

## Determination 2007/130

### Refusal to issue a code compliance certificate for a 12-year-old house at 9 Onewa Road, Northcote



#### 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 applicants are the owners of the building Mr and Mrs Lloyd (“the applicants”) and the other party is the North Shore City Council (“the territorial authority”). I also consider that the builder of the house is a person with an interest in the matters to be determined.
- 1.2 This determination arises from the decision of the territorial authority to refuse to issue a code compliance certificate for a 12-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).

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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).

1.3 The two matters for determination are:

**Matter 1: The cladding**

- a) Whether the cladding as installed to the walls of the building complies with clauses B2 and E2 (see sections 177 and 188 of the Act). By “the cladding as installed” 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.

**Matter 2: The durability considerations**

- b) Whether the other elements that make up the building work comply with clause B2 “Durability” of the Building Code, taking into account the age of the building work.

1.4 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. With regard to the cladding, 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 split-level pole house situated on a steeply sloping site that is in a high wind zone for the purposes of NZS 3604<sup>3</sup>. The house is relatively complex in shape and form and is of timber framed construction built on timber-framed floors. The pitched roof has hip, valley, and wall-to-roof junctions but, apart from a 1000 mm wide eaves extension over the deck, it has no eaves or verge projections. The roof is extended at the main entry where it is partially supported by a side screen.

2.2 A large timber-framed deck is constructed at the main floor level and extends across one elevation with an end return outside bedroom1. The deck is supported on timber pole and frame members and is complete with a weatherboard-lined timber balustrade. A timber-framed pergola is constructed over the main deck area.

2.3 According to the expert, the external wall framing timber is likely to be boron treated.

2.4 Three types of wall cladding have been applied to the timber-framed external walls of the buildings. These are:

- bevel backed timber weatherboards to the lower north wall and part of the west wall and to the sides of the deck balustrades
- a 40mm thick EIFS cladding system with a textured finish to the upper north wall, the entire south wall, and part of the west wall
- plywood and batten cladding to the east end of bedroom 1.

All the linings are fixed over a building membrane fixed directly to the framing, and all have paint systems applied to them.

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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 building consent No B4853 on 15 August 1995, under the Building Act 1991.
- 3.2 The territorial authority carried out various inspections of the property during the construction process, which took place in 1995. The territorial authority undertook a weathertightness inspection on 9 November 2006 and a final building inspection on 13 November 2006. I have not received any information explaining the delay in the territorial authority carrying out those latter inspections.
- 3.3 The territorial authority wrote to the applicants on 17 November 2006 and described certain risk factors identified with the building, together with a list of defects and outstanding items. The territorial authority stated that, due to the risk factors, defects, and other compliance requirements, it could not be satisfied on reasonable grounds that the cladding system complied with clauses E2 and B2. In addition, the territorial authority had concerns regarding the durability of all the building elements, taking into account the age of the building. The territorial authority also advised the applicants to provide a report from a “Certified Weathertightness Surveyor” employed to investigate the weathertightness of the cladding, confirm the moisture levels in the exterior framing, and propose remedial work if necessary. The territorial authority noted that:
- On completion of all required remedial work and all outstanding requirements for compliance, to Council satisfaction, the Council will issue a letter stating it is satisfied on reasonable grounds that the building work has been completed to the approved building consent, and to the performance requirements of the New Zealand Building Code, except for clause B2 Durability.
- 3.4 The Department received the application for a determination on 7 June 2007.

### **4. The submissions**

- 4.1 Neither party provided a detailed submission
- 4.2 The applicant forwarded copies of:
- the plans and specifications
  - some of the territorial authority’s inspection records
  - the correspondence from the territorial authority to the applicant dated 17 November 2006.
- 4.3 Copies of the documents from the applicants and other evidence were provided to the parties. Neither party made any submissions in response to the information that was provided.
- 4.4 A draft determination was issued to the parties on 17 August 2007. The draft was issued for comment and for the parties to agree a date when the building elements complied with the durability provisions of the Building Code.
- 4.5 The applicants accepted the draft (received at the Department on 21 September 2007) and submitted that the building elements complied with clause B2 at a time when the house was finished some time in 1995.
- 4.6 The territorial authority responded to the draft determination in a fax to the Department dated 25 October 2007. The territorial authority accepted the draft and

noted that in a phone call to the applicant an agreement had been reached on the date of 1 January 1996 being when the building elements complied with the durability provisions of the Building Code.

## 5. The consultants' report

5.1 As mentioned in paragraph 1.4, I engaged an expert, who is 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 property on 12 July 2007 and furnished a report that was completed on 27 July 2007. The report noted that the EIFS system did not require construction joints as the wall lengths do not exceed 20 metres. The expert removed sections of the EIFS cladding at the junctions of the jamb of one window with its head or sill and also a timber batten to expose a plywood cladding joint. I am prepared to accept that the details revealed at these locations would apply to similar situations throughout the building.

5.3 The expert took non-invasive moisture readings internally within the house, and relatively elevated readings were recorded in bedrooms 1, 2 and 3, and the lounge. Subsequently, invasive moisture readings were taken at various locations, the majority of which recorded relatively elevated readings. The elevated unadjusted readings were as follows:

- 20%, 23%, 32% (at 3 locations), and 40+% (at 5 locations) at the north elevation.
- 21% and 40+% (at 2 locations) at the south elevation.
- 20%, 21%, 32%, and 40+% (at 3 locations) at the east elevation.
- 32% (at 2 locations) and 40+% (at 2 locations) at the west elevation.

Moisture levels that vary significantly from the average base level (in this case 13% to 14%) cladding is in place generally indicate that external moisture is entering the structure.

5.4 The expert also observed obvious signs of water ingress and also noted that there was some decayed particle board flooring, significant decay in the deck and adjoining house floor support timbers, and blistering to some internal paintwork.

5.5 Commenting specifically on the cladding, the expert noted that:

- at the bases of each type of cladding the claddings are too close to the finished ground levels or deck timbers at some locations
- there is some significant cracking of the EIFS cladding, including its junctions with fascia boards and external joinery units
- the tops of the battens covering the plywood cladding horizontal joints lack cross-falls and there is evidence that the flashings at these joints are rusting
- the weatherboard claddings are butted against the roof purlins and not completed over them and scribes are not installed at the roof corrugations at these locations
- there are inadequately formed junctions between both the EIFS and the weatherboards and the roof structures above them

- the EIFS cladding does not extend behind the fascia boards or the roof construction timbers at some locations nor behind the spouting end adjacent to the kitchen
- the vertical corner junction between the EIFS and weatherboard claddings at the main bedroom is inadequately formed
- there is only a narrow gap formed between the cladding and the south side retaining wall
- the timber facing and packer system installed around the external joinery frames fixed to the weatherboard-clad walls is allowing the ingress of moisture and some of these units lack head flashings
- no head or jamb flashings are installed to the external joinery units fixed to the EIFS-clad walls
- the timber louvre structure fitted over the lounge west window lacks a head flashing and is poorly finished to the cladding
- the deck stringer plates are fitted directly against boundary joists that have no cladding or drainage separation
- the timber capping to the deck balustrade walls are too narrow, have no cross-falls, and lack flashings
- the ends of the balustrade cappings and the post penetrations through the cappings lack flashings
- the electrical meter box is subject to moisture ingress
- the weatherboard cladding is not sealed around the roof rafter penetrations
- the end of the apron flashing above the east kitchen window lacks a kick-out flashing
- an apron flashing is missing above the front entry walkway
- the rear spouting upstand is unsealed at the external corner junction and is leaking.

5.6 The expert also noted that :

- the concrete driveway paving has not been formed so as to direct the surface water to the stormwater drain and water is collecting under the house
- plant growth under the house has grown up into the cavity space under the floor insulation
- the spouting requires cleaning out at some locations
- leaf debris collecting on the main bedroom deck is causing decay to the decking boards and the adjacent plywood cladding
- the roof has been poorly repaired where a chimney has been removed
- an unsupported floor joist has been cut to enable a shower waste to be installed and no trimmer joist has been installed at this location
- there is insufficient, or a lack of, nailing to the north elevation perimeter roof purlins.

5.7 A copy of the expert's report was provided to each of the parties on 31 July 2007.

## **Matter 1: The cladding**

### **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 features of this house are code compliant.

However, in making this comparison, the following general observations are valid:

- Some Acceptable Solutions are conservatively written 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>5</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.

#### **6.2 Weathertightness risk**

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

- is a single-storey pole house
- is in a high wind zone
- generally lacks eaves or verge projections that could protect the claddings below them
- has a large timber deck and associated pergola
- has external wall framing that is likely to be treated to a level that provides some resistance to the onset of decay if the framing absorbs and retains moisture. However, there is evidence that some floor and deck timbers are already in a state of decay.

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<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.

- 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. A higher risk rating will necessitate more rigorous weatherproof detailing; for example, a high risk rating is likely to necessitate particular types of cladding being 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 one elevation of the house demonstrate a low weathertightness risk, two elevations a high risk, and the remaining elevation a very high risk. I note that, in order to comply with E2/AS1, the monolithic cladding of this building would require a drained cavity while the weatherboard cladding would not require a drained cavity.

## 7. Discussion

- 7.1 Taking into account the expert's report, I am satisfied that the current performance of the cladding installed on this house is inadequate because it has not been installed according to good trade practice. In particular, the cladding is at present allowing water penetration into the walls through defects in the cladding, which in turn has led to the decay of some framing timbers and particle board at some locations. In particular, the cladding demonstrates the key defects listed in paragraph 5.5. I have also identified the presence of a range of known weathertightness risk factors in this house. The presence of the risk factors on their own is not necessarily a concern, but they have to be considered in combination with the significant faults identified in the cladding system. It is that combination of risk factors and faults that indicate that the structure does not have sufficient provisions that would compensate for any lack of a drained and ventilated cavity. Consequently, I am not satisfied that the cladding system as installed complies with either clause B2 or clause E2.
- 7.2 I find that, because of the extent and apparent complexity of the faults that have been identified with the cladding, I am unable to conclude, with the information available to me, that repair of the identified faults, as opposed to partial or full re-cladding, could result in compliance with clauses B2 or E2. I consider that final decisions on whether code compliance can be achieved by either repair or re-cladding, or a combination of both, can only be made after a more thorough investigation of the cladding. This will require a careful analysis by an appropriately qualified expert. Once that decision is made, the chosen option should be submitted to the territorial authority for its comment and approval. If the territorial authority chooses to reject the proposal, then the applicants are entitled to seek a further determination on whether the proposed remedial work will led to compliance with the requirements of clauses B2 and E2.
- 7.3 In addition, the expert has noted a list of defects other than those identified as relating to the cladding. These are listed in paragraph 5.6 and concern clauses B1 "Structure" and E1 "Surface Water" in addition to clauses B2 and E2.
- 7.4 Of more immediate concern are the observations of the expert regarding the decaying deck and floor timbers. I suggest that the territorial authority inspect these areas to check on their current condition as a matter of urgency and to take steps to ensure that, if any faults are discovered, they are rectified immediately by the applicants.

## Matter 2: The durability considerations

### 8. Discussion

- 8.1 The territorial authority has concerns about the durability, and hence the compliance with the building code, of the building elements making up the alterations, taking into consideration the completion of the building work in 1995. I note that a final inspection did not take place until 2006.
- 8.2 The relevant provision of clause B2 requires that building elements must, with only normal maintenance, continue to satisfy the performance requirements of the Building Code for certain periods (“durability periods”) “from the time of issue of the applicable code compliance certificate” (clause B2.3.1).
- 8.3 These durability periods are:
- 5 years if the building elements are easy to access and replace, and failure of those elements would be easily detected during the normal use of the building
  - 15 years if building elements are moderately difficult to access or replace, or failure of those elements would go undetected during normal use of the building, but would be easily detected during normal maintenance
  - the life of the building, being not less than 50 years, if the building elements provide structural stability to the building, or are difficult to access or replace, or failure of those elements would go undetected during both normal use and maintenance.
- 8.4 In this case, the 11-year delay between the commencement of the building work and the applicant’s request for a code compliance certificate raised the concern with the territorial authority that various elements of the building are now well through their required durability periods and would consequently no longer comply with clause B2 if a code compliance certificate were to be issued affective from today’s date.
- 8.5 However, all parties have agreed that the building elements complied with B2 on 1 January 1996 (refer paragraph 4.6). Therefore it is appropriate to modify the date at which the durability clause becomes affective.
- 8.6 In order to address these durability issues, I sought some clarification of general legal advice about waivers and modifications. I have now received that clarification and the legal framework and procedures based on this clarification are described in previous determinations<sup>6</sup> (for example, Determination 2006/85) and are used to evaluate the durability issues raised in this determination.
- 8.7 I continue to hold the views expressed in the previous relevant determinations, and therefore conclude that:
- (a) the territorial authority has the power to grant an appropriate modification of clause B2 in respect of all of the elements of the building
  - (b) it is reasonable to grant such a modification, with appropriate notification, because in practical terms the building is no different from what it would have been if a code compliance certificate had been issued in 1995.

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



8.8 I strongly recommend that the territorial authority record this determination, and any modification resulting from it, on the property file and also on any LIM issued concerning this property.

## 9. The decision

9.1 In accordance with section 188 of the Building Act 2004, I determine that:

- (a) the building work does not comply with clauses B1, B2, E1, and E2 of the Building Code, and accordingly confirm the territorial authority's decision to refuse to issue a code compliance certificate.
- (b) all the building elements installed in the building, apart from the items that the territorial authority required to be rectified to its satisfaction, complied with clause B2 on 1 January 1996.
- (c) the building consent is hereby modified as follows:

The building consent is subject to a modification to the Building Code to the effect that, clause B2.3.1 applies from 1 January 1996 instead of from the time of issue of the code compliance certificate for all of the building elements except that this modification does not apply to the remedial work required to correct the defects described in paragraphs 5.5 and 5.6 of Determination 2007/130.
- (d) following the modification set out in (c) above, the territorial authority is to issue a code compliance certificate in respect of the building consent as amended.

9.2 I note that the territorial authority has not issued a notice to fix. A notice to fix should be issued that requires the owner 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.

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 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 17 November 2007.

John Gardiner  
**Manager Determinations**