

# Determination 2006/48

## Refusal of a code compliance certificate for a building with a “monolithic” cladding system at 798 Beach Road, Browns Bay, North Shore City

### 1. The dispute to be determined

1.1 This is a determination of a dispute under Part 3 Subpart 1 of the Building Act<sup>1</sup> 2004 (“the Act”) made under 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 Graham of Probuild Consultants Ltd (“the owner’s agent”), acting on behalf of the owner, Mr Wynn (“the owner”), and the other party is the North Shore City Council (“the territorial authority”). The application arises because no code compliance certificate was issued by the territorial authority for this 5-year-old house.

1.2 The questions to be determined are:

#### Issue 1: The cladding

1.2.1 Whether I am satisfied on reasonable grounds that the monolithic wall cladding as installed to the external walls of the building (“the cladding”), complies with the Building Code<sup>2</sup> (see sections 177 and 188 of the Act). By “the monolithic wall cladding as installed” I mean the components of the system (such as the backing sheets, the flashings, the joints and the plaster and/or the coatings) as well as the way the components have been installed and work together.

#### Issue 2: The additional durability considerations

1.2.2 Whether certain building elements, which have 5 and 15-year durability requirements, comply with clause B2 of the Building Code considering the time that has elapsed since the elements of the 5-year-old house were constructed.

1.3 In making my decision, I have not considered any other aspects of the Act or the Building Code.

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<sup>1</sup> The Building Act 2004 is available from the Department’s website at [www.dbh.govt.nz](http://www.dbh.govt.nz)

<sup>2</sup> The Building Code is available from the Department’s website at [www.dbh.govt.nz](http://www.dbh.govt.nz)

## 2. Procedure

### 2.1 The building

- 2.1.1 The building work consists of a detached house situated on an excavated and stepped site, which is in a high wind zone for the purposes of NZS 3604<sup>3</sup>. The house is three storeys on the east elevation and one storey on the west. Construction is generally conventional light timber frame, with a concrete slab and foundations, concrete block retaining walls, monolithic wall cladding, aluminium windows and 30° profiled metal gable roofs. The house shape is fairly complex, with the upper roof made up of intersecting gables with decorative horizontal bands in line with eaves at the gable ends, and lower level projecting roofs that form lean-tos against upper walls. Eaves projections vary from gutter width only to 600 mm overall, and there are no verge projections. The lower level main entry and the upper deck are recessed under gabled canopies.
- 2.1.2 A small cantilevered deck, with triangular timber struts beneath both ends, a membrane floor and metal balustrades, extends to the east from the upper level master bedroom. A large enclosed deck, situated partly over the lower level study and entry, extends from the mid-level living areas and has a membrane floor and metal balustrades with monolithic clad barriers at both ends.
- 2.1.3 The specification calls for wall framing to be H1 treated. The owner has submitted copies of quotations from the timber supplier, which make no reference to timber treatment. The expert commissioned by the Department to inspect the cladding (“the expert”) has noted that he found no evidence of treatment on timber he was able to inspect. Based on this evidence, I consider that the external wall framing is unlikely to be treated.
- 2.1.4 The cladding system is what is described as monolithic cladding, and consists of 40 mm “Insulclad” polystyrene backing sheets fixed directly to the framing over the building wrap, and finished with a 2-coat “Ezytex” coating system. The system includes purpose-made flashings to windows, edges and other junctions.
- 2.1.5 Plaster Systems Ltd provided a “Producer Statement” dated 17 July 2004, for the “Insulclad” system, which noted the completion of the cladding as August 2000. It also provided a 15-year “Materials Components Guarantee” dated 5 July 2004 relating to the “Insulclad” and “Ezytex” systems, which carried an exclusion clause, whereby Plaster Systems Ltd did not accept responsibility for consequential damage of any kind to any building component that has occurred as a result of the use of untreated timber.
- 2.1.6 I note that 3 elevations of the building demonstrate a high weathertightness risk and 1 elevation a low risk rating, as calculated using the E2/AS1 risk matrix. 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

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<sup>3</sup> New Zealand Standard NZS 3604:1999 Timber Framed Buildings

account when the building as actually built is assessed for the purposes of issuing a code compliance certificate.

- 2.1.7 Accordingly I consider that, as three elevations of the building are rated as having a high weathertightness risk using the E2/AS1 risk matrix, this face fixed EIFS cladding is an alternative solution (refer to paragraph 4.2).

## **2.2 Sequence of events**

- 2.2.1 The territorial authority issued a building consent for the original house on 6 April 2000, and carried out various inspections during construction, including pre-line and post-line. The house appears to have been completed late in 2000.

- 2.2.2 At the final inspection on 1 June 2004, the owner was given a standard letter from the territorial authority which advised that:

*Existing properties in North Shore City using any type of monolithic cladding without a cavity, that have not had specific inspections to deal with weathertightness issues, will be reviewed on a case-by-case basis before determining if a code compliance certificate can be issued...*

- 2.2.3 The territorial authority carried out a visual cladding inspection of the house on 27 July 2005. In a letter to the owner dated 8 August 2005, the territorial authority explained its concerns about the weathertightness of monolithic claddings and stated that the Building Code required the building work to remain durable for specific periods of time. The territorial authority also noted that:

*At the time your building consent was processed, it was not known to the extent it is now, that face fixed monolithic cladding systems particularly were not performing. The allowance of moisture ingress, together with the use of untreated timber framing, has now become a major problem to the structural integrity of buildings. Another important aspect is proper inspections on proprietary cladding installations. Prior to 2003, it wasn't the practice among Councils and certifiers to carry out detailed cladding inspections as we do at present.*

The territorial authority outlined risk factors associated with the house and listed identified defects along with other requirements for compliance, concluding that it could not be satisfied on reasonable grounds that the cladding system complied with clauses E2 and B2 of the Building Code.

- 2.2.4 The territorial authority did not issue a notice to fix as required under section 164(2) of the Act.
- 2.2.5 The owner's agent applied for a determination on 12 September July 2005.

## **3. The submissions**

- 3.1 The owner's agent noted in the application that the "Matter of doubt or dispute" is:

*Whether or not the cladding installed complies with the Building Code.*

3.2 The owner's agent forwarded copies of:

- the drawings and specification
- some of the correspondence with the territorial authority
- some of the inspection records
- various producer statements and other statements.

3.3 The territorial authority made a submission in the form of a letter to the Department dated 18 October 2005, which summarised the consent and inspection processes related to the house, and noted that:

*In regards to this application for a determination, the matters of doubt are:*

- *Whether the installed cladding system complies with clauses B2.3.1 and E2.3.2 of the Building Code.*
- *Whether other building elements, which have 15-year durability requirements comply with clause B2 of the Building Code, considering the age of construction. Specifically roof cladding, external joinery units, flashings, deck membranes, fixings, plumbing and piping, showers and internal wet areas.*

3.4 The territorial authority forwarded copies of:

- some of the consent documentation
- the inspection records.

3.5 Copies of the submissions 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.

3.6 The draft determination was forwarded to the parties for comment on 5 December 2005. The applicant accepted the draft.

3.7 The territorial authority accepted the draft but in a submission to the Department dated 31 January 2006, it commented on the lack of inclusion of several items in the expert's report within paragraph 6.3.1 of the draft determination. I have considered these comments and have amended the draft as I consider appropriate.

3.8 In the same letter, the territorial authority also commented on amending the waiver of clause B2 to apply to all building elements. With the concurrence of the applicant, this was included in the determination. This issue is discussed further in section 9.

## **4. The relevant provisions of the Building Code**

4.1 The dispute for determination is whether the territorial authority's decision to refuse to issue a code compliance certificate because it was not satisfied that the cladding

complied with clauses B2.3.1 and E2.3.2 of the Building Code (First Schedule, Building Regulations 1992) is correct.

4.2 There are no Acceptable Solutions that have been approved under section 22 of the Act that cover the monolithic cladding as installed on this house. The cladding is not currently certified under section 269 of the Act. I am, therefore of the opinion that the cladding system as installed must now be considered to be an alternative solution.

4.3 In several previous determinations, the Department has made the following general observations, which in my view remain valid in this case, about acceptable solutions and alternative solutions:

- 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.

## 5. The expert's report

5.1 The expert inspected the cladding on 6 October 2005, and furnished a report that was completed on 14 October 2005. The expert noted that the cladding generally appeared to be installed according to the manufacturer's instructions with the coating "generally good with minor defects" and the finish "uniform and sound". The expert noted that window flashings appeared to be carefully installed, and that the wall areas present in this house are of dimensions that do not require control joints in order to comply with the manufacturer's instructions. The expert cut away a small section of cladding of a monolithic clad deck barrier at the junction with the family room wall to investigate weatherproofing. I accept that the location opened is typical of similar locations around the building.

5.2 The expert took non-invasive moisture readings through interior linings at skirting level, under windows and other risky areas throughout the house, and noted "borderline" readings and water staining below a pipe penetration through the roof above the master bedroom, and elevated readings in the east wall of the lounge, beneath the junction of the eaves with the family room wall.

Further invasive moisture readings were taken through the wall cladding, and the following elevated moisture contents were recorded in the framing:

- 30% in the east wall of the lounge, under the eave to wall junction
- 20% near the junction of the upper deck handrail with the wall

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

- paving and landscaping is unfinished, and cladding clearances are inadequate at some locations – with some cladding covered by soil or vegetation
- the concrete block retaining wall projects beyond the EIFS cladding horizontal junction in some locations on the west wall, and the horizontal junction is poorly flashed
- the vertical junction of the lower level concrete block retaining wall projecting beyond the cladding on the south wall appears to lack flashings or other weatherproofing, and there is no capping to the top of the concrete block wall
- the metal barges at gable ends do not overlap the top of the cladding, which is poorly plastered at the junction
- the horizontal bands at the gable ends butt against the sloping metal verges at the eaves, preventing water from draining down the wall and potentially directing it behind verges and into the soffits
- a number of roof junctions and penetrations were poorly flashed and heavily reliant on sealant, which was poorly adhered and appeared to be failing in some locations (there were signs of recent poorly applied sealant repairs)
- where eaves butt into walls, the cladding is not continuous behind gutter ends and the bottom of apron flashings are poorly formed with no kickouts, gaps showing and a heavy reliance on poorly adhered sealant
- the soffit linings do not slope toward the gutters, allowing water penetrating into the soffit area to migrate towards the wall framing
- the cut-out of the cladding at of the EIFS clad deck barrier showed that the junction with the wall did not comply with the manufacturer’s instructions, with no saddle flashing or other weatherproofing
- the tops of the EIFS clad deck barriers are flat, with no cappings or underlying flashings or other weatherproofing
- the glue joints of the upper deck membrane appeared to be starting to lift
- outlets from the membrane decks are poorly formed and weatherproofed
- penetrations through the cladding, including the fixings of the upper deck struts, were either unsealed or very poorly sealed, and the sealant appeared to be failing in some locations.

5.4 A copy of the expert’s report was provided to each of the parties on 7 November 2005.

## **6. Discussion**

### **6.1 General**

6.1.1 I have considered the submissions of the parties, the expert's report and the other evidence in this matter. The approach in determining whether building work complies with clauses B2 and E2 is to examine 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 Building Industry Authority and the Department have described the weathertightness risk factors in previous determinations (Refer to Determination 2004/01 et al) relating to monolithic cladding, and I have considered these comments in this determination.

### **6.2 Weathertightness risk**

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

- is built in a high wind zone
- is a maximum of three storeys high
- has a cantilevered deck and another enclosed deck, with monolithic clad balustrades at both ends, which is partially situated above the study and entry
- is fairly complex in plan and in form, with many roof to wall junctions
- has eave projections that vary from the gutter width only to about 600 mm, and has no verge projections
- has monolithic cladding which is fixed directly to the framing
- has external wall framing that is untreated, so providing no resistance to the onset of decay if the framing absorbs and retains moisture

### **6.3 Weathertightness performance**

6.3.1 Generally the cladding appears to have been installed satisfactorily, apart from the faults identified in paragraph 5.3. Some junctions, edges and penetrations are not well constructed, and these areas are as described in paragraph 5.3 and in the expert's report as being the:

- inadequate clearances from bottom of the cladding to the unfinished ground
- lack of adequate weatherproofing of horizontal and vertical junctions of the cladding with the concrete block walls at a number of locations
- lack of cladding behind the metal barges and ends of gutters
- lack of slope of soffit linings toward gutters

- risky junction of the horizontal bands with the metal barges at gable ends
- inadequate formation and weatherproofing of roof junctions, bottom of apron flashings and roof penetrations at a number of locations
- flat tops of the clad balustrades and lack of adequate weatherproofing of the tops and junctions with the walls
- poorly formed and weatherproofed outlets and joints to the deck membrane
- lack of sealing of penetrations through the cladding, including to the fixings of the upper deck struts
- very poor sealing of penetrations through the cladding, with failing sealant in some locations.

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

- the cladding generally appears to have been installed satisfactorily
- the windows and doors appear to have been installed satisfactorily
- the house has eave projections over some walls, which provide some protection to the cladding areas below them
- the upper deck is sheltered under a canopy

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

## **Issue 1: The cladding**

### **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 comply 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 becoming and remaining weathertight and in compliance with clauses B2 and E2.
- 7.4 I note that effective maintenance of monolithic claddings is important to ensure ongoing compliance with clause B2 of the Building Code. That maintenance is the responsibility of the building owner. The Building Code assumes that the normal maintenance necessary to ensure the durability of the cladding is carried out. For that reason clause B2.3.1 of the Building Code requires that the cladding be subject to “normal maintenance”. That term is not defined in the Act and I take the view that it must be given its ordinary and natural meaning in context. In other words, normal maintenance of the cladding means inspections and activities such as regular checking, cleaning, re-painting, replacing sealants, and so on.
- 7.5 It is emphasised that each determination is conducted on a case-by-case basis. Accordingly, the fact that a particular cladding system 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.
- 7.6 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 Building 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 paragraph 6.3.1 is likely to result in the proposed alternative solution for the parapets to the external walls of this building remaining 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 technically robust proposal, produced in conjunction with a competent and suitably qualified person, as to the rectification or otherwise of the specified issues. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.
- 8.5 Finally, I consider that the cladding will require on-going maintenance to ensure its continuing code compliance.

## **Issue 2: The additional durability considerations**

### **9. Discussion**

- 9.1 I note that 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 “from the time of issue of the applicable code compliance certificate”.
- 9.2 As set out in paragraph 3.3, the territorial authority has concerns about the durability, and hence the compliance with the Building Code, of certain elements within the building, taking into account the completion of the building in 2000. In the draft determination sent to the parties in December 2005 I made an interim decision on the matter of the durability by determining that there be a waiver or modification of the Building Code requirements relating to durability. Since then, I have since received some general legal advice on waivers and modifications. As this advice is not clear, I subsequently have sought clarification of some aspects of that advice.
- 9.3 Until I receive the clarification will I suspend making a decision about the additional durability considerations. This will enable me to now determine matters related to the compliance of the cladding so that the steps outlined in paragraph 8.4 can commence. I will issue a second determination limited to the durability considerations as soon as possible.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 24 May 2006.

John Gardiner  
**Determinations Manager**