Department of Building and Housing
Te Tari Kaupapa Whare

Determination 2010/129

Refusal to issue a code compliance certificate for a 10-year-old house with monolithic cladding at 35 Samwell Drive, Whitby, Porirua

1. The matters to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004[1] ("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 D and L Archer ("the applicants") and the other party is the Porirua City Council ("the authority"), carrying out its duties as a territorial authority or building consent authority. I consider the consultancy company, Building Compliance and Investigation Limited ("the consultant") is a person with an interest in this determination.

1.2 This determination arises from the decision of the authority to refuse to issue a code compliance certificate ("CCC") for a 10-year-old house, because it is not satisfied that the building work complies with certain clauses[2] of the Building Code (First Schedule, Building Regulations 1992). The authority's concerns about the compliance of the building work relate to its age and to the weathertightness of its claddings.

[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 determined[3] is therefore whether the authority was correct to refuse to issue a CCC for the original building work. In deciding this, I must consider:

1.3.1 Matter 1: The external envelope

Whether the external envelope to the house ("the claddings") complies with Clause E2 External Moisture and Clause B2 Durability of the Building Code. The claddings include the components of the systems (such as the monolithic wall cladding, the windows, the roof cladding and the flashings), as well as the way the components have been installed and work together. (I consider this matter in paragraph 6.)

1.3.2 Matter 2: The durability considerations

Whether the elements that make up the building work in the house comply with Building Code Clause B2 Durability, taking into account the age of the house. (I consider this matter in paragraph 7.)

1.4 The building consents

1.4.1 Matter 1 includes the original claddings to the house, together with associated new claddings replaced as part of repair work carried out in 2009. The claddings therefore include building work carried out under the following building consents:

- Consent No. ABA 990488 ("the original consent") issued 7 January 1999
- Consent No. BCA 0703/09 ("the repair consent") issued 26 June 2009, for which a CCC was issued on 23 November 2009.

1.5 In making my decisions, I have considered the submissions of the parties, the report of the expert commissioned by the Department to advise on this dispute ("the expert") and the other evidence in this matter.

2. The building work

2.1 The building work consists of a detached house situated on a south-sloping site in a medium wind zone for the purposes of NZS 3604[4]. While generally single-storey, the southwest corner of the house is two-storeys due to the basement garage. The slope results in a storey-high sub-floor area extending around the southeast corner. The house is assessed as having a high weathertightness risk (see paragraph 6.2).

2.2 Construction is generally conventional light timber frame, with concrete foundations and floor slab to the basement, timber-framed floors and sub-floors elsewhere, monolithic wall claddings, aluminium windows, pressed metal tiles to 30^{o} pitch roofs and membrane to flat roof areas.

2.3 The house is fairly complex in plan and form, with varying roof slopes and materials, exposed wing walls, parapets to gable ends and wing walls, sloping-head windows, various decorative features, and box bay projections. Two of the latter incorporate conservatory-type glazed roofs. There are no eaves projections, except for some recessed walls at the southeast corner and a small length of the north elevation.

[3] Under section 177(b)(i) of the Act (prior to 7 July 2010)
[4] New Zealand Standard NZS 3604:1999 Timber Framed Buildings

2.4 Two ground level timber decks are attached to the house. A small entry deck is recessed beneath a membrane-roofed canopy on the west elevation and a larger deck extends along part of the north elevation. These decks have spaced timber decking and no balustrades. A third timber deck, with spaced timber decking and open timber balustrades, is partly recessed beneath the roof on the east elevation.

2.5 The monolithic wall cladding consists of 7.5mm thick fibre-cement sheets fixed through the building wrap to the framing, and finished with an applied textured coating system. The flush-finished fibre-cement extends to clad roof parapets, columns, wing walls and a decorative flying beam feature to the west parapet.

2.6 The expert noted no evidence of timber treatment. Given the lack of evidence and the date of construction in 1999, I consider that the original wall framing of this house is not treated. Framing removed and replaced during repairs carried out in 2009 was recorded as H3.1 treated timber in the authority's inspection records.

3. Background

3.1 The original consent

3.1.1 The authority issued the original consent (No. AB 990488) on 7 January 1999 under the Building Act 1991. I have not seen a copy of the original consent.

3.1.2 The authority carried out two inspections, being a foundation inspection on 12 April 1999, and a pre-line inspection on 8 July 1999. There is no record of a final inspection or of a CCC being issued. The applicants purchased the house in December 1999, on the assumption that all compliance matters had been resolved.

3.2 The 2009 investigations

3.2.1 While preparing the house for sale in 2009, the applicants engaged a recoating company to repaint the building on three sides. During preparation work, the recoating company 'noted spalling of the existing texture coating' in several locations and the consultant was engaged to 'inspect these three locations and advise on a suitable repair method'.

3.2.2 In May and June 2009, the consultant investigated only these areas and prepared a 'scope of work' and building consent documentation for the repair work. The building consent specification included descriptions of investigations carried out, along with proposals for replacement of damaged timber framing to the following areas:

- the base of the wing wall at the northeast corner
- walls associated with the wall to roof junctions at the entry canopy.

3.2.3 The specification called for cladding to be cut back; with damaged framing timbers to be removed and replaced with H3.1 treated timber. Framing to be removed included timber beyond the affected areas by '0.5m for treated timber and 1.0m for untreated.' For any untreated timber found, the specification stated 'treat all sides where possible with two coats frame saver concentrate.'

3.2.4 The consent drawings included the floor plan and elevations from the original consent, with the repair areas identified. The specification included the following note:

> We have not inspected the wood work or other parts of the structure which are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the structure is free from defect.

3.2.5 The above note appears to be the only reference to the remaining building envelope, with no comments by the consultant about the condition of the original wall cladding.

3.3 The repair consent

3.3.1 The authority issued the repair consent for repairs to the house, and the work was carried out from August to October 2009. The authority carried out three inspections as the work progressed.

3.3.2 According to invoices, the repairs carried out included:

- removing and replacing decayed framing and cladding
- re-pitching and re-roofing entry membrane roof to achieve adequate falls
- forming concrete nib to bedroom wing wall framing
- installation of metal parapet flashings
- to the original cladding:
  - repair of 'numerous cracks'
  - resealing all 'windows, doors, roof apron flashing/cladding intersections, head flashings and all service penetrations as required'.

3.3.3 In the final inspection, carried out on 21 October 2009, the inspection record identified documentation to be provided and stated:

> Reclad, renewal of rotten timber where found in areas shown on the consented documents is complete:
>
> - Wall at entry
> - Wingwall to the rear.

3.3.4 The authority received the required documentation and issued a CCC dated 23 November 2009 for 'repairs to cladding at entry and to the wing-wall as necessary'.

3.4 The refusal to issue a CCC

3.4.1 When the house was offered for sale, a prospective purchaser discovered that no CCC was held on the authority's property file for the original consent. The applicants were then advised by their real estate agent that the property would not be further marketed 'unless it has [a CCC]'. Believing that one had been issued and mislaid, the applicants did not formally apply for a CCC.

3.4.2 The Department initially received the application for this determination on 4 June 2010. Following receipt of the authority's submission dated 10 June 2010 (refer paragraph 4.3) the Department made further enquiries and confirmed that the authority had not been requested to carry out a final inspection and therefore had not actually refused to issue a CCC for the original building work.

3.4.3 The applicants subsequently requested a final inspection and, in an email to the Department dated 22 September 2010, the authority confirmed that it had carried out a final inspection of the original building work on 21 September 2010. The authority stated that:

> Our observations on site revealed that the remedial work to the cladding for which a CCC was issued was in fact very limited in scope and the existing cladding is showing clear evidence of failures.

3.4.4 The authority also noted that it would formally write to the applicants to advise that:

> As the building has not been fully reclad and as the existing cladding is now demonstrating failures of B2 and E2, we will not modify the original consent and will not issue a [CCC].

3.4.5 In a letter to the applicants dated 22 September 2010, the authority noted the 'cracking and deterioration' of the original cladding observed during its final inspection and stated that it was therefore:

> ... now unable to issue a [CCC] for this building consent given the issues of non-compliance that were identified during the inspection.
>
> As the existing cladding is showing signs of failure you should engage a suitably qualified person to investigate and report on the reasons for the failures and the impact that those failures may have had on the underlying timber substrate.

3.4.6 Having now been formally refused a CCC for the original consent, the authority added that the applicants may wish to pursue their application for a determination.

3.5 On receipt of the authority's letter, the applicants contacted the Department and the determination was reactivated on 24 September 2010.

4. The submissions

4.1 In their original submission dated 28 May 2010, the applicants outlined the background to the dispute and stated that they believed a CCC had been issued for the original house but the authority had lost the original. As they needed to sell the house, the matter was urgent as:

> We have also been advised that it is not a legal requirement for a home to have a [CCC] issued, but it appears that there is a public perception that it is necessary before buying a house, and that it is a requirement by many banks before they will loan against a house.

4.2 The applicants submitted copies of:

- the original consent drawings
- the inspection records for the original building work
- for the 2009 repair work:
  - the building consent documentation
  - the authority's inspection records
  - the CCC dated 23 November 2009
  - various invoices, warranties, producer statements and other information.

4.3 The authority made a submission in a letter to the Department dated 10 June 2010, confirming that no CCC had been issued for the original consent and noted that the applicants had made no application for one. The authority had therefore 'not been provided with an opportunity to carry out a Final Inspection on the building work' under the original building consent. The authority therefore asked the Department to clarify whether the matter was determinable before proceeding further with the application (refer paragraph 3.4.2).

4.4 The authority submitted copies of its records for the two building consents.

4.5 The draft determination

4.5.1 The draft determination was issued to the parties and the consultant for comment on 15 November 2010. The applicant accepted the draft without comment. The consultant did not respond to the draft. The authority did not accept the draft, the reasons for which it detailed in a 14 page submission to the Department dated 7 December 2010.

4.5.2 With respect to the remedial work the authority submitted that:

> The process followed by the owner in engaging external technical experts is the process outlined in the Department's own guidelines to weathertightness remediation.
>
> The [consultant] detailed that only minor repair work was required in their application for building consent. This indicates that they were satisfied with the condition of the existing cladding system and the underlying timber substrate.
>
> The [authority] cannot be held responsible when applicants do not provide all relevant and necessary information …
>
> The defects that have been identified by the Department did not form part of [the remedial work].

The authority noted what it believed were inconsistencies in the specification for the remedial work, submitting it was 'clearly evident that the [consultant] did carry out a comprehensive investigation …'. (I note the specification says that '[the consultant has] not inspected the wood work or other parts of the structure which are covered, unexposed or inaccessible'. The authority advised that it did not inspect the cladding prior to issuing the repair consent for the remedial work.

4.5.3 With respect to the original consent the authority noted that:

> If [the authority] had been requested to inspect the original wall claddings prior to the failed inspection of the 21st September 2010 then it is likely that all defects would have been identified at that time.

The authority questioned why the matter to be determined was the refusal to issue a CCC in respect of the original building work, when it had not been invited to carry out a final inspection for the work. The authority strongly disagreed that the condition of the original cladding would have been apparent to it, noting that the condition of cladding would have been equally evident to the consultants.

4.5.4 With respect to the matters to be determined the authority requested that:

- the Department 'distinguish and identify that the remaining defects relate to work completed as part of the original consent …'.
- if the Department 'believes it requires further investigation or evidence to establish compliance with Clause B1 Structure then [it] should seek that additional evidence …'
- the Department 'identify to the applicant whether or not remediation or re-cladding is required to make the building compliant.'
- the Department should clarity the building's compliance with Clauses B1, B2 and E2 as this was unclear from the decision.

4.5.5 With respect to a modification of Clause B2.3.1, the authority advised it would only undertake such modifications itself for building work of 'very limited liability' unless instructed to do so by the Department.

4.5.6 The authority noted some errors and omissions in the draft.

4.6 My response to the authority's submission

4.6.1 I consider the authority's letter to the applicants dated 22 September 2010 (refer paragraph 3.4.3) establishes the matter to be determined as it is described in paragraphs 1.2 to 1.3.2.

4.6.2 I do not accept the authority's position with respect to the Department's remediation guidelines and I hold to the recommendation made in paragraph 6.3.4. The guidelines describe the engagement of experienced remediation specialists to first complete a detailed diagnosis of the building envelope to determine the extent and significance of moisture, the investigation of at-risk locations, invasive moisture testing and timber sampling. The guidelines show the type of investigation and testing necessary to determine the required repairs.

4.6.3 In my view this process was not following for this house. The consultant's brief for the remedial work appears to be limited to 'inspect these three locations and advise on a suitable repair method'. The authority's own view is that 'the remedial work to the cladding for which a CCC was issued was in fact very limited in scope' (refer paragraph 3.4.3).

4.6.4 The authority has sought specific advice from the Department about the appropriate repair option and whether 'recladding is required'. I cannot give that advice as that is an owner's choice to make. The costs and benefits associated with either option (targeted repair or full recladding) will inform an owner which method they will chose to use. In my view, the method of repair would now be much clearer had the remediation guidelines been followed when undertaking the remedial work. .

4.6.5 The authority expressed the view that the Department should provide definitive evidence about the building's compliance with B1. As this relates directly to the building's compliance with Clause E2, and the effects of water ingress on the timber framing, this extent of non-compliance with Clause B1 cannot be defined until after a thorough investigation of the building has been undertaken. Again, in my view the application of the methodology outlined in remediation guidelines will assist the parties in determining this.

4.6.6 In addition I note that under the Act I am required to gather sufficient evidence in order to decide whether the authority's decision with respect to the refusal to issue the CCC was correct. The expert's report has provided that evidence.

4.6.7 I have taken the authority's comments into account and amended the determination as I consider appropriate.

5. The expert's report

5.1 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 Building Surveyors. The expert inspected the house on 5 October 2010 and provided a report dated 29 October 2010.

5.2 General

5.2.1 The expert considered the construction workmanship to be 'moderate in quality and the detail at difficult junctions is poor and does not provide a weathertight solution.' He noted that the recent repairs and maintenance carried out to the house 'has not rectified the damage that has occurred prior to the work', adding that very little work had been done to the south elevations.

5.2.2 The expert observed that windows and doors had metal head flashings and had been face-fixed against the fibre-cement backing sheets prior to applying the coating system. The expert inserted a blade behind the window jamb flanges and noted that there was no sign of seals behind the flanges.

5.3 Moisture levels

5.3.1 The expert inspected the interior of the house and noted obvious signs of moisture penetration at the following locations

- damaged skirtings beside the garage door
- stained carpet to the northeast corner of the lounge
- wet and damaged flooring to the northwest corner of bedroom 1
- wet and damaged flooring at the front entry (beneath the recent repairs).

5.3.2 The expert took 11 invasive moisture readings through the cladding into the framing at locations considered to be at particular risk of moisture penetration. All readings were elevated as follows:

Roof/wing wall parapets and apron flashings

- 40% and wet decayed drillings at the northwest corner of bedroom 1
- 40% and wet decayed drillings directly under the parapet at the northeast corner of bedroom 1, with 18% at the bottom plate below
- 26% below the jamb of the west family room adjacent to the wing wall
- 26% under the parapet end at the bottom of the northwest corner of the lounge
- 22% under the apron flashing at the bottom of the bathroom southeast corner

Windows and doors

- 18% on the north below the bedroom 1 window jamb
- 18% on the east below the study window jamb, with 22% in the fibre-cement
- 40% on the east below the toilet's window jamb

The entry porch

- 24% at the southwest corner, with fibre-cement 'crumbly from being wet'
- Wet and damaged flooring under the door, observed from the sub-floor.

Moisture levels above 18% generally indicate that external moisture is entering the structure and further investigation is needed.

5.4 Commenting specifically on the external envelope of the house, the expert noted that:

General

- if further remedial work is not carried out, 'further decay is inevitable that will cause structural failure'
- there are insufficient clearances below the cladding at the garage door and around the entry porch
- a gatepost is fixed directly into the end of the family room wing wall
- there is no evidence of control joints

Windows and doors

- windows are face-fixed against fibre-cement backing sheets, with no seals behind jamb flanges, no drainage gap under sill flanges and the coating applied after the window installation

Roof junctions

- the recently installed metal parapet cap flashings have flat tops and no saddle flashings at junctions with walls
- the ends of parapet walls intersect with roof and apron flashings and these junctions are not weathertight, with moisture and decay apparent

- the ends of apron flashings are not weatherproof, with inadequate kickouts, gutter ends butted against the coating, and moisture and decay apparent
- fascias have been installed against fibre-cement backing sheets prior to the coating application and there are cracks apparent
- there is no drip edge installed to the new membrane roof to the entry

Decks

- the deck floors butt against the cladding, with no drainage gap
- deck ribbon plates are fixed directly against the cladding, with no drainage gap.

5.5 The expert concluded:

> Repairs have been done however it is my view that these are a patch up and have not addressed the design failure of the dwelling. There is also still badly decayed timber in the framing of the areas that have been repaired.

5.6 A copy of the expert's report was provided to the parties on 2 November 2010.

Matter 1: The external envelope

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 two-storeys in part
- the roofs have parapets and no eaves above most walls to shelter the cladding
- although fairly simple in plan, the house includes complex roof to wall junctions, unconventional joinery and other decorative features
- the walls have monolithic cladding fixed directly to the framing
- there are timber decks attached to the house
- the external wall framing is not treated to a level that provides resistance to decay if it absorbs and retains moisture

Decreasing risk

- the house is in a medium wind zone
- the attached decks have spaced timber slat floors.

6.2.2 When evaluated using the E2/AS1 risk matrix, these features show that all elevations of the house demonstrate a high weathertightness risk rating. I note that, if the details shown in the current E2/AS1 were adopted to show code compliance, the cladding on this house would require a drained cavity. However, I also note that this was not a requirement of E2/AS1 at the time of construction.

6.3 Weathertightness conclusion

6.3.1 I consider the expert's report establishes that the current performance of the building envelope is not adequate because there is evidence of moisture penetration and decay in at least three areas of the untreated timber framing. Consequently, I am satisfied that the house does not comply with Clause E2 of the Building Code. In addition, the extent of any damage to the structural framing needs investigation to determine the building's compliance with Clause B1 Structure.

6.3.2 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 faults to the cladding on the house are likely to allow the ingress of moisture in the future, the building work does not comply with the durability requirements of Clause B2.

6.3.3 I consider that final decisions on whether code compliance can be achieved by either remediation or re-cladding, or a combination of both, can only be made after a more thorough investigation of the cladding and the condition of the underlying timber framing. This will require a careful analysis by an appropriately qualified expert, and should include a full investigation of the extent, level and significance of the timber decay to the framing. Once that decision is made, the chosen remedial option should be submitted to the authority for its approval.

6.3.4 I note that the Department has produced a guidance document on weathertightness remediation[5]. I consider that this guide will assist the owner in understanding the issues and processes involved in remediation work, and in exploring various options that may be available when considering the upcoming work required to the house.

6.4 The 2009 repair work

6.4.1 The two areas repaired in 2009 require further investigation, as continuing moisture penetration is apparent and I also note the expert's comments regarding damaged timber remaining in those areas. Invoices supplied for the repair work also refer to the repair of 'numerous cracks' in the cladding, which I take to refer to the original cladding. Those cracks were apparently not investigated at the time to establish their cause or causes and to identify any associated timber damage.

[5] External moisture – A guide to weathertightness remediation. This guide is available on the Department's website, or in hard copy by phoning 0800 242 243

6.4.2 I am therefore of the opinion that the initial investigation of the cladding did not adequately establish the full extent of appropriate repairs needed to make the house weathertight and durable. From the significant moisture penetration and damage identified during the expert's limited investigation, it is apparent that moisture ingress has been occurring over a prolonged period and damage may be extensive.

6.4.3 In my opinion it would have been reasonable to for the authority to have undertaken a site inspection prior issuing the building consent for the repair work, particularly given:

- the limited nature of the repair work
- the building's age, weathertightness risk profile and cladding used
- no final inspection has been undertaken under the original consent.

6.5 Weathertightness performance

6.5.1 It is clear from the expert's report that the flush-finished fibre-cement cladding, including the junctions with the roof, is unsatisfactory in terms of its weathertightness performance, which has resulted in moisture penetration and decay to the framing. Taking into account the expert's report, I conclude that the areas outlined in paragraph 5.4 require rectification.

6.5.2 Considerable work is required to make the external envelope weathertight and durable. Further investigation is necessary, including the systematic survey of all risk locations, to determine the causes and the full extent of defects, moisture penetration, timber damage and the repairs required. It is also apparent that the two areas repaired in 2009 also require further investigation.

6.5.3 I am unable to confirm, as requested by the authority (refer paragraph 4.5.4), whether the outstanding defects relate to the work completed as part of the original consent.

Matter 2: The durability considerations

7. Discussion

7.1 There are concerns about the durability, and hence the compliance with the Building Code, of certain elements of the building taking into consideration the completion of the house in 1999.

7.2 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 [CCC]" (Clause B2.3.1).

7.3 In previous determinations (for example Determination 2006/85) I have taken the view that a modification of this requirement can be granted if I can be satisfied that the building complied with the durability requirements at a date earlier than the date of issue of the CCC, that is agreed to by the parties and that, if there are matters that are required to be fixed, they are discrete in nature.

7.4 Because of the extent of further investigation required into the timber framing and therefore the house's structure, and the potential impact of such an investigation on the external envelope, I am not satisfied that there is sufficient information on which to make a decision about this matter at this time.

8. What is to be done now?

8.1 A notice to fix should be issued that requires the owner to bring the house into compliance with the Building Code, including the defects identified in paragraph 5.4 and any other defects found in the course of that work, but not specifying 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.

8.2 In addition, the notice to fix should include the requirement for a full investigation into the extent and the causes of decay in the timber framing, referring also to the need for laboratory testing of framing samples to establish the full extent, levels and structural significance of decay to the framing.

8.3 I suggest that the parties adopt the following process to meet the requirements of paragraph 8.1. Initially, the authority should issue the notice to fix. The applicants should then produce a response to this in the form of a detailed proposal, produced in conjunction with a competent and suitably qualified person, as to the investigation and rectification or otherwise of the specified matters. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.

9. The decision

9.1 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 damaged timber framing does not comply with Building Code Clauses B1

and accordingly, I confirm the authority's decision to refuse to issue a CCC for the building work under the original consent.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 17 December 2010.

John Gardiner
Manager Determinations