Determination 2007/39

Determination regarding a code compliance certificate for a house at 81 Aldinga Avenue, Stoke, Nelson

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 the previous owner Ms N Duell ("the applicant") and the new owners are Mr A and Mrs L Wall ("the new owners"). The other party is the Nelson 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 a 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] 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 matters to be determined are whether:

1. the cladding as installed to the walls of the building ("the cladding") complies 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.

2. the elements that make up the building work comply with clause B2, taking into account the age of the building.

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. In 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 two-storey detached house situated on a level site, which is in a low wind zone for the purposes of NZS 3604[3]. The house is relatively complex in plan and form. The construction is conventional light timber frame constructed on concrete slabs and timber-framed floors. The pitched roofs at two main levels have hip, valley, and wall-to-roof junctions. While there are some eaves and verges that do not have projections, the majority of the eaves have 600mm wide projections. A small, partly cantilevered, timber-framed balcony is situated at the first floor level adjoining bedroom 1. This has a monolithic-clad timber-framed balustrade with an attached metal handrail.

2.2 I have not received any information as to the treatment, if any, of the external wall framing timber.

2.3 The external walls of the house are clad with either 6mm fibre-cement sheets with vertical PVC jointers or direct fixed wire-reinforced solid plaster stucco plaster. Both types of cladding have a painted finish and are fixed through the building wrap to the framing.

2.4 No producer statements or guarantees have been provided in relation to either of the cladding systems.

3. Sequence of events

3.1 The territorial authority issued a building consent in June 1995.

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

3.2 The territorial authority carried out various inspections of the property from 1996 to 2001 and completed a final inspection in March 2003. Following this inspection, the territorial authority wrote to the previous owner of the house on 25 March 2003 and listed 10 items that required attention before the territorial authority could consider the issue of a code compliance certificate. Three of these items related to the cladding.

3.3 In a memo dated 7 December 2004 to the applicant, who apparently purchased the house in April 2003, the territorial authority noted that final inspections carried out in 2003 did not identify any obvious visual defects. The territorial authority now required a favourable cladding report from an independent consultant prior to the issuing of a code compliance certificate.

3.4 The applicant engaged a consultant to inspect and report on the exterior cladding. The consultant visually inspected the building on 28 August 2006 and provided a report that was dated 29 August 2006. The report described the building and noted that there was no visible evidence of moisture ingress. The report noted that the balcony balustrade had a flat top and that one apron flashing was not effective.

3.5 The territorial authority has not issued a notice to fix as required by section 435.

3.6 An application for a determination was received by the Department on 15 September 2006.

4. The submissions

4.1 The applicant noted that the territorial authority would not issue a code compliance certificate because the house was built in 1995 and is now "out of time".

4.2 The applicant forwarded copies of:

- the plans and specifications
- some consent documentation and inspection records
- the correspondence with the territorial authority
- the consultant's report of 29 August 2006.

4.3 In a letter to the Department dated 17 November 2006, the territorial authority stated that its primary reasons for refusing to issue a code compliance certificate was the age of the consent and the lack of continuity in the inspection records for the building work. The territorial authority was not satisfied on reasonable grounds that the work complied with clauses B2 and E2. The territorial authority noted that it had not received any amended plans showing changes to the roof and that a plumbing defect found during an inspection had not been re-inspected.

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

4.5 A copy of the draft determination was sent to the parties (the applicant and the territorial authority) for comment on 11 December 2006. Both parties accepted the draft.

4.6 In a letter to the Department dated 6 March 2007, a solicitor acting for the applicant advised that the house had been sold and that the new owners would continue with the determination. I have therefore considered the new owners to be parties to the determination following that advice.

4.7 A copy of the second draft determination was forwarded to the parties on 15 March 2007. The draft was issued specifically for the parties to agree a date when all the building elements installed in the house complied with the Clause B2 Durability.

4.8 The parties accepted the draft determination and agreed that compliance with B2 Durability was achieved on 1 September 1996.

5. The expert's report

5.1 The expert inspected the house on 17 and 20 October 2006, and furnished a report that was completed on 24 October 2006. The expert noted that while the building appears to be sound and true, in some areas the workmanship quality is poor. However, the stucco finish is very good and has been recently painted. The expert removed the stucco plaster at several locations to observe the construction. I am prepared to accept that the exposed details would apply to other similar situations throughout the building.

5.2 The expert took internal non-invasive moisture readings throughout the building and no higher readings were recorded. The expert took 15 invasive readings into the external wall framing and two slightly elevated readings of 20% and 22% were recorded. Moisture levels above 18% recorded after cladding is in place generally indicate that moisture is entering the structure.

5.3 The expert made the following specific comments on the cladding:

The stucco plaster cladding

- There are no drip edges where the cladding oversails one roof nor at the base of the plaster over the apron flashings where the plaster is finished hard onto the flashing.
- The base of the plaster at the balcony is finished hard onto the deck membrane.
- There are no back flashings installed where the stucco plaster joins the fibre-cement cladding, nor at the lean-to bargeboard.
- The external joinery units lack jamb and sill flashings and there is no solid backing at the unit perimeters.
- The ends of two apron flashings lack kick-outs and there is an unsealed junction where an apron flashing adjoins the plaster.

- No flashings or cap flashings have been installed at the balcony and the top of the balustrade lacks cross falls.
- The handrail uprights penetrate the top of the balcony balustrade.
- The plaster is not sealed around the deck light fitting.
- No overflow is installed at the balcony and there is no downpipe installed from the balcony outlet.

The fibre-cement cladding

- The base of the cladding lacks the required 6mm anti-capillary gap.
- The cladding is carried down onto the paving at the south wall and in some other locations there is insufficient ground clearance to the base of the cladding.
- The fixing nails are not hammered home at one location.
- The external joinery unit jambs lack foam inserts and sealants.
- There are gaps at the junction of the external joinery unit jambs and the cladding and between the cladding and the south wall fascia.
- The metal cover flashing between the adjacent jambs of the door and window at the deck is lifting.
- Some penetrations through the cladding lack flanges.

5.4 The expert also noted that there were other building defects, which were:

- a glue failure at one butyl-rubber roof membrane area
- nail fixings proud of the substrate stressing the butyl-rubber roof membrane at some locations
- the metal roofing being poorly lengthened at many locations.

5.5 In regard to the territorial authority's final inspection letter to the applicant, dated 25 March 2003, the expert noted that the items that required fixing had been satisfactorily rectified with the exception of:

- the fall of over 1 metre from the open stair string
- the bathroom extractor fan not being connected to the extract duct.

5.6 Copies of the expert's report were provided to each of the parties on 14 November 2006.

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[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] (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 built in a low wind zone
- is two storeys high
- is relatively complex in plan and form

[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.

- generally has 600mm wide eaves projections, which together with the attached gutters afford good protection to the walls under them
- has one partly cantilevered balcony
- has external wall framing that is unlikely to 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 medium weathertightness risk and two 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.

6.3 Weathertightness performance

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

The stucco plaster cladding

- The lack of drip edges where the cladding oversails a roof and at the base of the plaster over the apron flashings, and the plaster being finished hard onto the flashing.
- The base of the plaster at the balcony being finished hard onto the deck membrane.
- The lack of back flashings where the stucco plaster joins either the fibre-cement cladding or the lean-to bargeboard.
- The lack of jamb and sill flashings and solid backing to the external joinery units.
- The lack of kick-outs to the ends of two apron flashings and the unsealed junction where an apron flashing adjoins the plaster.
- The lack of flashings or cap flashings at the balcony and the lack of cross-falls to the top of the balustrade.
- The handrail uprights penetrating the top of the balcony balustrade.
- The plaster is not being sealed around the deck light fitting.
- The lack of an overflow at the balcony and the lack of a downpipe from the balcony outlet.

The fibre-cement cladding

- The lack of a 6mm anti-capillary gap to the base of the cladding.
- The cladding being carried down onto the paving and the insufficient ground clearance to the base of the cladding.
- The fixing nails not hammered home at one location.
- The external joinery unit jambs lacking foam inserts and sealants.
- The gaps at the junction of the external joinery unit jambs and the cladding, and between the cladding and the south wall fascia.
- The lifting metal cover flashing between the adjacent jambs of the door and window at the deck.

General

- Any other building elements associated with the above that are consequently discovered to be in need of rectification.

6.3.2 The expert has also noted other non-compliant items and these are as described in paragraphs 5.4 and 5.5. These should also be fixed to the approval of the territorial authority.

6.3.3 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 built in a low wind zone
- the house generally has 600mm wide eaves projections that provide good protection to the cladding below them.

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

7 Conclusion

7.1 I consider that the expert's report establishes that the current performance of the monolithic cladding is not adequate because it is allowing water penetration into the building in at least 2 locations at present. Consequently, I am not satisfied that the cladding system as installed on the building complies with clause E2 of the Building Code.

7.2 In addition, the building 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 additions to remain weathertight. Because the cladding faults on the additions are likely to allow the ingress of moisture in the future, the additions do 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 6.3.1 will result in the building remaining weathertight and in compliance with clauses B2 and E2. I have given further consideration to the question of B2 compliance under issue 2 of this determination.

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 may not 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.

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 certain elements of the building, taking into consideration the completion of the building in 1996. I also note that the territorial authority's inspection records indicate compliance with clause B2 at the time of those inspections, including the final inspection undertaken in April 2003.

8.2 The relevant provision of clause B2 of the Building Code (clause B2.3.1) 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".

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 It is not disputed, and I am therefore satisfied that all the building elements installed in the house, apart from items that have to be rectified as described in paragraphs 6.3.1 and 6.3.2, complied with clause B2 on 1 September 1996. This date has been confirmed by the applicant and the territorial authority, refer paragraphs 4.8.

8.5 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 (for example, Determination 2006/85) and are used to evaluate the durability issues raised in this determination.

8.6 I continue to hold that view, 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 2003.

8.7 I strongly recommend that the territorial authority record this determination and any modification resulting therefrom, 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 the cladding on the building does not comply with clauses B2 and E2 of the Building Code, and accordingly confirm the territorial authority's decision to refuse to issue a code compliance certificate.

9.2 I also determine that:

(a) all the building elements installed in the house, apart from the items that are to be rectified, complied with clause B2 on 1 September 1996.

(b) the building consent is hereby modified as follows:

> The building consent is subject to an modification to the Building Code to the effect that, clause B2.3.1 applies from 1 September 1996 instead of from the time of issue of the code compliance certificate for all building elements provided that this modification does not apply to the elements that have been altered or modified as set out in paragraphs 6.3.1 and 6.3.2 of Determination 2007/39.

(c) once the defects set out in paragraph 6.3.1 and 6.3.2 of this determination have been fixed to its satisfaction, the territorial authority is to issue a code compliance certificate in respect of the building consent as amended. The amendments should also include the documented changes to the roof noted by the territorial authority.

9.3 I note that the territorial authority has not issued a notice to fix. A 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 and 6.3.2, but not specifying how those defects are to be fixed. That is a matter for the new owners 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.

9.4 I would suggest that the parties adopt the following process to meet the requirements of paragraph 9.3. Initially, the territorial authority should issue the new notice to fix. The new owners 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 binding determination.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 13 April 2007.

John Gardiner
Manager Determinations