



Determination 2018/003

The refusal to issue a code compliance certificate for a 13-year-old house with mixed claddings at 707C Great North Road, Grey Lynn, Auckland



Summary

This determination is concerned with the compliance of a 13-year-old 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 2004¹ ("the current Act") made under due authorisation by me, Katie Gordon, Manager Determinations, 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 building, A Scott ("the applicant")
 - Auckland Council ("the authority"²), carrying out its duties as a territorial authority or building consent authority.
- 1.3 This determination arises from the decision of the authority to refuse to issue a code compliance certificate for a 13-year-old house. The refusal arose because the authority is not satisfied that the building work complies with certain clauses³ of the Building Code (First Schedule, Building Regulations 1992). The authority's concerns primarily relate to the weathertightness and durability of the claddings.

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 After the original house building was completed, Rodney District Council was transitioned into Auckland Council. The term "authority" is used for both.

³ Unless otherwise stated, 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 determined⁴ is therefore the authority's exercise of its powers of decision in refusing to issue the code compliance certificate for the reasons given in its letter dated 14 September 2016 (see paragraph 3.7).
- 1.5 In deciding this matter, I must consider whether the external building envelope of the building complies with Clause B2 Durability and Clause E2 External moisture of the Building Code that was in force at the time the original building consent was issued. The building envelope includes the components of the systems (such as the wall claddings, the windows and the roof cladding) as well as the way components have been installed and work together. This matter includes compliance with Clause B1 Structure insofar as it applies to the weathertightness of the house.
- 1.6 In making my decision, I have considered the submissions of the parties, the report of the expert commissioned by the Ministry to advise on this dispute ("the expert") and the other evidence in this matter. The decisions to make this determination under section 184 of the current Act and engage a person to assist under section 187 of the current Act were made by the previous Manager Determinations and Assurance.

1.7 Matters outside this determination

- 1.7.1 In its refusal to issue the code compliance certificate, the authority limited its concerns to items associated with the clauses outlined above and this determination does not address other clauses of the Building Code.
- 1.7.2 I also note that the applicant can 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 2004. Clause B2.3.1 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".
- 1.7.3 In this case the 13-year delay since substantial completion of the house in 2004 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.
- 1.7.4 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 code compliance certificate for the house had been issued in 2004.

I therefore leave the matter of amending the building consent for the house to modify Clause B2.3.1 to the parties to resolve in due course, and I have taken the anticipated modification into account when considering the compliance of the claddings.

⁴ Under sections 177(1)(b) and 177(2)(d) of the current Act

2. The building work

2.1 The building

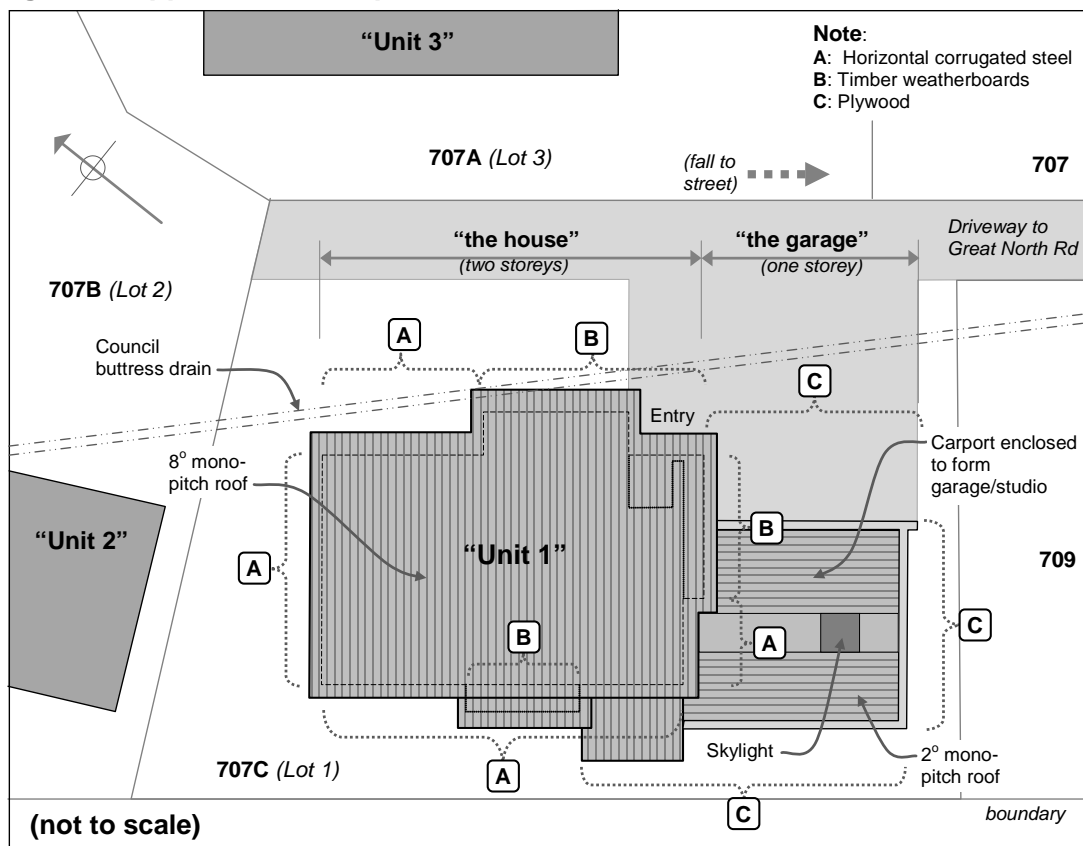
2.1.1 The property was developed as shown in Figure 1, with the subject building being Unit 1 of three units constructed under separate building consents. Access to the units is provided via a sloping driveway from the street.

2.1.2 The building work consists of a two-storeys-high detached house (“the house”) with an attached single-storey garage/studio (“the garage”) situated on a level building platform in a low wind zone⁵ for the purposes of NZS 3604⁶. Unit 1 is fairly simple in plan and form and is assessed as having a moderate weathertightness risk.

2.1.3 Unit 1 accommodates the following:

- Level 1 (the lower level): Recessed entry foyer with laundry and stairs to the southwest, and a living/dining/kitchen area to the northwest. A single garage to the southeast (shown as a carport in the consent drawings) and a lean-to store to the southwest (not shown in the consent drawings).
- Level 2 (the mid-level): two bedrooms, bathroom and master bedroom, with a dressing room and ensuite bathroom.

Figure 1: Approximate site plan



2.1.4 Construction is generally conventional light timber frame; with specifically engineered timber piles under concrete foundations and floor slab, timber framed upper floor, monopitched profiled metal roofing, aluminium windows and three different wall claddings as shown in Figure 1.

⁵ According to the bracing calculations

⁶ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

- 2.1.5 The 8° monopitched house roof incorporates oblique eaves, with exposed rafters and outriggers to the soffits. Eaves and verges vary from about 300mm to 600mm overall. The 3° monopitched garage roof has no roof overhang, with the plywood-clad garage walls extended up to form roof parapets and a skylight.
- 2.1.6 The specification called for framing timber to be ‘H1’ unless otherwise nominated in the drawings. Laboratory testing of six timber samples identified that four samples were CCA⁷ treated to an equivalent of H3.2, with two samples ‘either untreated perishable radiata pine, or may have been LOSP⁸-treated’. I consider that the timber framing is likely to be a mix of CCA-treated and LOSP-treated timber which was in common use at the time.

2.2 The wall claddings

- 2.2.1 The garage walls are clad in plywood fixed through the building wrap directly to the framing timbers (cladding “C” in Figure 1). Timber battens are fixed over vertical joints, with a metal flashing over the horizontal joint.
- 2.2.2 The wall cladding to the east corner and to the southwest projecting bay is horizontal bevel-backed timber weatherboards (cladding “B” in Figure 1), fixed through the building wrap directly to the framing timbers. Timber facings frame the windows, with flashings over head facings, scribes to jamb facings and a sloped top to sill facings.
- 2.2.3 The remaining walls of the house are clad in horizontal corrugated steel (cladding “A” in Figure 1) fixed through the building wrap directly to the framing timbers. Proprietary folded metal flashings are installed at corners and other junctions. Flat riveted steel sheet form ‘facings’ around windows and doors, with metal head flashings underlapping head facings.

3. Background

- 3.1 The authority issued building consent no. BLD 2003/11872/01 to the developer on 26 November 2003 under the Building Act 1991 (“the former Act”). The building consent conditions included the requirement for a registered engineer to observe the excavations, inspect the driven piles and certify the foundation work on completion.
- 3.2 I have not been provided with the inspection records for this work. I note that a later record dated 23 February 2010 refers to a failed final inspection on 17 May 2004 as the ‘last recorded inspection’.
- 3.3 The authority’s records referred to the building as ‘709A Great North Road’, which related to the initial subdivision of the site. It appears that the house was completed in early 2004 with a freehold title issued for Lot 1 on 3 March 2004. The subject house then became 707C Great North Road’ and was sold without a code compliance certificate.

3.4 The 2010 final inspection and notice to fix

- 3.4.1 The authority carried out the first final inspection on 23 February 2010. The authority produced a ‘photo file’ of defects identified during the inspection and ‘failed’ a number of items, with the record noting:

Items of non-compliance. Notice to fix to be issued.

⁷ Chromated copper arsenate

⁸ Light organic solvent-based preservative

Note: fall on carport [roof] running different way to building consent plans.

Carport closed in and used as studio (car parking issue, access issue). Smoke alarms to be installed. Laundry to vent to exterior.

- 3.4.2 On 24 March 2010 the authority issued notice to fix No. 3055 for building work undertaken not in accordance with the building consent and in breach of sections 17, 40(1) and 44(1) of the current Act. In the ‘details of the contraventions’, the notice included items and changes from the building consent identified during the final inspection and stated that:

The construction methods used in this building do not allow the water to drain away. There is only limited ability for air circulation in the wall framing to ensure that damp timber can dry out.

The notice to fix stated that the building work was not compliant with clauses:

...B1 Structure, B2 Durability, E1 Surface Water, E2 External Moisture, E3 Internal Moisture, F4 Safety from falling, G2 Laundering, G3 Food preparation and prevention of contamination, G4 Ventilation and G12 Water Supplies...

3.5 The 2014 refusal to issue a code compliance certificate

- 3.5.1 Several years after the 2010 final inspection and notice to fix, the applicant engaged a builder who requested a meeting to discuss how a code compliance certificate could be obtained. The authority inspected the building on 18 August 2014. The record of the site meeting noted that the notice to fix would be withdrawn and a ‘Section 95A’ letter would be issued, outlining these concerns.
- 3.5.2 The authority wrote to the applicant on 18 August 2014, referring to the above inspection and giving notice under section 95A of the refusal to issue a code compliance certificate. The authority repeated the recommendation that the applicant engage a suitably qualified person and listed 12 items requiring attention
- 3.5.3 The authority noted that it had received an application for ‘B2 modification’ and had reviewed the documentation required for the house. Taking into account the time lapsed and the in-service history of performance of the house, the authority had decided that the following information was no longer required:
- Producer statement for drainage
 - Construction review (PS4) for foundations and floor slab
 - Glazing systems installers certificate (with markings visible as confirmation)
 - Installer’s certificate and manufacturer’s warranty for wet area membrane
 - Surveyor’s certificate.
- 3.5.4 However, the authority noted that the following documentation was still required:
- Electrical certificate of compliance
 - Gas certificate of compliance
 - Drainage as-built plan
 - Encumbrance for flood effects to be registered on certificate of title.

3.6 The remedial work and 2016 final inspections

- 3.6.1 The builder prepared a scope of works outlining repairs to address most of the authority's concerns and submitted this to the authority for approval. The undated 'proposed scope of works for remedial works' included (in summary, with the authority's reference numbers in brackets):
- Reduce ground levels to southwest, northwest and northeast elevations, with new concrete to northwest and northeast – to fall away from walls (1, 3)
 - Bevel tops to sill facing boards and seal joinery/facing junctions (2)
 - Replace vent grilles with sealed units that incorporate opening shutters (4)
 - Approved gas fitter to move gas instantaneous water heater away from opening windows (5)
 - Cut inspection holes to allow visual inspection of framing (6,11)
 - Fit removable cover to laundry chute (7)
 - Install fire alarms (8)
 - Seal ensuite shower cubicle (9)
 - Install garage raised skylight with 15° slope and appropriate flashings (10).
- 3.6.2 In a letter to the builder and applicant dated 2 September 2014, the authority approved the builder's proposals and the remedial work was subsequently carried out. The authority re-inspected the house on 23 May 2016 and the record noted:
- Section 95a is almost solved by builder. All issues from last inspection sighted, most are solved, still two outstanding. Shute laundry and threshold rear door.
Builder will close shute or half the door [chute opening]. Rear door, builder will put in drain channel.
- 3.6.3 The two outstanding items were completed and the inspection of 24 August 2016 passed, with the record⁹ noting:
- Sighted balance of open issues. All done according to plans. No work required for issuing [code compliance certificate].
Paper work required. Your final inspection has now passed. Please apply for the Code Compliance Certificate promptly including with the application certificates, producer statements etc. which are detailed in your building consent and the final inspection notes.
- 3.6.4 The authority carried out a 'durability final inspection' on 13 September 2016; which focussed on weathertightness and made no reference to the remedial work and final inspections, noting only the 2010 and 2014 inspections. The record identified the lack of a drained cavity and the lack of threshold clearance and commented:
- Note: fail subject to peer review and documentation.
Issues as identified will be explained in Section 95A letter.

3.7 The 2016 refusal to issue a code compliance certificate

- 3.7.1 The authority wrote to the applicant and the builder on 14 September 2016, refusing to issue a code compliance certificate and referring only to the above durability inspection. The letter repeated the wording of the 2014 refusal, but reduced the list

⁹ I note that the inspection record is dated-stamped 'Audit 27 Aug 2016'

of items requiring attention to the following (in summary using the authority's references):

1. Cladding clearances
2. Evidence of degradation around timber facings to joinery
3. Performance of junction of oblique soffit with wall cladding, with invasive inspection of framing required (2014 items 6 and 11)
4. As-built drawings needed for carport.

3.7.2 The authority also required the following to be provided:

- Certificate of acceptance application and as-built drawings for carport changes
- Construction review (PS4) for foundations and floor slab¹⁰
- Gas certificate of compliance
- Confirmation that memorandum of encumbrance for flood effects is registered on certificate of title
- "Scope of Works and Report from a suitably qualified individual (building surveyor)..."
- Site specific maintenance plan for external building envelope.

3.8 The matter remained unresolved and the Ministry received an application for a determination on 14 June 2017, which was accepted on 26 June 2017.

4. The submissions

4.1 The applicant's submission

4.1.1 In correspondence dated 30 May 2017, the applicant set out the background to the situation, noting that the carport had already been enclosed when the house was purchased so the applicant had been unaware that this was not approved. The applicant described remedial work and investigations carried out since the authority's first refusal in 2010.

4.1.2 The applicant provided copies of:

- the original consent drawings
- the final inspection record and 'photo file' dated 23 February 2010
- photographs of the above areas following remediation
- the builder's scope of works
- as-built floor plans of the house with garage
- as-built drainage plan dated 10 February 2016
- electrical 'certificate of re-verification' dated 19 August 2014
- gasfitting certificate of compliance dated 20 December 2016
- the authority's refusal to issue a code compliance certificate dated 14 September 2016

¹⁰ Despite the s95A refusal of 18 August 2014 specifically stating that this was no longer required due to the in-service history of the house.

- various other invoices and information.

4.2 The authority's submission

4.2.1 The authority made no submission, but forwarded an electronic copy of the property file, which contained additional documents pertinent to this determination, including:

- the consent documentation
- the final inspection record and 'photo file' dated 23 February 2010
- the notice to fix dated 24 March 2010
- the site meeting and inspection dated 18 August 2014
- the authority's refusal to issue a code compliance certificate dated 18 August 2014
- the authority's agreement with proposed repairs dated 2 September 2014
- the final inspection records dated 23 May and 24 August 2016
- the durability final inspection checklist dated 13 September 2016

4.3 A draft determination was issued to the parties for comment on 20 November 2017.

4.4 On 4 December 2017 the authority accepted the draft but requested that the documents presented by the applicant for the amendment to the building consent and for the unauthorised enclosure of the garage are clear in providing a distinction between these two parts of the completed work.

4.5 On 26 January 2018 the applicant accepted the draft without comment.

5. The expert's report

5.1 As mentioned in paragraph 1.6, I engaged an independent expert who is a member of the New Zealand Institute of Architects to assist me. The expert visited the site on 14 September and 16 October 2017, and provided a report dated 2 November 2017. The expert's report was sent to the parties on 3 November 2017.

5.2 General

5.2.1 The expert noted that the scope of the assessment was to provide an opinion about items identified in the authority's refusal to issue a code compliance certificate dated 14 September 2016 and to assess the areas identified by the authority in regard to code compliance with the associated parts of Clauses B2 and E2 of the Building Code. The expert also noted that the assessment assumed that a modification of durability provisions would be agreed.

5.2.2 The expert considered that the as-built house was generally in accordance with the consented plans, with the following exceptions:

- The open carport was enclosed and the garage is used as a studio.
- The garage roof was changed to slope to the southeast, with parapets and an internal gutter.
- Various changes to windows and doors.

(I also note that the as-built plans show the garage position moved towards the southwest, with an adjoining lean-to store added to the southwest.)

5.3 Moisture testing

- 5.3.1 The expert visually inspected internal linings to the external walls, noting these ‘were free from mould, stains, swelling or other signs of moisture ingress’. The expert tested wall linings under windows using a non-invasive meter and readings were ‘low throughout the house’, with one elevated reading noted in the garage.
- 5.3.2 The expert took 15 sample invasive moisture readings into wall framing at areas at risk of moisture entry; with uncorrected readings¹¹ varying from 12% to 17% except for one reading of 19% in the garage southwest bottom plate. The expert considered that true readings in CCA treated framing would likely be lower than those recorded.
- 5.3.3 The expert also noted that the assessment was carried out in spring ‘after rain on 16 of the preceding 21 days including periods of heavy rain’ and moisture readings were therefore likely to represent the peak of seasonal variation. The expert considered that this together with 14 out of the 15 moisture readings being low provided ‘reasonable evidence that the requirements of NZBC clause E2 were met generally.’

5.4 Decay analysis

- 5.4.1 The expert took six timber samples for analysis from the following areas:
- Sample 1: sill trimmer to the northeast dining window (timber weatherboards)
 - Sample 2: sill trimmer to the southwest living window (corrugated steel)
 - Sample 3: sill trimmer to the southeast garage window (plywood & batten)
 - Sample 4: southwest garage bottom plate with 19% moisture reading (plywood & batten)
 - Sample 5: sill trimmer to the northwest living ranchsliders (corrugated steel)
 - Sample 6: sill trimmer to the northeast living ranchsliders (corrugated steel)
- 5.4.2 Samples 1 and 3 contained no detectable preservative, so were either untreated pine or may have been LOSP-treated, depending on the age of the building. The remaining samples were CCA-treated to an equivalent of H3.2 (see paragraph 2.1.6).
- 5.4.3 The laboratory report dated 24 October 2017 stated that all six samples:
- ...contained varying degrees of fungal growths and/or fungal remnants but no structurally significant decay was detected. Such wood is typically found in moisture compromised locations, although the low density and low diversity of fungi indicated that the moisture hazard was at the low end of the spectrum encountered for moisture compromised buildings in New Zealand.

5.5 The weatherboards

- 5.5.1 In assessing the likely performance of the weatherboard cladding installation the expert compared the as-built work with the details in the Acceptable Solution for Clause E2, E2/AS1, because these described acceptable trade practice for comparable situations.
- 5.5.2 In regard to base details, the expert noted that:
- overlaps to concrete foundations accord with Figure 65 of E2/AS1
 - although clearance from weatherboards to southeast entry paving is only 50mm, the low moisture reading indicates adequate performance and the

¹¹ Uncorrected for timber treatment due to the lack of reliable correction tables.

concrete slopes away from the wall with some shelter from the eaves and entry soffit

- although clearance from weatherboards to pebbles at the southwest kitchen wall is only 50mm, the low moisture reading indicates adequate performance and the area is well drained with some shelter from the roof overhang.

5.5.3 In regard to joinery details, the expert noted that:

- windows and doors are face-fixed over the weatherboards, with timber facings to heads, jambs and sills – and retro-fitted head flashings that extend from the head facing into the weatherboard lap above
- the top edge of the sill facing was recently chamfered to provide a slope away from the sill junction
- the three invasive moisture readings below joinery in weatherboard walls ranged from 12% to 16%, indicating adequate current performance
- testing of Sample 1 from the sill trimmer found no fungal growth after 13 years in service (despite the lack of head flashing during most of that time) – indicating adequate past performance
- the lack of moisture penetration and/or past decay indicates that the joinery details are satisfactory in the circumstances.

5.6 The corrugated steel

5.6.1 In regard to base details, the expert compared the as-built work with E2/AS1 and noted that:

- overlaps to concrete foundations accord with Figure 65 of E2/AS1
- paving was lowered on the northeast and northwest, with floor and cladding clearances now close to or exceeding those indicated in E2/AS1
- a drainage channel has been retro-fitted to the northwest ranchsliders threshold.

5.6.2 The expert noted that E2/AS1 does not include comparable window details and therefore referred to the NZMRM¹² Code of Practice (see Figure 2 in Appendix A) in order to assess the windows as-installed.

5.6.3 In regard to joinery details, the expert noted that:

- metal ‘facings’ provide trim to window heads, jambs and sills, with joinery face-fixed over the facings and no sealant at the flange overlap
- head flashings underlap facings but do not extend behind the cladding
- although a metal flashing is visible at jambs¹³, it is not possible to determine whether the flashing is folded behind the cladding
- the four invasive moisture readings below joinery in corrugated steel walls ranged from 12% to 15%, indicating adequate current performance
- testing of Samples 2, 5 and 6 from sill trimmers found no fungal growth after 13 years in service indicating adequate past performance (with the traces of yeast indicating a transfer of condensation from the back of the metal)

¹² NZ Metal Roofing Manufacturers Inc.: Metal Roof and Wall Cladding Code of Practice

¹³ There is no profiled compressible foam behind the metal jamb facings

- the trimmer samples were found to be CCA-treated to an equivalent of H3.2 and the lack of moisture penetration and/or past decay indicates that the joinery details are satisfactory in the circumstances.

5.6.4 Notwithstanding the above, the expert recommended as part of normal maintenance improving the weathertightness of joinery installation by:

- sealing junction between the joinery jamb flanges and metal ‘facings’
- reinstalling missing clip-on retaining extrusion to northwest ranchsliders.

5.7 The garage plywood cladding

5.7.1 In assessing the likely performance of the plywood cladding installation the expert compared the as-built work with E2/AS1 details because these described acceptable trade practice for comparable situations.

5.7.2 In regard to base details, the expert noted that:

- overlaps to concrete foundations accord with Figure 65 of E2/AS1
- clearances to paving that had been lowered to the southeast, and part of the southwest, are now close to or exceed the clearances shown in E2/AS1
- pebbles at the house end of the southwest elevation are in contact with the bottom of the cladding and moisture levels in the bottom plate are elevated, with decay to the bottom of the battens over the plywood.

5.7.3 In regard to joinery details, the expert noted that:

- the southwest window is face-fixed over the plywood with full-height battens at the jambs and horizontal battens above the head flashing and below the sill
- tops to the head and sill battens are not sloped to shed water and the battens are in poor condition, although moisture levels in framing were not elevated
- testing of Sample 3 from sill trimmers found ‘moderately dense fungal growth’ and the retention of moisture shown by plant growth to the head batten ‘leads to doubt as to the compliance of the garage window with [Clause] B2’.

5.8 The authority’s concerns

5.8.1 The expert also assessed the items identified by the authority in its letters of 14 September 2016 (see paragraph 3.7), and the ‘photo file’ attached to the 2010 notice to fix (see paragraph 3.4.1), taking into account unresolved items from its letter of 18 August 2014 (see paragraph 3.5). Table 1 includes a summary of the expert’s responses, with my added comments shown in brackets.

Table 1: expert’s review of authority’s items of concern

Areas of concern (in summary)		Expert’s comments	
Section 95A letter dated 14 September 2016 (see paragraph 3.7)			
1	Cladding clearances	(ground and paving lowered in 2016) <ul style="list-style-type: none"> • Moisture readings and sample analysis indicate adequate performance • No clearance to part of southwest wall of garage/studio 	Adequate in circumstances Work required

Areas of concern (in summary)		Expert's comments	
2	Timber facings to joinery degrading	(tops to head and sill facings chamfered in 2016 repairs) <ul style="list-style-type: none"> Moisture readings and laboratory analysis indicate adequate performance 	Adequate in circumstances
3	Performance of oblique soffit/ wall cladding junction	<ul style="list-style-type: none"> Moisture levels low below junction No evidence of moisture penetration after 14 years 	Adequate in circumstances
	Invasive investigations outstanding from 2014 s95A letter (Variations in moisture readings)	<ul style="list-style-type: none"> Builder's scope of repairs approved by authority Linings removed and framing inspected 2016 final inspections passed repair work and noted that 2014 items resolved 	
4	Garage as-built drawings Certificate of acceptance application	<ul style="list-style-type: none"> Drawings required – following repair work Carport apparently constructed as garage by developer Issue may either be dealt with as amendment to building consent or a certificate of acceptance 	
a)	Construction review (PS4) for foundations and floor slab	(I note that 2014 S95A letter stated that PS4 <u>was not required</u> due to in-service history – see paragraph 3.5.3) <ul style="list-style-type: none"> Floor slab polished concrete, with cut joints and no cracks in the house slab One visible static crack to garage east corner. Likely to be from original settlement/shrinkage - considered to be static No evidence of movement in linings and trim 	Adequate
b)	Gas certificate of compliance	(Gas califont moved away from opening windows in 2016 – certificate dated 20 December 2016 provided)	
c)	Encumbrance for flood effects to be registered on certificate of title	Owner accepts this being registered on the title	
d)	Building surveyor's report	Scope and details of repairs to garage southwest elevation should be prepared and agreed with authority prior to undertaking	
e)	Exterior maintenance plan	Cladding systems use standard products – complying with industry standard maintenance recommendations sufficient to ensure adequate performance	
2010 final inspection photo file (see paragraph 3.4.1)			
E2	Weathertightness of roofs and walls	<ul style="list-style-type: none"> No damage or indication that house roofs and exterior walls had caused undue dampness 	Adequate
		<ul style="list-style-type: none"> Evidence of undue dampness to part of garage walls 	Work needed to garage
E2	Inadequate head and sill flashings to weatherbds	(Head flashings retro-fitted in 2016) <ul style="list-style-type: none"> No evidence of moisture penetration or past damage 	Adequate
E2	No drainage gap above window flashings to corrugated steel	<ul style="list-style-type: none"> Joinery installation assessed - lack of moisture penetration and/or past decay indicates that details have performed Installation of seals under jamb flanges recommended 	Adequate
E2	No drained cavity to corrugated steel	<ul style="list-style-type: none"> Five invasive moisture readings low (12% to 15%) Sample analysis found CCA treated framing with no decay Reasonable evidence of adequate performance after 13 years in service 	Adequate
E2	Insufficient downpipe fixings	<ul style="list-style-type: none"> Performing adequately after more than 13 years (passed during 2016 inspections of repair work) 	Adequate in circumstances

Areas of concern (in summary)		Expert's comments	
G12	No back flow protection to showers over baths	Back flow valves fitted in 2016 repairs <ul style="list-style-type: none"> Atmospheric breaker fitted to garden tap 	Adequate
E2	Cladding and floor clearances	(most areas remedied in 2016) <ul style="list-style-type: none"> Generally adequate in circumstances No clearance to end of southwest garage wall 	Work needed to part of southwest garage wall
E3	Hand basins and sink bench not sealed to walls	(sealed in 2016) <ul style="list-style-type: none"> Now satisfactory 	Adequate
E3	Unsealed bath tap penetration	(sealed in 2016) <ul style="list-style-type: none"> Tap now satisfactory Tiles well adhered with no evidence of moisture ingress Non-invasive moisture readings low 	Adequate
F4	Uncovered laundry shute	(cover installed in 2016) <ul style="list-style-type: none"> Satisfactory cover now prevents falling 	Adequate
E3	Oblique soffit/ wall cladding junction	<ul style="list-style-type: none"> Moisture levels low below junction No evidence of moisture penetration after 14 years Linings removed to allow framing inspection in 2016 	Adequate
<u>Changes to consent:</u> <ul style="list-style-type: none"> Carport enclosed and extended to southwest Roof slope changed to fall towards southeast internal gutter Skylight installed 		<ul style="list-style-type: none"> Appropriate documentation required 	
		<ul style="list-style-type: none"> Skylight raised and new flashings installed in 2016 repairs No evidence of leaks below after 13 years 	Adequate in circumstances

5.9 Summary

5.9.1 The expert concluded that:

This investigation indicates the cladding of the house has performed adequately and will continue to do so if normal maintenance is carried out.

The ply and batten garage cladding was poorly installed leading to decay in the battens and other issues raised [in the report]. ...

It appears that other construction issues raised in the Council's s95A letter and photo file have been addressed adequately but some paperwork may still be outstanding.

6. Compliance of the house

6.1 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 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, I must therefore consider whether the house

complies with the provisions of the Building Code that applied when the consent was issued in 2003.

- 6.3 An application can be made to the authority for a modification of durability requirements to allow durability periods for the house to commence from the date of the first final inspection in May 2004 (see paragraph 3.2). Although that matter is not part of this determination, I have taken the anticipated modification into account when considering the compliance of the claddings.

7. Compliance with Clause E2 External moisture

- 7.1 The evaluation of the external building envelope 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 two-storeys high
- the building has three different wall claddings fixed directly to the wall framing
- the garage has no roof overhangs to shelter wall claddings
- the house roof incorporates oblique eaves with exposed rafters

Decreasing risk

- the building is in a low wind zone
- the building is fairly simple in plan and form with no attached decks
- some house roof overhangs shelter parts of the wall cladding
- most of the external wall framing is treated to provide resistance to decay.

- 7.2.2 Using the E2/AS1 risk matrix to evaluate these features, most elevations are assessed as having a 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 corrugated steel and plywood wall claddings. However, this was not a requirement at the time of construction in 2004.

7.3 Weathertightness performance

- 7.3.1 The inspection records indicate that the building envelope was completed by May 2004 and I have taken into account that the wall and roof claddings are now more than 13 years old when considering the weathertightness performance.
- 7.3.2 The expert has investigated the installation and performance of the roof and wall claddings and found them generally satisfactory. I concur with the expert's opinion that the evidence indicates that 'the cladding of the house has performed adequately and will continue to do so if normal maintenance is carried out'.
- 7.3.3 I consider the expert's report establishes the current performance of the house envelope is adequate because there is no evidence of moisture penetration into the timber framing. I am therefore satisfied that the house complies with Clause E2 of

the Building Code. The lack of timber damage also satisfies me that the timber framing to the house complies with Clause B1 Structure.

- 7.3.4 Clause B2 Durability requires the claddings to remain weathertight for a minimum of 15 years, and a modification of the durability periods in Clause B2.3.1 will allow their commencement from May 2004.
- 7.3.5 The roof and wall claddings to the house are now 13 years old and the expert's investigations have found no evidence of significant past moisture ingress, which satisfies me that claddings have also complied with Clause B2 insofar as it applies to Clause E2. The claddings are likely to continue to comply for the next two years and therefore satisfy Clause B2 in terms of meeting the 15-year minimum durability period described in Clause B2.3.1(b).
- 7.3.6 However, that is not the case for some areas of the single-storey garage. The expert's report establishes that the current performance of the garage envelope is not adequate because there is evidence of moisture penetration into one area of the timber framing. Consequently, I am satisfied that the garage does not comply with Clause E2 of the Building Code. I have insufficient information to determine the compliance of the framing with respect to Clause B1, but the compliance of the framing will be able to be clarified following investigation and any required remediation as below.
- 7.3.7 Taking account of the expert's report, I consider that remedial work is required to the garage only, which should include the following areas:
- the flat tops to head and sill battens to the southeast window
 - the inadequate ground levels to the southwest elevation
 - the decayed timber battens to the southwest elevation
 - the condition of the framing to the southwest wall.
- 7.3.8 Because the identified cladding faults occur in discrete areas, I am able to conclude that satisfactory investigation and rectification of areas outlined above will result in the external building envelope of the garage being brought into compliance with Clauses E2 and B2 of the Building Code.
- 7.3.9 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).

8. What happens next?

- 8.1 The authority may issue a notice to fix that requires the applicant to bring the building work into compliance with the Building Code or issue another notice under section 95A taking into account the findings of this determination. However, the applicant has expressed a willingness to remedy any outstanding matters and the issue of a formal notice may not be necessary.
- 8.2 A detailed proposal should be developed to address the matters of investigation and non-compliance identified in paragraph 7.3.7; produced in conjunction with a suitably qualified person experienced in weathertightness remediation and submitted to the authority for its consideration and approval.

- 8.3 An application for an amendment to the building consent and as-built drawings for the unauthorised enclosure of the garage should also be submitted to the authority for its consideration and approval.
- 8.4 The walls of the carport shown in the consent drawings were enclosed without the authority's approval. Taking account of the limited building work involved to ensure this work is compliant I consider that the remedial work should be undertaken as an amendment to the building consent, with a code compliance certificate issued for the house and garage when the required repairs are completed.
- 8.5 A code compliance certificate will be able to be issued once the above matters have been satisfactorily addressed and the matter of amending the building consent for the remedial work and to modify Clause B2.3.1 has been resolved.
- 8.6 If necessary, any outstanding items of disagreement can be referred to the Chief Executive for a further binding determination.

9. The decision

- 9.1 In accordance with section 188 of the Building Act 2004, I hereby determine that some areas of the external building envelope do not comply with Building Code Clauses E2 and B2, and accordingly I confirm the authority's decision to refuse to issue a code compliance certificate.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 28 February 2018.

Katie Gordon
Manager Determinations

Appendix A

A.1 Annotated Figure 2 from NZ Metal Roofing Manufacturers Inc.: Metal Roof and Wall Cladding Code of Practice; Version 2.2, 2012.

