Determination 2007/12

Refusal of a code compliance certificate for a house at 451B Maunganui Road, Mount Maunganui

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 Mrs Jan Law acting through an agent ("the applicant") and the other party is the Tauranga 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 the alterations and additions to a house because it was not satisfied that they complied with clause E2 "External Moisture" of the Building Code[2] (First Schedule, 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 The question to be determined is whether the cladding as installed to the walls of the building ("the cladding") and the roofing, comply with clause 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.

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 detached house situated on an excavated slightly sloping site, which is in a medium wind zone for the purposes of NZS 3604[3]. The altered house is a maximum of two storeys high and is relatively simple in plan and form. Construction is conventional light timber frame constructed on either concrete or timber-framed floors. The low-pitched roofs are at two main levels with hip and wall-to-roof junctions. The roofs have no eaves projections.

2.2 A large timber-framed open deck constructed at the lower level at one elevation and a return of the house, is supported on timber beams and columns and has associated access steps. A timber-framed cantilevered balcony is situated at the upper level adjoining the master bedroom. This has a wrought iron balustrade and a monolithic-clad timber-framed end parapet wall.

2.3 The expert is of the opinion that the external wall framing timber is untreated.

2.4 The new and existing walls of the house are clad with fibre-cement sheets fixed through the building wrap to the framing, and finished with a painted "Fosroc" textured system. I note that, as recognised by the territorial authority and the consultant (refer paragraph 3.1), the original plans show the cladding to be "Insulclad", ie a cladding different from that actually installed.

2.5 "Architextures" issued a "Coating Compliance Form" on behalf of the "Fosroc" applicator for work commenced on 12 November 2005 and completed on 20 December 2005.

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

3. Sequence of events

3.1 According to a report prepared by a consultant engaged by the applicant ("the consultant"), the territorial authority issued a building consent for the addition of bedrooms, an ensuite, a garage, a dining room, a lounge, a deck and a pergola to the property on 21 June 1998. A second consent for the addition of a chimney was issued on 22 October 1999.

3.2 The territorial authority carried out various inspections of the property, including final inspections on 18 and 30 May 2006. The building work failed both of these latter inspections.

3.3 The consultant carried out two inspection of the partly completed building work in April 2002. Subsequent to those inspections, the consultant prepared a report dated 10 April 2002. (I note that this report relates to the second inspection conducted on 16 April 2002). The report made numerous recommendations regarding the building work and noted that the house "appears to have been generally built as per the approved plans". The report also noted that the external cladding, as installed, was different to that shown on the consent drawings.

3.4 The consultant re-inspected the building on 1 July 2004 and listed work that had either been completed, or needed checking, or had yet to be carried out.

3.5 The territorial authority issued a notice to fix dated 4 July 2006. The "Particulars of Contravention or Non-Compliance" noted:

> That the building may not comply with the performance provisions of the NZ Building Code E2. The cladding has been substituted from Insulclad to face-fixed Harditex . . .
>
> The territorial authority also recommended that the applicant apply to the Department for a determination.

3.6 An application for a determination was received by the Department on 18 September 2006.

4. The submissions

4.1 In a covering letter to the Department, the applicant's agent noted that it had carried out the remedial work listed by the consultant. An application for a certificate of acceptance had been refused by the territorial authority as the cladding was not code-compliant.

4.2 The applicant forwarded copies of:

- the plans
- some inspection records

- the consultant's reports
- the notice to fix
- the "coating compliance form".

4.3 The territorial authority did not make a submission.

4.4 Copies of the submissions and other evidence were provided to each of the parties.

4.5 A copy of the draft determination was sent to the parties for comment on 10 January 2007. The parties accepted the draft without comment.

5. The expert's report

5.1 As discussed in paragraph 1.4, I engaged an independent expert capable of providing 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 cladding on 2 November 2006, and furnished a report that was completed on 6 November 2006. The expert noted that there was a general failure to carry out the work in accordance with the manufacturer's instructions. However, the textured finish is carried out to an acceptable standard. The expert removed the cladding at one window jamb/sill junction to observe the construction and I am prepared to accept that the exposed details would apply to other similar situations.

5.3 The expert took non-invasive moisture readings internally and no elevated readings were noted. Invasive moisture readings were taken through the wall cladding and the following higher readings were recorded:

- 23% at the laundry window sill.
- 25% at an external corner of the balcony.
- 35% at the roof/balcony junction outside of the master bedroom.
- 40% (2 locations) at the balcony soffit.
- 40% at a deck/cladding junction.

Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure.

5.4 Commenting specifically on the cladding, the expert said:

- there are cracks in the cladding at some locations
- there are no vertical control joints evident in the cladding

- the backing sheets have not been sealed before other building elements were fixed
- there is minimal clearance between the bottom of the cladding and the balcony deck
- the cladding is taken hard down onto the roof flashings at some locations and also onto the decking
- the external joinery units lack jamb and sill flashings and the applied sealant is ineffective
- no flashings are installed around the gas bottle access door
- the apron and roof barge flashings are poorly detailed and are failing
- the roof parapet flashings have flat tops and are poorly detailed
- the balcony parapet balustrade top is flat and lacks a metal flashing
- the balcony metal balustrade supports are directly screwed through the deck membrane.

5.5 The expert also noted that the roof pitch was less than the required 8 degrees and the roof flashings were deficient at some locations.

5.6 Copies of the expert's report were provided to each of the parties on 14 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.

[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.

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 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 built in a medium wind zone
- is a maximum of two storeys high
- is relatively simple in plan and form
- has no eaves projections to protect the cladding
- has one external large open deck and one cantilevered upper balcony
- has external wall framing that may not be 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, two elevations of the house demonstrate a moderate weathertightness risk and the remaining elevations 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.

7 Discussion

7.1 Taking into account the expert's report, I am satisfied that the current performance of the wall cladding installed under these consents is inadequate because it has not been installed according to good trade practice. The cladding is at present allowing water penetration into the walls through defects in the cladding. In particular, the cladding demonstrates the key defects listed in paragraphs 5.4. I have also identified the

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

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 the lack of a drained and ventilated cavity. Consequently, I am not satisfied that the wall cladding system as installed complies with clause E2 of the Building Code.

7.2 The expert has also noted that the roof pitch is less than 8 degrees and the roof flashings are poorly executed. These issues should also be considered by the territorial authority and appropriate measures taken to rectify them if so required.

7.3 The high moisture readings obtained by the expert at the high-level cantilevered balcony soffit are also of concern and I recommend that the territorial authority urgently inspect the balcony to ensure its structural integrity.

8 Conclusion

8.1 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 remediation of the identified faults, as opposed to partial or full re-cladding, could result in compliance with clause E2. I consider that final decisions on whether code compliance can be achieved by either remediation 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 remedial 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 E2.

8.2 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.

8.3 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.

8.4 As the external wall framing of the of the building may not to be 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.

9 The decision

9.1 In accordance with section 188 of the Act, I hereby determine that the wall and roof cladding systems do not comply with clause E2 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 issued a notice to fix as required by section 435. A new notice to fix should now issued that requires the owners to bring the building into compliance with the Building Code, identifying the defects listed in paragraphs 5.4 and 5.5 and referring to any further defects associated with this work that might be discovered in the course of rectification. The notice to fix should not specify 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 Act allows for more than one method of achieving Code 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 a 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 to the Chief Executive for a further determination

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 2 February 2007.

John Gardiner
Determinations Manager