

## Determination 2006/105

### Refusal of a code compliance certificate for a house with a monolithic cladding system at 435 Allport Road, Paengaroa, Te Puke



#### 1 The matter to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004<sup>1</sup> (“the Act”) made under due authorisation by me, John Gardiner, Determinations Manager, Department of Building and Housing (“the Department”), for and on behalf of the Chief Executive of that Department. The applicant is the previous owner Mr P Davies (“the applicant”), and the other party is the Western Bay of Plenty District Council (“the territorial authority”). I also consider that the new owner is a person with an interest in this Determination. The application arises because the territorial authority declines to issue a code compliance certificate for a house, unless changes are made to its monolithic cladding system.

1.2 The matter for determination is whether I am satisfied on reasonable grounds that the territorial authority’s decision to decline to issue a code compliance certificate for a 4-year-old house is correct. The territorial authority declined the application because it was not satisfied that the monolithic cladding as installed on the new building work complied with clause E2 “External Moisture” of the Building Code<sup>2</sup> (First Schedule,

<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).

Building Regulations 1992). By “the monolithic cladding as installed” I mean the components of the system (such as the backing materials, 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 considered the submissions of the parties, the report of the independent expert commissioned by the Department to advise on this dispute (“the expert”), and the other evidence in this matter.

## **2 The building**

- 2.1 The building work consists of a large single-storey house situated on a level site that is in a high wind zone in terms of NZS 3604<sup>3</sup>. The house is of a relatively complex shape on plan, and the roofs have hip, valley, and roof-to-wall junctions. The roof is extended 3000mm over the north elevation deck, where it is supported on timber posts and beams. Elsewhere, the roofs have 600mm wide eaves and verge projections. The external walls are conventional timber framing built on concrete ground floor slabs. An external timber-framed boarded deck is constructed along the full length of the north elevation.
- 2.2 The specification calls for the framing timber to be “Laserframe” and the territorial authority, in a written note dated 31 May 2006, states that the house was built with untreated timber. As I have not received any further evidence, I accept that the external wall framing is unlikely to be treated to a level that is effective in helping resist decay if it absorbs and retains moisture.
- 2.3 The wall cladding to the timber-framed walls is a monolithic cladding system described as stucco plaster over a solid backing of 4.5mm thick fibre-cement backing sheets fixed through the building wrap directly to the framing timbers. The plaster is finished with a “Fuhler” sealer coat. I note that this cladding differs from the 60mm thick polystyrene system indicated on the consented plans. Both the territorial authority and the expert have commented on this system change. There is a part-height area of stone veneer at the entrance and the entrance and north elevation columns are also encased in a matching veneer. I note that on the original plans the northern columns are not shown as being encased.

## **3 Sequence of events**

- 3.1 The territorial authority issued a building consent on 26 November 2001.
- 3.2 The territorial authority carried out various inspections during construction, undertaking a final building inspection on 31 May 2006. In a hand-written note relating to this inspection, the territorial authority noted 10 issues arising from the inspection. Those relating to the cladding were:

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<sup>3</sup> New Zealand Standard NZS 3604: 1999 Timber framed buildings.

2. Consent plans show polystyrene cladding. This has been changed to be stucco which has cracked badly in places.
3. Cracks around pergola beams passing through stucco. Correct flashing?
6. Ground levels are too high to area around the exterior.
7. The exterior cladding is unpainted stucco. Has this been sealed?
9. According to N Lindsay this dwelling was built with untreated timber

3.3 The territorial authority wrote to the applicant on 22 June 2006, stating that it was unable to issue a code compliance certificate. The territorial authority also noted that:

In this case the building is clad in monolithic style and Council is not satisfied on reasonable grounds that it complies with the Functional Requirement and the Performance Requirement of Building Code Clause E2 External Moisture.

The territorial authority noted that the alternatives available to obtain Code compliance and a code compliance certificate were:

1. Removal of the monolithic-style cladding and replacement either with alternative non-monolithic cladding, or monolithic cladding with a suitable moisture management system (a drained cavity is one possible method), Please note that this must be carried out under a building consent.
2. An application for an amendment to the current building consent may be acceptable provided it is less than two years old. Please enquire
3. You may apply to the Building Industry Authority (*sic*) for a Determination in this matter...

3.4 The territorial authority did not issue a notice to fix as required under section 164 of the Act.

3.5 The applicant's application for a determination was dated 22 June 2006.

## **4 The submissions**

4.1 Neither the applicant nor the territorial authority made submissions.

4.2 The applicant forwarded copies of:

- the plans and specifications
- the territorial authority's letter of 22 June 2006 to the applicant.

4.3 Copies of the collected evidence was provided to each of the parties.

- 4.4 A copy of the draft determination was forwarded to the territorial authority and the previous owner for comment on 31 August 2006. The draft was also sent to the new owner on 26 October 2006. The territorial authority and the new owner accepted the draft.
- 4.5 In a letter to the Department dated 18 October 2006, the previous owner's only comment on the draft was a request that:

... the Department takes into consideration the building code that was applicable at the time the house was built in 2002 and [whether] the construction techniques and materials adhered to the code at that time.

I note that while the Building Act and the Acceptable Solution for E2/AS1 have been amended in the period since the house was built in 2002, the performance requirements for the Building Code itself have remained unchanged.

## 5 The expert's report

- 5.1 The expert inspected the cladding of the building on 26 July 2006 and furnished a report that was completed on 18 August 2006. The expert was of the opinion that, with the exception of the cracking, the general condition of the plaster stucco appears to be sound. The expert removed an area of the plaster to examine the construction at the junction of a window jamb and sill. I am prepared to accept that this example is representative and applies to similar details throughout the house.
- 5.2 The expert took non-invasive moisture readings through the interior linings of the exterior walls and no evidence of external water leakage was found. The expert then took 17 invasive moisture readings into the exterior of the wall framing. The following higher readings were recorded:
- 19%, and 20% below a window in bedroom 1
  - 30% below an en-suite window.

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

- 5.3 The expert made the following comments regarding the cladding:
- the cladding lacks vertical control joints
  - there is severe cracking in the cladding adjacent to the corners of some exterior joinery units
  - the cladding is buried into the ground or is too close to the paving at most locations
  - the jamb and sill flashings to the exterior joinery units are not effective
  - the flashings between the cladding and the masonry veneer are not effective
  - the junctions where the pergola beams penetrate the cladding are inadequately sealed

- the cladding has been finished with one sealer coat only, and this is considered to be ineffective against water penetration.

5.4 Copies of the expert's report were provided to each of the parties on 24 August 2006.

## 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 Solution<sup>4</sup>, in this case E2/AS1, which will assist in determining whether the named 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 may be necessary to add some other provision to compensate for that in order to obtain compliance 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 overall design of the building, the surrounding environment, the detailed 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)<sup>5</sup> 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 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 the weathertightness characteristics, I find that the building work:

- is situated in a high wind zone
- is single storey and is of a relatively complex shape on plan
- has 600mm wide eaves and verge projections, which together with the roof overhang above the deck, provide good protection to the cladding beneath

<sup>4</sup> 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](http://www.dbh.govt.nz).

<sup>5</sup> Copies of all determinations issued by the Department can be obtained from the Department's website.

them

- has external wall framing that is unlikely to be treated to a level that is effective in helping resist decay if it absorbs and retains moisture.

6.2.2 When evaluated using the E2/AS1 risk matrix, these weathertight features show that all elevations of the building demonstrate a low weathertightness risk rating. 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, edges, and penetrations are not well constructed, and these are as described in paragraph 5.3 and in the expert's report as being:

- the lack of vertical control joints
- the severe cracking in the cladding adjacent to the corners of some exterior joinery units
- the cladding being buried in the ground or too close to the paving at most locations
- the ineffective jamb and sill flashings to the exterior joinery units
- the ineffective flashings between the cladding and the masonry veneer
- the inadequately sealed junctions where the pergola beams penetrate the cladding
- the cladding being finished with one sealer coat only.

6.3.2 Notwithstanding the fact that the cladding is 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:

- Apart from the noted exceptions the cladding is installed to good trade practice.
- The house is single-storey.
- The house has 600mm wide eaves and verge projections and a roof overhang above the deck.

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 Discussion**

- 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 several locations at present. 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 house to remain weathertight. Because the cladding faults on the house are likely to allow the ingress of moisture in the future, the building 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 identified with the cladding system occur in discrete areas, I can conclude that satisfactory rectification of the items outlined in paragraph 6.3.1 will result in the building remaining weathertight and in compliance with clauses B2 and E2.
- 7.4 I have previously referred to the additional stone veneer that is encasing the north elevation roof columns. As this veneer was not shown on the consented plans, I suggest that the territorial authority closely examine this stonework to ensure that it is structurally sound in all respects.
- 7.5 It is emphasized 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 I decline to incorporate any waiver or modification of the Building Code in this determination.

## **8 Conclusion**

- 8.1 The cladding system as installed on the house does not comply with clauses B2 and E2 of the Building Code.
- 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 associated faults that may become apparent in the course of that work, will consequently result in the house remaining weathertight and in compliance with clauses B2 and E2.
- 8.3 Effective maintenance of claddings (in particular 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.

- 8.4 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 should 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.
- 8.5 As the majority of the external wall framing of the building is not treated to a level that will resist the onset of decay if it gets wet, periodic checking of its moisture content should also be carried out as part of normal maintenance.

## **9 The Decision**

- 9.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the monolithic cladding does not comply with clauses B2 and E2 of the Building Code, and accordingly confirm the territorial authority's decision to refuse to issue a code compliance certificate.
- 9.2 I note that the territorial authority has not issued a Notice to Rectify or a notice to fix. The territorial authority should now issue a notice to fix, and the applicant is then obliged to bring the building up to compliance with the Building Code. 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 applicant to propose and for the territorial authority to accept or reject.
- 9.3 I would suggest that the parties adopt the following process to meet the requirements of clause 9.2. Initially, the territorial authority should issue the notice to fix, listing all the items that the territorial authority considers to be non-compliant. The applicant should then produce a response to this in the form of a technically robust proposal, produced in conjunction with an expert, 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.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 9 November 2006.

John Gardiner  
**Determinations Manager**