

## Determination 2007/92

### Refusal of a code compliance certificate for a house at 8B Oroua Street, 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, Manager Determinations, Department of Building and Housing (“the Department”), for and on behalf of the Chief Executive of that Department. The applicant is the owner of the building, K Hamilton, acting through an agent (“the applicant”) and the other party is the Western Bay of Plenty District Council (“the territorial authority”).
- 1.2 This determination arises from the decision of the territorial authority to refuse to issue a code compliance certificate for a 6-year-old house because it was not satisfied that it complied with clause E2 “External Moisture” of the Building Code<sup>2</sup> (First Schedule, Building Regulations 1992).
- 1.3 The matter to be determined is whether the monolithic cladding as installed on the building complies with clause E2 (see sections 177 and 188 of the Act). By “the

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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).

cladding” 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 advise on this dispute (“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.
- 1.5 In this determination, unless otherwise stated, references to sections are to sections of the Act and references to clauses are to clauses of the Building Code.

## **2. The building**

- 2.1 The building work consists of a single-storey detached house situated on a level site, which is in a medium wind zone for the purposes of NZS 3604<sup>3</sup>. The house is relatively simple in plan and form. Construction is conventional light timber frame constructed on concrete floors. The metal tiled pitched roofs have hip, valley, and wall-to-roof junctions, and apart from the west elevation where the eaves project 100mm, have 600mm wide eaves and verge projections.
- 2.2 A porch with a pitched roof is constructed over the front entrance and supported on monolithic-clad timber-framed columns and beams. A boarded deck is constructed at the east and north elevations and a pergola formed from timber beams and columns is fixed to the east elevation of the house.
- 2.3 I have not received any information as to the treatment, if any, of the external wall framing.
- 2.4 The walls and columns of the house are clad with 7.5 mm thick “Harditex” fibre-cement sheets fixed through the building wrap to the framing, and finished with sprayed texture and paint coatings.
- 2.5 The expert has listed some amendments to the consented plans, including a change of cladding. However, I note there is a handwritten note by the territorial authority on the consented plans indicating that the cladding has been changed to Harditex. The other amendments listed by the expert are only of a minor nature.

## **3. Background**

- 3.1 The territorial authority issued a building consent on 16 January 2001.
- 3.2 The territorial authority carried out some inspections of the building. Following an inspection carried out on 9 February 2007, the territorial authority wrote to the applicant on 13 February, listing 4 areas of concern regarding the cladding.

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

3.3 In a second letter also dated 13 February 2007, the territorial authority advised the applicant that it could not, on reasonable grounds, issue a code compliance certificate. The territorial authority was not satisfied that the cladding complied with clause E2 and stated that one way to achieve code-compliance was:

Removal of the monolithic-style cladding and replacement either with alternative non-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.

3.4 The territorial authority did not issue a notice to fix as required under section 164(2) of the Act.

3.5 An application for a determination was received by the Department on 7 May 2007.

## **4. The submissions**

4.1 The applicant forwarded copies of:

- the plans and specifications
- the correspondence between the parties.

4.2 Copies of the evidence was forwarded to each of the parties.

4.3 The draft determination was sent to the parties for comment on 20 June 2007. The applicant's response was received on 9 July 2007, the territorial authority's response was received on 6 August 2007. Both parties accepted the draft without comment.

## **5. The expert's report**

5.1 As mentioned in paragraph 1.4, I engaged an independent expert, who is a member of the New Zealand Institute of Building Surveyors, to provide an assessment of the condition of those building elements subject to the determination.

5.2 The expert inspected the cladding of the house on 31 May 2007 and furnished a report that was completed on 8 June 2007. The expert noted that, apart from the peaking and cracking of joints, the straightness and "fairness" of finish is good, as is the overall standard of workmanship/finish. The expert was of the opinion that the sheet lay-out and control joints generally complied with the manufacturer's recommendations.

5.3 The expert took non-invasive moisture readings internally around the house and no elevated readings were found. Subsequently, a total of 23 invasive moisture readings were taken through the cladding. Elevated readings were noted at the east elevation (19.8%), at north elevation (21.4% and 42%), and at the south elevation (30%). Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure.

- 5.4 Commenting specifically on the cladding, the expert noted that:
- there is extensive peaking and associated hairline cracking of the sheets at many locations
  - no gap has been provided between the base of the cladding and the concrete foundations at the north elevation
  - the base of the cladding is too close to the ground at the front of the garage
  - no Inseal strips or flashings have been installed to the jambs and sills of the external joinery units
  - the ends of the two south elevation apron flashings lack kick-outs
  - some penetrations are inadequately sealed.

5.5 Copies of the expert's report were provided to each of the parties on 12 June 2007.

## **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, 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 are written conservatively to 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 one or more other provisions 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<sup>4</sup> (for example, Determination 2004/1) 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.

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<sup>4</sup> Copies of all determinations issued by the Department can be obtained from the Department's website.

## 6.2 Weathertightness risk

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

- is built in a medium wind zone
- is single storey
- is relatively simple in plan and form
- generally has 600mm wide eaves and verge projections
- has a roofed-over front porch and a pergola at one elevation
- has timber decks to two elevations
- has external wall framing that is not likely to be treated to a level that provides much resistance to the onset of decay if the framing absorbs and retains moisture.

6.2.2 The house has been evaluated using the E2/AS1 risk matrix. The risk matrix allows the summing of a range of design and location factors applying to a specific building design. The resulting risk rating can range from 'low' to 'very high'. The risk rating is applied to determine what claddings can be used on a building in order to comply with E2/AS1. Higher levels of risk will require more rigorous weatherproof detailing; for example, a high risk level is likely to require particular types of cladding to be installed over a drained cavity.

6.2.3 When evaluated using the E2/AS1 risk matrix, the weathertightness features outlined in paragraph 6.2.1 show that all elevations of this house demonstrate a low weathertightness risk rating. In order to meet the requirements of E2/AS1, the cladding of this building would not require a drained cavity.

## 6.3 Weathertightness performance

6.3.1 Generally the cladding appears to have been installed in accordance with good trade practice. However, based on the expert's opinion, I accept that remedial work is necessary in respect of the following:

- The extensive peaking and associated hairline cracking of the sheets at many locations.
- The lack of a gap between the base of the cladding and the concrete foundations at the north elevation.
- The base of the cladding being too close to the ground at the front of the garage.
- The lack of Inseal strips or flashings to the jambs and sills of the external joinery units. There appears to be no protection over the join of the aluminium jamb section and the textured fibre-cement sheet.
- The lack of kick-outs to the ends of the two south elevation apron flashings.

6.3.2 I have noted certain building features 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 and is relatively simple in plan and form.
- The house generally has 600mm wide eaves and verge projections that protect the claddings below them.

6.3.3 I consider that these features assist compliance with the weathertightness and durability provisions of the Building Code.

## 7 Discussion

7.1 I consider the expert's report establishes that the current performance of the cladding is not adequate because it is allowing water penetration into the building at some locations at present. Consequently, I am satisfied that 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 in the building are likely to continue to allow the ingress of moisture in the future, the house does not comply with the durability requirements of clause B2.

7.3 Because the faults 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 will result in the building remaining weathertight and in compliance with clauses B2 and E2.

7.4 I emphasise 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.

7.5 I decline to incorporate any waiver or modification of the Building Code in this determination.

7.6 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.

7.7 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.

7.8 As the external wall framing of the building may not be treated to a level that will fully 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.

## **8 The Decision**

8.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the building work 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.

8.2 I note that the territorial authority has not issued a notice to fix. A notice to fix should be issued that requires the applicants to bring the building into compliance with the Building Code, identifying the defects listed in paragraph 6.3.1 including any associated defects discovered during the course of that work, but not specifying how those defects are to be fixed. That is a matter for the owner to propose and for the territorial authority to accept or reject. It is important to note that the Building Code allows for more than one method of achieving compliance.

8.3 I would suggest that the parties adopt the following process to meet the requirements of paragraph 8.2. Initially, the territorial authority should issue the notice to fix. 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.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 21 August 2007.

John Gardiner  
**Manager Determinations**