MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HIKINA WHAKATUTUKI

Determination 2017/060

Regarding the refusal to issue a code compliance certificate for 19-year-old additions and alterations to a house at 24 Godden Crescent, Mission Bay

Summary

This determination is concerned with the compliance of 19-year-old additions and alterations to a house. The determination considers the authority's reasons for refusing to issue the code compliance certificate and whether the building work 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 owners of the house, B and S Pearson ("the applicants")
- Auckland Council ("the authority"), carrying out its duties as a territorial authority or building consent authority.

1.3 This determination arises from the decision of the authority to refuse to issue a code compliance certificate for 19-year-old additions and alterations to a house. The refusal arose because the authority is not satisfied that building work complies with certain clauses[2] of the Building Code (First Schedule, Building Regulations 1992).

1.4 The matter to be determined[3] is the authority's exercise of its powers of decision in refusing to issue a code compliance certificate for the reasons given in its letter dated 10 June 2015 (see paragraph 3.3).

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

1.5 In deciding this matter, I must consider:

(a) Whether the external building envelope 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 plywood cladding, the windows, the decks 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 alterations. I consider this in paragraph 6.

(b) Whether other items identified by the authority comply with relevant Building Code clauses: namely B1 Structure, D1 Access routes, F7 Warning systems, G1 to G3 Sanitary, laundering and food preparation facilities, and H1 Energy efficiency. I consider this in paragraph 6.3.

1.6 Matters outside this determination

1.6.1 In its final inspection and refusal to issue the code compliance certificate, the authority limited its concerns to items associated with the clauses outlined above (see paragraph 3.3). This determination is limited to the matters outlined above and I leave any remaining issues to the parties to resolve in due course.

1.6.2 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 December 1997. Although I leave this matter to the parties to resolve in due course, I have taken the anticipated modification into account when considering the durability of the claddings.

1.7 The evidence

1.7.1 In making my decision, I have considered:

- the submissions of the parties, including various reports by:
  - the building surveyor (paragraph 3.5)
  - the repair company working with the building surveyor (paragraph 3.6)
- the report of the expert commissioned by the Ministry to advise on this dispute (paragraph 5)
- the other evidence in this matter.

1.7.2 Within this determination, relevant reports are given the following titles:

Table 1: The relevant reports

Date	Report author:	Report provided to:	Report title used herein
Aug 2016	Building surveyor	applicants	“scope of works report”
Aug 2016	Repair company	applicants	“repair report”
Sept 2016	Building surveyor	applicants	“invasive testing report”
Oct 2016	Building surveyor	applicants	“proposal for further investigation”
June 2017	Expert	Ministry	“expert’s report”

2. The building work

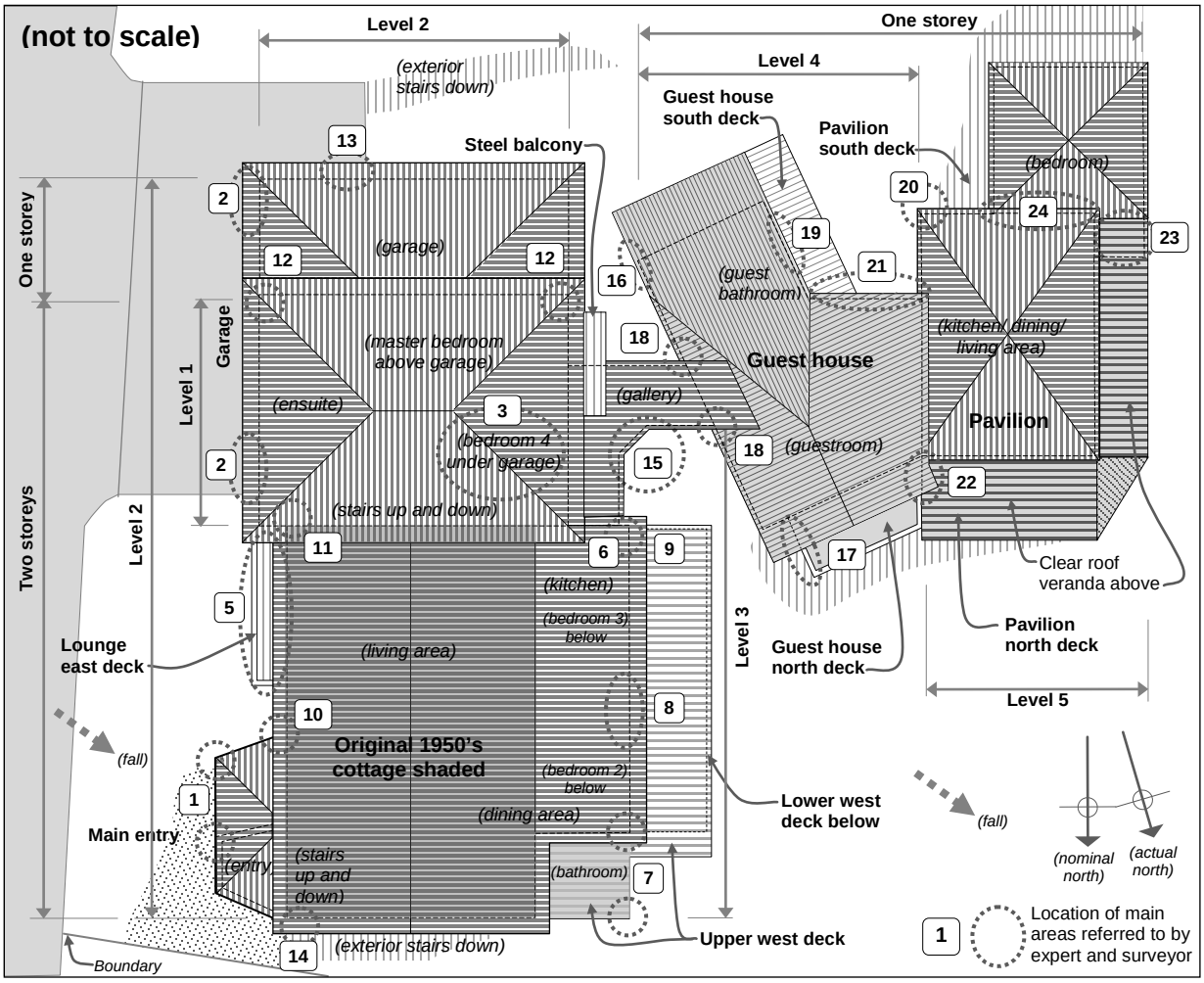
2.1 The building work consists of extensive additions and alterations to a detached house situated on a steeply sloping site in a medium wind zone as described in NZS 3604[4]. The main house is sited adjacent to the road on the crest of the hill, with ancillary structures stepped down the slope. The expert takes the garage door as facing east and this determination follows that convention.

2.2 The original simple two-storey cottage was built in the 1950's, with traditional light timber frame construction on pile footings, weatherboard cladding, timber joinery and a gabled corrugated steel roof.

2.3 The extensions more than doubled the size of the original cottage; and the completed building is complex in plan and form, with a medium to high weathertightness risk. The building is shown in Figure 1 and includes additions and alterations to all elevations that have left no remaining visual indications of the original cottage.

2.4 The lower level of the main house is linked via an enclosed gallery to a separate structure ("the guest house"), which is attached to a further structure ("the pavilion"). The guest house and pavilion are stepped down the steep slope of the site. Exterior access is provided by timber steps and platforms that step down the steep slope of the site around a number of large protected trees.

Figure 1: Approximate site plan



[4] New Zealand Standard NZS 3604:1999 Timber Framed Buildings

2.5 The completed work comprises a multi-level building with roofs and decks at various levels. Including changes made since completion in 1997, the building now has five main levels (with some split-levels) as follows:

The main house

- Level 1: Master bedroom and ensuite above the ground floor garage, with a small balcony to the west.
- Level 2:
  - The garage to the south, with stairs leading up to the living area and master bedroom.
  - Living, kitchen and dining areas to the north of the garage, opening onto a deck along the west elevation.
  - A smaller deck to the east off the living area.
  - The main entry canopy and foyer in the northeast corner, with stair access up to the living area and down to Level 3.
- Level 3:
  - Bedrooms 2 and 3 opening onto a deck to the west, sub-floor area to the east, and bathroom in the northwest corner.
  - Bedroom 4 beneath the northwest corner of the garage, with a gallery and stairs down to the guest room in Level 4.

The guest house

- Level 4:
  - A bed/sitting room opening onto a deck to the north.
  - A bathroom and back door to the south, with a deck beneath the south roof overhang which extends along the west wall.

The pavilion

- Level 5:
  - A living/dining/kitchen area to the north opening onto a deck beneath a veranda at the northwest corner and another deck to the south.
  - A bedroom to the south.

2.6 Construction of the alterations is generally conventional light timber frame with some specifically engineered elements. The building now includes concrete foundations to the garage east wall with pile foundations and timber framed floors elsewhere, plywood wall claddings, profiled metal roofing and aluminium joinery. The 30^{o} pitch gable and hipped roofs have eaves and verge overhangs that vary from about 200mm to 1000mm.

2.7 Walls are clad in 12mm thick cedar plywood[5], with 9mm wide x 5mm deep grooves at 100mm centres and tongue in groove joints. The plywood sheets are fixed through the building wrap directly to the framing; with timber battens installed at external corners and metal 'Z' flashings at horizontal joints.

[5] Noted in the authority's section 95A letter, dated 10 June 2015

2.8 The decks

2.8.1 The main house includes four attached decks as follows:

- A small steel framed cantilevered deck bolted to the west wall of Level 1 master bedroom ("the steel balcony"), with free draining timber slat flooring and open metal balustrades.
- A timber deck with timber slat flooring and clad balustrades off the east wall of the Level 2 living room ("the lounge east deck")
- A timber deck with a slat floor and open timber balustrades along the west wall of the living/dining areas and extended above the Level 3 bathroom, where timber slats are installed over tiled membrane ("the upper west deck").
- A timber deck with a slat floor and open timber balustrades along the west wall of Level 3 bedroom 2 and bedroom 3 ("the lower west deck").

2.8.2 The guest house includes two decks as follows:

- A timber deck with timber slat flooring and clad balustrades off the north wall of the Level 4 bedroom ("the guest house north deck")
- A timber deck with a slat floor and open timber balustrades extends around the southwest corner of the guesthouse bathroom ("the guest house south deck").

2.8.3 The pavilion includes two decks as follows:

- A timber deck with a slat floor and open timber balustrades around the northwest corner of the living/dining area.
- Ground level timber decking around the south east corner of the bedroom.

2.9 Timber treatment

2.9.1 Given the age of the original cottage, I consider that the remaining original framing is likely to be rimu. The expert noted that some subfloor wall framing was marked H1 and considered that given the low levels of general decay despite moisture entry the framing was likely to be treated. I consider that the wall framing installed as part of the additions and alterations is likely to be treated to a level that will provide some resistance to fungal decay.

3. Background

3.1 The authority issued building consent No. B/1996/3806978 to the original owners under the Building Act 1991 ("the former Act") for the additions and alterations. I have not seen a copy of the building consent but the drawings were stamped as approved on 24 September 1996. I have seen no records relating to the original construction, but the building appears to have been substantially completed by the end of 1997[6].

3.2 The 2015 final inspection

3.2.1 The original owners sought a code compliance certificate prior to selling the house and the authority inspected the house on 9 June 2015.

[6] Quotable Value NZ has no valuation for the altered building in December 1997, but does in January 1998.

3.2.2 The authority's 'Durability final inspection checklist' failed the following items:

- Roof apron and barge flashings.
- Cladding/flashing and gutter clearances.
- Cladding/paving or ground clearances.
- Cladding/decking clearances.
- Meter box flashings
- Downpipes/spreaders.
- Deck thresholds.
- Deck tiles/membranes.
- Smoke alarms.

3.2.3 The authority also took photographs during the inspection, which were subsequently provided to the building surveyor.

3.3 The 2015 refusal to issue a code compliance certificate

3.3.1 The authority wrote to the original owners on 10 June 2015 to provide formal notification under Section 95A of the current Act that 'a code compliance certificate cannot be issued at this stage.' The authority stated that:

> Following the site inspection and subsequent 'peer review' process, [the authority] could not be 'satisfied on reasonable grounds' that building works comply with the NZ Building Code, or that it is performing as intended.

The authority recommended the original owners:

> ... engage the services of a suitably qualified individual (Building Surveyor)… This person must further investigate the performance of this building… also taking into account the items below and provide a 'scope of works' and any recommendations to [the authority] for further review.

3.3.2 The authority listed 'some of the items identified (but not limited to)' as follows ("the authority's list"):

1. Seal wet areas.
2. Vermin proofing piping penetrations.
3. Ground clearances not achieved in some areas, cedar ply cladding shows signs of degradation.
4. Window flashings (head, jamb and sill), overlapping of flashings.
5. Apron flashings.
6. All penetrations to cladding to be sealed.
7. Downpipe requires a spreader, some areas have no gutters and downpipes
8. External corner flashings (scribers) to be refixed and plugged, flashing details.
9. Cladding fixings failing in some areas.
10. Evidence of moisture penetration to dwellings, and degradation of timber.
11. Inside stairs handrails to be fitted.
12. Inconsistent moisture readings.
13. Gib damaged due to possible water ingress.
14. Membrane deck tiled. Membrane damaged in some areas.
15. Butynol used for internal gutter is delaminating.
16. No wash down gaps.
17. Cladding to roof junctions.

18. Exposed bearers.
19. Kitchen plumbing installed in the guest bedroom.
20. Plumbing installed in the pavilion.

3.4 The renovations

3.4.1 Following this, the original owners obtained a report on the building. The report was not provided to the authority and it appears little work was carried out before the property was offered for sale without a code compliance certificate.

3.4.2 The property sold to the second owner ("the developer") in August 2015. In email correspondence with the applicants and the building surveyor during September 2016, the developer confirmed the following (in summary):

- The developer met the authority onsite to get 'clarification and agreement' of work in the authority's section 95A letter but was told that a building surveyor should be engaged 'as a first step' to obtaining a code compliance certificate. The matter was not taken further.
- The developer did not see the photographs taken by the authority during the final inspection.
- The developer described work he has undertaken which included:
  - painting, flooring, kitchen and bathroom 'upgrades'
  - exposure of wall framing where a building report[7] indicated elevated moisture readings and some areas were repaired
  - where elevated readings were noted, framing around exterior joinery was exposed but there was no sign of moisture damage and no repairs were needed
  - the only framing damage was discovered by accident, being the entry canopy (Area 10) which was repaired.

3.5 The scope of works report

3.5.1 The applicants purchased the property in August 2016 aware of the authority's refusal to issue a code compliance certificate, and engaged a building surveyor to assess the items on the authority's list. The building surveyor inspected the building, carried out non-invasive moisture testing and some invasive investigations; providing a report dated 31 August 2016 which was forwarded to the authority for review.

3.5.2 The building surveyor assessed the authority's list and identified:

- minor repairs and/or maintenance required for some of the items
- despite previous repairs (see paragraph 3.4.2), there was evidence of moisture penetration in Level 2 living areas and Level 3 bedrooms
- areas requiring further investigation of possible timber decay, and exposure of timber damage that needs further investigation to determine extent
- some elevated moisture readings which need further invasive testing
- consistent low non-invasive moisture readings in the Level 1 bedroom
- consistent low non-invasive moisture readings in the guest house and pavilion

[7] The report has not been provided so it is not known what it found, or the basis for the findings.

- the applicants' intention to:
  - rebuild the deck above Level 3 bathroom
  - obtain a plumber's assessment of plumbing to guest house and pavilion
  - install handrails, meter box flashings and smoke alarms.

3.5.3 Including some additional changes wanted by the applicants, the report noted that a new building consent would be applied for, which would cover:

- the significant repairs/modifications
- refitting the guest room bathroom sliding window to include sill tray
- adding a steel flitch beam to the garage post to allow a post to be removed
- extending the upper deck using cantilevered beams
- replacing timber with glass balustrades on upper and lower west decks.

3.6 The repair report

3.6.1 The building surveyor worked with the repair company when assessing the work required, and a separate report dated 28 August 2016 titled 'Comprehensive exterior analysis and quote' was provided. The repair company assessed the exterior cladding against the authority's list of items and the final inspection report.

3.6.2 The repair company report noted that external faults had been identified that were considered non-compliant that would 'likely to lead to or be causing water ingress issues'; and listed 41 items under the following headings:

> Main CCC items [17 items listed]
>
> Items noted in Inspection Reports and from our assessment [11 items listed]
>
> [Items that] may or may not need rectifying or rebuilding depending on further Surveyor Investigation and [authority's consideration] [3 items listed]
>
> Extra items as required by the owner [3 items listed].

3.6.3 The repair report attached photographs, details and other information about the repair proposals, with a brief specification and quotations for the above categories.

3.7 The invasive testing report

3.7.1 On review of the scope of works report, the authority required a more invasive inspection to be carried out. On 16 September 2016, the building surveyor carried out invasive moisture testing and destructive investigation of areas identified in the earlier reports. The surveyor emailed results to the applicants on the same day and included an updated list of 'Cladding & Construction Faults & Proposed Remedies', using the same number references as in the repair report (see paragraph 3.6.2).

3.7.2 The building surveyor completed a report dated 21 September 2016, which was forwarded to the authority on 22 September 2016. Six areas identified in the scope of works report for further investigation were 'opened full height' by removing interior linings and insulation, with timber visually assessed and invasive moisture readings taken.

3.7.3 The report considered the areas (in summary with location references shown in Figure 1 provided in brackets)

- Bottom of apron flashing to Level 2 entry canopy (Area 10)
  - dry insulation and timber, with no evidence of historic moisture entry, 14% to 18% moisture in the native timber framing
  - diverter required to bottom of apron flashing.
- Bottom of deck door to Level 2 kitchen (Area 6)
  - dry insulation and damaged building wrap, 40% moisture in bottom plate
  - adjacent to exposed external corner, no sealed jamb scribers, corner flashing or cover boards
  - repairs and modification required, with Z flashing to deck stringer
- Bottom of deck door to Level 3 bedroom 2 below dining (Area 8)
  - visually dry insulation and timber, 22% moisture in bottom plate but no clear moisture source, no sealed jamb scribers
  - repairs and modification required, with Z flashing to deck stringer
- Bottom of deck door to Level 3 bedroom 3 below kitchen (Area 9)
  - dry insulation and damaged building wrap, 40% moisture in top plate and top of stud
  - adjacent to exposed external corner, no sealed jamb scribers, corner flashing or cover boards
  - repairs and modification required, with Z flashing to deck stringer
- Below sliding window to Level 4 guest bathroom (Area 19)
  - dry insulation, timber and wrap, no elevated moisture readings
  - no sealed jamb scribers, corner flashing or cover boards
  - repairs and modification required, with sill flashing and sealant to mitres
- Bottom plates in Level 2 garage (Areas 2)
  - dry timber, 15% to 18% moisture in bottom plates
  - no remedial work required.

3.7.4 The surveyor also provided an updated list of work for which a new building consent would be applied for, noting that the consent drawings would include details to clarify certain aspects of the remedial works. The updated list was:

1. The kitchen balcony extension
2. The new glass balustrade to upper & lower balcony and
3. Removal of centre pole in garage (specific design)
4. The install of H5 retaining boards against middle building from higher adjacent grounds.
5. Construction of a concrete nib under support post – front entry canopy.

3.8 Subsequent correspondence, proposals and meetings

3.8.1 Following some emails between the authority and the building surveyor, the authority forwarded 12 photos that showed the previous condition of the building. (The applicants have noted that they had not seen these before.)

3.8.2 A meeting was apparently held between the applicants, the building surveyor and the authority to discuss the various reports and to consider the net steps. The applicants note that the authority described the considerable difference in the condition of the house between the final inspection in 2015 and the time of the meeting.

3.9 Proposal for further investigation

3.9.1 The building surveyor received and analysed some 200 inspection photos provided by the authority, and completed a report on 6 October 2016, which proposed invasive investigation of the additional locations identified in the authority's photographs. The report attached relevant photographs of locations to be tested and proposed (in summary):

- removing sections of linings, claddings and roofing
- taking invasive moisture readings and sampling timber for treatment and decay
- about 25 to 30 locations to be invasively investigated
- opening deck above Level 3 bathroom to investigate underlying condition.

3.9.2 The surveyor noted:

> Before embarking on the proposed invasive inspections, the [applicants] wish to have some indication that the verification pathway being proposed here is sufficient and adequate for [the authority] to rule on …

3.9.3 The authority responded on the same day, noting that because of 'the complexity of the building it is a good idea to open up as much as possible'. In regard to the above, the authority stated:

> ...this can only be answered once we know what the outcome of the surveying is. … In this particular case the building is complex and if there are failures in more than one area, [the authority] will not approve a consent for targeted repairs, and it will probably end up in a full reclad.

3.10 Another meeting was held between the parties on 18 October 2017, but the applicants felt that the authority 'had already made their decision' and were concerned that the submitted findings and proposals 'were not being considered'. The authority advised that 'the original house had formed part of the 1996 building consent and that it would form part of the full survey of the building' despite previously noting that their main concern was around the 1996 extensions.

3.11 The Ministry received an application for a determination on 8 November 2016.

4. The submissions

4.1 The applicants outlined the background and described the investigations and reports completed on the building's condition (which I include within this determination). The applicants explained that they realised work needed to be done but believed that 'with some targeted improvements' the building work could be made code-compliant.

4.2 The applicants provided copies of:

- the consent drawings
- the final inspection record dated 9 June 2015 including photographs
- the authority's refusal to issue a code compliance certificate dated 10 June 2015

- photographs and email information from the developer
- the scope of works report dated 31 August 2016
- the repair report dated 28 August 2016
- the invasive testing report dated 23 September 2016
- the proposal for further investigation dated 6 October 2016
- email correspondence between the authority and the building surveyor, and other information from the authority's property file.

4.3 The authority made no submission but forwarded a PDF entitled 'Property File', which contained no specification, building consent, inspection records, meeting records or other information pertinent to this determination beyond that already provided by the applicants.

4.4 A draft determination was issued to the parties for comment on 12 July 2017.

4.5 The authority and the applicants accepted the draft without further comment in responses received on 19 and 20 July respectively.

5. The expert's report

5.1 General

5.1.1 As mentioned in paragraph 1.7, I engaged an independent expert who is a member of the New Zealand Institute of Building Surveyors to assist me. The expert inspected the house on 23, 24 and 25 February 2017, providing a report completed on 7 June 2017. The parties were provided with a copy of the report on 15 June 2017.

5.1.2 The expert noted that the scope of the inspection was to assess the code-compliance of areas identified by the authority with the associated parts of Clauses B1, B2, D1, E2, F7, G1 to G3, and H1, taking into account the age of the building.

5.1.3 The expert considered that the building had not been completed 'to an acceptable trade standard', with various 'weathertightness failures and unsatisfactory repairs that have been undertaken.' The expert also observed that the house was currently 'maintained reasonably well and was tidily presented' with finishes generally in 'good order with a few exceptions such as paint peeling off balustrades and deteriorating decking.'

5.1.4 I note that the copies of the consent drawings are of poor quality and difficult to read. The expert noted that the 'the overall 'architectural shape and form of the building appears to be largely in accordance with the consented drawings', with more significant discrepancies observed as follows:

- Level 1: steel balcony position moved to south
- Level 2:
  - kitchen position and layout modified, with central deck door deleted
  - lounge east deck changed in plan form
  - balcony to north end gable wall removed in 2015
- Level 3:
  - layout changed with living area partitioned to form bedroom 3
  - laundry moved to east of passage

- northwest bathroom increased in area
- bathroom beneath the garage became bedroom 4
- bedroom 4 and gallery floors timber framed in lieu of concrete

- Level 4 Guest house:
  - south glazing to gallery not installed
  - rear bedroom converted into guest bathroom
  - glazing above north deck doors not installed
  - north deck changed in plan and form
  - south deck extended around west wall
- Level 5 Pavilion:
  - constructed as self-contained accommodation
  - kitchen/living area to north with bedroom to south
  - wardrobe constructed in space under veranda
  - veranda added to north west corner
  - north deck changed in plan and form.

5.2 Invasive moisture testing

5.2.1 The expert cut out small sections of cladding or lining at four locations and took a total of 55 invasive moisture readings using long probes through linings or claddings, with some holes drilled from the outside. In a number of locations, moisture levels were low but signs of decay were apparent in drillings or at cut-outs.

5.2.2 The expert recorded:

- 18% to 20% in bottom plates beside garage door (Areas 2)
- 18% to 33% in bottom plates and 23% in clad balustrade to lounge east deck, with damaged particle board flooring and decay to balustrade framing (Area 5)
- 20% in bottom plate at NW corner to bedroom 2, with water stained flooring and decayed plywood and subfloor framing below (Areas 7)
- 19% and discoloured drillings in stud below bathroom window below the upper west deck (Areas 7)
- 18% and 19% in bottom plates beside bedroom 2 deck window, with water stained particle board flooring (Area 8)
- 21% and 23% in bottom plate and particle board flooring at southwest corner to bedroom 3, with decayed drillings (Area 9)
- 36% and wet deteriorating cladding at the bottom of the south apron flashing to the main entry roof (Area 10)
- 20% in plywood cladding under garage south side door (Area 13)
- 19% to 22% in bottom plates and damaged joist to gallery link (Area 15)
- 19% and wet decayed cladding beside pavilion deck door (Area 22).

5.2.3 I note that readings over 18% generally indicate that moisture is entering the framing and further investigation is needed, and the expert's inspection was carried out in late summer and moisture levels are expected to be higher during winter months.

5.2.4 The expert observed a section of 'H1' treated timber in the gallery subfloor and saw low levels of decay despite exposure to regular long-term wetting. He therefore considered that wall framing used in the 1996 alterations is likely to be treated.

5.2.5 The expert considered the localities identified in photographs and various reports and commented on their weathertightness and durability performance, while noting proposals already made within earlier reports (see Table 1). Paragraph 5.3 to paragraph 5.8 summarise the expert's comments on relevant features of the external building envelope, with localities of areas identified in Figure 1.

5.3 Ground clearances

5.3.1 Area 1: Main entry:

- Plywood cladding on walls and clad post is close to or in contact with paving.
- Plywood and battens to the entry post is decayed.
- Moisture levels in the bottom plate are not elevated and drillings appear sound.
- Scope of work includes drainage channel against wall and nib under post.

5.3.2 Area 2: Garage door:

- Concrete is poured against the plywood cladding and the bottom plate is slightly below paving level.
- Garden soil is against cladding at the north end, with decay to the plywood.
- Despite elevated moisture levels in bottom plates, the timber appears sound.
- The scope of work proposes to install a drainage channel against the wall.

5.3.3 Area 3: Bedroom 4 under garage:

- The interior south wall is clad on the subfloor side with fibre-cement sheet.
- A layer of plywood is fixed against the sheet, with sub-soil backfilled.
- Although particle board flooring appears in good condition, drillings from bottom plate were dark and appeared decayed.

5.3.4 Area 16: East wall at the guest house south door:

- A large rock and vegetation against bottom of the wall.
- Plywood and a timber joist are severely decayed, although there is no sign of dampness on the interior side of the wall.

5.3.5 Area 20: Southeast corner of pavilion:

- Garden soil built up against the bottom of the cladding.
- Although there is no moisture entry or damage, decay will be inevitable.
- The scope of work proposes to install retaining boards to keep soil away.

5.4 Deck junctions

5.4.1 In regard to the master bedroom steel balcony, the expert noted that the small deck appears well fixed, with no apparent moisture problems at connections to the house.

5.4.2 Area 5: The east living deck:

- The ribbon plate fixed against the plywood, with no drainage gap and high moisture levels in the south end of the bottom plate.

- Only nail fixing to the north end of the plate.
- Deteriorated flat cracked timber cappings, with mitred joints risking water penetration into balustrade framing.
- Lack of drainage gaps allowing ponding against east fibre-cement balustrade inner cladding, with decay apparent to the northeast corner of bottom plate.
- At the south end, a gap between the door jamb flange and the cladding allowing moisture penetration into the bottom plate, with damaged flooring apparent.

5.4.3 Area 6: The free draining upper west deck:

- Although the ribbon plate is fixed against the plywood with no drainage gap, the plywood grooves allow some drainage behind the ribbon plate.
- Five invasive moisture levels in the ribbon plate ranged from 11% to 15%, with drillings appearing to be in good condition.

5.4.4 Areas 7: The membrane end of the upper west deck:

- The north deck section situated above the northwest Level 3 bathroom, with timber decking on battens recently installed above original tiled membrane floor.
- No evidence of leaking directly from deck floor, with low moisture readings in floor framing and sound drillings, but elevated moisture at bedroom 2 northwest corner, with water stained flooring, decayed plywood and subfloor framing.
- Moisture levels also elevated in bathroom northwest corner stud below deck, with discoloured drillings – further investigation needed to establish cause(s).

5.4.5 Areas 8 and 9: The lower west deck:

- The ribbon plate fixed against the plywood with no drainage gap.
- Despite 2015 repairs, moisture levels still elevated beside bedroom 2 deck window with water stained flooring and ‘marginal’ drillings.
- High moisture levels, decayed drillings and damaged flooring to southwest corner of bedroom 3.
- Scope of work proposes further investigation of Area 9.

5.4.6 Area 17: The guest house west deck:

- The ribbon plate fixed directly against the plywood with no drainage gap.
- Despite low current moisture levels, drillings beside the deck door appeared decayed and plywood beneath the deck was water stained and able to be broken off ‘under thumb pressure’.
- Deteriorated cracked flat timber cappings, with mitred joints risking water penetration into balustrade framing.
- Elevated moisture levels in the northwest corner balustrade, with discoloured drillings.

(I note that the repair report included the installation of clearance gaps to decking, with flashings to be installed over ribbon plates.)

5.5 Apron flashings

5.5.1 Area 10: Apron flashing to entry canopy:

- Attempted repairs using expandable foam sprayed over junction.
- No diverter flashing to direct water away from cladding, with moisture trapped between foam and cladding and wet deteriorating plywood.
- Scope of work proposes installation of a diverter flashing.

5.5.2 Area 11: Apron flashing to ensuite NE corner:

- Apron flashing upstand tucked up behind sill flange of raking sill.
- Metal angle fixed and sealed against the apron of the flashing to divert water away, with similar angle prudent at upper end of the raking sill.
- No elevated moisture readings below junction and apparently sound drillings.
- Although scope of work proposes a diverter flashing, this would require raising window to provide room and appears unnecessary given circumstances.

5.5.3 Areas 12: Apron flashings at Level 1 southeast and southwest corners:

- Similar flashings lap over eaves barge flashings, with unsealed gaps between and apron upstand terminated in line with the plywood cladding at the external corners – creating gaps.
- Barge flashings not turned up or sealed and building wrap not extended around corner or up behind apron flashing.
- Despite low moisture levels, wrap and framing is water marked and a chip from the southeast corner stud is brittle and may be decayed.
- Further investigation and repairs are required.

5.5.4 Areas 18: North and south junctions between gallery and guest house roofs:

- The north apron flashing is membrane, with a metal diverter flashing installed under the membrane at the bottom, which appears satisfactory.
- The south apron flashing is metal, with a diverter under the lower end – however the lack of cladding clearance above the apron and the accumulation of debris has resulted in decay in the plywood lower edge.

5.5.5 Areas 20: South end of internal gutter between guest house and pavilion roofs:

- Internal gutter turns around the southwest corner of guest house, with membrane to short south section covered with fibreglass and a diverter at lower edge to direct water into external gutter.
- Low moisture levels in bottom plate below, with apparently sound drillings.

5.5.6 Area 22: Apron flashing to guest house north deck/veranda junction:

- Poorly constructed flexible tape flashing, with gap at south end allowing debris accumulation.
- Despite sheltered position, decayed cladding, disintegrated building wrap and green mould below junction.
- Elevated moisture levels in apparently brittle framing.

5.5.7 Area 22 to 23 The pavilion veranda:

- No apron flashing at junction of the clear roof with upper roof.
- 'Barely 25mm roofing cover', with visible roof framing and clear path for windblown rain penetration into roof space.

5.6 Door and window joinery

5.6.1 The expert noted that aluminium windows and doors were face-fixed against cladding, with metal head flashings and no sill flashing (as was common practice at the time). Commenting on the joinery – the expert noted the following:

- Area 5: Lounge east deck doors – a cut-out at the south end below unsealed gaps at jambs revealed damaged wrap, swollen flooring but apparently sound timber. The scope of work proposes further investigation of Area 5, which had been unsuccessfully repaired by the developer.
- Areas 8 and 9: Lower west deck doors – battens are installed against jambs, with head flashings not extended above the battens.
- Area 13: Garage south side door – head flashing extends past jamb flanges, with unsealed gap behind west jamb flange. Despite normal moisture levels in the bottom plate, drillings appeared decayed and water is penetrating behind plywood under the door sill.
- Area 14: North stairwell window – despite normal moisture levels below raking sill, drillings were highly decayed and further investigation and repair is needed to determine the extent of damage.
- Area 7: Level 3 bathroom west window – despite normal moisture levels below sill, drillings were discoloured and further investigation is needed. A subfloor joist showed historic water damage, prior to apparent replacement of flooring when the developer refinished the bathrooms, including new tiling.
- Area 19: Guest house bathroom west sliding window – leaking and damage below identified in the scope of works report, which proposed installation of a sill tray.

5.6.2 At the garage door, battens are installed at the head and jambs, with the head flashing over the head batten and extended past the jamb battens. Although the head flashing is fully sealed to the upper plywood, junctions appear to be performing adequately.

5.7 Other cladding junctions

5.7.1 In regard to horizontal construction joints:

- Gaps at various intersections of horizontal Z flashings.
- No flashing to a horizontal junction above east garage door
- Area 15: Gallery northwest cladding: Lack of a gutter above angled wall results in significant runoff over cladding, window and Z flashing below, with high moisture levels and damage to cladding that requires investigation and repair.

5.7.2 In regard to cover battens:

- No weathergrooves to backs of external corner battens.
- Some corner battens jointed to direct water into cladding, and the scope of works proposes removing and refitting battens over new corner flashings.
- Area 23: pavilion bedroom northwest corner – no cover battens to northwest corner of wardrobe extension beneath the clear veranda roof and scope of works proposes installation of apron flashing and battens.
- The batten to the top of the south meter box allows moisture to penetrate via the plywood grooves through the cladding and scope of works proposes installation of head flashing for long term weathertightness.
- Horizontal and angle battens trimming arches at the main entry allow moisture penetration via plywood grooves, which can accumulate on the top of arch reveals – and require flashings for long term weathertightness.

5.7.3 The expert also noted that:

- some exposed extract vents lack shrouds or flashings to provide long term weathertightness and the scope of works proposes installation of shrouds
- subfloor framing exposed under the gallery is inadequately treated.

5.8 Roof gutters

5.8.1 Commenting on roof gutters, the expert noted:

- Area 15: Gallery roof lacking spreader and gutter missing at angled wall
- Area 21: Guest house south gutter – poorly installed, with section missing at the top and lower end extended to discharge directly onto the ground
- Area 22: West end of the guest house north verge overhang – lacks gutter
- Area 22 to 23 Pavilion roof above veranda – lacks gutter
- Area 23: Pavilion veranda south gutter – extended to discharge onto ground
- Area 24: Internal gutter between the pavilion roofs – very narrow, poorly constructed and difficult to maintain, but no evidence of moisture entry.

5.9 Summary

5.9.1 The expert concluded that some areas of the cladding had failed to perform adequately with respect to durability and weathertightness due to various defects identified in his report, noting also that the defects were widespread but not systemic. In the expert's opinion some minor work to areas currently performing should also be undertaken to protect the underlying structure for its required durability.

5.10 The authority's other concerns

5.10.1 Clause B1: Structure:

- Apparently only nail fixings to north end of lounge east deck.
- Although not widespread, nail fixing of some areas requiring attention because the plywood cladding is used as bracing.

- Areas of visible or potentially decayed timber requiring investigation to determine the extent and significance of structural damage.

5.10.2 Clause D1: Access Routes:

- Graspable handrails now installed to all interior stairs.
- Many exterior steps still lacking handrails.
- Scope of works proposes installation of graspable handrails to exterior steps.

5.10.3 Clause F7: Warning Systems:

- Smoke alarms installed within 3m of bedrooms, except in the pavilion.
- Scope of works proposes installation of complying alarms.

5.10.4 Clause G1 to G3: Sanitary, kitchen and laundry facilities:

- The developer upgraded original facilities and no problems were observed.
- All junctions apparently satisfactorily sealed.

5.10.5 Clause H1: Energy Efficiency:

- No insulation to the wall between master bedroom and garage roof space.

6. The compliance of the building

6.1 General

6.1.1 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'.

6.1.2 In order to determine whether the authority correctly exercised its power in refusing to issue a code compliance certificate for the building work, I must therefore consider whether the alterations comply with the provisions of the Building Code that applied when the consent was issued in 1996.

6.2 Clauses E2 External moisture, and B2 Durability

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

6.2.2 It appears that the building was substantially completed and occupied by the end of 1997 and I have taken that into account when considering the weathertightness performance as many areas of the wall and roof claddings continued to perform for more than the minimum 15 years required by Clause B2 of the Building Code.

6.2.3 I concur with the expert's opinion that the cladding was not originally installed to an acceptable trade practice, with some subsequent repairs also unsatisfactory. However, I also accept the expert's view that the defects are widespread but are not systemic.

6.2.4 Taking account of the expert's report, I consider that the following requires attention in regard to the 23 locations shown in Figure 1 and described in this determination[8]:

- Investigation into the significance and extent of damage to the framing.
- Confirmation of the cause(s) for elevated moisture levels in some areas.
- Lack of ground clearances in some locations.
- Lack of cladding clearances to decks and steps.
- Lack of diverters to the bottom of some apron flashings.
- Lack of weathertightness to some joinery perimeters.
- Gaps to some horizontal construction joints.
- Cover battens to external corners and some other areas.
- Incomplete roof flashings and gutters.
- The lack of spreaders from upper roofs.

6.2.5 I consider the expert's report establishes that the current performance of the building envelope is not adequate because there is evidence of ongoing moisture penetration into various areas of the timber framing. Consequently, I am satisfied that the cladding does not comply with Clause E2 of the Building Code.

6.2.6 Although roof and wall claddings are now some 19 years old, the expert's investigations revealed evidence of moisture ingress over an extended period. The evidence of current and past moisture penetration also satisfies me that the building does not comply with Clause B2 insofar as it applies to Clauses E2. Because of the presence of visibly decayed timber and the potential for further hidden damage I am of the opinion that the timber framing may not comply with Clause B1 Structure, but I have insufficient evidence on which to make a decision in this respect.

6.2.7 Based on the findings of the expert, because identified moisture penetration and cladding faults occur in discrete areas, I am able to conclude that satisfactory investigation and rectification of areas outlined in paragraph 6.2.3 will result in the external envelope being brought into compliance with Clauses B2 and E2 of the Building Code.

6.3 The remaining compliance matters

6.3.1 Taking account of the expert's comments as outlined in paragraph 5.10, I am satisfied that the following areas require further investigation and/or appropriate repairs (with the relevant code clauses shown in brackets):

- Connections to the north end of the lounge east deck (B1)
- Fixings to some areas of the plywood cladding used as bracing (B1)
- The structural adequacy of some damaged timber framing (B1)
- The lack of handrails to some exterior steps (D1)
- The lack of insulation to the master bedroom (H1).

[8] It is not intended, nor should it be inferred, that the report of the Ministry's expert provides a definitive statement about compliance, particularly in relation the compliance of the cladding on an older building where the building elements may well not be visible.

6.3.2 I also note that the authority required smoke alarms to be installed and the expert has noted the non-compliance of the smoke alarm to the pavilion. Although smoke detectors were not a requirement of the Building Code that was in effect in 1996 when the original alterations were constructed[9], I strongly urge the applicants to provide these in accordance with current requirements.

6.4 Maintenance

6.4.1 The various reports identify areas where a lack of maintenance and unsuccessful repairs has led to deterioration of claddings and associated components. Although a modification of durability provisions will mean that many areas of the claddings have already met the 15 years required by the Building Code, the expected life of the building as a whole is considerably longer. Careful maintenance is needed and must continue to ensure that claddings continue to protect the underlying framing for its minimum required life of 50 years for the structure.

6.4.2 Although the expert describes the house as currently reasonably well maintained, I note the following in regard to past maintenance:

- claddings were repainted in 2015 and the condition prior to that maintenance is obvious from the authority's photographs during the final inspection, which indicate that claddings were poorly maintained for the 18 years prior to 2015
- water entry was occurring prior to 2015 and this has continued despite repairs
- where the 2015 repairs prevented further moisture penetration, some of those repairs did not include repairing damage to the underlying construction.

6.4.3 The lack of past maintenance has resulted in the extent, level and significance of moisture penetration and the likely decay now apparent in many areas of the plywood cladding, the particle board flooring, and the timber framing – which affects the extent of consequential investigation and repair now required to those areas. Reduction of future risks will improve longer-term durability and assist the claddings in protecting the underlying structure for the required minimum of 50 years.

7. The durability considerations

7.1 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).

7.2 In this case the 19-year delay since substantial completion of the house in 1997 raises concerns that many elements of the building are now well through or 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.

7.3 I have considered this 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

[9] The provision of domestic smoke detectors in the Acceptable Solution for Building Code Clause F7 "Warning Systems", F7/AS1, did not come into effect until April 2003.

code compliance certificate for the alterations 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 matters addressed in this determination are resolved.

8. What happens next?

8.1 The authority may issue a further notice under section 95A of the current Act. The notice should include the investigations and defects identified in this determination 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 applicants to propose and for the authority to accept or reject.

8.2 The applicants 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, and rectification of the specified matters. The proposal should be produced in conjunction with a competent person with suitable experience in weathertightness remediation. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.

8.3 Given the extent of investigation and remediation required, I am of the view that the work should be carried out under a new building consent as opposed to an amendment to the original consent. Once the building has been brought into compliance with the Building Code, the original building consent can be amended in respect of modifying Clause B2.3.1 and to exclude the remedial works carried out, and a code compliance certificate will be able to be issued for the original building consent.

9. The decision

9.1 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:

- the exterior building envelope does not comply with Clauses B2 and E2
- the lack of handrails to some exterior steps does not comply with Clause D1
- the lack of insulation to the master bedroom 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.

9.2 I consider there is insufficient evidence to establish whether the building complies with Clause B1 Structure.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 28 July 2017.

John Gardiner
Manager Determinations and Assurance