

# **Determination 2005/170**

## **Refusal of a code compliance certificate for a building with a “monolithic” cladding system at 55 Davies Drive, Nelson**

### **1. The dispute to be determined**

- 1.1 This is a determination of a dispute under Part 3 Subpart 1 of the Building Act 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 applicants are the owners, Mr and Mrs Clinton (“the owner”), and the other party is the Nelson City Council (“the territorial authority”). The application arises because no code compliance certificate was issued by the territorial authority for this 2-year-old house.
- 1.2 The question to be determined is 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 (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.
- 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 work consists of a detached house situated on a sloping excavated site, which is in a high wind zone in terms of NZS 3604: 1999 “Timber framed buildings”. Most of the house is two storeys high, with a one storey double garage on the upper level. Construction is conventional light timber frame, with concrete block retaining walls, concrete foundations and floor slab, aluminium windows and monolithic wall cladding to all walls. A deck, with spaced timber decking and metal and glass balustrades, extends the full length of the west elevation and part of the

north elevation, and is supported by monolithic-clad columns. The house shape is fairly simple, with a 15° profiled metal hip roof, which has eaves varying from gutter width only, on east and south elevations, to more than 1000 mm above the deck.

- 2.1.2 The expert commissioned by the Department to inspect the cladding (“the expert”) provided evidence from a technologist that the deck framing timber is treated to H3.2. The specification calls for wall framing to be treated to H1. I have received no other written evidence as to the treatment, if any, of the external wall framing timber.
- 2.1.3 The cladding system to the building is what is described as monolithic cladding, with upper and lower floor walls clad in two different types, both fixed directly to the framing timber over the building wrap. The upper cladding is a 60 mm “Insulclad” EIFS system, with vertical grooves formed in the back of the polystyrene backing sheets, and finished with a multi-coat “Wattyl Granosite” plaster and paint system. The lower cladding is a “Harditex” system with 7.5 mm thick fibre cement sheets finished with a “Wattyl Granosite” textured coating system.
- 2.1.4 The coating applicator provided a “Wattyl Granosite applicator quality assurance checklist” dated 10 March 2003. Wattyl (NZ) Ltd provided a “Manufacturers Warranty” dated 22 May 2003, which noted a number of liability exclusions, including damage resulting from substandard workmanship, movement and entrapped moisture.
- 2.1.5 I note that three elevations of the building demonstrate a low weathertightness risk rating, and the remaining elevation a medium weathertightness 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.
- 2.1.6 Accordingly I consider this faced fixed EIFS and fibre-cement cladding to be an alternative solution (refer to paragraph 4.2)

## **2.2 Sequence of events**

- 2.2.1 The territorial authority issued a building consent on 12 July 2002, based on a building certificate issued by Prime Building Compliance Ltd (“the building certifier”), dated 23 May 2002. The scope of engagement attached to the building certificate noted no exclusions.
- 2.2.2 The building certifier carried out various inspections during the course of construction, including prior to lining installation and following lining installation. The last inspection appears to have taken place on 1 February 2005.
- 2.2.3 On 16 March 2005 the building certifier wrote to the territorial authority enclosing the final building certificate and handing over the building to the territorial authority for “the inspection of building works and issue of the Code Compliance Certificate”. The scope of engagement attached to the final building certificate noted an exclusion of “Exterior cladding outside scope of E2/AS1 (Harditex and EIFS)”.

2.2.4 On 29 March 2005 the territorial authority wrote to the owner noting that a code compliance certificate could not be issued, as the exterior cladding had not been approved in the final building certificate. The territorial authority explained that to:

... be able to issue a Code Compliance Certification, we must be satisfied on reasonable grounds that the work now excluded by the building certificate complies as an alternative solution and we must inspect the work as it progresses and approve each stage.

As we have not been engaged to carry out any inspections of the work prior to that work being completed Nelson City Council cannot be satisfied on reasonable grounds that the work complies with the code and therefore will not be in a position to issue a Code Compliance Certificate.

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

2.2.6 The owner applied for a determination on 4 May 2005.

### **3. The submissions**

3.1 The owner stated that the matter of doubt was the “Code of Compliance determination regarding the cladding weathertightness” as described in the territorial authority’s letter of 29 March 2005.

3.2 The owner forwarded copies of:

- the building plans
- some of the building consent documentation
- the building certifier’s building certificates and inspection records
- various producer statements and other statements
- the territorial authority’s letter of 29 March 2005.

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- the building plans and specification
- the consent documentation
- the building certifier’s building certificates and inspection records
- various producer statements and other statements
- the letter to the owner of 29 March 2005.

3.4 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.

## **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 or section 49 of the Building Act 1991 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 claddings of the building on 9 August 2005 and 17 August 2005, and furnished a report that was completed on 16 September 2005. The expert noted that the cladding generally appeared "to be sound and true", with satisfactory flashings, well-sealed penetrations through the cladding and aluminium head flashings to windows and doors. The expert cut away a small section of polystyrene at the sill to jamb junction of an upper floor window and noted that the windows had uPVC flashings in accordance with the manufacturer's instructions, except that jamb flashings had been overlapped and sealed to sill flashings in lieu of corner soakers. I accept that the window opened up in this way is typical of similar windows in the EIFS cladding around the building. The expert noted that control joints are not recommended by the manufacturer as necessary for the dimensions of EIFS used on the upper walls of this building.
- 5.2 The expert took a large number of non-invasive moisture readings through exterior wall claddings, and noted no elevated readings. A large number of invasive moisture readings were also taken at the bottom plate level through the cladding, and at the jamb to sill framing of the exposed window junction. No elevated readings were recorded, with moisture contents varying from 11% to 18%.
- 5.3 The expert made the following specific comments on the cladding:

- there are no vertical control joints in the 12.4 m lower west wall, where the length of Harditex exceeds the 5.4 m limit recommended by the manufacturer
- there is limited ground clearance to the base of the upper level EIFS around the garage walls, and to the Harditex on the lower west elevation
- the base of the Harditex lacks the Inseal strip and offset from the foundation wall as shown in the manufacturer's instructions.
- the drainage slots in the uPVC flashing at the base of the EIFS cladding have been blocked with paint at a number of locations
- there are many cracks in the plaster coating of the EIFS, at internal corners, head to jamb reveal corners, and at the outer edges of sills and jambs
- the EIFS cladding at the jamb of a deck door is able to be moved by hand, and the plaster coating is cracked, with subsequent failure of the jamb sealant
- there are signs of sealant failure at other window and door jambs
- the windows in the Hardiflex cladding have been face-fixed with jamb sealant applied as a fillet onto the cladding, rather than behind the window flanges as per the manufacturer's instructions
- the roof junction at the top of the barge flashing on the projecting bathroom roof is heavily reliant on sealant for weathertightness and allows water to pond.

5.4 The expert also noted that the deck stringer had not been fixed in accordance with the requirements of NZS 3604, 1999.

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

## **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 two storeys high
- has a timber deck extending from the first floor
- is fairly simple in plan and form
- has no eave projections over most of the east and south walls, and projections that vary from 600 mm to more than 1000 mm over other walls
- has two different monolithic claddings which are 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.

### 6.3 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 all as described in paragraph 5.3 and in the expert's report as being the:

- lack of vertical control joints in the lower west wall
- lack of clearance from the ground to the base of the EIFS cladding on the east wall of the garage, and to the base of the Harditex on the south wall
- blocking of the drainage slots to the EIFS base flashing
- cracks in the plaster coating of the EIFS cladding at a number of locations
- movement due to inadequate fixing of the EIFS cladding beside a deck door
- poor condition of sealants at some door and window jambs
- lack of sealants under the jamb flanges of the lower level face-fixed windows
- poorly finished junction at the top of the barge flashing on the bathroom roof.

6.3.2 I note the expert's comments on the clearance from the paving at the base of the Harditex on the west elevation, and agree that the clearance provided is adequate as the area is protected reasonably well by the deck above.

6.3.3 I note the expert's comments on the base of the Hardiflex cladding and on the lack of moisture penetration over the past two years, and agree that the deck provides significant protection. I consider that, if the clearance from the ground to the cladding base on the south wall is improved, the cladding base is likely to remain weathertight.

6.3.4 Notwithstanding the fact that the backing sheets are fixed directly to the timber framing, thus inhibiting drainage and ventilation behind the cladding sheets, I have

noted certain compensating factors that assist the performance of the cladding in this particular case:

- the cladding generally appears to have been installed to good trade practice
- the house is a fairly simple, two-storey building
- the house has eave projections over some walls that provide reasonable protection to the cladding areas below them
- the EIFS cladding has grooves in the back of the polystyrene sheets that assist in the drainage behind the cladding sheets.

6.3.5 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.

## 7. Conclusion

7.1 I consider that the expert's report establishes there is no evidence of external moisture entering the house, and that the monolithic wall claddings comply with clause E2 of the Building Code at this time.

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 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 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 checking, cleaning, re-painting, replacing sealants, and so on. As the external wall framing is not treated, periodic checking of its moisture content should be carried out as part of normal maintenance.

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 house is weathertight now and the monolithic cladding systems as installed comply with clause E2 of the Building Code. However, there are a number of items to be remedied to ensure that the house 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 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, is likely to result in the house remaining weathertight and in compliance with clauses B2 and E2.

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 the 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.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 22 December 2005.

John Gardiner  
**Determinations Manager**