Determination 2007/14

Refusal of a code compliance certificate for a house at 38 Gilletta Road, Mount Roskill, Auckland

1. The matter to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004[1] ("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 Mr Alzaher ("the applicant") and the other party is the Auckland City Council ("the territorial authority").

1.2 The matter for determination is the territorial authority's decision to refuse to issue a code compliance certificate for alterations and additions to an existing house because it was not satisfied that it complied with clauses B2 "Durability" and E2 "External Moisture" of the Building Code[2] (First Schedule, Building Regulations 1992).

1.3 The question to be determined is whether the cladding as installed to the walls of the building ("the cladding") complies with clauses B2 and E2 (see sections 177 and 188

[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.

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.

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 alterations and additions to a single-storey detached house situated on an excavated steeply sloping site, which is in a high wind zone for the purposes of NZS 3604[3]. The altered house has an undeveloped basement area and is relatively simple in plan and form. Construction is conventional light timber frame constructed on either existing concrete or new timber-framed floors. The pitched roof generally has 500mm wide eaves projections but there are no projections to the verges.

2.2 A triangular-shaped suspended timber-framed close-boarded deck is constructed at one elevation of the house and this is supported on timber posts and beams. The deck has a timber post and handrail balustrade infilled with a tensioned wire lattice. A pitched roof is constructed over part of the deck and this has wall-to-roof junctions. I note that the consented plans show a developed basement area under the house. However, this work has only been partially completed to date.

2.3 The applicant has confirmed that the external wall framing timber is untreated.

2.4 The external walls of the house are clad with 60mm thick "Insulclad Ultra" polystyrene sheets having "vertical drainage channels" set into the back, and which are fixed through the building wrap to the framing. The sheets are finished with an "Ezytex" sponge finished system.

2.5 Plaster Systems Ltd has issued a "Material Components Guarantee" dated 24 August 2006 in regard to the cladding. This guarantees, subject to certain limitations, the material components for a period of 15 years and the coating system for 10 years.

[3] [3] New Zealand Standard NZS 3604:1999 Timber Framed Buildings

3. Sequence of events

3.1 The territorial authority issued a building consent for the building work on 7 June 2002, based on a building certificate issued by Nationwide Building Certifiers Ltd ("the building certifier") dated 7 June 2002.

3.2 According to the applicant, the building certifier carried out various inspections of the property during its construction, including a pre-lining inspection in November 2002. However, as the building certifier went into liquidation on 30 December 2004, it was unable to carry out a final inspection. The house was completed in September 2004.

3.3 The applicant faxed the territorial authority on 24 January 2005 and again on 19 May 2005, requesting a final inspection of the building work. The applicant also noted that the framing was not treated.

3.4 The territorial authority carried out an inspection of the property on 31 May 2005. In a letter to the applicant dated 13 June 2005, the territorial authority refused to issue a code compliance certificate because it was not satisfied that the house complied with the Building Code in a number of respects.

3.5 The territorial authority attached a notice to fix, also dated 13 June 2005, to this letter. The "particulars of contravention or non-compliance" attached to the notice listed requirements under the following headings:

1. Issues relating to cladding.
2. Drainage and Ventilation.
3. Changes to the building consent.
4. Other building related issues.

The notice also set out the actions that the applicant was to undertake to remedy the contravention or items of non-compliance.

3.6 On 12 July 2005 the applicant forwarded to the territorial authority a "scope of works" that outlined how the applicant was going to address the issues raised in the notice to fix.

3.7 The territorial authority wrote to the applicant on 13 July 2005 in response to the "scope of works". The territorial authority agreed in principle with the suggested remediation work but still insisted that "until satisfactory documentation confirming sufficient drainage and ventilation is provided" it was not acceptable to the territorial authority that this matter be ignored.

3.8 The applicant wrote to the territorial authority on 4 October 2005, requesting clarification of 2 items. These related to the conservatory roof membrane and the requirement for a cavity. Regarding the latter item, the applicant noted that the

polystyrene cladding system has vertical drainage channels at the back of the sheets, although no details were provided.

3.9 The territorial authority responded in a letter dated 11 October 2005, stating that it was in agreement with the conservatory membrane proposal, subject to acceptable detailing. However, the territorial authority stated that it was not aware that the vertical drainage channel system on the back of the Insulclad panels had been tested. It also stated that if the applicant could provide any testing documentation the territorial authority would consider it. Alternatively, sufficient drainage and ventilation or an early warning detection system would need to be installed.

3.10 The territorial authority wrote again to the applicant on 17 July 2006, expressing satisfaction with some of the remedial work that had been carried out on the house. The territorial authority noted that the issues relating to the cladding ventilation and drainage, together with the amendment to the building consent had not been addressed.

3.11 An application for a determination was received by the Department on 8 September 2006.

4. The submissions

4.1 In a covering letter to the Department dated 6 September 2006, the applicant described the background to the matters in question and noted that the matter of dispute related to the drainage of the cladding. The applicant described in detail the cladding system and stated that he did not wish to install a permanent monitoring system for moisture detection.

4.2 The applicant forwarded copies of:

- the plans
- some consent documentation and inspection records
- the notice to fix
- the correspondence with the territorial authority
- the wall cladding guarantees and invoices.

4.3 The territorial authority did not make a submission.

4.4 Copies of the material received were provided to each of the parties.

4.5 Draft copies of this determination were sent to the parties on 5 December 2006. The applicant responded in a letter to the Department dated 11 December 2006. The applicant did not accept the draft and requested that an on-site practical test be undertaken to establish the weathertightness of the house. The applicant was of the opinion that internal condensation accounted for the higher moisture readings (refer

paragraph 5.3). The applicant did not accept that the house was leaking and requested that the determination be amended accordingly.

4.6 The territorial authority also responded in a letter dated 14 December 2006. The territorial authority did not accept the draft determination as it did not agree with the applicant's opinion that the cladding was performing correctly. The territorial authority requested that additional invasive testing be carried out and depending on the results obtained, the determination should be revised.

5. The expert's report

5.1 As discussed 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 house on 9, 13 and 26 October 2006, and furnished a report that was completed on 30 October 2006. The expert noted that the cladding and flashings appeared to be installed and finished in a satisfactory and workman-like manner and had been installed in accord with the manufacturer's requirements of the time.

5.3 The expert took non-invasive moisture readings internally and found no elevated readings. The expert noted various locations where moisture staining and mould growth were evident. A high moisture reading of 50% was recorded under the west bedroom window. This was attributed to excessive condensation which has caused minor damage around some windows and the expert noted that provision has been made to manage this moisture.

5.4 Commenting specifically on the cladding the expert said:

- there is no textured coating behind the barge flashings
- the deck boarding is hard against the cladding but a waterproof membrane is provided between the wall and decking timbers
- the barge flashings adjoining the west elevation window are poorly constructed
- there is a hole in the soffit linings where a power cable has been removed.

5.5 The expert noted that there is quite extensive cracking and some damage to the internal plasterboard linings.

5.6 Copies of the expert's report were provided to each of the parties on 9 November 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[4], 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.

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[5] (refer to Determination 2004/1 *et al*) relating to cladding and these factors are also used in the evaluation process.

6.1.3 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 the house:

- is built in a high wind zone
- is one storey high and has an undeveloped basement area
- is relatively simple in plan and form
- generally has 600mm wide eaves projections, which, together with the roof over the deck, protect the cladding

[4] 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.
[5] Copies of all determinations issued by the Department can be obtained from the Department's website.

- has one suspended open deck
- has external wall framing that is not treated to a level that provides resistance to the onset of decay if the framing absorbs and retains moisture.

6.2.2 When evaluated using the E2/AS1 risk matrix, three elevations of the house demonstrate a low weathertightness risk and the remaining elevation a high 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.

6.3 Weathertightness performance

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

- The lack of a textured coating behind the barge flashings.
- The deck boarding being hard against the cladding.
- The poorly constructed barge flashings adjoining the west elevation window.
- The hole in the soffit linings where a power cable has been removed.
- Any other building elements associated with the above that are consequently discovered to be in need of rectification.

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 projections and a roof over the deck that provides good protection to the cladding below them.
- The cladding has vertical grooves set into the back of the polystyrene sheets, and while these do not fully compensate for the lack of a cavity, they do provide some drainage facility.

6.3.3 I consider that these factors help compensate for the lack of a full drained and ventilated cavity and can assist the building to comply with the weathertightness and durability provisions of the Building Code.

7 Conclusion

7.1 The expert's report establishes that there are high levels of internal condensation inside the house. However, there are no reliable indications that external moisture is entering the building and is contributing to these levels. Accordingly, I find I have no evidence that the house's monolithic cladding does not comply with clause E2 at this time.

7.2 However, despite the uncertainty about E2 compliance, the building is also required to comply with the durability requirements of clause B2. Clause B2 requires that building elements continue to satisfy all the performance requirements of the Building Code for specified periods, and that includes the requirement for a building to remain weathertight. Because the cladding faults on the building are likely to allow the ingress of moisture now and in the future, the house does not comply with the durability requirements of clause B2.

7.3 I conclude that, 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 5.3 and of any other associated defects that are consequently discovered to be in need of rectification, will result in the building remaining weathertight and in compliance with clause B2.

7.4 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.

7.5 Effective maintenance of claddings (in particular monolithic cladding) is important to ensure ongoing compliance with clauses B2 and E2 and is the responsibility of the building owner. Clause B2.3.1 requires that the cladding be subject to "normal maintenance", however that term is not defined in the Act.

7.6 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.

7.7 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.

7.8 The expert's report refers to the presence of excessive condensation inside the house and how this has some affect on the internal linings. I urge the applicant to take measures to alleviate this internal moisture problem as it has already damaged

internal linings that may be contributing to the bracing integrity of the building. Such damage if unchecked could also cause damage to the adjoining untreated framing timbers.

7.9 I have noted the comments made by the parties concerning the draft decision. I am of the opinion that I have received sufficient information from the expert, and from the submissions of the parties, to enable me to form an opinion as to the compliance of the cladding. The faults found in the cladding are such that irrespective of moisture entry, it does not comply with the clause B2 requirements of the Building Code. If the territorial authority wishes to undertake further invasive testing, I suggest that this be carried out in conjunction with the applicant within the processes described in paragraph 8.3.

8 The decision

8.1 In accordance with section 188 of the Act, I hereby determine that the 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.

8.2 I note that the territorial authority has issued a notice to fix that also required provision for adequate ventilation and drainage behind the cladding. Under the Act, a notice to fix can require the owner to bring the additions into compliance with the Building Code. The Building Industry Authority has found in a previous Determination (Determination 2000/1) that a Notice to Rectify (the equivalent to a notice to fix under the Building Act 2004) cannot specify how that compliance is to be achieved. I concur with that view. A new 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, but not specifying how those defects are to be fixed. That is a matter for the applicants 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 new notice to fix, listing all the items that the territorial authority considers to be non-compliant. The owner should then produce a response to this in the form of a detailed 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 back 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 7 February 2007.

John Gardiner
Determinations Manager