

Determination 2006/46

Refusal of a code compliance certificate for a building with a “monolithic” cladding system at 10 Errigal Close, Albany



1. The dispute 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, Determinations Manager, Department of Building and Housing, for and on behalf of the Chief Executive of that Department. The applicant is Mr Atkinson (“the applicant”), acting on behalf of the owner “the Croad Family Trust”, and the other party is the North Shore City Council (“the territorial authority”).
- 1.2 The dispute for determination is whether the territorial authority’s decision to decline to issue a code compliance certificate for a 3-year-old house because it was not satisfied that the monolithic cladding complied with clauses B2 “Durability” and E2 “External Moisture” of the Building Code² (First Schedule, Building Regulations 1992) is correct.

¹ The Building Act 2004 is available from the Department’s website at www.dbh.govt.nz.

² The Building Code is available from the Department’s website at www.dbh.govt.nz.

- 1.3 The question to be determined is whether I am satisfied on reasonable grounds that the wall cladding as installed to the external walls of the building (“the cladding”), complies with the Building Code (see sections 177 and 188 of the Act). By “the wall cladding as installed” I mean the components of the system (such as the backing materials, the flashings, the joints and the coatings) as well as the way the components have been installed and work together.
- 1.4 In making my decision, I have considered the submissions of the parties, the report of the independent expert commissioned by the Department to inspect the house (“the expert”), and the other evidence in this matter. I have evaluated this information using a framework that I describe more fully in paragraph 6.1. I have not considered any other aspects of the Act or the Building Code.

2. The building

- 2.1 The building work consists of a two-storey house situated on a sloping site, which is in a low wind zone for the purposes of NZS 3604. The house has four different levels, with the two ground floor levels set to accommodate the slope of the site. Construction is conventional light timber frame, with concrete slabs and foundations, concrete block retaining walls, aluminium windows and monolithic wall cladding. The house shape is reasonably complex in plan and form, with 20° concrete tile hip and mono-pitched roofs. Several lower ground floor projections form lean-tos, at varying levels, against upper walls. Eaves projections are about 600mm overall, and verge projections are 500mm. An enclosed deck, with a tiled membrane floor and monolithic-clad balustrades, extends from the dining area over living areas below.
- 2.2 A horizontal band of monolithic cladding is used at the inter-storey junction, and further decorative bands are applied around some of the windows and doors. A monolithic-clad chimney structure, with sloping “shoulders”, passes through the eaves of the lower roof on the northwest elevation. A gable-roofed canopy extends from the upper roof over the entry, and is supported on 2-storey high monolithic-clad columns that are linked back to the external walls with part-height wing walls. Various other decorative bands and features are applied to tops, corners and bases of the columns, wing walls, chimney and other walls.
- 2.3 The specification calls for wall framing to be “treated”, or to comply with NZS 3602, which at the time of construction would permit untreated timber in certain situations. The expert has noted that he found no evidence of treatment on timber he was able to inspect. I have received no other evidence as to the treatment of the wall framing timbers. Based on this evidence, I consider that the external wall framing is unlikely to be treated.
- 2.4 The cladding system on the building is what is described as monolithic cladding, and consists of 7.5 mm thick fibre cement sheets fixed through the building wrap to the framing, and finished with an applied flush-finished textured coating system. The bands, decorative features, and the cappings to the chimney and deck balustrades are formed from shaped polystyrene finished with the same textured coating as the main walls.

2.5 I have seen no evidence of producer statements or warranties for the cladding.

3. Sequence of events

3.1 The territorial authority issued a building consent to the first owner of the house on 8 May 2002.

3.2 The first owner engaged a building certifier to undertake inspections of the construction. The building certifier carried out various inspections during the course of construction, including prior to installation of interior wall linings and following “exterior lining” installation, with the “final building” inspection on 11 February 2003 noted as incomplete in the inspection summary.

3.3 It appears that the first owner sold the house to the current owners in April 2003.

3.4 The building certifier wrote to the territorial authority on 30 April 2003, attaching the records of the house inspections and formally advising that:

...we are no longer involved in the above mentioned project and therefore hand it back to Council for completion...

3.5 The territorial authority carried out a final inspection on 3 June 2003 and a “recheck” inspection on 10 December 2003. The territorial authority’s inspection summary notes a number of outstanding items, including that:

Cladding appears to be face fixed. Therefore, weathertightness inspection required.

No further action appears to have been taken in relation to this notification until the weathertightness inspection was completed on 24 February 2006.

3.6 In response to the applicant’s request in February 2006 for a code compliance certificate, the territorial authority carried out a visual “weathertightness” inspection on 24 February 2006. In a letter to the applicant dated 13 March 2006, the territorial authority stated that the Building Code required the durability of the cladding to be 15 years and that of the timber framing to be 50 years. The territorial authority also noted that the inspection process for monolithic claddings had changed since the time that the building consent for the house was processed. The territorial authority listed certain weathertightness risk factors associated with the building, together with three identified defects and stated that, due to the risk factors and defects, it could not be satisfied on reasonable grounds that the cladding system complied with clauses E2 and B2 of the Building Code.

3.7 The territorial authority did not issue a Notice to Rectify as required under section 43(6) of the Building Act 1991.

3.8 In a letter to the territorial authority dated 21 March 2006, the lawyer acting on behalf of the applicant (“the lawyer”) explained that the applicant had relied on the territorial authority’s advice, in February 2006, with regard to the remaining outstanding items, and had therefore entered into an unconditional sales contract that

was dependent on the provision of a code compliance certificate for the house. After supplying the outstanding paperwork items to the territorial authority, the applicants had received a “standard” refusal to issue a code compliance certificate, and the lawyer concluded that:

Our client believes that you have a clear obligation to advise it if there are further requirements that you need satisfied before issuing a code compliance certificate for their property. You did not do so and our client believes that it should be entitled to rely on the advice previously given and having satisfied all outstanding requirements, you should now be able to issue a code compliance certificate.

- 3.9 In a letter to the territorial authority dated 22 March 2006, the local Member of Parliament (the “Member of Parliament”) outlined the situation facing his constituents, and noted that they had:

...met the Council's original requirements for consent, then the additional requirements for CCC, and now these seem to have changed again. Even if these latest requirements are met it is possible that still more work might be required.

Could you please look into this situation and give certainty to [the owners] that if the current requirements are met, then CCC will be issued.

- 3.10 The territorial authority responded to the lawyer’s letter on 27 March 2006, outlining the inspections carried out on the house and the reasons for its decision - explaining that:

The requirement for dwellings with direct fixed monolithic cladding to undergo a weathertightness inspection before the issue of a Code Compliance Certificate was introduced by the North Shore City Council in December 2003, probably only days after the final recheck on 10 December 2003. This decision was brought about by the alarming number of failures of this type of wall cladding.

- 3.11 The territorial authority responded to Member of Parliament’s letter on 1 April 2006, describing the background to its decision and explaining how it could not issue a code compliance certificate unless it was satisfied on reasonable grounds that the cladding complied with the building code. The territorial authority recommended that the owners seek a determination that:

...will determine whether the Council was correct in not issuing a Code Compliance Certificate and will suggest a further course of action. If as a result of the determination and further action the Council is satisfied on reasonable grounds that the requirements of the New Zealand Building Code can be met, a Code Compliance Certificate will be issued.

- 3.12 An application for a determination was received by the Department on 8 April 2006.

4. The submissions

- 4.1 The applicant forwarded copies of:

- the record of the final plumbing and drainage inspection

- the letter from the territorial authority.

4.2 The letter to the Department dated 11 April 2006 from the territorial authority, which accompanied the documentation, noted that:

The matter to be determined is:

- Whether the installed cladding system complies with clauses B2.3.1 and E2.3.2 of the Building Code.

4.3 The territorial authority forwarded copies of:

- the building plans and specification
- some of the consent documentation
- the building certifier's records and correspondence
- the territorial authority's inspection records
- the correspondence with the applicant, the lawyer and Member of Parliament.

4.4 Copies of the submission and other evidence were provided to each of the parties. Neither party made any further submissions in response to the submission of the other party.

5. The expert's report

5.1 Following receipt of sufficient information from the owner, the expert inspected the claddings of the building on 17 April 2006, and furnished a report that was completed on 18 April 2006. The expert noted that parts of the cladding were of a "reasonable standard", with well-made vertical control joints, generally adequate clearances from the paving or ground, adequately sealed penetrations and adequate head flashings to windows.

5.2 The expert took non-invasive moisture readings through interior linings at skirting level, under windows and at other risky areas throughout the house, and noted no elevated readings or signs of interior moisture damage. More than 50 invasive moisture readings were taken through the wall cladding, at window sills, bottom plates and other risky areas, and 13 elevated readings were recorded as follows:

Northeast elevation

- 19% below the apron flashing of the projecting lounge roof
- 21% in the bottom plate at the corner of the lounge
- 2 at 21% beneath the window sill of the upper entry window
- 2 at 24% in the lower framing of the entry column
- 18% in the bottom plate of the wing wall above the concrete retaining wall

- 21% in the bottom plate at the garage door
- more than 40% at the junction of the deck balustrade with the exterior wall

Northwest elevation

- 20% below the apron flashing of the projecting lounge roof
- 18% at the jamb to sill junction of the doors to the lounge
- more than 40% in the upper framing of the chimney
- 18% in the bottom plate of bedroom 3

Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure.

5.3 The expert removed two small sections of cladding where high moisture contents were recorded - at the base of the entry column and at the junction of the deck balustrade with the wall. The expert also removed a section of the horizontal band to inspect the underlying cladding joint. I accept that the locations opened are typical of similar locations around the building.

5.4 The expert made the following specific comments on the cladding:

- while vertical control joints have been provided, there are several lengths of wall without control joints where the length of Harditex exceeds the 5.4 m limit recommended by the manufacturer
- there are vertical cracks and peaked joints in the cladding in some locations
- the horizontal band has been installed over coated fibre cement, but the interstorey junction has a sealant joint only, in lieu of a flashing appropriate for accommodating movement as a control joint
- the section of the interstorey cladding joint with no covering band is also sealant filled, and joint movement has caused peaking in two locations
- clearances from the bottom of the cladding to the paving are inadequate at the garage doors and at the entry
- the cut-out of the column cladding revealed that bottom plates of the entry columns and adjoining wing walls sit at the same level as the concrete slab, meaning that the tiled surface is higher than the bottom plates. Tile grout has penetrated over the bottom plate, and severe decay is apparent
- the cut-out at the deck balustrade revealed no top flashing or saddle flashing at the top of the balustrade framing and signs of decay in the top plate, with the only weatherproofing being provided by the flat polystyrene “capping”
- the top of the chimney appears to have no weatherproofing beneath the polystyrene “capping”, which is disintegrating and allowing water into the framing, resulting in apparent decay in the upper timber framing. The sloping

shoulders of the chimney are covered with building wrap only, with no other protective weatherproofing

- the decorative bands and sills to the windows appear to have been installed over unsealed fibre cement and cracks are appearing in the textured coating at the junction between the fibre cement and the polystyrene at some locations. The sill flanges of all windows have been sealed against the cladding, with no drainage gap provided. The windows without decorative bands have sealant between the jamb flanges and unsealed fibre cement, and the sealant appears to be in questionable condition at some locations
- the bottoms of some of the apron flashings at roof to wall junctions are poorly weatherproofed, with gaps showing or a heavy reliance on sealant for weatherproofing. Gutters and verge tiles are buried in the textured coating.

5.5 Copies of the expert's report were provided to each of the parties.

6. Evaluation for code compliance

6.1 Evaluation framework

6.1.1 In evaluating the design of a building and its construction, it is useful to make some comparisons with the relevant Acceptable Solution³, in this case E2/AS1, which will assist in determining whether the features of this house are code compliant. However, in making this comparison, the following general observations are valid:

- Some Acceptable Solutions cover the worst case, so that they may be modified in less extreme cases and the resulting alternative solution will still comply with the Building Code.
- Usually, when there is non-compliance with one provision of an Acceptable Solution, it will be necessary to add some other provision to compensate for that in order to comply with the Building Code.

6.1.2 The approach in determining whether building work is weathertight and durable and is likely to remain so, is to apply the principles of weathertightness. This involves the examination of the design of the building, the surrounding environment, the design features that are intended to prevent the penetration of water, the cladding system, its installation, and the moisture tolerance of the external framing. The Department and its antecedent, the Building Industry Authority, have also described weathertightness risk factors in previous determinations (refer to Determination 2004/1 *et al*) relating to cladding and these factors are also used in the evaluation process.

6.1.3 The consequences of a building demonstrating a high weathertightness risk is that building solutions that comply with the Building Code will need to be more robust. Conversely, where there is a low weathertightness risk, the solutions may be less

³ An Acceptable Solution is a prescriptive design solution approved by the Department that provides one way, but not the only way, of complying with the Building Code. The Acceptable Solutions are available from the Department's website at www.dbh.govt.nz.

robust. In any event, there is a need for both the design of the cladding system and its installation to be carefully carried out.

6.2 Weathertightness risk

6.2.1 In relation to these characteristics I find that the building:

- is built in a low wind zone
- is a maximum of two storeys high
- has a deck recessed into a lower roof
- is reasonably complex in plan and in form, with many wall to roof junctions
- has roof projections that vary from 500mm to 600mm
- has monolithic cladding which is fixed directly to the framing
- has external wall framing that is unlikely to be treated, so providing no resistance to the onset of decay if the framing absorbs and retains moisture.

6.2.2 When evaluated using the E2/AS1 risk matrix, these factors show that two elevations of the building demonstrate a moderate weathertightness risk and two a high weathertightness risk. The matrix is an assessment tool that is intended to be used at the time of application for consent, before the building work has begun and, consequently, before any assessment of the quality of the building work can be made. Poorly executed building work introduces a risk that cannot be taken into account in the consent stage but must be taken into account when the building as actually built is assessed for the purposes of issuing a code compliance certificate.

6.3 Weathertightness performance

6.3.1 Generally the cladding appears to have been installed in accordance with good trade practice. However, some junctions, penetrations and edges are not well constructed, and these areas are as described in paragraph 5.4 and in the expert's report as being the:

- lack of vertical control joints to some areas of the cladding
- inadequately formed horizontal control joints to the cladding
- cracks and peaked joints in the cladding
- inadequate clearance of the cladding to paving at the entry and garage doors
- lower timber framing of the entry columns and wing walls
- top of the deck balustrade and the junction with the external wall

- top and sloping shoulders of the chimney
- lack of drainage gaps at window sills
- questionable sealant at window jambs
- decorative bands to some of the windows and doors
- bottom of some of the apron flashings, and gutter ends on lower roofs

6.3.2 Notwithstanding the fact that the backing sheets are fixed directly to the timber framing, thus limiting drainage and ventilation behind the cladding, I have noted certain compensating factors that assist the performance of the cladding in this particular case:

- The cladding appears to have generally been installed to reasonable trade practice with vertical control joints in a number of locations.
- The house has roof projections that have provided good protection to the wall cladding and the windows below them.

6.3.3 I consider that these factors help compensate for the lack of a ventilated cavity and can assist the building to comply with the weathertightness and durability provisions of the Building Code.

7. Conclusion

7.1 I am satisfied that the current performance of the monolithic cladding is not adequate because it is allowing water penetration into the building at a number of locations at present. Consequently, I am satisfied that the cladding system as installed on the building does not with clause E2 of the Building Code.

7.2 In addition, the building 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 building are likely to allow the ingress of moisture in the future, the house does not comply with the durability requirements of clause B2.

7.3 Subject to further investigations that may identify other faults, I consider that, because the faults that have been identified with the cladding system occur in discrete areas, I am able to conclude that satisfactory rectification of the items outlined in paragraph 6.3.1 is likely to result in the building remaining weathertight and in compliance with clauses B2 and E2.

7.4 I draw to the attention of the territorial authority the evidence of timber decay already apparent in this 3-year old house, with the likelihood that further investigation may reveal a more widespread decay in the untreated wall framing,

which could compromise the structural integrity of the building and the safety of the deck balustrades.

7.5 Effective maintenance of claddings (in particular of monolithic cladding) is important to ensure ongoing compliance with clauses B2 and E2 of the Building Code and is the responsibility of the building owner. Clause B2.3.1 of the Building Code requires that the cladding be subject to “normal maintenance”, however, that term is not defined in the Act.

7.6 I take the view that normal maintenance is that work generally recognised as necessary to achieve the expected durability for a given building element. With respect to the cladding, the extent and nature of the maintenance will depend on the material, or system, its geographical location and level of exposure. Following regular inspection, normal maintenance tasks shall include but not be limited to:

- Where applicable, following manufacturers’ maintenance recommendations
- Washing down surfaces, particularly those subject to wind-driven salt spray
- Re-coating protective finishes
- Replacing sealant, seals and gaskets in joints.

7.7 As the external wall framing of this building is likely to be untreated, periodic checking of its moisture content should also be carried out as part of normal maintenance.

7.8 In the circumstances, I decline to incorporate any waiver or modification of the Building Code in this determination.

8 The decision

8.1 In accordance with section 188 of the Act, I hereby determine that the monolithic cladding system as installed does not comply with clause E2 of the Building Code. There are a number of items to be remedied to ensure that the house becomes and remains weathertight and thus meets the durability requirements of the code. Consequently, I find that the house does not comply with clause B2. Accordingly, I confirm the territorial authority’s decision to refuse to issue a code compliance certificate.

8.2 I also find that rectification of the items outlined in paragraphs 6.3.1 will consequently result in the house being weathertight and in compliance with clauses B2 and E2. Work to correct these items may expose additional associated defects not yet apparent. All rectification work is to be completed to the approval of the territorial authority.

8.3 I note that the territorial authority has not issued a notice to fix. A notice to fix should be issued that requires the owners to bring the cladding into compliance with the building code, without specifying the features that are required to be incorporated. It

is not for me to decide directly how the defects are to be remedied and the cladding brought to compliance with the building code. That is a matter for the owner to propose and for the territorial authority to accept or reject.

- 8.4 I would suggest that the parties adopt the following process to meet the requirements of paragraph 8.3. Initially, the territorial authority should issue a notice to fix, listing all the items that the territorial authority considers to be non-compliant. The owner 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 issues and present this to the territorial authority for evaluation to accept or reject. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 31 May 2006.

John Gardiner
Determinations Manager