  - kitchen window flashings and seals (28 to 36)
  - overgrown rose affecting downpipe and gutter (37 to 40)
  - seals and flashings to veranda skylights (41 to 45)
  - top of veranda hip flashing (46, 47)
  - trees affecting roofing (49 to 51)
  - roof nails lifting (52)

- blocked gutters leaking (53)
- butyl rubber internal gutter (54 to 61)
- roof penetrations (62)
- roof underlay defects (64 to 66)
- staining to roof framing and ceiling (68 to 72)

- E3 Internal Moisture:
  - leaking to bathroom shower trays (para. 4.6.5, 82 to 89)
- F7 Warning Systems:
  - smoke alarms removed (para. 4.7.2)
- G4 Ventilation:
  - ducts not connected (para. 4.6.4, 78,79)
- G8 Artificial light:
  - some lights not operating (para. 4.6.3)
- G9 Electricity:
  - extract unit overheating (para.4.6.4, 80, 81)
- G13 Foul Water:
  - top of gulley traps too low and covered with debris (para. 4.7.3, 93)
- H1 Energy Efficiency:
  - missing ceiling insulation (63)
  - missing pipe insulation (73, 74).

3.5 The refusal to issue a code compliance certificate

3.5.1 In a letter to the original owners dated 21 July 2014, the authority noted that the building consent had been issued in 1996 but no application for a code compliance certificate had been made until June 2014. The authority attached a copy of its site visit report and noted that elements of the building work did not comply with the Building Code that was in force when the building consent was issued.

3.5.2 The authority refused to issue a code compliance certificate because:

> ... for the reasons outlined in the … site visit report, [the authority] cannot be satisfied on reasonable grounds that the building work complies with clauses B2 (Durability), E1 (Surface Water), E2 (External Moisture), E3 (Internal Moisture), F7 (Warning Systems), G8 (Artificial Light), G13 (Foul Water) and H1 (Energy Efficiency) of the New Zealand Building Code (NZBC).

3.5.3 In a telephone conversation on 4 August 2014, the applicant apparently informed the authority that a weathertightness report on the house would be obtained.

3.6 The consultant's report

3.6.1 The applicant engaged the consultant to carry out a moisture investigation of the house. The consultant inspected the house on 10 March 2015 and provided a report dated 20 April 2015, which was not forwarded to the authority.

3.6.2 The consultant initially carried out non-invasive moisture testing followed by invasive testing where high moisture readings were recorded. Non-invasive testing was generally within 'acceptable tolerances (9% - 16% M.C.)' except for:

- the bottom right corner of the kitchen window
- the north wall of the family room adjacent to the bay window
- the east toilet beneath the internal gutter.

Invasive moisture testing of the above areas confirmed that 'water has and possibly continues to enter the wall cavity'.

3.6.3 The consultant was of the opinion the EIFS cladding should be removed and that the areas could be repaired without a building consent, on the basis that 'no material damage has decayed the structural framework'.

3.6.4 The consultant also inspected the external design of the house to assess weathertightness risks and noted the following (in summary):

- The bay window butyl rubber roofs direct moisture behind the cladding.
- Window/cladding junctions are cracked and need recoating and sealing.
- The overflow pipe needs lengthening with a downward slope.
- The TV aerial is causing the barge boards to split.
- Cracks to the EIFS require repair.
- Ground levels need to be lowered in some areas.
- The kitchen window/roof junction requires better flashing design.
- Gutter ends are embedded in the plaster and need a gap, with diverter flashings needed to the bottom of apron flashings.
- Where branches have worn roof coating away, priming and repainting is needed.
- The toilet vent pipe penetration is not adequately sealed.

3.7 The 2015 repairs

3.7.1 The applicant purchased the property on 15 August 2015. In an email to the authority dated 10 September 2015, the applicant referred to the site visit report and noted that invasive moisture testing had been carried out and a builder, plumber and electrician would be engaged to work through the site visit report and repair the items listed. The applicant asked whether the authority required a proposal of repairs prior to the building work being carried out.

3.7.2 The authority responded on 11 September 2015, noting that it required a copy of the 'weathertightness report' (see paragraph 3.5.3) along with the proposal for the remedial work, which would be assessed. The proposal would need to show how compliance with the relevant clauses of the Building Code would be achieved.

3.7.3 No proposal was submitted to the authority for approval. In October 2015 repairs were carried out to the kitchen window, the bay windows, the internal gutter, the bedroom veranda, the bathroom shower and various other areas. Construction photographs taken during the repairs show exposed framing and timber replacement in various areas. It is not clear when the wood burner was removed[7] and when alterations to the main entry[8] and other repairs were carried out.

[7] The flue is still visible in photographs taken on 21 October 2015
[8] Construction photographs of entry columns are undated

3.8 The application for an amendment to the consent

3.8.1 On 10 October 2016, the applicant submitted an application for an amendment to the building consent for:

1. Ultra Drain 60 to be inserted between concrete terrace and [EIFS] along front of house (size 60mm x 100mm)
2. Woodburner & flue has been completely removed
3. 4 pillars on terrace – [EIFS] to be removed on bottom part of pillars – approx ½ metre in height. Mulseal waterproofing up post. [Technical details attached] 500 x 500 schist[9] to be installed. Weepholes every joint on bottom course.
4. Resealing of both showers. Rimu skirtings removed & gib to side of showers removed. Inside timbers all checked. Gib replaced. Rimu skirtings replaced. Showers sealed properly.

3.8.2 In a letter to the applicant dated 25 October 2016, the authority refused to grant the amendment because it needed 'confirmation that all of the issues resulting in the previous refusal of the code compliance certificate had been addressed.'

4. The submissions

4.1 The initial submission

4.1.1 The Ministry received an application for a determination from the applicant on 17 February 2017, which was accepted on 7 March 2017. Consent from the applicant for the independent expert to carry out invasive testing was received on 29 March 2017.

4.1.2 In an email to the parties dated 31 March 2017, the Ministry asked for information on past repairs. The authority responded on 3 April 2017 that it had 'not given approval for any remediation work carried out to date.' On 7 May 2017, the applicant provided information on the recent repairs, which I have included in paragraph 4.1.4.

4.1.3 The applicant set out the background to the situation and noted that only an interim code compliance certificate had been issued on completion of the house because two items needed attention (a shower leak and an incorrectly installed wood burner flue). Since purchasing the property, there had been 'numerous meetings' with the authority about resolving the problems identified in the site visit report.

4.1.4 The applicant advised that repairs carried out to date included (in summary):

- At the main entry (Zone A):
  - (to support columns) lower 500mm of EIFS removed and replaced with schist
  - (to adjacent walls) 500mm high schist installed over EIFS
  - drainage channel installed.
- Diverters added to the bottom of apron flashings (Zone B).
- At the kitchen window (Zone C):
  - new roof flashings installed
  - seals and hardware replaced
  - lower EIFS removed and replaced to check framing timber.

[9] The schist is a proprietary 80mm thick concrete/schist composite.

- Membrane to bay window roofs replaced, with overhang extended (Zone D)
- At the bedroom veranda (Zone F):
  - hip flashing replaced
  - new post/beam brackets installed
  - roofing replaced above defective junctions to skylights.
- The internal gutter replaced (Zone G).
- At the bathrooms (Zone H):
  - linings removed adjacent to shower cubicles
  - shower junctions sealed
  - linings replaced.
- Wood burner and flue removed.
- Various other repairs and maintenance, including window seal replacement.

4.1.5 With and following the application, the applicant provided copies of:

- the authority's site visit report dated 2 July 2014, and refusal to issue a code compliance certificate dated 21 July 2014
- the consultant's report dated 20 April 2015
- a schedule of repairs carried out to date, and photographs taken during the 2015 repairs
- the authority's refusal to issue a building consent amendment dated 25 October 2016.

4.1.6 The authority provided copies of:

- the building consent, the original consent drawings, and the inspection records
- the interim code compliance certificate dated 22 May 2000
- the 2014 application for a code compliance certificate
- the 2016 application documentation for amendment of the building consent
- various calculations, statements, technical brochures and other information.

4.2 The draft determination and the responses received

4.2.1 A draft determination was issued to the parties for comment on 28 June 2017.

The authority's submission

4.2.2 The authority responded to the draft determination on 10 July 2017, saying it did not accept the determination's findings. The authority provided some addition detail and made the following comments:

- It had not seen the construction photographs referred to in paragraph 3.7.3.
- Photographs in the expert's report show the schist cladding has been installed to the main entry walls. The work was carried out without consent and it has not been inspected. It appears from the photographs in the expert's report that the product has not been installed in accordance with the manufacturer's instructions.

- Several potential compliance issues may have arisen from the change in cladding to the main entry wall, irrespective of the protection provided the entry gable canopy.

4.2.3 The authority also provided the following comments on the expert's report and the conclusions reached in the draft determination:

- The expert's moisture readings verify the authority's observations of 2 July 2014. However, one of the moisture readings taken by the expert, at the northeast corner of the family room bay window (15%), was at odds with an elevated reading taken by the consultant (56%).
- A crack in the EIFS cladding at the northeast corner of the family room bay window identified by the expert was not evident during the authority's inspection. The authority believes the crack has developed in the time between those two dates (July 2014 and May 2017) and indicates movement of the framing and glazing unit, which the authority considers would be unrelated to the Canterbury earthquake sequence[10].
- 'Low moisture readings could also indicate a loss in bulk[11] of timber elements.'
- The areas described above should be further investigated and samples taken for analysis.
- Any upstands to the gully traps would prevent surface water run-off and debris entering the drainage system, but would compromise overflow relief dimension regarding the lowest sanitary fixture (the shower tray); potentially leading to non-compliance with Clause G13.

4.2.4 The authority noted the building consent was still operative and the current owner could complete the work and apply for the code compliance certificate. The authority said that despite the original owners being responsible for the building work, the authority could issue a notice to fix to the current owner to bring the building into full compliance. (I have set out my views on this matter in paragraph 10.4.)

The applicant's submission

4.2.5 The applicant accepted the draft determination on 11 July 2017. In response to the authority's submission the owner said:

- The repairs untaken had been carefully considered and the applicant had used 'every endeavour to get someone to tell me how to fix the problems'. Advice from the authority and experts had been followed, but had not progressed the matter.
- The cladding has not been changed on the front of the house. The schist has been installed on top of the existing cladding for aesthetic purposes.
- The construction photographs referred to in paragraph 3.7.3 had now been supplied to the authority.
- Repairs would be carried out where required.

[10] The Canterbury Earthquake Sequence includes the 'Darfield Earthquake' of 4 September 2010 with a moment magnitude of 7.1, followed by a series of aftershocks that included a 6.3 magnitude shake on 22 February 2011.
[11] Loss in bulk occurs when timber is severely decayed and in effect is giving a low moisture readings because of a significantly reduced density.

4.3 My comment in responses to the authority's submission

4.3.1 I have taken account of the authority's submission and amended the determination as appropriate. In response to matters not considered elsewhere, I note the following:

- Low moisture readings that may arise from a 'loss in bulk' will be significantly lower than those recorded by the expert, and the expert would have carried out further investigations if readings indicated a loss in bulk.
- An owner is entitled to seek consent or an amendment to address specific work without being obliged to consider other building work that an authority does not consider are compliant; an authority is unable to decline a consent or a consent amendment based on the scope of the works. This matter has been considered in other determinations, such as Determination 2012/023[12].
- The expert assessed the effect of the crack to the cladding referred to by the authority, and no elevated moisture readings were observed.
- The overflow to only one gully trap needs to be positioned so it is below the lowest sanitary fixture in the house. The gully outside the kitchen is currently compliant and can be used as the overflow relief gulley.

4.3.2 The expert was asked for his response to the comments made by the authority. His responses are as follow:

- The 56% moisture reading taken reading by the consultant was not disputed. The source of moisture has been removed and the timber had dried out.
- A moisture reading of 8% or lower would indicate a loss of bulk.
- No established decay was noted to timber samples taken at the main entry. The timber was H1 treated; if treatment had leached out and there was a pocket of decay, it would not spread to adjacent timber.

5. The expert's report

5.1 General

5.1.1 As mentioned in paragraph 1.6, I engaged an independent expert who is a member of the New Zealand Institute of Building Surveyors to assist me. The expert visited the house on 16 and 23 May 2017, providing a report dated 7 June 2017 that was forwarded to the parties on 8 June 2017.

5.1.2 The expert noted that the scope of the assessment was in relation to the matters raised by the authority and to form a view about compliance while taking into account the 'age, risk profile and performance in use since completion' of the house.

5.1.3 The expert considered that the interior of the house and the exterior envelope were generally finished 'to an acceptable trade standard'. Except for the original installation of the roof underlay, the expert considered the repaired roof and flashings had been 'neatly installed and are operating effectively'.

5.1.4 The expert noted that the five consent drawings did not state how many pages made up a full set and observed that the 'overall shape and form of the building is largely in accordance with the architectural design concept of the construction drawings reviewed', except that the stairs and attic space above the garage were not

[12] *Determination 2012/023 The exercise of the powers of an authority in refusing to grant an amendment to a building consent for remedial work to a house* Department of Building and Housing, 30 March 2012 (p 5.7 to 5.7)

constructed and there is no eave overhang above the east wall to the kitchen/dining area.

(Based on photographs, I also note the following changes: side walls to bay windows not constructed at 45^{o} angle to main walls; conventional kitchen window replaced with wall/roof window.)

5.2 Moisture investigations (Clauses B1, E2, and E3)

5.2.1 The expert investigated locations considered at risk of moisture penetration, using long probes to take invasive readings within 10mm of the outer face. Readings were generally low except for:

- 84% and advanced decay in the south end of east kitchen window sill reveal
- from 19% to 21% below window jambs to the garage gable end south wall
- 18% to more than 24% beneath the apron flashing to the north garage wall
- 68% and decay to bottom plate when garage lining removed from the above
- 18% to more than 24% around the shower tray to the bathroom.

5.2.2 The expert inspected roof spaces and noted the following signs of past moisture penetration:

- water stains and decay at the end of a currently dry roof purlin
- water stains but no obvious decay to framing below the repaired internal gutter.

5.2.3 The expert removed timber samples from the following areas:

- soffit framing near the repaired fascia above the bathroom window (sample 1)
- the corner stud behind the bathroom shower (sample 2)
- the bottom plate to the shower/hall wall (sample 3)
- the bottom plate below the apron flashing to the garage north wall (sample 4)
- in bottom plates below the bay window roof/wall junctions:
    - below the south junction to the lounge bay window (sample 5)
    - below the north junction to the lounge bay window (sample 6)
    - below the west junction to the family room bay window (sample 7)
    - below the east junction to the family room bay window (sample 8)

5.2.4 The expert forwarded the five samples for analysis and the laboratory report dated 7 December 2016 noted the following:

- No treatment was detected in samples 1, 3 and 4 (possibly due to leaching), with the remaining samples boron treated to an equivalent of H1.2
- Samples 1, 3 and 4: contained ‘advanced decay’ and would probably need replacement due to the ‘loss of the bulk of original structural integrity’
- Sample 2 from the corner stud to the bathroom contained ‘earlier stages of decay’ and was ‘marginal in terms of replacement’
- Samples 5 to 8: from bay window bottom plates contained ‘fungal growths’ but ‘no structurally significant decay’

- The condition of Samples 1 to 4 ‘was consistent with exposure to at least 5-10 years of elevated moisture conducive to decay’ or a longer period ‘of more intermittent moisture elevation’.

5.2.5 The report concluded that:

> The fungal morphology, its distribution and the fungal and decay types identified suggested that at least the majority of the samples examined had been exposed to moisture conditions that are inconsistent with sound building practice and/or weather-tight design, and that appropriate remediation is needed to correct this.

5.3 Clauses B1 Structure and B2 Durability (Items 48, 67, and 75 to 77)

5.3.1 During the 2014 final inspection, the authority raised various structural concerns. The expert investigated the current condition and commented as follows:

- Galvanised ‘T’ brackets now connect veranda posts and beam, with bolts penetrating through the beam and adjacent fascia (item 48).
- A purlin had been reduced to allow for the woodburner flue, which has since been removed. The roof framing has resisted ‘numerous earthquakes’ over the past seven years with no sign of movement (item 67).
- There is no indication that any lining cracks are a result of failure of structural performance (item 75).

5.3.2 Items 76 and 77: In regard to the workshop floor/wall junction, the crack had been repaired with epoxy and has not reappeared. The expert also noted that:

- pulling carpet back revealed similar cracking at exterior walls in other rooms
- the floor slab was poured inside the ring foundation, with membrane against the foundation – and was inspected and passed during construction
- the ‘crack’ is a joint and does not affect the structural integrity of the house.

5.3.3 (I also note that the moisture investigations and laboratory sample analysis of wall framing timbers indicate that some areas of the framing contain ‘structurally significant decay’ and provides evidence that there is non-compliance with Clauses B1 and B2 of the Building Code.)

5.4 Clauses B1 Structure, B2 Durability, and E2 External moisture (Items 2 to 47, 49 to 62, 64 to 66, and 68 to 72)

5.4.1 The expert inspected the external building envelope of the house, taking into account the age of the building work and the risks applying at particular junctions and intersections. (Refer to Figure 1 for locations of significant observations.)

5.4.2 **Zone A**: Cladding clearances at the main entry (Items 2 to 4).
The expert inspected the repairs carried out and noted the following:

- EIFS was removed up to about 500mm above the paving (photographs show posts supported on steel brackets with a gap under the timber) and the schist veneer is installed over a drained cavity, with weep holes provided in the bottom course on each side of the stone plinths.
- EIFS was also removed from the base to the walls, with schist cladding and a drainage channel installed which discharges onto the ground at each end.

- The wall/paving junctions are protected from southerly rain by the garage and are sheltered beneath the entry canopy, with paving sloped away from the cladding – the expert considered that the drainage channel was unnecessary in these circumstances.

5.4.3 **Zone B**: The bottom of apron flashing at the north garage wall (Items 5 to 7):

- Although a proprietary uPVC diverter has been installed to the bottom of the flashing and the gutter now clears the plaster, there are still very high moisture levels in the adjacent framing, and the removal of lining from the garage wall revealed advanced decay in the bottom plate.
- The decay to the bottom plate appeared well established and the junction is likely to have leaked within the first 15 years after construction, with the framing around Zone B requiring 'substantial reconstruction including replacing decayed framing'.

5.4.4 **Zone C**: The kitchen window (Items 8 to 11, 28 to 36):

- New flashings have been installed and glazing seals have been replaced, with open joints in the aluminium joinery unit filled with sealant, which is exposed to UV and likely to deteriorate prematurely – the joints probably resulted from seismic movement and should have been attended to during earthquake repairs.
- Construction photographs show wall framing around the window exposed and new treated framing installed below window sill height, but the window unit and reveals were not removed during repairs (no building consent was applied for, so there was no oversight of testing/replacement of timber framing).
- The jamb/sill junction of the interior reveal was severely water stained, and removal of a section of reveal exposed severe decay at the mitred joint – a photograph shows water damaged framing beside the decayed reveal, which was not replaced.
- Destructive testing through the sill reveal exposed a new metal sill flashing installed over 'clean, dry, firm framing' and removal of a section of the sill trimmer revealed a separate metal stop end overlapping the sill flashing, with no sealant to prevent water from tracking into adjacent timber.
- Any unplanned moisture via window/wall or window/roof junctions will not be directed to the outside and adjacent framing will decay.

5.4.5 **Zones D**: The bay windows (Items 12 to 16, 23 to 27):

- The membrane roofs and plywood substrates to bay windows were replaced and now provide a small overhang above the glazing and a drip edge to prevent future staining of the EIFS.
- Glazing seals have been replaced, and photographs show EIFS cut away and proprietary uPVC diverters installed at the ends of the roof/wall junctions.
- Invasive moisture levels in bottom plates were low and drillings (samples 5 to 8) were confirmed as boric-treated, with fungal growths but no structurally significant decay.

5.4.6 **Zone E**: The gable end windows (Items 17 and 18):

- Apart from the bay windows, no windows include head flashings and high moisture levels were recorded below the garage south windows.

- Although windows to the east and west elevations are sheltered beneath deep eaves overhangs or verandas, window heads to the north and south gable end walls are exposed to moisture penetration.

5.4.7 **Zone F**: The bedroom veranda (Items 37 to 47):

- The climbing rose has been pruned (but will need regular attention) and gutter joints appear to have been resealed, with no leaks observed.
- Glazing seals were replaced, transition flashings have been modified, upper roof sheets were replaced, and the skylight heads are 'now neatly finished'.
- The veranda hip flashing has been satisfactorily replaced and now underlaps the roofing, with soft edge metal neatly dressed over the corrugations.

5.4.8 **Zone G**: The internal gutter (Items 54 to 61):

- Photographs show the original membrane and substrate removed, with adjacent roofing temporarily lifted to installed new re-formed plywood substrate upstands of about 400mm to a repositioned lower purlin.
- The new gutter has sufficient width and falls to both ends, with the butyl rubber dressed over the roofing to allow water to disperse.

Items 19 to 22, 49 to 53, 62, 64 to 66, 68 to 72)

5.4.9 In respect of these items the expert noted the following:

- The HWC overflow has been redirected and the pipe is now redundant and should be removed, but there is no evidence of past or current moisture penetration from the cladding penetration (Items 19 to 22).
- Trees have been removed or pruned, roof fixings have been repaired or replaced, gutters have been cleaned and sealed, and the roof has been completely repainted (Items 49 to 52).
- Decayed fascia boards above the bathroom window have been replaced and gutters have been cleaned and joints sealed, but Sample 1 from eaves framing contained advanced soft rot across the full depth (Item 53).
- A proprietary rubber boot flashing has been fitted over the vent pipe above the bathroom (Item 62).
- Although some areas of the roofing underlay lack correct overlaps, are damaged or have shrunk due to heat build-up in the ceiling space; there is no evidence of past or current moisture in associated framing (Items 64 to 66).
- The end of a roof purlin under a past roof nail leak is decayed and needs replacement, but there is no evidence of decay to other roof framing or any significant damage to ceiling linings (Items 68 to 72).
- The garden is built up to the tops of the east gully traps and will allow surface water into the drain. Surrounds need to be fitted and ground levels should be 100mm below the top, with falls away from the gully traps (item 93).

5.5 Clause E3 Internal moisture (Items 82 to 89)

5.5.1 The expert investigated the walls adjacent to the two shower cubicles and noted:

- standard plaster board has patched bathroom walls in lieu of the originally water-resistant plaster board linings – and repairs are not completed
- removal of the water-marked hallway skirting revealed timber damage, and Sample 3 from the bottom plate contained structurally significant decay; the office wall is likely to be similar as that skirting is more water-marked
- there is no visual indication of moisture penetration or damage to walls in the ensuite bathroom, with invasive moisture readings ranging from 8% to 12%.

5.6 Compliance with the remaining clauses

5.6.1 The expert also commented on the following items on the authority's inspection list (with relevant clauses shown in brackets):

- Items 90 to 92: the wood burner has now been removed (Clause C1)
- Para. 4.7.2: working smoke alarms are now installed (Clause F7)
- Items 78 and 79: the kitchen extract ducting has been repaired and the clothes dryer ceiling duct has been removed (Clause G4)
- Para. 4.6.3: three of the 42 downlights are not operating, but this is a maintenance item rather than related to compliance (Clause G8)
- Items 80 and 81: the deformed cover on the extractor unit indicates overheating that requires investigation by a registered electrician (Clause G9)
- Item 93: the garden is built up to the tops of the east gully traps and will allow surface water into the drain; upstands need to be fitted to provide ground clearance of 100mm, with ground falls away from the gully traps (Clause G13)
- Items 63, 73 and 74: despite improvement there is still excessive clearance around the downlights and missing pipe insulation has been rectified with vermin bait laid to avoid recurrence (Clause H1).

5.7 The expert's conclusions

5.7.1 The expert concluded that the following areas do not comply with the Building Code at the time the house was constructed (with relevant clauses shown in brackets):

- confirmed or potentially damaged timber framing (B1, B2):
  - in the north wall of the garage
  - around the shower tray to the bathroom
  - beside the south end of the kitchen window
  - beside the repaired fascia boards above the bathroom window
- ground clearances to the tops of the east gully traps (E1, G13)
- the north wall of the garage, including ground clearances at the northeast corner (E2, B2)
- the south end of the kitchen window (E2, B2)
- the window heads in the gable end walls without flashings (E2, B2)

- the deteriorated and damaged roof underlay (E2, B2)
- the shower tray to the bathroom (E3, B2)
- the deformed cover to the extractor unit (G9)
- excessive clearance of ceiling insulation from downlights (H1).

6. Compliance of the house

6.1 I note that the building consent considered in this determination was issued under the former Act, and accordingly the transitional provisions of the current Act apply when considering the issue of a code compliance certificate for work completed under this consent. Section 436(3)(b)(i) of the transitional provisions of the current Act requires 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'.

6.2 In order to determine whether the authority correctly exercised its power in refusing to issue a code compliance certificate for this house, I must therefore consider whether the house complies with the provisions of the Building Code that applied when the consent was issued.

6.3 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 1997. Although that matter is not part of this determination (see paragraph 1.5.1), I have taken the anticipated modification into account when considering the compliance of the house.

7. Discussion: the external envelope

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 high wind zone
- although fairly simple in form, the house includes some complex junctions
- one wall includes non-standard joinery and no eaves overhang
- the walls have EIFS cladding fixed directly to the framing

Decreasing risk

- the house is one storey high in part and fairly simple in plan and form
- there are no decks attached to the house
- external wall framing is treated to provide some resistance to decay if it absorbs and retains moisture.

7.2.2 Using the E2/AS1 risk matrix to evaluate these features, the elevations are assessed as having a low to 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 the EIFS cladding at all risk levels. However, this was not a requirement at the time of construction in 1996.

7.3 Weathertightness performance

7.3.1 Inspection records indicate that the house was substantially complete and occupied during 1997 (see paragraph 3.2.1) and I have taken that into account when considering the weathertightness performance of the external envelope as most of the building envelope appears to have continued to perform for more than the minimum 15 years required by Clause B2 of the Building Code.

7.3.2 Taking account of the repairs carried out to date, I note the expert's conclusions in paragraph 5.7.1 and I consider that the following areas require attention:

- moisture penetration and/or investigation into the extent of damage to framing associated with current or past defects at:
  - the north wall of the garage
  - the south end of the kitchen window
  - eaves framing adjacent to repaired fascia boards above bathroom window
  - some areas of the roof framing affected by past leaking
- the window heads in the gable end walls
- the gaps and overlaps of the roof underlay.

7.4 Weathertightness conclusion

7.4.1 The expert's report establishes that the current performance of the building envelope is not adequate because there is evidence of moisture penetration, with decay to timber in several areas. The significant decay apparent indicates that moisture had been penetrating for some time; and I am therefore satisfied that the building envelope did not and still does not comply with Clause E2 of the Building Code.

7.4.2 The house 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. The durability requirements of Clause B2 include a requirement for wall claddings to remain weathertight for a minimum of 15 years and for timber framing to remain structurally adequate for a minimum of 50 years.

7.4.3 The structurally significant timber damage to the some of the framing, together with the likelihood of further hidden damage, satisfies me that some timber framing may not comply with Clause B1.

7.4.4 Although roof and wall claddings are now 20 years old, the expert's investigations revealed evidence of moisture ingress over an extended period. Because of the decay damage revealed and the likelihood of further undiscovered damage, I am therefore satisfied that the timber framing has not complied with Clause B2 insofar as it applies to Clauses B1. Evidence of past moisture penetration also satisfies me that the building envelope has not complied with Clause B2 insofar as it applies to E2.

7.4.5 However, the identified moisture penetration and cladding faults occur in discrete areas, and I am therefore able to conclude that satisfactory investigation and

rectification of areas outlined in paragraph 7.3.2 will result in the building envelope being brought into compliance with Clauses B1, B2 and E2 of the Building Code.

8. Discussion: the compliance of the remaining code clauses

8.1 Clause B1 Structure

8.1.1 Taking account of the expert's report and conclusions, I concluded in paragraph 7.4.3 and also in paragraph 8.2.2 that some of the timber framing does not comply with Clause B1, and also with Clause B2 insofar as it applies to Clause B1, due to both external and internal moisture penetration and damage to associated framing.

8.1.2 In regard to the authority's concerns about the crack at the edge of the workshop floor, the expert's investigations have confirmed that this is a construction joint. I also note the expert's comments in paragraph 5.3.1 and accept that these areas are adequate in the circumstances described.

8.2 Clause E3 Internal Moisture

8.2.1 Taking account of the expert's investigations, I am satisfied that the shower cubicle to the bathroom does not comply with Clause E3, with evidence of continuing moisture penetration into the internal wall framing.

8.2.2 The expert's investigations also satisfy me that some of the timber framing to interior walls adjacent to the shower tray does not comply with Clause B1 and further investigation is needed to determine the extent of that damage.

8.3 Conclusion on the remaining clauses

8.3.1 Taking account of the expert's report, I consider the following areas require attention (with relevant clauses shown in brackets):

- confirmed or potentially damaged timber framing not otherwise not noted above (B1, B2):
  - in the north wall of the garage
  - around the shower tray to the bathroom
  - beside the south end of the kitchen window
  - beside the repaired fascia boards above the bathroom window
- ground clearances to the tops of the east gully traps (E1, G13)
- the shower tray to the bathroom (E3, B2)
- the deformed cover to the extractor fan unit (G9)
- excessive clearance of ceiling insulation around downlights (H1).

8.4 Conclusions

8.4.1 Taking account of the expert's report and the age of the house, Table 1 summarises my conclusions on the authority's concerns identified for this house.

Table 1

The authority's area of concern (Using the photograph item, or para. number)			**My comments** (taking account of expert's report)	**Conclusion on compliance** (7.4.5 and 8)
B1 Structure				
48		Veranda post/beam connections	• Bolted T brackets now added	Complies
67		Modified purlin at flue	• Flue now removed • No sign of past movement	Complies
75	4.6.1	Cracks to lining joints	• No evidence of structural failure	Complies
76 to **77**	4.6.2	Crack to workshop floor/wall junction	• Joint at slab/foundation junction • Occurs at all exterior walls • Construction inspected/passed	Complies
C1 Outbreak of Fire				
90 to **92**	4.6.6	Installation of solid fuel heater	• Solid fuel heater now removed	Complies
E2 External Moisture				
2 to **4**		Cladding clearances at entry	• Base EIFS replaced or over-clad with stone • Column plinths drained, drainage channel added to walls • Wall junctions very sheltered • No evidence of moisture damage over past 20 years	Complies
5 to **7**		Gutter/wall junctions	• Repairs made but still very high moisture levels in north wall • Advanced decay in bottom plate	**Investigation and repairs required**
8 to **11**		Kitchen window sill junction	• Extensive repairs carried out but still very high moisture levels and advanced decay in south reveal • Sill tray/stop end junction allows moisture into adjacent framing	**Investigation and repairs required**
12 to **16**		Bay window membrane/wall junctions	• Roofs reconstructed to provide small overhang • Diverters added to ends • No significant damage before repairs completed	Complies
17,18		Lack of head flashings to exposed windows	• Gable end windows lack head flashings and are exposed to rain • Elevated moisture under south garage windows	**Repairs required**
19 to **21**		HWC overflow outlet penetration	• Pipe now redundant so should be removed • No sign of past damage	**Requires attention**
22		Screws through cladding	• Now repaired	Complies
23 to **27**		Missing or dislodged seals to bay windows	• Now repaired	Complies

The authority's area of concern (Using the photograph item, or para. number)			**My comments** (taking account of expert's report)	**Conclusion on compliance** (7.4.5 and 8)
28 to **36**		Kitchen window flashings and seals	• Window re-flashed satisfactorily • Seals replaced • Seismic stress opened some aluminium joints within window • Joints sealed with silicon sealant as a short-term solution • Further earthquake repairs in medium term	Complies
37 to **40**		Overgrown bush affecting downpipe and gutter	• Bush cut back • Maintenance item	Complies
41 to **45**		Seals and flashings to veranda skylights	• Seals replaced • Repairs carried out to heads	Complies
46,47		Top of veranda hip flashing	• New flashing installed	Complies
49 to **51**		Trees affecting roofing	• Trees pruned or removed • Roof completely repainted	Complies
52		Roof nails lifting	• Repairs carried out	Complies
53		Blocked gutters leaking	• Blockages removed • No gutters now leaking • Decayed fascia replaced, but adjacent eaves framing decayed	**Investigation and repairs required**
54 to **61**		Butyl rubber internal gutter	• Gutter and substrate rebuilt • Sufficient width and falls • Disperses to roofing at each end	Complies
62		Roof penetrations	• Repairs carried out	Adequate
64 to **66**		Roof underlay defects	• No evidence of associated moisture damage • Maintenance needed	Adequate
68 to **72**		Staining to roof framing and ceiling	• Decay to one end of a purlin • No other evidence of decay or ceiling damage	**Repair required**
E3 Internal Moisture				
82 to **89**	4.6.5	Leaking to bathroom shower trays	• Repairs made to bathroom, but high moisture levels and decay in adjacent walls	**Investigation and repairs required**
			• Ensuite repairs satisfactory – no evidence of moisture or damage	Complies
F7 Warning Systems				
	4.7.2	Smoke alarms removed	• Operating alarms installed	Complies
G4 Ventilation				
78, 79	4.6.4	Ducts not connected	• Kitchen duct repaired • Dryer ducting removed	Complies
G8 Artificial light				
	4.6.3	Some lights not operating	• 3 of 42 downlights not operating • Maintenance item	Complies

The authority's area of concern (Using the photograph item, or para. number)			**My comments** (taking account of expert's report)	**Conclusion on compliance** (7.4.5 and 8)
G9 Electricity				
80,81	4.6.4	Extract unit overheating	• Cover deformed • Requires investigation by electrician	**Requires attention**
G13 Foul Water				
93	4.7.3	Surround to two gulley traps	• Surface water can drain into two gully traps	**Requires attention**
H1 Energy Efficiency				
63		Missing ceiling insulation	• Cover improved, still excessive clearance to downlights	**Requires attention**
73,74		Missing pipe insulation	• Repaired, vermin bait laid	Complies

8.5 Maintenance

8.5.1 Although a modification of durability provisions will mean that most components and elements have already exceeded the minimum life required by the Building Code, the expected life of the building as a whole is considerably longer. Careful maintenance is therefore needed to ensure that elements such as flashings, roofing and gutter systems continue to protect the underlying framing for its minimum required life of 50 years for the structure.

8.5.2 Although the house currently appears to be well maintained, the authority's inspection photographs of deteriorated aluminium joinery, cladding cracks, decayed fascia boards, pulled roof fixings, vermin damage, dislodged ducting and insulation, overgrown planting, blocked and leaking gutters and leaking shower cubicles show a lack of adequate maintenance in the 17 years prior to the 2014 inspection.

8.5.3 That lack of effective maintenance has resulted in the level and significance of decay now revealed in some areas of the framing and affects the extent of consequential investigation and repair now required to those areas. Further reduction of future risks will improve longer-term durability and assist the claddings in protecting the underlying structure where the minimum durability requirement is 50 years.

8.5.4 Effective maintenance of the house is important to ensure ongoing compliance with the Building Code and is the responsibility of the building owner. The Ministry has previously described maintenance requirements associated with the external building envelope (for example, Determination 2007/60).

9. The durability considerations

9.1 The relevant provision of Clause B2 of the Building Code requires that building elements must, with only normal maintenance, continue to satisfy the performance requirements of the Building Code for certain periods ("durability periods") "from the time of issue of the applicable code compliance certificate" (Clause B2.3.1).

9.2 In this case the 20-year delay since the substantial completion of the house in 1997 raises concerns that many elements of the building are now beyond their required durability periods, and would consequently no longer comply with Clause B2 if a code compliance certificate were to be issued effective from today's date.

9.3 I have considered this issue in many previous determinations and I maintain the view that:

(a) the authority has the power to grant an appropriate modification of Clause B2 in respect of all the building elements, if requested by an owner

(b) it is reasonable to grant such a modification, with appropriate notification, as in practical terms the building is no different from what it would have been if a code compliance certificate for the building work had been issued at the time of substantial completion in 1997.

I therefore leave the matter of amending the building consent to modify Clause B2.3.1 to the parties once the matters identified in this determination are resolved.

10. What happens next?

10.1 The authority may issue a new notice under section 95A of the Act. The notice should include the investigations and defects identified in paragraph 7.3.2 and paragraph 8.3.1; and refer to any further defects that might be discovered in the course of investigation and rectification, but not specify how those defects are to be fixed – that is a matter for the applicant to propose and for the authority to accept or reject.

10.2 The applicant can then produce a response to the notice in the form of a detailed proposal to specifically address the matters of non-compliance and investigation for the areas identified, produced in conjunction with a competent person with suitable experience in weathertightness remediation, as to the investigation and rectification or otherwise of the specified matters. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.

10.3 A code compliance certificate will be able to be issued once these matters have been rectified and the matter of amending the building consent to modify Clause B2.3.1 has been resolved.

10.4 The authority contends that it is able to issue a notice to fix requiring the applicant to bring the building into full compliance with Building Code for the reasons given in paragraph 4.2.4. The issuing of notices to fix in situations such as this has been considered in past determinations, including Determination 2013/015[13] and 2014/035[14]. In 2014/035 I said:

> 5.3.4 A notice to fix is focused on a person and the ability for that person to be prosecuted for failure to comply with the notice under section 168 of the Act.
>
> 5.3.8 Where an authority intends to issue a notice to fix, they should identify the provision of the Act or Regulations that has been contravened and they should check that it was the person to whom the notice to fix is going to be issued who contravened the provision and not a previous owner.

10.5 I remain of that view. If the authority is to issue a notice in this case it needs to both identify the specific contravention(s) of the Act and/or its Regulations and identify the person who contravened the Act and or its Regulations. The present owner was not responsible for carrying out the work completed under the original building consent and a notice to fix cannot be issued to the present owner simply on the basis of being in possession of the house. I note also that while the authority has identified

[13] *Determination 2013/015 The refusal to issue a code compliance certificate and the simultaneous issue of a notice to fix for a 14-year-old house* (MBIE) 8 April 2013

[14] *Determination 2014/035 The issue of a notice to fix for weathertightness remedial work carried out by a previous owner* (MBIE) 15 August 2014

some items that are breaches of the Building Code, other items are identified only as possible non-compliances or are maintenance issues.

10.6 In paragraph 4.2.5 of Determination 2013/015 I said:

> A notice to fix is an enforcement notice that … may be enforced by a prosecution for failing to comply with the notice … . The offence is a serious one involving a fine of up to $200,000 and reflects the main purpose of a notice to fix, which is to ensure compliance and provide effective penalties for those that do not comply.

I note the owner has expressed a clear willingness to bring the house into compliance. Setting aside the position set out in paragraph 10.5, the need for an enforceable notice to be issued in this case is unclear.

11. The decision

11.1 In accordance with section 188 of the Building Act 2004, I hereby determine that, in regard to the Building Code that was in force at the time the building consent was issued in 1996:

- some of the timber framing does not comply with Clauses B1 and B2
- the exterior building envelope does not comply with Clauses E2 and B2
- the bathroom shower does not comply with Clauses E3
- the bathroom extract unit does not comply with Clause G8
- the east gully traps do not comply with Clauses E1 and G13
- insulation around downlights does not comply with Clause H1

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 July 2017.

John Gardiner
Manager Determinations and Assurance