

Determination 2008/46

Determination regarding the refusal to issue a code compliance certificate for a house at 350 Jesmond Road, Drury



1. The matters to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004¹ (“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 applicants are the owners, M and A Lumpert, and the other party is the Papakura 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 2-year-old house because it was not satisfied that it complied with the Building Code² (Schedule 1, Building Regulations 1992).

¹ The Building Act 2004 is available from the Department’s website at www.dbh.govt.nz.

² The Building Code is available from the Department’s website at www.dbh.govt.nz.

1.3 I consider that the matters for determination are:

1.3.1 Matter 1: The deck membrane and monolithic cladding

Whether the deck membrane and monolithic wall cladding as installed to the house comply with Clauses B2 and E2 of the Building Code (see sections 177(a) and 188 of the Act). By “as installed” I mean the components of the systems (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.

1.3.2 Matter 2: Other code compliance matters

Whether other building elements, identified as outstanding matters by the territorial authority, comply with the relevant clauses of the Building Code.

1.4 I note that, in its submission as outlined in paragraph 4.3, the territorial authority has identified only three items that prevent it from issuing a code compliance certificate, and this determination is therefore limited to the following matters:

- the monolithic cladding
- the membrane used in the roof flashings and on the decks
- the bearing capacity of the soil at the foundations.

1.5 In making my decision, I have considered the submissions of the parties, the report of the 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.

1.6 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 large detached house that is situated on a flat rural site, which is in a high wind zone for the purposes of NZS 3604³. The house forms a “U” shape, with an upper floor over part of the eastern end. Construction is specifically engineered reinforced concrete and concrete block, with precast concrete panel exterior walls, concrete columns and beams, two masonry internal walls and concrete floor slabs at ground and first floor level. The only timber-framed exterior walls are to the gable ends, the “chimney” structure and the deck balustrades, which are clad in monolithic cladding. The 30° pitch clay tile gable roofs have eaves and verge projections of about 450mm.

2.2 Two large concrete decks extend from the upper levels of the east and west elevations. The decks are tiled, with membrane applied over the concrete substrate. The east deck forms a “porte-cochère” over the main entry, while exterior stairs provide access from ground level to the west deck. Both decks have monolithic-clad balustrades to the sides and open metal balustrades across the front, with the side

³ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

balustrade cladding continuing around the outer corners to form monolithic-clad timber framed panels below the deck edge.

- 2.3 The expert noted that he was unable to inspect any of the concealed timber framing. Given the date of construction in 2005 and the lack of other evidence, I consider the external wall framing is likely to be treated to H1.2 and the balustrade framing to H3.1, in order to meet the minimum treatment levels required at that time.
- 2.4 The cladding system to the timber framed chimney, gable ends and deck balustrades is EIFS⁴ monolithic cladding. The expert could not identify the proprietary brand, but the quotation from the cladding applicator indicates that the cladding system is likely to be “Fosroc/Sika Polyclad Barricade” cavity system, with purpose-made flashings to edges and other junctions. The cladding consists of 40mm polystyrene backing sheets fixed, over 20mm polystyrene battens over the building wrap, to the framing, and finished with a mesh-reinforced plaster system and an acrylic paint coating system.
- 2.5 The expert has noted that the membrane applied under the deck tiles appears to be “Mapelastic”, which is a two-part, flexible, cementitious, liquid-applied reinforced membrane applied in two coats to a minimum thickness of 2mm, with fibreglass mesh reinforcement at joints and junctions. I note that the membrane has a current BRANZ Appraisal Certificate No. 485 (2005).

3. Background

- 3.1 The territorial authority issued a building consent (No. 21273), which I have not seen. The consent appears to have been issued in February 2005 (under the Building Act 1991). The consent drawings are stamped by the territorial authority although one drawing is stamped by both the territorial authority and a building certifier (Compass Building Certification Ltd). The building certifier’s input into the approval of the work is not known. However, it appears the inspections were conducted by the territorial authority.
- 3.2 I have no records of the inspections carried out by the territorial authority. According to the territorial authority, the consent conditions (which I have not seen) included a requirement for an inspection by a geotechnical engineer during the foundation work, and it appears that the building contractor did not arrange for this inspection to be carried out.
- 3.3 It appears that most of the building work was completed during 2005, but the contractor went into liquidation early in 2006 with various items incomplete (including some outstanding documentation). It appears that the territorial authority carried out a final inspection and issued a field note (FN 1477) that listed a number of items and documentation to be completed.
- 3.4 The owners managed to complete most of the building work, but some producer statements from subcontractors remained outstanding due to payment problems related to the contractor’s situation.

⁴ External Insulating & Finish System

3.5 The owners engaged a specialist independent roofing consultant (“the roof consultant”) to inspect the membrane roof flashings. The roof consultant inspected the visible membrane flashings on 28 May 2007 and, in a report to the owners dated 27 June 2007, concluded that the butynol flashings were “up to the recommended standard” and the installation should “provide its life expectation without any problems”.

3.6 The owners also engaged a geotechnical engineer (“the engineer”) to consider the soil bearing capacity (refer paragraph 3.2). The engineer visited the site on 3 July 2007 and, in a facsimile to the owners dated 10 July 2007, stated:

We have checked the density of the soil around the perimeter of the existing foundation. Scala test results adjacent to the foundation at the level of the footings revealed that the bearing capacity of the soil is 100kPa.

3.7 The territorial authority carried out a recheck inspection on 10 December 2007 and wrote to the owners on 16 December 2007 noting that 4 items from the final inspection remained outstanding. As well as minor plumbing work, the territorial authority required producer statements:

- for the membrane installation
- from a geotechnical engineer
- from the cladding and plaster coating installer.

The territorial authority concluded:

After reviewing the file the Papakura District Council is in a position where to issue a final Code Compliance Certificate on the above project would be inappropriate. Therefore Papakura District Council is refusing to issue the final Code Compliance Certificate.

3.8 Under cover of a letter to the owners dated 13 February 2008, the territorial authority issued a notice to fix, which repeated the outstanding items outlined in paragraph 3.7.

3.9 The Department received an application for a determination from the owners on 29 February 2008.

4. The submissions

4.1 In a letter to the Department dated 18 February 2008, the applicants outlined the background of the project, explaining the problems involved in completing the house and the required documentation, due to non-payment of various subcontractors following the contractor’s liquidation.

4.2 The applicants forwarded copies of:

- the specification and some of the consent drawings
- the correspondence from the territorial authority
- the roof consultant’s report
- the facsimile from the geotechnical engineer

- the notice to fix
- various other statements.

4.3 In a letter to the Department dated 29 February 2008, the territorial authority noted that it had carried out some cladding inspections and outlined the three outstanding producer statements, noting:

These are the only remaining items. Although the lack of these is more of a contractual issue, Papakura District Council needs to have a duty of care, hence the decision not to issue the final Code Compliance Certificate.

4.4 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.

4.5 The draft determination was issued to the parties on 8 May 2008. Both parties accepted the draft without comment.

5. The expert's report

5.1 As mentioned in paragraph 1.5, 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 Architects specialising in building surveying.

5.2 The expert inspected the house on 3 March 2008 and furnished a report that was completed on 28 March 2008, which noted that his investigation was limited to the EIFS cladding and the deck membrane.

5.3 The deck membrane

5.3.1 The expert noted that the deck slope appeared adequate, with no signs of staining or ponding. The tiles were neat and well grouted with no cracks or evidence of moisture penetration.

5.3.2 The expert noted that copper bands cover the junction between the deck membrane and the EIFS cladding at the front edges of the decks. The expert removed the band on the west deck to observe the underlying construction, noting that the deck membrane turned down over fibre-cement backing sheets and observed that the membrane appeared thin, with the fibreglass mesh clearly visible at the surface of the turndown.

5.4 The cladding

5.4.1 The expert noted that the cladding was "straight and fair" with no significant cracking and the overall standard of workmanship appeared good, except for the items outlined in paragraph 5.4.5. The expert also noted that apron and chimney membrane flashings were "tidy and effective".

5.4.2 The expert noted that no control joints were required for the dimensions of the EIFS cladding applied to this house, and that no cladding areas contained windows or

doors. The expert also noted that there were no apparent problems associated with the cladding applied to the gable ends and to the framed chimney.

- 5.4.3 The expert inspected the EIFS cladding applied to the front edges and balustrades of the two decks, and observed water stains at the base of the edge cladding at one front corner. The expert took invasive moisture readings through the cladding and noted that the moisture content ranged from 10% to 16%, except for a reading of more than 30% at the south corner of the west deck edge panel (refer paragraph 2.2).
- 5.4.4 The expert noted that the moisture readings were taken following an extended period of dry weather, and expected moisture contents to be higher at wetter times of the year. The expert considered that the moisture readings and moisture stains indicated that moisture was penetrating into framing behind the fibre-cement backing sheets at the deck edges, as the readings at the corners were recorded as follows:
- 16% at the edge, but 12% in the balustrade bottom plate directly above.
 - More than 30% at the edge, but 13% in the bottom plate directly above.
- 5.4.5 Commenting specifically on the deck claddings and membrane, the expert noted that:
- the balustrades lack cappings, and there is insufficient slope to their top surfaces
 - the balustrade to wall junctions lack saddle flashings to protect the balustrade framing, with the junctions reliant on sealant, and cracked at some junctions
 - although the membrane turns up against the deck side of the bottom plates, the ends of the bottom plates at deck corners are visible, with bare timber exposed to moisture
 - the copper bands are not effective in protecting the junction between the deck membrane and the edge cladding and there are cracks at one of the junctions
 - the metal balustrades to the fronts of the decks appear to penetrate the deck membrane.
- 5.4.6 The expert concluded that the moisture penetration into the framing at the deck edges (refer paragraph 2.2) is likely to be the result of one or more of the following factors;
- the inadequate thickness of the membrane at the deck edge turndown
 - the fixings of the metal balustrades through the deck membrane
 - the buckling of the copper bands and band fixings through the membrane.
- 5.4.7 A copy of the expert's report was provided to the parties on 3 April 2008.
- 5.4.8 In a letter to the Department dated 8 April 2008 the territorial authority generally accepted the expert's report, noting that the points raised:
- ...would appear to cover most issues. However we believe that the penetration of the balustrade fixings as shown in photos 13 and 20 need to be addressed.
- 5.4.9 In a letter to the Department dated 9 April 2008 the applicants accepted the expert's report without comment.

6. Evaluation for code compliance

6.1 Evaluation framework

6.1.1 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 determinations⁵ (for example, Determination 2004/1) relating to cladding and these factors are also used in the evaluation process.

6.1.2 The consequence 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 these characteristics I find that this house:

- is built in a high wind zone
- is a fairly complex building that is two storeys in part
- has monolithic cladding fixed over a drained cavity
- has eaves and verge projections to protect the cladding
- has external wall framing that is treated to a level that provides 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 level of risk can range from 'low' to 'very high'. The risk level 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 a particular type 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 two elevations of the house demonstrate a low weathertightness risk rating and two a high rating. I note that the monolithic cladding on this house is installed over a drained cavity in compliance with E2/AS1.

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

Matter 1: The deck membrane and monolithic cladding

7. Discussion

- 7.1 I consider the expert's report establishes that the current performance of the cladding is adequate because it is currently preventing water penetration into the building. However, I also consider the expert's report establishes that the current performance of the deck membrane is not adequate because it is currently allowing water penetration into the framing at the deck edges. Consequently, I am satisfied that the building work does not comply with Clause E2 of the Building Code.
- 7.2 In addition, the building work 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 deck balustrades are likely to allow the ingress of moisture in the future, the building work does not comply with the durability requirements of Clause B2.
- 7.3 I note that the expert was unable to assess the quality of the membrane beneath the deck tiles, although he could see no evidence of moisture penetration. However, I note that the deck floor is concrete and I therefore consider that the quality of the membrane over the body of the deck floor is not critical to the durability of the underlying element, in contrast to the timber framed edges of the decks.
- 7.4 Because the faults identified with the cladding and the deck membrane occur in discrete areas, I am able to conclude that satisfactory rectification of the items outlined in paragraph 5.4.5 will result in the building work being brought into compliance with Clauses B2 and E2.
- 7.5 Effective maintenance of claddings is important to ensure ongoing compliance with Clauses B2 and E2 of the Building Code and is the responsibility of the building owner. The Department has previously described these maintenance requirements (for example, Determination 2007/60).

Matter 2: Other code compliance matters

8. Discussion

- 8.1 I note the geotechnical engineer's inspection and testing of the soil condition at the perimeter of the foundations as outlined in paragraph 3.6. Taking into account the plan shape of the building, I am prepared to accept that the bearing capacity of the ground beneath the foundations of the building is likely to be similar to that at the perimeter and therefore adequate, notwithstanding the lack of a producer statement for this part of the building work.
- 8.2 I have also reviewed the roof consultant's report on the membrane roof flashings as outlined in paragraph 3.5, and consider that the roof flashings appear adequate, notwithstanding the lack of a producer statement for this part of the building work.

9. What is to be done now?

- 9.1 I note that the territorial authority has issued a notice to fix that includes the requirement to provide producer statements for various parts of the building work. I consider that producer statements are not a condition for compliance with the Building Code, but rather a condition that may be imposed within a building consent for certain building elements. Under the Act, a notice to fix can require the owner to bring the house into compliance with the Building Code. The Building Industry Authority has found in a previous Determination 2000/1 that a Notice to Rectify (the equivalent to a notice to fix under the Building Act 1991) cannot specify how that compliance can be achieved. I concur with that view.
- 9.2 The territorial authority should now withdraw the notice to fix and issue a new notice that requires the owners to bring the house into compliance with the Building Code, restricted to the defects listed in paragraphs 5.4.5 and referring to any further defects that might be discovered in the course of investigation and rectification, but not specifying how those defects are to be fixed. It is not for the notice to fix to specify how the defects are to be remedied and the house 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.
- 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 detailed proposal, together with suitable amendments to the plans and specifications, 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.

10. The decision

- 10.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the deck membrane does not comply with Clauses E2 and B2, and the deck cladding 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.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 4 June 2008.

John Gardiner
Manager Determinations