

Determination 2011/083

Regarding the refusal to issue a code compliance certificate for an 18-year-old house with monolithic cladding at 24A Balmain Road, Chatswood, Auckland



1. The matters to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004¹ (“the Act”) made under due authorisation by me, John Gardiner, Manager Determinations, Department of Building and Housing (“the Department”), for and on behalf of the Chief Executive of that Department. The applicants are the owners, K and H Chung (“the applicants”), acting through a registered architect (“the architect”). The other party is the Auckland Council (“the authority”), carrying out its duties as a territorial authority or building consent authority.
- 1.2 This determination arises from the decision of the authority to refuse to issue a code compliance certificate for the 18-year-old house, because it is not satisfied that the building work complies with certain clauses² of the Building Code (First Schedule, Building Regulations 1992). The authority’s concerns about the compliance of the building work relate largely to the weathertightness of the building envelope and moisture problems related to the two bathrooms.

¹ The Building Act, Building Code, Compliance documents, past determinations and guidance documents issued by the Department are all available at www.dbh.govt.nz or by contacting the Department on 0800 242 243.

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

- 1.3 The matter to be determined³ is therefore whether the authority was correct to refuse to issue a code compliance certificate. In deciding this, I must consider whether the external building envelope of the house complies with Clause B2 Durability and Clause E2 External Moisture of the Building Code, and whether the showers comply with Clause E3 Internal Moisture. The “building envelope” includes the components of the systems (such as the monolithic cladding, the windows, the deck, the roof cladding and the flashings), as well as the way the components have been installed and work together. I consider the compliance of the house in paragraph 6.
- 1.4 In making my decision, I have considered the architect’s submission, the report of the expert commissioned by the Department to advise on this dispute (“the expert”), and other evidence in this matter.

2. The building work

- 2.1 The building work consists of the original construction of and subsequent repair work to a detached house on a sloping site in a medium wind zone for the purposes of NZS 3604⁴. The street is referred to as “west” in the expert’s report and also within this determination. The house is assessed as having moderate to high weathertightness risk elevations (see paragraph 6.2).
- 2.2 The two-storey house consists of four split-levels in total. The ground floor sits in part on concrete floor slab and partly cantilevered with light weight timber framing founded on timber piles. At the lower level a timber framed slatted deck also cantilevers to the east elevation with a smaller deck at the top of stairs to the laundry and a narrow deck like attachment under windows close to the main deck. The upper level projects out over the entrance providing shelter to the entranceway.
- 2.3 Construction is conventional light timber frame with a combination of monolithic wall cladding and rusticated cedar weatherboards, aluminium windows, and a concrete tile roof with 650mm wide eaves to most areas and 350mm gables ends. The roof has lead apron flashings and the gutters are concealed behind fascias.
- 2.4 The monolithic cladding is an EIFS⁵ system, which consists of 40mm polystyrene sheets fixed over the building wrap to the framing, and finished with a textured coating system. The joinery set in the EIFS cladding lacks head or jamb flashings but has sill flashings of a type used at the time of construction.
- 2.5 The decks were originally connected to the house with ‘tanalised’ deck joists penetrating the EIFS cladding and nailed to H1 treated boundary joists. The expert considered that the decking itself was untreated hardwood.
- 2.6 The expert noted that the floor joists were stamped as H1 and accordingly considered the framing like to be treated with boron. Given the date of construction in 1993, I accept that the joists were likely to be boron treated to a level that may provide some resistance to decay.

The repairs

- 2.7 The larger east deck was made ‘free standing’ and the locations where the joists penetrated the cladding were plugged and repaired. These repairs concealed any

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

⁴ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

⁵ Exterior Insulation and Finish System

damage to the boundary joists left in place behind the cladding which were not repaired.

- 2.8 It appears that some work was also undertaken to a shower unit in the ensuite that had been leaking. It is not clear how effectively this has been carried out.

3. Background

- 3.1 The authority issued a building consent for the house (No. B2341 (REM-4011315)) on 12 August 1993 under the Building Act 1991. I have not seen a copy of the building consent. It appears the construction was substantially completed by 1 February 1994.
- 3.2 The previous owner of the house applied for a code compliance certificate in 2005 and a final inspection was carried out on 3 October 2005. The authority wrote to the previous owner on 19 October 2005 stating that there were outstanding issues to be resolved.
- 3.3 It appears that the previous owner engaged a building surveyor to undertake weathertightness assessment and a “Defects report” dated 31 October 2005 was provided. The report notes that the surveyor did not undertake any invasive testing but lists 19 items that were identified visually as requiring remedial work. I have not been provided with information regarding any remedial work that may have been undertaken, and I am not aware of the date at which the applicants became the owners.
- 3.4 The authority undertook a final inspection on 16 November 2009; resulting in two field memorandums (87588 and 87699) listing a number of items that required attention. In regards to weathertightness and internal moisture this included:
- the need for a weathertightness inspection
 - provide adequate ground clearance
 - installer of the waterproof membranes to the bathrooms, laundry and kitchen to provide a ‘PS3’ (“construction review - producer statement”).
- 3.5 On 24 November 2009 the authority carried out a weathertightness inspection and followed up with a letter to the applicants dated 2 December 2009. The authority noted that the applicants had requested a code compliance certificate but that the authority considered there were ‘weathertightness issues to be investigated’ and that it was not satisfied that the house complied with Clauses E2 External moisture and B2 Durability.
- 3.6 In its letter the authority noted that a producer statement PS3 was required for the application of waterproof membranes under the tiles in wet areas, as-built plans were required for the changed deck design and stairway, and all items on the field memorandum 87588 were still outstanding. The authority also provided a ‘preliminary list of identified defects’ as follows:
1. Finished ground levels relative to top of concrete slab floor are too high in places.
 2. Inadequate vertical and horizontal clearance between cladding and finished ground in many places, also garden retaining structure
 3. Sealing around pipe penetrations through cladding needs upgrading.

4. Meter box vision panel has come unstuck.
5. Sealing of rustic weatherboard profile behind facings/window facings is inadequate.
6. Garage door head flashing does not extend past side facings.
7. No saddle flashings have been provided to deck joist penetrations.
8. Decking is not gapped off cladding, outside laundry.
9. There are some cracks in plasterwork of [EIFS] cladding.
10. Plaster/paint has not been completed behind barge boards in places
11. Both shower boxes are leaking.

3.7 The authority went on to suggest that the owners engage the services of a certified weathertightness surveyor to investigate and provide a report and remedial proposal. The authority also referred to the issues raised with the previous owner (refer paragraph 3.2) stating that some of those issues had been resolved.

3.8 The authority also noted that subsequent to required remedial work being undertaken the owners could apply to the authority for a modification of the Building Code to allow the durability periods to commence from the date of substantial completion of the building. I therefore leave this matter to the parties to resolve once the house has been made code-compliant.

3.9 On 22 February 2010 the architect provided the owners with a 'Moisture and thermal survey report, [Remedial] work advice'. The report stated that the architect had undertaken thermal imaging and inspected the interior and exterior of the house, undertaking both non-invasive and invasive testing. The architect concluded that:

- there were 'no sign of current leaks' but there were signs of cracking in the cladding that required maintenance.
- the shower did not leak and the replacement of affected timber framing around the shower was maintenance
- the deck to the east and the deck to the north (adjacent to the family room) required 'reworking' so that the deck is separated from the cladding with a minimum gap of 20mm
- external ground to be lowered to achieve required ground clearance
- 'a few windows which need [to be] plugged and sealed off as well as some top flashing not in accordance with E2/AS1 ...'.

It was the architect's view that the house was 'structurally sound' and did not require replacement of the cladding.

3.10 In the same report, the architect referred to field memorandum 87588 and asked the authority to approve the following proposed remedial work:

- adjust ground levels to comply with E2/AS1
- upgrade sealing to pipe penetration
- sealing of weatherboard behind facings, etc, and install 'adequate' flashings
- flashing to the garage door head

- separate the (east) deck from the building structure, and seal any penetrations to the cladding
 - rectify other decks to provide a separation between the decks and the cladding
 - replaster cracks in EIFS cladding
 - rectify the bathroom flooring adjacent to the shower
 - install ‘a proper scribe [and] finish’ at the junction of the claddings.
- 3.11 The architect’s 22 February 2010 report also included an assessment of the weathertightness risk for the building that showed all elevations as having a low weathertightness risk rating (I comment on this assessment in paragraph 6.2.3).
- 3.12 On 23 June 2010 the authority wrote to the architect regarding the ‘Moisture and thermal survey report, [Remedial] work advice’ report sent to the authority with a covering letter dated 26 April 2010. The authority advised the architect that qualified specialist expertise in the field of weathertightness remediation was required for the diagnosis prior to the planning of remedial work. The authority also expressed its concerns regarding the reliance on thermal imaging, and noted that the architect had not referenced the thermal images to elevations or provided any conclusions drawn from the images. The authority also noted that there was no evidence that high risk areas had been investigated with invasive moisture testing.
- 3.13 It appears from the architect’s submission (refer paragraph 4.1) that the applicants undertook some remedial work. However, I have not been provided with detail on the building work that was undertaken other than the general descriptions provided in the architect’s February 2010 report.
- 3.14 On 26 April 2010 the applicants again sought a code compliance certificate and were apparently given verbal advice by the authority that it would refuse to issue a code compliance certificate.
- 3.15 The architect has provided a ‘Producer Statement - PS4 - Construction Review’ dated 18 May 2011 and ‘Producer Statement - Construction - PS3’ dated 19 May. Although the PS3 notes it is in respect of the consent and the two field memorandums, I consider that this PS4 is in respect of the remedial work undertaken to the east deck only. The original consent was not amended to show the structural alterations to the deck nor was there a consent sought for this work.
- 3.16 The Department received an application for a determination on 2 June 2011.

4. The submissions

- 4.1 In the covering letter to the application, the architect submitted that the applicants have ‘already taken action to rectify issues such as the current E2/AS1 requirements’ and that the architect’s investigation established that the house was not leaking. The architect was also of the view that as the house was built prior to 2004 weathertightness issues were ‘not relevant’.
- 4.2 The architect provided copies of:
- some of the consent plans, dated May 1993
 - field memoranda Nos. 87588 and 87699, both dated 16 November 2009
 - correspondence from the authority to the applicants, dated 2 December 2009

- The architect's report 'Moisture and thermal survey report, [Remedial] work advice', dated 22 February 2010
 - correspondence from the authority to the architect, dated 23 June 2010
 - 'Producer Statement - PS4 - Construction review', dated 18 May 2011
 - 'Producer Statement - Construction - PS3', dated 19 May 2011
- 4.3 The authority acknowledged the application for determination and provided copies of documents pertinent to the matters including the 2005 Defects report (refer paragraph 3.3) and various inspection records.
- 4.4 A draft determination was issued to the parties for comment on 27 July 2011. The authority accepted the draft without comment.
- 4.5 The architect accepted the draft but requested the inclusion of a paragraph that stated that the 'house is fit for future amendment renovation upon issuing of the proposed notice to fix', that there were no 'health and safety' concerns, and that the house could be occupied when the remedial work was being completed.
- 4.6 I acknowledge the architects request but consider the condition of the building, and the remedial work required, can only be determined after the further investigation noted in paragraph 6.3.2.

5. The expert's report

- 5.1 As mentioned in paragraph 1.4, I engaged an independent expert to assist me. The expert is a member of the New Zealand Institute of Building Surveyors and inspected the house on 17 and 18 July 2011; providing a report dated 27 July 2011.

5.2 General

- 5.2.1 In comparing the as built house with the consented plans the expert noted that there were some variations, including; a small extra window on the top level, alterations to the stairs from the laundry, omission of stairs indicated on the plans for the main deck, and an additional deck built on the north elevation.
- 5.2.2 The expert commented that as he had observed some relatively obvious failures he did not undertake a complete investigation and further investigation was required. He considered the observed decay was likely to be present to all areas where the deck had been constructed against the house.
- 5.2.3 The expert noted that, with the exception of the gutters, the house was generally well maintained.
- 5.2.4 The expert observed that the ground clearances to the north and south elevation were adequate, the joinery installations in the weatherboards included well extended head flashings and carefully fitted scribes, and care has been taken with some weathertight detailing.

5.3 Moisture levels

- 5.3.1 The expert inspected the interior of the house, carrying out non-invasive moisture testing at areas considered to be at high risk, and noted several areas on the ground floor where further investigation was required.

5.3.2 The expert took invasive moisture readings using probes through the EIFS cladding at locations considered at high risk. Of the thirty readings taken, seven returned ‘off the scale’ readings of above 40%, and 14 returned elevated readings ranging from 18% to 29%.

5.3.3 The expert also observed water damage and decay to the following:

- water damage to the particle board under the laundry
- signs of decay in the boundary joist and adjacent timber in areas where the deck joists had been attached
- decay to the house boundary joist where the laundry “deck” was still attached
- some signs of decay starting in places in the hardwood the decking itself
- high levels of moisture and significant decay at the two external corners on the main deck below the windows. The framing, bottom plate and particle board flooring were all affected.

5.4 The external envelope

5.4.1 Commenting specifically on the external envelope, the expert noted that:

- weatherboards are partly covered by paving at the front door and either side of the garage door, and the weatherboards to a small section on the north elevation appear to have been recently uncovered
- though they were available at the time of construction, jamb and head flashings were not installed to joinery in the EIFS cladding. This has worked in some places but there is evidence of some ingress below some jamb-sill joins with areas of decay as described above
- some sealant applied at the time of the original construction is now deteriorating
- some gutters are clogged with debris.

5.4.2 Commenting specifically on the sub floor, the expert noted that:

- the additional deck to the north is still fixed through a concealed weatherboard
- one of the original penetrating deck joists on the east deck was left in place

5.4.3 Due to the extent of moisture penetration and the evidence of decay, the expert did not carry out further cladding investigations.

5.5 Other compliance matters

Clause B1

5.5.1 The expert also observed a number of structural matters in the sub floor area that require attention, including:

- the ends of some joists butt into ribbon plates with no joist hangers
- one brace had never been fixed at the bottom
- one joist was not long enough to land on the bearer
- there were no solid nogs (required by NZS 3604 at the time)
- many of the gang nails were severely corroded

Clause E3

- 5.5.2 The expert noted that photographs provided by the architect showed decayed framing adjacent to the showers. The expert recorded a moisture reading of 65% and observed that there was evidence that repairs that had been carried out may not have resolved the problem. However it is noted there is no ventilating fan in the main bathroom, and it is possible elevated moisture levels might be related to that. This is a matter for further investigation.
- 5.6 A copy of the expert's report was provided to the parties on 21 July 2011.

6. Weathertightness

- 6.1 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 Weathertightness risk

- 6.2.1 The house has the following environmental and design features which influence its weathertightness risk profile:

Increasing risk

- the house is sited in a medium wind zone
- it is two-storeys-high
- there are complex roof and wall junctions
- the EIFS cladding is fixed directly to the framing
- the treatment of the external wall framing is unlikely to provide resistance to decay if it absorbs and retains moisture.

Decreasing risk

- there are generous eaves to shelter the cladding on three elevations

- 6.2.2 When evaluated using the E2/AS1 risk matrix, these features show that the relevant elevations of the addition demonstrate a moderate to high weathertightness risk rating. I note that, if the details shown in the current E2/AS1 were adopted to show code compliance, the EIFS cladding would require a drained cavity. However, I also note that a drained cavity was not a requirement at the time of construction.
- 6.2.3 I note with concern that the architect used the E2/AS1 risk matrix in his February 2010 report but incorrectly calculated the risk scores on each elevation, and subsequently concluded that the risk level as low (refer paragraph 3.11). This is grossly inaccurate and I consider the correct risk level is moderate to high.

6.3 Weathertightness performance

- 6.3.1 It is clear from the expert's report that the external envelope is unsatisfactory in terms of its weathertightness performance, which has resulted in significant moisture penetration and decay to some areas of the house.
- 6.3.2 Considerable work is required to make the house weathertight and durable and further investigation is necessary, including the systematic survey of all risk

locations, to determine all of the causes and the full extent of moisture penetration, timber damage and the repairs required.

6.4 Weathertightness conclusion

- 6.4.1 I consider the expert's report establishes that the current performance of the building envelope is not adequate. Consequently, I am satisfied that the house does not comply with Clause E2 of the Building Code.
- 6.4.2 The building envelope is also required to comply with the durability requirements of Clause B2. Clause B2 requires that a building continues to satisfy all the objectives of the Building Code throughout its effective life, and that includes the requirement for the house to remain weathertight. Because the cladding faults will continue to allow the ingress of moisture in the future, the building work does not comply with the durability requirements of Clause B2.
- 6.4.3 Given the extent of non-compliance with Clause E2 and the damage to the ground floor external framing recorded in the expert's limited investigation, the building's current and ongoing compliance with Clause B1 must be considered in any further investigation.
- 6.4.4 Final decisions on whether code compliance can be achieved by remediation or re-cladding, or a combination of both, can only be made after a more thorough investigation of the external envelope and of the extent of decay in the underlying timber framing. This requires a careful analysis by an appropriately qualified expert, and should include a full investigation of the causes, extent, level and significance of the timber decay to framing, with the chosen remedial option submitted to the authority for its approval.
- 6.4.5 I note that the Department has produced a guidance document on weathertightness remediation⁶. I consider that this guide will assist the owners in understanding the issues and processes involved in remediation work to the cladding, and in exploring various options that may be available when considering the upcoming work required to the additions.
- 6.4.6 I concur with the views expressed by the authority in its letter of 23 June 2010 (refer paragraph 3.12) and I find it disappointing that the architect has supported the owners in an application for determination when the authority has clearly provided sufficient information to warrant further investigation by a qualified weathertightness specialist. The architect's conclusion that the house is 'sound' is at odds with the results of the expert's finding of advanced decay. It is clear that the previous communication from the authority which identified non-compliant items requiring expert investigation was not followed.
- 6.4.7 I also question the ability of the architect to issue producer statements in May 2011 in respect of work that is not clearly defined in the statements, and was, for the most part, completed in 1993.
- 6.4.8 In the application for determination the architect contends that the Act is 'not relevant' to the house because it was built under the Building Act 1991 (refer paragraph 4.1). This is not correct. The Act contains transitional provisions that require the assessment of code compliance to be completed against the requirements

⁶ Weathertightness – Guide to remediation design. This guide is available on the Department's website, or in hard copy by phoning 0800 242 243.

of the Building Code that existed at the time the consent was issued. The performance requirements of Clauses B2 and E2 have not changed significantly in the period since the consent was issued.

7. What is to be done now?

- 7.1 The authority should issue a notice to fix that requires the owners to bring the additions into compliance with the Building Code. The notice should identify the defects listed in paragraphs 5.4.1, 5.4.2 and 5.5, referring also to the further investigation required as discussed in paragraph 6.4.4 and 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. It is not for the notice to fix to specify how the defects are to be remedied and the building brought to compliance with the Building Code. That is a matter for the owners to propose and for the authority to accept or reject.
- 7.2 I suggest that the parties adopt the following process to meet the requirements of paragraph 7.1. The applicant should produce a response to the notice to fix in the form of a detailed proposal, produced in conjunction with a competent and suitably qualified person, as to the rectification or otherwise of the specified matters. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.
- 7.3 I also note that the expert has identified changes from the consent drawings, and I leave these to the parties to resolve once the appropriate remedial work is satisfactorily completed.

8. The decision

- 8.1 In accordance with section 188 of the Building Act 2004, I hereby determine that:
- the external envelope does not comply with Building Code Clauses E2 and B2
 - the external framing does not comply with Building Code Clause B2 insofar as it relates to Clause B1
- 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 Department of Building and Housing on 9 September 2011.

John Gardiner
Manager Determinations