Determination 2008/71

Refusal to issue a code compliance certificate for a house at 24 Ray Road, Taupiri

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, Manager Determinations, Department of Building and Housing ("the Department"), for and on behalf of the Chief Executive of that Department. The applicant is the owner, the Thompson Family Trust, acting through an agent ("the applicant"), and the other party is the Waikato District Council ("the authority") carrying out its duties as a territorial authority or building consent authority. Bruce Downing Builders Ltd ("the builder" has been included as a party with an interest in the matter.

1.2 This determination arises from the decision of the authority to refuse to issue a code compliance certificate for a two year-old house because it was not satisfied that it complied with Clause E2 "External Moisture" of the Building Code[2] (Schedule 1, Building Regulations 1992).

1.3 The matter to be determined is whether the monolithic cladding as installed to the walls of the building ("the cladding"), complies with Clauses E2 and consequently B2 (see sections 177 and 188 of the Act) rather than just E2 as stated by the authority. By "the monolithic 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] 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.

1.4 In making my decision, I have considered the submissions of the parties, the report of the independent expert ("the expert") commissioned by the Department to advise on this dispute, and the other evidence in this matter. I have evaluated this information using a framework that I describe more fully in paragraph 6.

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 detached house situated on a level site that is in an (assumed) high wind zone for the purposes of NZS 3604[3].

2.2 I have received no written evidence as to the treatment, if any, of the external wall framing timber. However given the date of construction I have assumed the timber is treated to a level that would provide some resistance to decay.

2.3 The walls of the house are clad with brick veneer, some rusticated weatherboard and solid plaster (stucco). The solid plaster is laid over riblath expanded metal reinforcing fixed through 20mm battens and the building wrap to the framing to form a cavity, and was initially finished with acrylic waterproofing. The monolithic solid plaster is the subject of this determination.

3. Sequence of events

3.1 The authority issued a building consent in June 2005. Subsequently the consent was amended to incorporate solid plaster cladding in lieu of EIFS[4]. The house was completed and occupied in March 2006.

3.2 Shortly thereafter, the owner became concerned with the extent of cracking to the plaster and a member of the New Zealand Institute of Building Surveyors ("the first surveyor") was engaged to inspect the plaster cladding and provide a report. The inspection was carried out on 28 June 2006. The report was dated 16 August 2006. Subsequently, the first surveyor chaired a meeting of the parties to discuss the wide-spread cracking evident in the plaster. As a result, a programme of remedial work was agreed to be carried out by the builder's sub-contracted plasterer.

3.3 The authority carried out an inspection of this remedial work but declined to issue a code compliance certificate, as its inspector considered the plaster was still not code compliant.

3.4 The first surveyor carried out a more detailed investigation of the cladding and the remedial work on 25 September 2006. This second report, dated 10 October 2006, noted that cracking was still evident and that the cavity behind the plaster was partly filled with plaster and concluded that "all stucco, the riblath and building wrap must be removed from the building and disposed of." The expert informed the authority of the situation.

3.5 The plasterer obtained a report dated 20 November 2006 from another building surveyor ("the second surveyor") on the condition of the plaster and probable causes of the cracking. This report described the faults in the plaster and probable causes but no remedial work was suggested. This report was provided to the applicant.

[3] New Zealand Standard NZS 3604:1999 Timber Framed Buildings
[4] External Insulation & Finish System

3.6 The Department received the application for a determination on 27 November 2007.

4. The submissions

4.1 The applicant forwarded copies of:

- The first surveyor's first report, dated 16 August 2006, and minutes of the site meeting 11 August 2006
- the first surveyor's second report dated 10 October 2006
- the second surveyor's report of 20 November 2006 (commissioned by the plasterer).

4.2 The authority made a submission in a letter dated 11 February 2008. This stated that the authority would not issue a code compliance certificate until the issue of the cracking was resolved and the exterior cladding complied with Clause E2 of the Building Code. Reference was made to the first surveyor's report of 10 October 2006 as the basis for its decision.

4.3 A copy of the draft determination was sent to the parties for comment on 28 April 2008. The authority accepted the draft. The builder did not accept the draft, and presented inspection records and a further submission from a surveyor. I have taken these submissions into account in making the final determination. The applicant did not respond to the draft determination despite being given several opportunities to do so.

5. The expert's report

5.1 As mentioned in paragraph 1.4, and with the concurrence of the parties, I engaged the first surveyor as the expert. His brief was to provide the Department with additional information on the cladding subject to the determination.

5.2 The expert inspected the claddings of the house on 22 February 2008 and furnished a report that was dated 28 February 2008. The expert noted that, where evidence of unacceptable cracking has occurred, the walls have been over-coated with an adhesive plaster and embedded fibre glass mesh.

5.3 The expert removed sections of the cladding at a head/jamb join and a jamb/sill join of one of the windows to verify the flashing details. I am prepared to accept that the details revealed at these locations would apply to similar situations throughout the building.

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

- the solid plaster cladding is fixed to the framing through 20mm battens to form a cavity
- the cavity has been effectively filled with plaster which varies in thickness from 20 to 40 mm plus a further thickness of 8 to 10 mm for the overcoating
- the cladding has no control joints
- the openings have head and jamb flashings but no sill flashings
- the plaster is taken down to the head flashing with no drainage gap being formed

- there are un-tradesmanlike downpipe attachments
- the framing to the gable ends will not provide adequate support to the cladding
- the original plaster has been over-coated in places where cracking was severe and the over-coating is not well adhered to the original plaster.

5.5 The expert concluded that full replacement of the plaster cladding system is required "before full code compliance can be achieved and certified."

5.6 A copy of the expert's report was provided to each of the parties on 13 March 2008.

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[5], 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 written conservatively 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[6] (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 dwelling
- is reasonably straight forward in plan and form
- has eaves that offer a degree of protection to the walls
- is clad with brick veneer, weatherboards, and monolithic solid plaster

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

- has external wall framing that is likely to be 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 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. Higher levels of risk will require more rigorous weatherproof detailing; for example, a high risk level is likely to require particular types 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 the 4 elevations of the house clad with plaster demonstrate a low weathertightness risk. I note that, in order to comply with E2/AS1, the monolithic cladding of this building would require a drained cavity, irrespective of the level of risk.

7 Discussion

7.1 Although there are no signs of water ingress to date it is unlikely the monolithic cladding will meet the durability requirements of the Building Code to prevent water ingress in the future, because it has not been installed according to good trade practice. The cladding demonstrates the key defects listed in paragraph 5.4. and, after considering the combination of these faults as well as the risk factors associated with the this type of monolithic cladding, I am of the view that the cladding system as installed does not comply with Clause B2 of the Building Code. It is the expert's view that repairs to the monolithic cladding may not result in a cladding system that is of an overall acceptable standard to achieve code compliance. If that is indeed the case, then replacement of the cladding may be necessary.

7.2 The applicant may wish to seek a further investigation and analysis by an appropriately qualified expert before a final decision on whether code compliance can be achieved by either remediation or re-cladding, or a combination of both, can be made. Once that decision is made, the chosen repair option should be submitted to the authority for its comment and approval. If the authority chooses to reject the proposal, then the applicant is entitled to seek a further determination on whether the proposed remedial work will led to compliance with the requirements of Clauses B2 and E2.

8. What is to be done now?

8.1 I note that the authority has not issued a notice to fix. I suggest that the authority now issue a notice to fix that requires the owner to bring the building into compliance with the building consent and the Building Code, restricted to the defects listed in paragraph 5.4, and referring to any further defects that might be discovered in the course of investigation. It is not for the notice to fix to specify directly how the defects are to be remedied and the building brought to compliance with the Building Code. That is a matter for the owner to propose and for the authority to accept or reject.

8.2 I would suggest that the parties adopt the following process to meet the requirements of paragraph 8.1. Initially, the 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.

9. The Decision

9.1 In accordance with section 188 of the Building Act 2004, I confirm the 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 31 July 2008.

John Gardiner
Manager Determinations