

## Determination 2007/49

### Refusal of a code compliance certificate for a house at 617C Runciman Road, Drury, Auckland



#### 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 third owner of the building, Mr C Ruffell, acting through an agent (“the applicant”) and the other party is the Franklin 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 5-year-old house because it was not satisfied that it complied with clauses B2 “Durability” and 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 cladding and roofing as installed on the building comply with clauses B2 and E2 (see sections 177 and 188 of the Act). By “the cladding” I mean the components of the system (such as the backing materials,

<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).

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 7.1.
- 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 three-storey detached house situated on an excavated site, which is in a very high wind zone for the purposes of NZS 3604<sup>3</sup>. The house is relatively complex in plan and form. Construction is conventional light timber frame constructed on either concrete or timber-framed floors. The concrete tiled pitched roofs are at three main levels with hip, valley, and wall-to-roof junctions. The roofs have 300mm wide eaves and verge projections.
- 2.2 Three timber-framed open balconies are constructed at the upper-level of the house, one of which is built over a living space and two of which are cantilevered and have partly curved perimeters. All these balconies have monolithic-clad timber-framed balustrades.
- 2.3 Based on a biodeterioration consultant’s analysis I am of the opinion that the external wall framing is unlikely to be treated to a level that would prevent deterioration if it becomes wet and cannot dry out.
- 2.4 The walls to the mid and upper-levels of the house are clad with 40mm thick polystyrene sheets fixed through the woven plastic building wrap to the framing, and finished with a 3mm thick texture coating and a paint system. The expert considers it likely that the cladding is an “Insulclad” system. A small area of texture-coated and painted fibre-cement cladding is installed below the garage north wall window.
- 2.5 Plaster Systems Ltd produced a 15-year “Material Components Guarantee”, dated 20 February 2007 for the cladding material components and the cladding applicator issued a 5-year “Workmanship Guarantee” for the cladding installation. However, in a letter to the applicant dated 13 March 2007, the territorial authority raised doubts as to the authenticity of the latter document.

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

### 3. Sequence of events

- 3.1 The territorial authority issued a building consent on 19 December 2001, based on a certificated dated 26 November 2001 issued by A1 Building Certifiers Ltd (“the building certifier”).
- 3.2 The building certifier carried out some inspections in 2002. The building certifier’s approval as a certifier expired on 18 September 2002 and the project was handed back to the territorial authority for completion.
- 3.3 According to the territorial authority, the building certifier approved the cladding, which the territorial authority claimed was outside the building certifier’s scope of approval. I have not received any further documentation to verify this claim.
- 3.4 The territorial authority wrote to the first owner on 26 November 2002, advising that the building certifier was unable to continue to certify the building work. Accordingly, the building certifier had passed on the inspection records to the territorial authority, which would now have to complete the inspections of the building work.
- 3.5 The territorial authority carried out further inspections in 2003 and 2005.
- 3.6 On 22 February 2005, the supplier and installer of the tiled roofing certified that the roofing as installed complied with the contract documents, the Building Code, and the installation requirements of NZS 4206<sup>4</sup>.
- 3.7 In a fax to the territorial authority, dated 1 April 2005, Plaster Systems Ltd noted that its area manager had inspected the cladding. The manager had called for the application of a further plaster coating to some locations, prior to the application of any paint. It was also noted that, as it had not been possible to contact the plaster applicator, neither a producer statement nor a workmanship warranty could be provided for the plaster work.
- 3.8 The first owner sold the property to the second owner on or about October 2006.
- 3.9 The territorial authority carried out a final inspection of the building on 13 October 2006 and wrote to the second owner on 16 October 2006, listing the matters that required attention. One matter concerned the monolithic cladding, where the territorial authority noted that recent information cast doubts as to whether such claddings meet the requirements of clauses B2 and E2.
- 3.10 The applicant engaged a firm of building consultants (“the consultants”) to carry out a pre-purchase inspection of the house. Following a “visual” inspection of the property on 13 October 2006, the consultant produced a report also dated 13 October 2006, which was subject to certain limitations. The report referred to certain matters that required attention. Non-invasive moisture tests did not reveal any higher moisture levels.

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<sup>4</sup> New Zealand Standard NZS 4206:1992 Concrete interlocking roofing tiles

- 3.11 The applicant purchased the house on 24 October 2006.
- 3.12 The territorial authority wrote to the applicant on 4 December 2006, noting that it had re-inspected the building work on 1 December 2006. The territorial authority repeated its concerns about the cladding as raised in its letter to the second owner dated 13 October 2006. The territorial authority also requested that the apron flashing kick-outs be rectified.
- 3.13 The territorial authority did not issue a Notice to Rectify under the Building Act 1991 (“the former Act”) or a notice to fix as required under section 164(2) of the Act.
- 3.14 An application for a determination was received by the Department on 6 November 2006.

#### **4. The submissions**

- 4.1 The applicant noted that the territorial authority required the cladding to be “signed off [by the Department] as there is no ventilated cavity”.
- 4.2 The applicant forwarded copies of:
- the plans and specifications
  - the building consent and associated documentation
  - some inspection records
  - the correspondence from the building certifier and the territorial authority
  - the consultant’s report of 13 October 2006.
- 4.3 In its submission to the Department about the application, dated 13 November 2006, the territorial authority stated that the cladding did not meet the requirements of the current Acceptable Solution<sup>5</sup> for E2/AS1 and noted that the building certifier had approved the cladding outside the building certifier’s scope of approval.
- 4.4 The territorial authority responded to the expert’s report in a letter dated 30 January 2007, refer paragraphs 5.8 and 5.9.
- 4.5 A copy of the draft determination was forwarded to the parties for comment on 13 February 2007. In that draft I determined that the building did not comply with clauses B2 and E2.
- 4.6 The applicant accepted the draft but asked that the determination be placed on hold pending the receipt of additional information. The information has been provided and is discussed in paragraphs 6.1 to 6.4.

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<sup>5</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).

- 4.7 The territorial authority responded to the draft determination in a letter to the department, dated 19 February 2007, which said:

We note the significant statements in [paragraphs] 4.6 (now 5.8), 6.2.2, 7.1, 7.2 and conclude that this building will require a total reclad using a drained and ventilated cavity system. It is a pity the [draft] decision does not . . . clearly say so.

- 4.8 The determination was amended taking into account the matters discussed in paragraphs 6.1 to 6.4. A copy of the second draft determination was forwarded to the parties on 13 April 2007 which both parties accepted. However, the applicant appended a copy of a fax he sent to the territorial authority on 19 March 2007, in which he disputed a claim made by the territorial authority that the cladding guarantees were not authentic.

## 5. The expert's report

- 5.1 As mentioned in paragraph 1.4, I engaged an independent expert to provide an assessment of the condition of those building elements subject to the determination. The expert is a member of the New Zealand Institute of Building Surveyors.
- 5.2 The expert inspected the claddings of the house on 6 and 19 December 2006 and on 9 January 2007, and furnished a report that was completed on 12 January 2007. The expert noted that the plaster finish generally is straight, flat, and fair and the workmanship is generally good. The coating appeared to be uniform and sound and the mesh bedded into the plaster correctly. The expert removed a section of plaster at one window sill and found that appropriate jamb and sill flashings are installed. I am prepared to accept that these details apply to other similar locations throughout the building.
- 5.3 The expert took non-invasive moisture readings internally around the house and at seven points there were elevated readings of 19%, 20%, (at 4 locations), 21%, and 27%. Subsequently a number of invasive moisture readings were taken in the bottom framing of the ground and first floors. No elevated readings were noted. However, as the roof, roof flashings and guttering showed defects that would allow water entry the expert took a number of moisture readings around the soffits where readings of 35% to 85% were recorded at some locations. Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure.
- 5.4 The expert carried out indicative strength tests at various locations on site which resulted in scores of between 5 and 7 on a scale from 0 to 10. While invasive tests of the moisture content of the wall framing showed no high readings, given the widespread potential faults, the expert took timber samples from 4 locations and forwarded them to a testing laboratory for analysis. All the samples showed minimal boron retention and 3 showed signs of decay, exhibiting brown rot with a loss of birefringence and cell wall strength, indicating that the timber was unsound and that the timber at the location of the sample would possibly require replacement.
- 5.5 Commenting specifically on the cladding, the expert noted that:

- the paintwork system as applied is unsatisfactory
- the bottom of the cladding has been taken down too close to the paving adjacent to the dining room
- the base of the cladding is too close to the roofing at some locations
- the base of the cladding at the balcony decks are not plastered and the mesh is exposed at some locations
- the tops of the deck balustrades are almost flat and also lack metal flashings
- the ends of the apron flashings are not effectively formed
- some metal gutter and fascia ends are built into the plaster
- the larger balconies have only one outlet and one overflow and the installed outlets are inadequately sealed
- some penetrations are inadequately sealed or flashed
- there is no capillary gap installed at the base of the fibre-cement panel on the garage where it abuts the blockwork under it .

5.6 The expert also commented on the roofing as follows:

- Some junctions between the roof tiles and the structure are inadequately formed.
- The roof underlay is not adequately supported.
- The broken tiles need replacing.
- Some of the roof flashings are poorly detailed, lack sufficient joint overlaps, and are poorly finished at their ends and junctions.
- The gutter installation permits water to enter the soffit areas.
- Some high-level spoutings lack droppers.

5.7 Copies of the expert's report were provided to each of the parties on 16 January 2007.

5.8 The territorial authority responded to the expert's report in a letter to the Department dated 30 January 2007. The territorial authority noted that the cladding was completed around April 2002 when it was subject to the inspection by the building certifier. The territorial authority said it seemed appropriate for the transition provisions of Section 435 to apply and that the determination should direct the territorial authority to issue a certificate of acceptance for the work instead of a code compliance certificate. However, the territorial authority also suggested a date of 30 April 2002 when the building elements complied with B2 Durability.

5.9 In the draft determination, I noted that the nature and extend of the defects was likely to require the full exposure of the building elements in order for the defects to be rectified. It was suggested that the remedial work be fully inspected in order to provide sufficient grounds on which to issue a code compliance certificate.

## **6. Assessment of remedial work following the issue of the draft determination**

6.1 Following the issue of the draft determination, remedial work was carried out on the house. On completion of this work, the applicant engaged a firm of building consultants (“the consultants”) to inspect the work. The consultants duly inspected the work and issued a report dated 5 March 2007. I note that the person responsible for the inspection and the report is a member of the New Zealand Institute of Building Surveyors and is also an approved assessor for the Weathertight Homes Resolution Service. As such, I am prepared to accept the report as evidence that can assist me in determining the matters at issue.

6.2 The consultants monitored the 80 moisture probes that have now been installed at various locations around the building. No readings above 14% were recorded. The consultants also opened up the soffits and testing of these opened areas did not reveal any elevated readings. The consultants removed 22 timber samples at various locations and forwarded these to a biodeterioration consultant for analysis as to treatment and condition.

6.3 The consultants commented specifically on the building elements:

### **The cladding**

- The house has been totally repainted to provide a good protective cover.
- The bottom of the cladding remains too close to the paving adjacent to the dining room.
- In general, there is good clearance between the flashings and the base of the cladding.
- The details at the base of the cladding at the balcony decks is in accordance with the manufacturer’s data sheets current at the time that the building consent was issued.
- The top of the deck balustrades remain non-compliant.
- The ends of the apron flashings are now effectively completed.
- Where the ends of the metal gutters and fascias are built into the cladding they have been well sealed and are well protected by good roof projections at some locations.
- The re-formed balcony overflows are now effective.

- The penetrations through the cladding are now adequately sealed.
- The area of fibre-cement cladding that lacks a capillary gap is minimal and as the wall is not lined internally at this location, the framing has the ability to dry out.

### **The roofing**

- The roof underlay is now adequately supported.
- The broken tiles have been replaced.
- The defective roof flashings have been rectified.
- Droppers have been installed to the high-level spoutings.

6.4 The biodeterioration consultant tested the samples provided by the consultants. The analysis revealed evidence of surface boron treatment in 11 of the samples, while the remaining 11 were found to be untreated. Twenty-one of the samples suggested “transient moisture elevation conducive to decay”, however, the “sustained moisture typically required for decay had not occurred”. The remaining sample contained soft rot, which taking into account the situation from where it was removed and subsequent observations, was “compatible with fungal development caused by water from bathing activities”.

## **7. Evaluation for code compliance**

### **7.1 Evaluation framework**

7.1.1 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 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.

7.1.2 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>6</sup> (for example, Determination 2004/1) relating to cladding and these factors are also used in the evaluation process.

- 7.1.3 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.

## 7.2 Weathertightness risk

- 7.2.1 In relation to these characteristics I find that the house:

- is built in a very high wind zone
- is three storeys high
- is relatively complex in plan and form
- generally has 300mm wide eaves and verge projections
- has three external balconies, one of which is constructed over a living space
- has external wall framing that is not likely to be treated to a level that provides resistance to the onset of decay if the framing absorbs and retains moisture. I note also that the timber has already experienced decay at one location.

- 7.2.2 When evaluated using the E2/AS1 risk matrix, all elevations of the house demonstrate a high weathertightness risk. 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.

## 8 Discussion

- 8.1 I consider that the consultants' report establishes there is now no evidence of external moisture entering the building, and accordingly, that its cladding and roofing do comply with clause E2 at this time. I note that the expert was of the opinion that moisture was entering the building at the time that the expert examined the house. The biodeterioration consultants' analysis also noted that "transient moisture elevation conducive to decay" was present in the tested timber samples, which bears out the opinion of the expert. However, since the time that the expert inspected the house, remedial work has been carried out and the consultant carried out moisture investigations subsequent to this. Accordingly, I have concluded that the structure is

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<sup>6</sup> Copies of all determinations issued by the Department can be obtained from the Department's website.

weatherproof, and therefore complies with E2 at the present time, and that the soft rot evident in the bathroom wall framing was caused by internal moisture ingress.

8.2 However, 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 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.

8.3 Because the faults identified with the cladding and roofing systems occur in discrete areas, I am able to conclude that satisfactory rectification of the following items will result in the building remaining weathertight and in compliance with clause B2:

- The bottom of the cladding being too close to the paving adjacent to the dining room.
- The flat top and lack of metal cap flashings to the deck balustrades.
- The metal gutter and fascia ends being built into the plaster at the locations where there is a lack of protection from the eaves projections.
- The gutter installation permitting water to enter the soffit areas.

8.4 I emphasise that each determination is conducted on a case-by-case basis. Accordingly, the fact that a particular cladding or roofing 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.

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

8.6 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.

8.7 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.

- 8.8 As 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. I note that the moisture probes, already installed by the owner, may provide a means of facilitating this.

## **9 The decision**

- 9.1 In accordance with section 188 of the Act, I hereby determine that the building does not comply with clause B2 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 under the former Act or a notice to fix as required by section 164(2) of the Act. A notice to fix should now be issued that requires the owners to bring the building up to compliance with the Building Code, identifying the defects listed in paragraphs 5.5 and 5.6, and which are not yet rectified (refer paragraph 8.3), and referring to any further defects that might be discovered in the course of rectification, but not specifying how those defects are to be fixed. It is important to note that the Building Code allows for more than one method of achieving compliance
- 9.3 I would suggest that the parties adopt the following process to meet the requirements of paragraph 9.2. Initially, the territorial authority should issue the new 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 10 May 2007.

John Gardiner  
**Manager Determinations**