

# Determination 2006/01

## Refusal of a code compliance certificate for a house with a monolithic cladding system at 2/14 Hastings Road, Mairangi Bay, North Shore City

### 1 The dispute to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004 (“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 applicants are Mr and Mrs Langley (“the owners”), and the other party is the North Shore City Council (“the territorial authority”). The application arises from the refusal by the territorial authority to issue a code compliance certificate for a 7-year-old house, unless changes are made to its monolithic cladding system.
- 1.2 The matters to be determined are:
1. Whether I am satisfied on reasonable grounds that the monolithic wall cladding as installed to the timber-framed external walls, columns and beams of the house (“the cladding”), complies with the Building Code (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.
  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 were constructed.
- 1.3 In making my decision, I have not considered any other aspects of the Act or the Building Code.

## **2 Procedure**

### **2.1 The building**

- 2.1.1 The building is a two-storey house with an upper level “viewing room” situated on an excavated steeply sloping site that is in a high-wind zone in terms of NZS 3604: 1999 “Timber framed buildings”. The house is of a relatively simple shape on plan but with some complex features, with the steeply pitched roofs that are situated at various levels having valley and wall-to-roof junctions. A small section of the main roof has an open-rafter section. A lean-to roof is constructed over the living room extension. The viewing room has a curved copper tray clad roof over it. The exterior walls are of conventional light-timber frame construction built on concrete block retaining and foundation walls supported by piled concrete footings and sheathed with monolithic cladding. There are 80mm wide eaves projections to the roofs. A dormer window set into a monolithic-clad gable is situated in the roof.
- 2.1.2 An open balcony is constructed at one first floor elevation over a habitable space and this has a monolithic-clad-timber-framed balustrade with a tubular metal handrail set into its top. A similar balcony is constructed outside the viewing room and the north elevation timber-framed and monolithic-clad cavity facade wall forms part of this balcony’s balustrade. A close-boarded timber deck complete with a metal handrail, and supported on timber posts and beams, is situated adjacent to the lower-level hobby room. A pergola consisting of timber posts, beams and rafters is constructed at the north elevation.
- 2.1.3 The owners produced an invoice showing that some of the framing timber used on the house is H1 treated. The owner stated that a mixture of treated and untreated timber was used. The expert commissioned by the Department (“the expert”, see paragraph 5.1) has established that in at least one location untreated timber has been used for the external wall framing.
- 2.1.4 The cladding system to the exterior walls is what is described as monolithic cladding and is a 40mm thick “Insulclad” polystyrene system fixed directly to the framing over the building wrap and finished with an “Ezytex sponge system. I note that the backing sheets of the external wall cladding are described as being “Harditex” fibre-cement on the consented plans. I have not received any evidence that the original building consent has been amended to accommodate this change.
- 2.1.5 Plaster Systems Ltd provided an “Insulclad” “Materials Components Guarantee” dated 21 January 2005, which guaranteed the cladding for a period of 15 years from the date of completion.

### **2.2 Sequence of events**

- 2.2.1 The territorial authority issued a building consent on 9 April 1997.
- 2.2.2 The territorial authority carried out various inspections during the course of construction, and the building passed pre-line inspections on 3 April 1998 and the post-line inspection on 4 September 1998. Following final building inspections, carried out on 26 February 2003 and 15 December 2004, the territorial authority

raised certain concerns that about the cladding. The territorial authority's "Field Inspectors Inspection Sheet" noted against the entry for the last inspection:

Final recheck ok, but monolithic cladding...

- 2.2.3 The territorial authority carried out specific weathertightness visual inspections on 17 January 2005 and 15 March 2005. In a letter to the owners dated 4 February 2005, 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 then listed certain weathertightness risk factors identified with the building, together with a list of defects. The territorial authority stated that, due to the risk factors and defects, it could not be satisfied on reasonable grounds that the cladding system was code compliant.
- 2.2.4 Plaster Systems Ltd wrote to the owners on 11 March 2003, confirming that the company accepted the ground details relating to the cladding and that their guarantee included the ground details around the garage and front entrance.
- 2.2.5 On 17 January 2005, the owners wrote to the territorial authority identifying the cladding installer and describing the finish at the base of the cladding, the penetrations through the cladding and the balcony construction. The owners noted that the timber for the house was predominately LOSP treated. The owners provided documentation from various subcontractors and sketches detailing the cladding ground junctions.
- 2.2.6 In a letter to the owners dated 21 March 2005, the territorial authority stated that following the 15 March 2005 inspection, the territorial authority wished to inform the owners that the requirements of its letter of 4 February 2005 remained.
- 2.2.7 The territorial authority did not issue a Notice to Rectify as required under section 43(6) of the Building Act 1991.
- 2.2.8 The Department received the owners' application for a determination on 8 April 2005.

### **3 The submissions**

- 3.1 The territorial authority made a submission in the form of a letter to the Department dated 27 May 2005 that summarised the consent and inspection processes relating to the house. The territorial authority also noted that, due to the type of monolithic cladding applied to the house, together with its attendant risk factors, the territorial authority was unable on reasonable grounds to accept the compliance of the cladding. The territorial authority also listed the cladding defects that it had identified. The territorial authority stated that the matters of doubt were:

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

- Whether building elements, which have 5 and 15-year durability, requirements comply with clause B2 of the Building Code, considering the age of construction.

3.2 Further to the second matter of doubt raised by the territorial authority as described in paragraph 3.1, following a request from the Department, the territorial authority faxed further information to the Department on 5 August 2005. This fax gave details of the specific elements of the building that the territorial authority considered would not comply with clause B2, considering the time that has elapsed since the elements were constructed. The elements are the:

- cladding, including flashings
- timber shingle roofing
- deck membranes
- internal wet area membranes
- particle board flooring in wet areas
- external gutters and downpipes.

3.3 The territorial authority supplied copies of:

- the consent and inspection documentation
- the correspondence with the owners
- information from the subcontractors including warranties and producer statements.

3.4 In a letter to the Department dated 30 May 2005, the owners pointed out that the external cladding was 40mm polystyrene.

3.5 The owners wrote to the Department on 20 July 2005 as a response to the fax of 5 August 2005 that the territorial authority forwarded to the Department. The owners noted that while the permit (sic) was issued in 1997, the dwelling took 3 years to complete and was not inhabited until 2000. At this date only the lower level of the house was habitable, the entire building being completed in 2003. The owners noted that the external gutters and downpipes are copper, the deck membrane is bitumen and the roof shingles are Cedar fitted with stainless fixings.

3.6 The owners supplied copies of:

- the plans
- the correspondence with the territorial authority
- the cladding coating manufacturer's warranty
- the cladding manufacturer's letter of 11 March 2003 and guarantee

- the invoice from the timber supplier describing the timber treatment of some of the timber framing
- information from the subcontractors including warranties and producer statements
- the sketches detailing the cladding ground junctions.

3.7 The copies of the submissions and other evidence were provided to each of the parties. Neither the owners nor the territorial authority made any further submissions in response to the submissions of the other party.

## **Matter 1: The cladding**

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

- 4.1 The dispute for determination regarding this issue 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 and E2 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 or section 49 of the Building Act 1991 that cover this cladding. The cladding is not 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 remain valid in this case in my view, 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 commissioned by the Department to inspect the cladding carried out an inspection of the building on 24 and 28 June 2005 and furnished a report that was completed on 7 July 2005. It was the expert's opinion that the plaster and paint coating has been applied satisfactorily. The expert removed the plaster coating to reveal the flashing details at one location and noted that sill tape and sill trays are not installed. However, as noted by the expert, these were not required by the

manufacturer at the time that the windows were installed. The expert also made the following comments regarding the cladding.

- At some locations, the base of the cladding finishes is either too close to the adjoining ground or lower deck, or is below graded or paved areas. The expert was unable to agree with the cladding manufacturer that it was acceptable for the cladding base to be below graded areas.
- As the pergola ribbon plate is fixed directly to the cladding, no drainage gap is present.
- The fascia at the open-rafter section of the roof was installed prior to the finishing of the cladding.
- The rubber membrane apron flashing at the southwest corner of the viewing room is not correctly finished.
- There is an ineffective detail at the edge of the roof at the northwest corner of the garage.
- The balcony balustrades and the raking top to the north elevation facade wall lack the adequate cross falls and cap flashings that are recommended by the manufacturer.
- The balustrade handrail fixings penetrate the top of the balcony balustrades.
- There is insufficient fall to the decks of the balconies and there is insufficient freeboard between the deck tiles and the bottom edge of the external doors.
- Each balcony requires an additional outlet.

5.2 The expert took non-invasive readings at the interior linings of the exterior walls and no abnormal readings were obtained. Further invasive readings were taken from the exterior wall framing. Ten readings were taken through the interior of the external walls and six from the exterior. Only one interior reading of 24% at a garage bottom plate was over 18%. Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure. The expert also commented on the higher moisture probe readings, noting that these were at locations that had some risk issues.

5.3 The expert also removed a section of the interior lining in the garage and decayed untreated timber was exposed at this location.

5.4 Copies of the expert's report were provided to each of the parties. The territorial authority did not comment on the report. The owners forwarded the Department a letter from the cladding manufacturer to the owner dated 12 July 2005, which accepted that there could be a problem where the cladding is close to the paving in the location of the garage and with the lack of fall to the top of the balcony balustrades. The manufacturer also noted that the cladding had been installed in accordance with the specification and that the additional sill trays described in the

expert's report were not a requirement of that specification. Overall, the manufacturer said, the cladding is in very good condition.

5.5 The owners also commented directly in a letter to the Department dated 19 July 2005. The owners queried some of the expert's findings, and those which I consider relevant to the cladding are summarised below.

- H3 timber has been used in the sub-floor area of the top garage.
- Consideration should be given to the butynol flashing below the ground level blockwork onto the bottom plate in the patio area.
- H1 LOSP timber was definitely used for the upper floor framing.
- While the house is in a high wind area it is reasonably low-lying and is situated at the bottom of a hill.
- While the lower deck has a varying fall, the top deck is consistent, with both draining well.
- The territorial authority's inspector had not stated that the handrail fixings were not acceptable.
- The pergola ribbon board was fixed in accordance with the Building Code current at the time of its installation and additional precautions have been taken to prevent leaking at this detail.

5.6 The owners also stated that it would be impossible to raise the french doors and considered that they did not contravene the Building Code. The owners also attached a producer statement from the window manufacturer and a warranty from the deck membrane applicator.

## 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 taken these comments into account in this determination.

## 6.2 Weathertightness risk

6.2.1 In relation to the weathertightness characteristics, I find that the house:

- has minimal eaves projections, which do not provide good protection to the cladding areas below them
- is in a high wind zone
- is maximum three storeys high
- is of a fairly simple shape on plan but with some complex features
- has two high-level open decks that are constructed over habitable spaces
- has a suspended lower-level deck
- has external wall framing that is unlikely to be treated to a level that would help prevent decay if it absorbs and retains moisture.

## 6.3 Weathertightness performance

6.3.1 Generally, the cladding appears to have been installed according to good trade practice, but some junctions, edges, and penetrations are not well constructed. These areas are described in paragraph 5.1, and in the expert's report, as being:

- at some locations, the base of the cladding finishing too close to the adjoining ground or lower deck, or being below graded or paved areas
- the directly fixed pergola ribbon plate
- the fascia at the open-rafter section of the roof being installed prior to the finishing of the cladding
- the incorrectly finished rubber membrane apron flashing at the southwest corner of the viewing room
- the ineffective detail at the edge of the roof at the northwest corner of the garage
- the inadequate cross falls and lack of cap flashings to the balcony balustrades and the raking top to the north elevation facade wall
- the balustrade handrail fixing penetrating the top of the balcony balustrades
- the insufficient fall to the decks of the balconies and insufficient freeboard between the deck tiles and the bottom edge of the external doors
- the additional outlet required at each balcony.

- 6.4 Notwithstanding the fact that the backing sheets are fixed directly to the timber framing, thus inhibiting drainage and ventilation behind the cladding sheets, I find that, as the cladding generally appears to have been installed according to good trade practice, this is a compensating factor assisting the performance of the cladding in this particular case. This factor also helps to compensate for the lack of a drainage and ventilation cavity and can assist the house to comply with the weathertightness and durability provisions of the Building Code.
- 6.5 I note that the expert's invasive investigation has shown that no sill trays or sill tape has been installed to the windowsills. However, these were not a manufacturer's requirement at the time of their installation, nor were this issue raised by the territorial authority in its submission. I am, therefore, prepared to accept that the windows as installed are code compliant at the present time.
- 6.6 I note that one elevation of the building demonstrates a moderate weathertightness risk rating and the remaining elevations a high 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 account when the building as actually built is assessed for the purposes of issuing a code compliance certificate.

## **7 Conclusion**

- 7.1 I am satisfied that the current performance of the monolithic cladding on the building is not adequate because it is allowing water penetration into the building in at least one location, which could affect the cladding. Consequently, I am not satisfied that the cladding system as installed on the building complies 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 building to remain weathertight. Because the monolithic cladding faults on the building have already allowed the ingress of water, or will allow the ingress of moisture in the future, it does not comply with the durability requirements of clause B2 of the Building Code.
- 7.3 Subject to further investigations that may identify other faults, I consider that, because the faults that have been identified with this cladding 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 being 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, 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 cleaning, repainting, 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.

## **8 The decision**

- 8.1 In accordance with section 20 of the Building Act 1991, I hereby determine that the cladding system as installed on the building does not comply with clause E2 of the Building Code. There are also a number of items to be remedied to ensure that it remains weathertight and thus meet the durability requirement of the Building Code. Consequently, I find that the building 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 to the approval of the territorial authority, along with any other faults that may become apparent in the course of that work, will consequently result in the house being weathertight and in compliance with clauses B2 and E2.
- 8.3 I note that the territorial authority has issued a Notice to Rectify requiring provision for adequate ventilation, drainage and vapour dissipation. Under the Act, a notice to fix can require the owners to bring the house into compliance with the Building Code. The Building Industry Authority had already found in a previous determination (2000/1) that the Notice to Rectify cannot specify how that compliance can be achieved. I concur with that view. A new 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 dictate how the defects described in paragraph 6.3.1 are to be remedied. That is for the owners to propose and 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 the notice to fix, listing all the items that the territorial authority considers to be non-compliant. The notice should indicate that this list may not cover all items of non-compliance and that further investigation by a competent and suitably qualified person will be required. The owners, with suitable assistance, should then produce a response to this in the form of a technically robust proposal. 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 ongoing maintenance to ensure its continuing code compliance.

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

### **9 Discussion**

- 9.1 I note that the relevant provision of clause B2 of the Building Code is 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 paragraphs 3.1 and 3.2, the territorial authority has concerns about the durability, and hence the compliance with the Building Code, of certain elements of the building, taking into consideration the completion date of the building in 1998. I am of the opinion that the territorial authority should amend the original building consent by making it subject to a waiver of the Building Code in accordance with section 67(1) of the Act to the effect that the durability of the elements listed in paragraph 3.4 is to be measured from the date of the substantial completion of the building instead of from the time of the issue of the code compliance certificate. The land information memorandum relating to this house should also be amended in line with the above. For the purpose of this determination, I am of the opinion that the term “substantial completion” of the building is achieved when the building is ready for occupation.

### **10 The decision**

- 10.1 I determine that the territorial authority is to amend the original consent, issued in April 1997, to incorporate a waiver of clause B2 of the Building Code to the effect that the required durability periods for the building elements put in place in the course of work carried out under that consent are to be measured from the date of the substantial completion of the building and not from the date of the issue of a code compliance certificate. For the avoidance of doubt I determine that this waiver is not to be applied to elements that have been renewed or replaced since the original construction and for which little of the required durability period has elapsed at the time of this determination.
- 10.2 Following this amendment, any code compliance certificate subsequently issued by the territorial authority should be issued in line with the amended building consent.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 24 January 2005.

John Gardiner  
**Determinations Manager**