



Determination 2011/036

Refusal to issue a code compliance certificate for a 12-year-old house with monolithic cladding at 40 Kinleith Way, Albany



1. The matter 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 applicant is the owner D Goudie (“the applicant”) and the other party is the Auckland Council² (“the authority”), carrying out its duties as a territorial authority or building consent authority. I consider the builder, Ian Bamford, to be a person with an interest in the determination.
- 1.2 This determination arises from the decision of the authority to refuse to issue a code compliance certificate for a 12-year-old house because it is not satisfied that it complies with certain clauses³ of the Building Code (First Schedule, Building Regulations 1992). The authority’s concerns about the compliance of the building work relate primarily to its age and weathertightness.

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 North Shore City Council was transitioned into the Auckland Council before the application was made. The term authority is used for both.

³ In this determination, 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 determined⁴ is therefore whether the authority was correct to refuse to issue a code compliance certificate. In deciding this, I must consider whether the external claddings to the house (“the claddings”) comply with Clause B2 Durability and Clause E2 External Moisture of the Building Code. The claddings include the components of the external envelope (such as the monolithic wall cladding, the windows, the roof cladding and the flashings), as well as the way these have been installed and work together.

1.4 Matters outside this determination

1.4.1 In its letter dated 13 October 2010 (see paragraph 3.4), the authority proposed that the determination be on the weathertightness of the building work. Although the authority also identified some outstanding plumbing and drainage items, these appear to be in the process of being completed, and I leave them to the parties to resolve.

1.4.2 The authority also raised concerns about the durability of all building elements in the house and stated that the applicant may apply to the authority for a modification of the requirements to allow durability periods to commence from the date of substantial completion in 1999. I therefore also leave this matter to the parties to resolve once the house has been made code-compliant.

1.5 In making my decision, 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, which is two storeys in part and is situated on a sheltered level site in a low wind zone for the purposes of NZS 3604⁵. Construction is generally conventional light timber frame, with a concrete slab and foundations, monolithic wall claddings, aluminium windows and asphaltic shingle roofing. The house is assessed as having a moderate to high weathertightness risk (see paragraph 6.2).

2.2 The house is fairly complex in plan and form; with numerous wall to roof junctions and attached timber pergolas. The lower roofs form lean-tos against the upper walls of the central two-storey section and a monolithic-clad ‘chimney’ structure projects through the roof on the northwest elevation. The 30° pitch hipped roofs have eaves projections of about 450mm overall, with verges of about 250mm.

2.3 The cladding system to the walls is a form of monolithic cladding system known as EIFS⁶. The proprietary EIFS system consists of 40mm polystyrene backing sheets fixed directly to the framing over the building wrap and finished with a proprietary textured coating system. The cladding system includes purpose-made flashings to windows, edges and other junctions.

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

⁵ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

⁶ Exterior Insulation and Finish System

- 2.4 The expert noted that the framing timber he was able to inspect appeared to be untreated. Given the date of construction of the house in 1998 and the other evidence, I consider the wall framing is untreated.

3. Background

- 3.1 The authority issued a building consent to the applicant (No. A13528) on 24 August 1998 under the Building Act 1991, and construction was completed over the following four months.
- 3.2 The authority carried out final inspections on 22 January 1999, which accepted that building items in the house were complete while identifying some minor outstanding plumbing items. No re-inspection was carried out and no code compliance certificate was issued for the building work.
- 3.3 While preparing to sell the property in 2010, the applicant sought to resolve the lack of a code compliance certificate. The authority carried out a final inspection on 17 September 2010 and identified a number of outstanding items. The inspection record also noted the need for an ‘inspection for weathertightness’, which was subsequently carried out on 29 September 2010.

3.4 The authority’s decision

- 3.4.1 In a letter to the applicant dated 13 October 2010, the authority explained that the ‘allowance of moisture ingress, together with the use of untreated timber framing, has become a major problem to the structural integrity of buildings’ and it now usually required ‘invasive moisture testing and investigation’ in order to be satisfied about the compliance of direct fixed monolithic cladding systems.
- 3.4.2 The authority listed 11 risk factors identified with the building and stated that its visual inspection had identified the following defects:
1. Finished ground levels are too high in places, relative to floor level
 2. Clearance between cladding and ground surfaces is inadequate in places
 3. Cladding not sealed behind end of some gutters
 4. No kickouts provided at bottom end of parallel apron flashings, including at chimney
 5. Timber decking lacks clearance from the wall cladding
 6. Pipe penetrations are not adequately sealed
 7. Holes through bottom of meter box are not sealed
 8. No spreaders have been fitted to downpipes discharging onto lower roofs
 9. No weathering cowl has been fitted over air extraction outlet.

The authority also listed various other minor defects and outstanding items, most of which related to plumbing items identified during the final inspections.

- 3.4.3 The authority concluded that, due to the risk factors, the identified defects and the age of the building, a code compliance certificate would not be issued as it was:
- ...unable to be satisfied on reasonable grounds that the installed cladding systems comply with clause E2 External Moisture and clause B2 Durability of the New Zealand Building Code, or that all other elements comply with B2, considering the age of construction.

- 3.4.4 The authority advised the engagement of an ‘appropriately qualified and experienced consultant’ to investigate the weathertightness of the cladding, identify any elevated moisture levels in the exterior framing and propose remedial work if necessary. The authority stated that, providing all required remedial work was satisfactorily completed within a year, a code compliance certificate would be issued that applied from the date of substantial completion (suggested as 1 March 1999).
- 3.5 The applicant did not undertake to have a weathertightness investigation done and the Department received the application for a determination on 10 November 2010.

4. The submissions

- 4.1 The applicant’s submission outlined the background to the situation, describing how she had ‘wrongly assumed’ that the house had a code compliance certificate until preparing to sell the house when she discovered that one had not been issued. The applicant stated that ‘I have never at any stage had any concerns about its weathertightness nor have I seen or experienced any evidence of dampness.’
- 4.2 The applicant forwarded copies of:
- the consent drawings
 - the building consent
 - the authority’s inspection summary and some other inspection records
 - the authority’s letter dated 13 October 2010
 - various other items of information.
- 4.3 The authority acknowledged the application and forwarded copies of:
- The authority’s weathertightness inspection record (refer paragraph 3.3)
 - some other inspection records
 - some photographs and other correspondence with the applicant.
- 4.4 A draft determination was issued to the parties for comment on 26 January 2011.
- 4.5 In a letter dated 14 March 2011 the authority accepted the draft but considered that further investigation of the electrical meter box was required. The authority noted that:
- ...the penetrations through the bottom of the box are not sealed. The inspector did not note whether the vision panels were riveted, as well as sealed, to the box door. However the box is mounted well below the 45° angle of shelter from the eaves above, and any shelter from the adjacent trees may not be permanent.
- 4.6 In an email received on 12 April 2011 the applicant accepted the draft determination without comment.

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 24 December 2010, providing a report dated 31 December 2010. The expert noted that the house appeared to accord with the consent drawings.

5.2 General

5.2.1 The expert noted that the overall quality of construction appeared 'reasonably good', with window and door flashings 'tidy and apparently effective' with the wall cladding finish generally good except for items identified in paragraph 5.4.

5.2.2 The aluminium joinery is recessed by the thickness of the cladding, with steeply sloping sill recesses, metal head flashings and uPVC jamb flashings that the expert could observe under door sills. The expert removed coating at the jamb to sill junction of a bathroom window, observing that the uPVC jamb flashings appeared satisfactory and in accordance with the manufacturer's instructions at the time, with the jamb flashings butting into and well sealed against the sill flashings.

5.3 Moisture levels

5.3.1 The expert inspected the interior of the house, taking non-invasive moisture readings and noting the following:

- swollen skirting behind the dryer in the garage, which were confirmed by invasive moisture readings that reduced from over 30% on the inside to 17% on the outside – showing that moisture was likely to be coming from the dryer
- some elevated moisture readings in the southwest wall beside the kitchen, with only one confirmed with invasive moisture readings (refer paragraph 5.3.2)
- water stains to outer areas of the plywood roof sarking (refer paragraph 5.4).

5.3.2 The expert carried out invasive moisture testing to 25 areas considered at high risk of moisture penetration and recorded elevated readings in three areas below the ends of apron flashings as follows:

- 40%, with advanced decay in the bottom plate beside the southwest kitchen
- 40% and 28%, with advanced decay in the north chimney structure
- 19% directly beneath the gutter to the roof at the northeast entry.

5.3.3 The expert established that the equilibrium moisture content of the framing was about 13%, noting that the remaining readings ranged from 10% to 16%. Moisture levels above 18%, or which vary significantly, generally indicate that external moisture is entering the structure and further investigation is required.

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

Apron flashings

- the end of the apron flashing above the kitchen is not weathertight, with saturated timber and severe decay in the framing below
- although the ‘shoulders’ of the framed chimney appear weathertight, the framing beneath the apron flashings is saturated and severely decayed
- the end of the apron flashing above the entry is not weathertight, with slightly elevated moisture levels in the framing directly below
- some other apron flashings are not weathertight, with gaps and exposed polystyrene

Other roof items

- there are no spreaders to downpipes discharging onto lower roofs
- two large trees are adjacent to vulnerable roof junctions, leading to roots disturbing the cladding base, leaf accumulation on the roof and gutter blockages risking roof leaks
- as some water staining of the plywood roof substrate is well away from the tree debris, further investigation is needed to determine all of the causes

General

- there is a hairline crack and some minor gaps to the cladding
- the flat top of the chimney capping is ponding, with an unsealed nail penetrating the capping where water accumulates
- the hot water overflow pipe penetration is unsealed
- moisture from the dryer is causing high moisture levels in the adjacent framing.

5.5 The expert made the following additional comments on the cladding:

- Although cladding contacts paving beside the garage doors, the paving is well-drained and sheltered, with no evidence of associated moisture penetration.
- Although the pergola is fixed through the cladding, the fixings are directly beneath and well protected by the roof overhang.
- Although a timber gate post is fixed directly through the cladding, the area is very sheltered and there is no sign of associated moisture penetration.

5.6 The expert also observed that while the gas flue penetration through the roof appeared to be satisfactorily sealed, the access and ventilation to the enclosed hot water cylinder was restricted and should be investigated. The expert also commented on some other items identified in the authority’s letter, noting that some of these appeared to have been satisfactorily resolved.

5.7 A copy of the expert’s report was provided to the parties on 13 January 2011.

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

Increasing risk

- the house is two-storeys high in part
- the walls have monolithic cladding fixed directly to the framing
- the house is fairly complex in plan and form, with some complex junctions
- 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 low wind zone
- the timber decks are attached at ground level and have free-draining floors
- there are eaves projections to shelter most of the cladding.

6.2.2 When evaluated using the E2/AS1 risk matrix, these features show that one elevation of the house demonstrates a moderate weathertightness risk rating and the remaining a high 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 for all risk levels. However, I also note that a drained cavity was not a requirement at the time of construction.

6.3 Weathertightness performance

6.3.1 Generally the claddings appear to have been installed in accordance with good trade practice and to the manufacturer's recommendations at the time. However, taking account of the expert's comments in paragraph 5.4, and the authorities submission (refer paragraph 4.5) I conclude that further investigation and remedial work is necessary in respect of the following:

- investigation into and repair of damaged framing timber to:
 - the clad chimney structure
 - the wall adjacent to the kitchen
- the lack of weathertightness to ends of the apron flashings
- the lack of spreaders to downpipes discharging onto lower roofs
- the large trees adjacent to vulnerable roof junctions

- further investigation to determine the cause(s) for the water staining of the plywood roof substrate, with repairs as necessary
- the hairline crack and minor gaps to the cladding
- the capping to the chimney top
- the unsealed overflow pipe
- adequate sealing of the electrical meter box
- the dampness causing high moisture levels in the framing behind the dryer.

6.3.2 I also note the expert's comments in paragraph 5.5 and I accept that these areas are adequate in these particular circumstances.

6.3.3 Notwithstanding that the wall cladding is fixed directly to the framing, thus inhibiting free drainage and ventilation behind the cladding, I have noted certain compensating factors that assist its performance in this particular case:

- After 12 years, moisture ingress is limited to areas with identified defects.
- The joinery is adequately flashed, with no evidence of moisture penetration.
- The cladding is installed in accordance with the manufacturers' instructions at the time of construction and is generally well maintained.

These factors can assist the building to comply with the weathertightness and durability provisions of the Building Code.

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 because there is evidence of significant moisture penetration and decay to two areas of the 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.

6.4.2 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 on the house are likely to 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 Because the faults identified with the claddings occur in discrete areas, I am able to conclude that satisfactory rectification of the items outlined in paragraph 6.3.1 will result in the building envelope being brought into compliance with Clauses B2 and E2 of the Building Code.

6.4.4 I emphasise that each determination is conducted on a case-by-case basis. Accordingly, the fact that a particular cladding has been established as being code-compliant in relation to a particular building does not necessarily mean that the same cladding system will be code-compliant in another situation.

- 6.4.5 Effective maintenance of claddings is important to ensure ongoing compliance with Clauses B2 and E2 of the Building Code and is the responsibility of the building owner. The Department has previously described these maintenance requirements (for example, Determination 2007/60).

7. What is to be done now?

- 7.1 The authority should issue a notice to fix that requires the owner to bring the house into compliance with the Building Code, identifying the defects and investigations listed in paragraph 6.3.1 and referring to any further defects that might be discovered in the course of investigation and rectification, 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.
- 7.2 I suggest that the parties adopt the following process to meet the requirements of paragraph 7.1. Initially, the authority should issue the notice to fix. The applicant 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 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 note the expert's comments on other items identified by the authority and also his comment on the need for further investigation of the gas hot water cylinder enclosure (see paragraph 5.6). I draw these comments to the authority's attention for further investigation and consideration as it considers appropriate.

8. The decision

- 8.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the external envelope of the house does not comply with Clauses E2 and B2 of the Building Code 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 18 April 2011.

John Gardiner
Manager Determinations