



## Determination 2017/044

### Regarding the refusal to issue a code compliance certificate for a 14-year-old house at 74 to 76 Voyager Drive, Gulf Harbour, Auckland



#### Summary

This determination is concerned primarily with the compliance of the building envelope to a 14-year-old house with autoclaved aerated concrete cladding. The determination considers the authority's reasons for refusing to issue the code compliance certificate and whether the house complies with the requirements of the Building Code that was in force at the time the building consent was issued.

#### 1. The matter to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004<sup>1</sup> ("the current Act") made under due authorisation by me, John Gardiner, Manager Determinations and Assurance, Ministry of Business, Innovation and Employment ("the Ministry"), for and on behalf of the Chief Executive of the Ministry.
- 1.2 The parties to the determination are:
  - the owner of the building, C Title ("the applicant"), acting via an agent
  - Auckland Council ("the authority"<sup>2</sup>), 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 14-year-old house. The refusal arose because the authority is not satisfied that the building work complies with certain clauses<sup>3</sup> of the Building Code (First Schedule, Building Regulations 1992). The authority's concerns primarily relate to the weathertightness and durability of the claddings.

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

<sup>2</sup> After the original townhouse building was completed, Rodney District Council was transitioned into Auckland Council. The term "authority" is used for both.

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

- 1.4 The matter to be determined<sup>4</sup> is therefore 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 5 May 2016 (see paragraph 3.3). In deciding this matter, I must consider the following:
- (a) Whether the external building envelope of the house complies with Clause E2 External moisture and Clause B2 Durability 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 cladding, the windows and the roof claddings) as well as the way components have been installed and work together.
  - (b) Whether elements in the house comply with relevant parts of the other clauses identified by the authority; namely Clause B1 Structure and E1 Surface Water.
- 1.5 In making my decision, I have considered the submissions of the parties, the reports by the consultant and engineer engaged by the applicant, the report of the expert commissioned by the Ministry to advise on this dispute ("the expert") and the other evidence in this matter.

## **1.6 Matters outside this determination**

- 1.6.1 In its refusal, the authority limited its concerns to items associated with the clauses outlined above (see paragraph 3.3) and this determination does not address other clauses of the Building Code.
- 1.6.2 The authority's refusal also questioned the status of the self-contained guest accommodation (see paragraph 3.3.4), but I note that a resource consent (No. L59799) was granted on 19 March 2013 'for retrospective resource consent for a Minor Household Unit contained within an existing dwelling.' I understand the applicant has agreed to remove a lock so this matter is no longer in dispute and is not considered further in this determination.
- 1.6.3 I note that the authority has also identified a list of outstanding documentation that is not relevant to my conclusions on the matters to be determined, and I leave the matter of documentation to the parties to resolve.
- 1.6.4 However, I do not consider that the authority can request a site specific maintenance plan. While maintenance is expected to be carried out by the owners of a building, it is not a requirement under the Building Act to produce a maintenance plan and cannot be required by the authority as a condition of issuing the code compliance certificate.
- 1.6.5 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 March 2003. Although I leave this matter to the parties to resolve in due course, I have taken the anticipated modification into account when considering the claddings.

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<sup>4</sup> Under sections 177(1)(b) and 177(2)(d) of the Act.

## 2. The building work

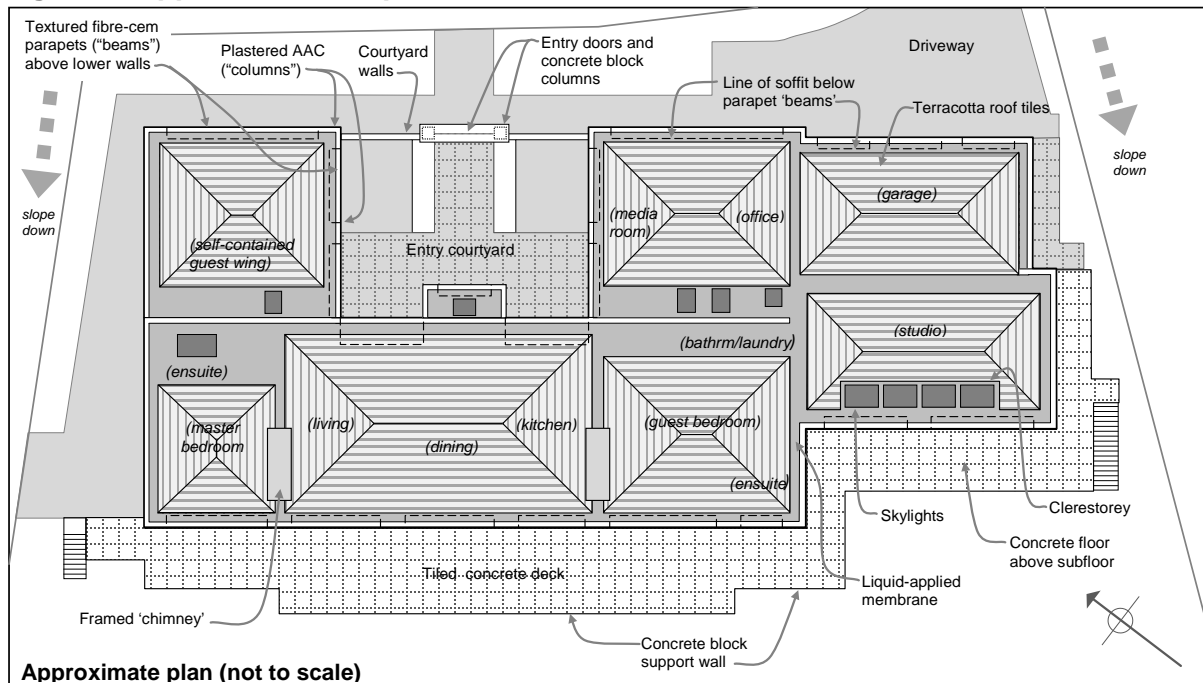
2.1 The building work consists of a single-storey detached house with a floor area over 550m<sup>2</sup>, which was constructed over two sloping sections in a high wind zone as described in NZS 3604<sup>5</sup>. The harbour side site slopes down to the southwest by about 3m across the house footprint. The house is complex in plan and form, and is assessed as having a moderate to high weathertightness risk.

2.2 Construction is a mix of specific design and conventional light timber frame; with specifically engineered concrete pile foundations, concrete beams and suspended precast concrete floors to the southwest, concrete foundations and floor slab-on-grade to the northeast, monolithic wall claddings, aluminium windows, and clay tile and membrane roof claddings.

2.3 As shown in Figure 1, the house accommodates:

- open-plan living, dining and kitchen areas to the southwest
- a guest bedroom and ensuite to the southwest
- a studio in the south corner
- a tiled terrace along the southwest and part of the southeast elevations
- master bedroom, ensuite and walk-in wardrobe in the west corner
- self-contained guest accommodation in the north corner
- a garage in the west corner
- an entry courtyard, office and media room to the northeast.

**Figure 1: Approximate site plan**



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

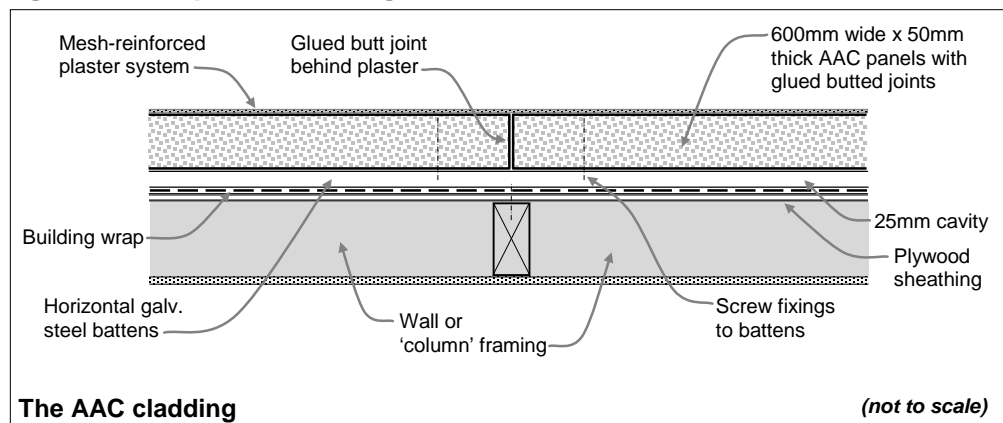
## 2.4 The roof

- 2.4.1 The roof is made up of seven separated 35° pitch hipped roofs with low-pitched liquid-applied membrane sections between. The tiled roofs drain onto the membrane sections then into internal parapet gutters as shown in Figure 1. The roof has two levels divided by roof parapets, with higher ceilings to the southwest rooms.
- 2.4.2 On the northeast and southwest elevations (including the entry courtyard), monolithic-clad parapets form framed ‘beams’ that extend between, and project by about 100mm beyond, framed ‘columns’. The recessed walls framed by the beams and columns include soffits of about 450mm as shown in Figure 1. The joinery units extend full height to the soffit, approximately 2.8m high for the higher southwest rooms and 2.2m for the lower northeast areas.
- 2.4.3 Deeper recesses of about 1.2m form verandas on either side of the northeast entry canopy. On the northwest and southeast side elevations, the framed parapet ‘beams’ project approximately 100mm beyond the lower walls, with no framed ‘columns’ or deeply recessed walls.

## 2.5 The wall claddings

- 2.5.1 The primary wall cladding is a proprietary monolithic cladding system, with 75mm thick steel reinforced AAC<sup>6</sup> backing panels finished with a proprietary mesh-reinforced plaster system to form a monolithic finish. Horizontal galvanised steel battens with a ‘top hat’ profile are fixed through the building wrap to the framing and form a 25mm cavity behind the AAC panels. Panels are screw-fixed to the battens, with glued butt-joints as shown in Figure 2, except where control joints are installed.

**Figure 2: The panel cladding**



- 2.5.2 The proprietary system installed in 2003 included recommended details for windows, corners and other junctions. The system has a current CodeMark Certificate<sup>7</sup> based on the manufacturer’s 2013 ‘NZ Design and Installation Guide’, which incorporates some amendments to design details made since the subject house was constructed.
- 2.5.3 The expert observed no vertical control joints, although I note that the cladding installer provided an ‘Installation Producer Statement’ dated 30 September 2004 which noted ‘control joints installed in required locations’. The manufacturer’s current instructions for requiring vertical control joints include the following situations relevant to this house (in summary):

<sup>6</sup> Autoclaved aerated concrete (AAC) is a lightweight, precast, foamed concrete product.

<sup>7</sup> CodeMark Certificates are issued under section 269 of the current Act and current certificates must be accepted by building consent authorities under section 19(d) as establishing compliance if every relevant condition in the certificate is met.

- At 6m maximum centres on straight wall runs (applies only the 9m long northwest wall to the master bedroom and ensuite where windows are not full height).
- To the side(s) of wide openings (does not apply as joinery is full height).
- At external and internal corners.

2.5.4 The wall cladding to the framed parapet 'beams' is a form of monolithic cladding, which consists of 7.5 mm thick fibre-cement sheets fixed through the building wrap directly to the parapet framing, and finished with an applied textured coating system to match the panel cladding finish as shown in Figure 3.

2.5.5 Taking account of the expert's observations; I note that although similar, the as-built parapet detail differs from that shown in Figure 3, in that:

- liquid-applied membrane is used in lieu of butyl rubber membrane<sup>8</sup>
- the textured fibre-cement extends down to form a 20mm drip edge at the soffit
- the lower decorative band is identical in thickness to the upper band.

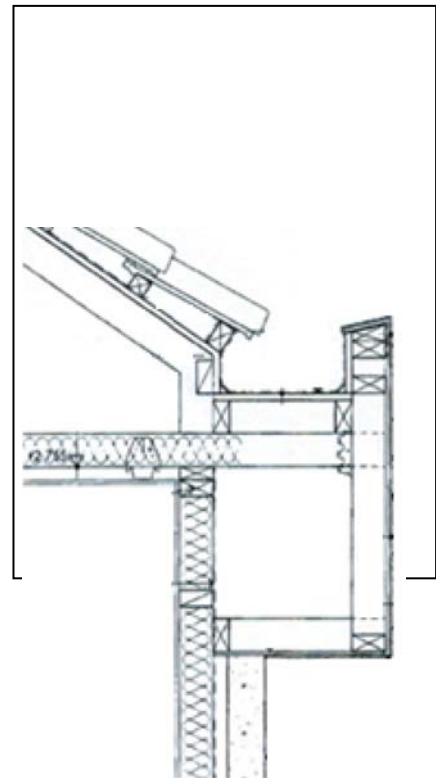


Figure 3: Framed parapet 'beam'

## 2.6 Timber treatment

2.6.1 The drawings note 'do not use chemical-free timber for structural or framing members'. The applicant provided the expert with an invoice which indicates that a substantial quantity of H1 and H3 treated wall framing was delivered to the site during construction. However a note on the invoice states that the H3 framing was to be used in 'parapets and wet area frames as detailed on plans'.

2.6.2 The applicant's consultant also noted that six timber samples from framing were tested and found to be 'H3.1 LOSP Tin' but provided no copies of laboratory test results.

2.6.3 Based on the combination of evidence, I consider that at the least the parapet framing is likely to be treated to resist decay.

## 3. Background

3.1 The authority issued building consent no. ABA 22339 for the house on 5 November 2002 under the Building Act 1991 ("the former Act"). None of the consent conditions related to the wall or roof claddings.

### 3.2 The construction

3.2.1 I have seen no records of inspections carried out during construction of the house, but it appears that the authority carried out and approved all inspections during

<sup>8</sup> Drawings call for 'butyl rubber (or equiv.)'

construction, including a pre-line inspection on 18 September 2002 and a final inspection on 29 March 2003.

- 3.2.2 Various producer statements and certificates were provided after completion of the house, including a PS4 dated 12 October 2004 from the structural engineer for ‘construction observation’ in respect of:

Foundations Site Observation Reports 1 and 2); Grade B masonry (SOR 3); Slab on grade and suspended floor slabs (SOR 4); Structural beams etc (SOR 5)

- 3.2.3 It appears that the only reason the code compliance certificate was not issued was due to confusion about the lack of resource consent for the self-contained guest accommodation (which was retrospectively approved under Resource Consent L59799 dated 19 March 2013).

- 3.2.4 The applicant was not aware of any unresolved matters until preparing to sell the house in 2016, when the LIM report on the property identified that no code compliance certificate had been issued for the house.

### **3.3 The 2016 refusal to issue a code compliance certificate**

- 3.3.1 The authority carried out an inspection of the house on 9 March 2016, and wrote to the applicant on 10 March 2016 to advise that the authority would not issue the code compliance certificate because:

[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.

- 3.3.2 The authority listed ‘various concerns regarding B1 Structure, E1 Surface Water, E2 External Moisture’, which included but were not limited to the following (in summary using the authority’s references):

- 1) AAC cladding cracks and moisture seepage to entry courtyard wall.
- 2) Cladding clearances.
- 3) Parapet cladding cracks.
- 4) AAC cladding/soffit junctions.
- 5) Flat membrane roof areas.
- 6) Cracks to masonry deck wall.
- 7) Surface water eroding driveway.
- 8) Unsealed wiring penetrations for light fittings.

- 3.3.3 The authority also identified changes from the consented details (Note 1):

- Threshold clearances.
- AAC cladding/soffit junctions.
- Polythene visible under edge of roof tiles.

- 3.3.4 The authority also noted that the guest accommodation contained a kitchen and required a fire report if it were to be used as a separate household unit. That matter is not considered further in this determination (see paragraph 1.6.2).

- 3.3.5 The authority also required the following documentation (in summary):

- Engineer’s assessments of:
  - AAC to ground junctions
  - AAC moisture seepage (item 1)

- Cracks in deck support wall (item 6)
- Erosion of driveway (item 7).
- Membrane manufacturer's performance assessment.
- Performance assessment of parapet cracking.
- Scope of works prior to any remediation.
- Site specific maintenance plan.

### **3.4 The consultant's report**

3.4.1 The applicant subsequently engaged a moisture detection company ("the consultant") to carry out a review of the performance of the building. The consultant inspected the external building envelope and provided a report dated 30 March 2016.

3.4.2 The consultant noted that 'due to the current claims [the authority] has modified its code compliance certificate process for historical consents'. The consultant considered that the house had 'been built to an exemplary standard with no detail spared.'

3.4.3 The consultant included the following comments on the house (in summary):

- Framing was tested and is 'H3.1 LOSP Tin'.
- Non-invasive moisture testing 'showed dry results throughout'.
- The applicant had arranged for some roofing maintenance and repainting.
- The house 'was meticulously built' of high quality materials and has been well maintained, with 'no visible signs of issues after 12 years'.
- The cladding is AAC panels fixed over metal battens.
- The unventilated cavity requires timber framing treated above H1.
- The H3.1 framing will remain durable even if wetted for extended intermittent periods, with dryer periods periodically destroying decay fungi.
- Any internal gutter leaks will be visible on soffits before entering framing. (I note here that not all internal gutters are outside the line of the external framing.)
- There are no timber boundary joists.
- Most joinery is full height between soffits and concrete floor.
- Internal gutters have factory fully welded plaster scuppers.

### **3.5 The engineer's report**

3.5.1 The applicant also re-engaged the structural engineer who had provided construction observation ("the engineer"). The engineer visited the house and commented on the engineering items identified by the authority in a letter to the authority and the applicant dated 31 March 2016. The letter also attached copies of the site observation reports noted in the producer statement (see paragraph 3.2.2).

3.5.2 The engineer commented on the following engineering matters (in summary):

- Item 1: The ‘weeping’ observed is in the concrete block columns of the courtyard wall, which is not part of the building. It is likely due to water entering around the light fitting and ‘is of no structural concern’ to the house.
- Item 6: The cracking is typical of masonry walls with no ‘formalised control joints’, but is ‘not of structural concern’. The walls enclosed the subfloor void below the deck rather than carrying any load of the exterior walls.
- Item 7: There is a small area in the southern most corner where the driveway has subsided by about 30mm. The driveway slab is poured on-grade and is not connected to the house. The slumped area is 300 to 400mm above adjacent ground levels and the concrete down stand has moved independently of the house. ‘While unsightly, this has no structural impact on the building at all.’

3.6 The roof membrane and parapet capping were subsequently recoated and the house was repainted as part of ongoing maintenance. However, despite the provision of reports and additional information, email correspondence between the parties continued without resolution of the situation.

3.7 The Ministry received an application for a determination on 23 February 2017, which was accepted on 6 March 2017.

## 4. The submissions

4.1 The applicant provided an overview of the construction history of the house and described the background to the current situation, noting that a prospective purchaser withdrew from a sale and the authority subsequently carried out an inspection. The applicant also noted that he would be happy for the durability requirements ‘to run from the time of the final inspection’ on 29 March 2003’, which would ‘essentially waive any responsibility’ for the authority.

4.2 The applicant provided copies of:

- the authority’s refusal to issue a code compliance certificate, dated 10 March 2016
- retrospective resource consent for a minor household unit, dated 19 March 2013
- the membrane installer’s statement for a maintenance coating, dated 29 March 2016, with the membrane supplier’s warranty, dated 20 June 2016
- the consultant’s report, dated 30 March 2016
- the engineer’s report to the authority and applicant, dated 31 March 2002
- email correspondence with the authority
- various producer statements, certificates, statements and other information.

4.3 The agent acknowledged receipt of the expert’s report and requested that the determination take into account the consultant’s comments on the treatment level of the framing timbers (see paragraph 3.4.2).

4.4 The authority made no submission in response to the application for determination, but forwarded a CD-ROM, which contained additional documents pertinent to this determination including:

- the building consent and consent drawings



- the 2016 application for a code compliance certificate
  - an unsigned application for B2 modification, dated January 2016
  - the authority's 'historic consents assessment coversheet' 26 February 2016
  - the durability final inspection checklist, dated 9 March 2016.
- 4.5 A draft determination was issued to the parties for comment on 17 May 2017. The applicant accepted the draft without comment in a response received on 25 May 2017.
- 4.6 The authority responded on 26 May 2017. The authority provided some editorial comment and did not accept the draft for the reasons summarised below:
- The cladding system is outside the scope of E2/AS1. The cladding system was not considered a "cavity construction" as it did not freely drain at the base. The system was sealed at the joinery penetrations, and the rail holding the AAC panels in effect closed the cavity; meaning that any water entering the cladding would be retained.
  - The cladding was not installed in accordance with the consent.
  - The internal gutters and parapets presented a risk to internal framing from ingress through the gutters, and not all of the gutters are exterior to the wall framing. Maintenance to these areas was critical, but recent maintenance carried out by the owner had prevented the expert from carrying out a valid assessment of these areas.
  - There was no evidence that treated timber had been used to exterior walls. Low timber moisture readings provided insufficient evidence of compliance. Conclusive evidence about the performance could only be gained by "destructive investigation".
- 4.7 The authority also submitted that there was no 'conclusive evidence' to prove structural integrity and that despite the result of moisture readings obtained by the expert 'it does not prove there has not been moisture ingress, or that damage has not been done'. I note here that for a code compliance certificate to be issued, the authority must have "reasonable grounds" on which to conclude that the building work complies with the Building Code that was in force at the time the building consent was issued; the test is not one of absolute certainty. I have considered whether there is sufficient evidence that supports a conclusion that the building work complies, and in particular whether there is any evidence of non-compliance after 14 years.

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

### **5.1 General**

- 5.1.1 As mentioned in paragraph 1.5, I engaged an independent expert to assist me. The expert is a member of the New Zealand Institute of Architects and inspected the house on 7 April 2017. The expert's report was completed on 28 April 2017 and was sent to the parties on the same day.
- 5.1.2 The expert noted that the scope of his inspection was to provide an opinion about items identified in the authority's refusal to issue a code compliance certificate (refer paragraph 3.3) and to assess the areas identified by the authority in regard to compliance with the relevant parts of Clauses B1, B2, E1 and E2. The expert also

noted that his assessment of the compliance of the as-built building envelope assumed that a modification of durability provisions would be agreed.

- 5.1.3 The expert noted that internal finishes were ‘free from signs of moisture ingress’ and ‘exterior claddings and roofs were sound, generally well maintained and free from significant signs of deterioration.’
- 5.1.4 The expert considered that the as-built house differed from the consented plans in regard to the flat roofs and internal gutters, which ‘were finished with a liquid applied membrane in lieu of 1.5mm butyl rubber specified on the consent drawings.’

## 5.2 Moisture testing

- 5.2.1 The expert visually inspected internal linings to the external walls, noting these ‘were free from mould, stains, swelling or other signs of moisture ingress’ and also observed that ceilings below all of the skylights and the studio clerestory glazing were ‘free from signs of moisture penetration’. The expert tested linings using a non-invasive meter and readings were low throughout the house except for one elevated reading in the master ensuite.
- 5.2.2 Including the single elevated non-invasive reading, the expert took sample invasive moisture readings into framing at areas considered at risk of moisture entry. Nine readings were taken in wall framing and four into roof framing; with readings<sup>9</sup> varying from 14% to 16% in wall framing and 14% to 17% in roof framing beneath parapets and internal gutters.
- 5.2.3 The expert noted that his inspection was carried out in autumn and the ‘very heavy rain in the preceding two weeks<sup>10</sup>, together with the low moisture readings recorded provided ‘reasonable evidence that the requirements of NZBC clause E2 were met in the period leading up to the investigation.’

## 5.3 The AAC panel cladding

- 5.3.1 The expert noted that the cladding system is not a cladding listed within E2/AS1, although it now has a current CodeMark Certificate. Although that certification would establish compliance today, the certificate was issued some 10 years after the house was built and the assessment of the cladding to this house therefore relies on its in-history service and evidence from site as to adequate performance since 2003 and also comparison with the manufacturer’s current details.
- 5.3.2 The cladding next year will have reached its durability period and, rather than assessing just its current condition, the question is also whether it has prevented moisture penetration during the past 14 years.

## 5.4 Joinery details

- 5.4.1 The heads of the full-height joinery are recessed beneath the framed parapet ‘beams’ (as described in paragraph 2.4). On the northeast and southwest elevations, the framed ‘beams’ form 500mm deep soffits directly above window heads. Except for the master bedroom and ensuite windows, joinery heads are recessed by about 150mm on the northwest and southeast elevations. Joinery jambs are recessed by the thickness of the 75mm cladding and sills of the smaller windows include AAC sloping sills.

<sup>9</sup> Uncorrected for timber treatment due the lack of reliable correction tables and uncertainty as to treatment levels and types.

<sup>10</sup> Including the deluge following Cyclone Debbie

5.4.2 The expert assessed the applicants' construction photographs and the drawing detail against the as-built details, noting that:

- the details show:
  - membrane head and sill flashings
  - aluminium angle overlapping head flange and forming a head flashing
  - strip polythene jamb flashings
  - foam air seals at internal reveals.
- the construction photographs show:
  - black polythene DPM at door jambs
  - paint-on membrane applied to sill/deck junctions
  - membrane jamb and sill flashings .
- the as-built details show:
  - aluminium angle head flashing
  - sealant applied at jamb flanges
  - fibre-cement extended down to form a 20mm drip edge at the soffit.
- moisture readings below and adjacent to doors and windows were all low, providing evidence of adequate performance.

5.4.3 In regard to the clerestory studio windows installed in the textured fibre-cement cladding, the expert noted:

- the windows are face-fixed to the cladding, with a continuous aluminium head flashing and jamb flanges overlapping and sealed to the cladding
- moisture readings are low, providing evidence of compliance.

## 5.5 AAC panel cracks (Item 1)

5.5.1 The expert observed no vertical control joints in the AAC cladding<sup>11</sup> (although I note that the cladding installer's 2004 producer statement noted 'control joints installed in required locations').

5.5.2 The expert noted that:

- despite lacking control joints, there were only two small cracks in close proximity, which were observed between the master bedroom and ensuite windows on the northwest elevation (I note that these cracks are in the 9m long wall described in paragraph 2.5.3)
- these cracks could have been the result of a blockage in the roof scupper above, leading to intermittent moisture ingress and expansion of the framing
- however, the low current moisture readings indicate adequate performance despite the cracks, which are therefore unlikely to lead to non-compliance
- the absence of general cracking indicates that the as-built AAC system accommodates thermal and moisture movement adequately.

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<sup>11</sup> I note that the expert did observe vertical control joints installed in the textured fibre cement parapet claddings

## 5.6 The base details (Item 2)

5.6.1 The expert examined the applicant's construction photographs, the manufacturer's instruction at the time of installation, and the as-built construction. The expert noted:

- the manufacturer's detail at the time of construction called for the bottom of the panel to be 75mm above finished ground level
- photos show a rebate of about 100mm deep and 150mm formed by the top of concrete block foundation wall or deck slab and the edge of the floor slab, with 'paint on membrane' applied to the junction
- AAC panels were placed on the concrete block base or deck slab, so when tiles were laid, the top was above the bottom of the cladding (I note this is similar to the consented details that show sections of stone veneer placed on the deck slabs - AAC panels have been installed in place of the stone veneer)
- although the buried base risks water wicking up through the panels and into the framing, that risk is mitigated by:
  - the 150mm height of the bottom plate level
  - the membrane applied to the junction (which, I note appears to extend at least 100mm onto the deck)
  - the low permeability of the tiles, allowing water to drain away from the junction before it is absorbed into the tile and the panel.
- all seven locations measured had low moisture levels, providing 'reasonable evidence of adequate performance of the as-built detail'.

## 5.7 The roof parapets and membrane (Items 3 and 5)

5.7.1 All roof areas are surrounded by parapets, and the expert noted that:

- membrane to the flat roof areas, internal gutters and the 13° sloping parapet capping has recently been recoated and is in good condition (I note the house repainting included both sides and the tops of parapets)
- a small area is ponding beside a partly blocked outlet to the southeast, but moisture levels below were consistent with other readings
- another small area of ponding is adjacent to the entry courtyard (where I note the soffit extends some 1.2m beyond the southwest exterior wall)
- other membrane slopes are sufficient to drain the roof and prevent ponding
- the upstands to the skylights appear adequate, with no signs of moisture to the interior linings below
- invasive moisture levels at areas with the five highest non-invasive moisture readings were low, providing evidence of compliance.

## 5.8 The authority's list of concerns

5.8.1 The expert also assessed the remaining concerns identified by the authority. Table 1 summarises the expert's observations and comments, with my added comments shown in brackets.

**Table 1: The authority's concerns**

Areas of concern in section 95A refusal, (refer paragraph 3.3.2)	Expert's comments	Compliance	Refer para.	
1	AAC cladding cracks	<ul style="list-style-type: none"> <li>Two minor localised cracks to NW</li> <li>No control joints observed, but no evidence of failure to perform over the past 14 years</li> <li>Cracks unlikely to lead to non-compliance (These are in 9m long wall to master bedroom and ensuite where no control joint is evident)</li> </ul>	Adequate (E2 and B2)	5.5 2.5.3
	Seepage to entry courtyard wall	<ul style="list-style-type: none"> <li>Seepage is to column which is part of courtyard wall</li> <li>Not AAC cladding and not timber-framed</li> <li>Cosmetic damage only</li> </ul>	Adequate (B1,E2 and B2)	Fig.1
2	Cladding clearances	<ul style="list-style-type: none"> <li>Bottom of AAC panels some 150mm below floor level with tiles laid against panel</li> <li>Risk of moisture transfer mitigated by height of bottom plate, membrane to junction and low permeability of tiles</li> <li>Water will drain away before it is absorbed</li> <li>No evidence of failure to perform over the past 14 years</li> </ul>	Adequate (E2, B2)	5.6
3	Parapet cladding cracks	<ul style="list-style-type: none"> <li>No cracks evident during inspection</li> <li>2016 membrane refurbishment included the LAM parapet capping (and repainting of cladding would have included repairs to any joint cracking) (Vertical control joints appear to be installed) (Parapet framing is largely beyond the line of AAC panels)</li> <li>No evidence of failure to perform over the past 14 years</li> </ul>	Adequate given ongoing maintenance (E2, B2)	5.7.1 2.4 2.4.3 Fig.3 3.6
4	AAC cladding/soffit junctions	<ul style="list-style-type: none"> <li>Protected by parapet 'beam' overhangs and drip edges</li> <li>No significant risk of moisture penetration (Parapet framing is largely beyond the line of AAC panels)</li> <li>No evidence of failure to perform over past 14 years</li> </ul>	Adequate (E2, B2)	2.4 2.4.3 Fig.3
5	Flat membrane roof areas	<ul style="list-style-type: none"> <li>Recently recoated and in good condition</li> <li>No significant ponding apparent</li> <li>Ceilings inspected – no evidence of failure to perform</li> <li>No evidence of failure to perform over past 14 years</li> </ul>	Adequate given ongoing maintenance (E2, B2)	3.6 5.7.1 Fig.3
6	Cracks to masonry deck wall	<ul style="list-style-type: none"> <li>Hairline cracks to some concrete block joints</li> <li>Some moisture entry through concrete</li> <li>Subfloor has polythene over ground, is adequately vented and is not habitable space (no effect on weathertightness)</li> <li>No signs of structural movement (The engineer reported on the wall in 2016)</li> </ul>	Adequate in circumstances (B1,E2, B2)	3.5.2

Areas of concern in section 95A refusal, (refer paragraph 3.3.2)	Expert's comments	Compliance	Refer para.
7 Surface water eroding driveway	<ul style="list-style-type: none"> <li>Some cracks in driveway concrete slab</li> <li>Slight horizontal settlement adjacent to cesspit but nowhere else</li> <li>No signs of structural settlement at junction with house, with tile sealant joint intact and undisturbed</li> <li>Nothing to suggest ongoing erosion or risk of failure (Driveway slab independent of house) (The engineer reported on the driveway in 2016)</li> </ul>	Adequate (B1,E1, E2, B2)	3.5.2
8 Unsealed wiring penetrations for light fittings	<ul style="list-style-type: none"> <li>Some light fittings on seaward side corroded</li> <li>No adjacent moisture levels elevated</li> <li>Cladding installed over cavity so any sealant failure unlikely to lead to moisture entry into framing (Wiring to courtyard masonry columns now sealed)</li> </ul>	Adequate given ongoing maintenance (E2, B2)	Fig.2
<b>Note 1</b> Changes from plans a) Threshold clearance b) AAC/soffit junction c) Polythene to tile underside at gutter	<ul style="list-style-type: none"> <li>Covered in Item 2</li> <li>Covered in Item 4</li> <li>Plastic 'comb' vermin guard installed under edge of tiles</li> <li>Guard appears effective (no effect on compliance)</li> </ul>		
<b>Note 2</b> Guest accommodation	Not considered by expert or in this determination (see paragraph 1.6.2)		
Documentation	<ul style="list-style-type: none"> <li>Not within scope of expert's assessment (Documentation provided by applicant following refusal) (No effect on compliance)</li> </ul>		

## 5.9 Summary

5.9.1 The expert noted that the internal gutters and roof outlets are vulnerable to blockage and that the owner should ensure that all outlets are inspected and cleared regularly as part of normal maintenance, to ensure that the roofs drain fully and to prevent the possibility of moisture ingress.

5.9.2 The expert concluded that:

The evidence found during the investigation indicates that the house complies and is likely to continue to comply with the performance requirements of the NZBC clauses B1, B2, E1 and E2 provided that normal maintenance is continued.

## 6. Discussion

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

requires the authority to issue a code compliance certificate only if it 'is satisfied that the building work concerned complies with the building code that applied at the time the building consent was granted'.

6.2 In order to determine whether the authority correctly exercised its power in refusing to issue a code compliance certificate, I must therefore consider whether the house complies with the provisions of the Building Code that applied when the consent was issued in 2002.

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 reported by the applicant as the first final inspection in March 2003 (see paragraph 3.2.1). Although that matter is not part of this determination (see paragraph 1.6.5), I have taken the anticipated modification into account when considering the compliance of the claddings.

#### **6.4 Compliance (Clause E2)**

6.4.1 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).

6.4.2 This house has the following environmental and design features, which influence its weathertightness risk profile:

##### *Increasing risk*

- the house is in a high wind zone
- the house has roof parapets with cladding fixed directly to the parapet framing
- the house has internal gutters
- roofs are at multiple levels with some complex junctions and intersections
- there are minimal roof overhangs to shelter some of the wall cladding
- the house is complex in plan
- it is unlikely that the external wall framing is treated to provide resistance to decay

##### *Decreasing risk*

- the house is single-storey
- most joinery and some walls are protected under deep soffits
- the only deck has a concrete floor and is sited above subfloor space.

6.4.3 Using the E2/AS1 risk matrix to evaluate these features, elevations are assessed as having a moderate to high weathertightness risk rating.

##### *Weathertightness performance*

6.4.4 The applicant's submission indicates that the building envelope was substantially complete prior to April 2003 (see paragraph 4.1) and I have taken that into account when considering the weathertightness performance, as the wall and roof claddings are now 14 years old.

- 6.4.5 The expert has investigated roof and wall claddings and found their construction and performance satisfactory. I concur with the expert's opinion that there is no evidence of non-compliance with the performance of the external building envelope.
- 6.4.6 I also accept the expert's comments regarding the following areas being adequate in the particular circumstances:
- Minor cracks to joints in the claddings.
  - Membrane roof areas.
  - Minor cracks to the concrete block deck wall.
  - Unsealed wiring penetrations.

### ***Weathertightness conclusion***

- 6.4.7 I consider the expert's report establishes that the current performance of the building envelope is adequate because there is no evidence of moisture penetration into the timber framing and I am therefore satisfied that the claddings comply with Clause E2 of the Building Code and have complied during the previous 14 years.
- 6.4.8 In addition, the house is required to comply with the durability requirements of Clause B2, which requires a building to satisfy all the objectives of the Building Code throughout its effective life. The durability requirements of Clause B2 include a requirement for wall claddings to remain weathertight for a minimum of 15 years and for timber framing to remain structurally adequate for a minimum of 50 years.
- 6.4.9 The roof and wall claddings are now 14 years old and the expert's investigations have found no evidence of past moisture ingress, which satisfies me that the claddings have also complied with Clause B2 insofar as it applies to Clause E2.
- 6.4.10 I consider that changes from the consent documentation outlined in 5.1.4 have not affected the compliance of the external envelope. In regard to the roof cladding, I note that the drawings call for the originally specified product 'or similar'. A minor variation under section 45A for identified alterations from the consent documentation should be supplied to the authority and I leave this to the parties to resolve.
- 6.4.11 It is emphasised that each determination is conducted on a case-by-case basis. Accordingly, the fact that particular cladding systems have been established as being code compliant in relation to a particular building does not necessarily mean that the same cladding systems will be code compliant in another situation.

## **6.5 The authority's remaining concerns**

- 6.5.1 Taking account of the engineer's report, I accept the expert's comments regarding the adequacy in the circumstances of:
- the minor cracks to the concrete block deck wall (B1, B2)
  - the minor cracks to the driveway concrete (B1, B2, E1).
- 6.5.2 The engineer's report, the expert's report and the other evidence provide me with reasonable grounds to be satisfied that the house also complies with Clauses B1, B2 and E1 of the Building Code in respect of those items.



## 6.6 Maintenance

6.6.1 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, including examples where the external wall framing of the building is not treated to a level that will resist the onset of decay if it gets wet (for example, Determination 2007/60).

6.6.2 In the case of this particular house, I note the following:

- The house design includes a number of high risk features, which require careful consideration of maintenance requirements of the roof and wall claddings in order to ensure their ongoing weathertightness. For example, the expert has identified the need to ensure that all roof gutters and outlets are inspected and cleared regularly.
- The external claddings appear to have been generally well-maintained, which I consider to be a key factor in the performance of the external building envelope over the past 14 years.
- Although a modification of the durability provisions to allow the provisions to commence from the date of substantial completion in March 2003 means that the most of the claddings have remained weathertight for 14 of the required 15 year period, the expected life of the building as a whole is considerably longer; careful maintenance should continue in order to protect the underlying framing for its minimum required life of 50 years.

## 6.7 The durability considerations

6.7.1 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).

6.7.2 In this case the 14-year delay since substantial completion of the house in 2003 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.

6.7.3 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 code compliance certificate for the house had been issued in 2003.

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.

## **7. The decision**

- 7.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the house complies with Clauses B1, B2, E1 and E2 of the Building Code that was in force at the time the building consent was issued in 2002, and accordingly I reverse the authority's decision to refuse to issue a code compliance certificate for the house subject to the modification of the durability periods as noted herein.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 20 June 2017.

John Gardiner  
**Manager Determinations and Assurance**