

Determination 2006/12

Refusal of a code compliance certificate for four town houses at 15 Brockworth Place, Riccarton, Christchurch

1 The dispute to be determined

- 1.1 This is a determination of a dispute referred to the Chief Executive of the Department of Building and Housing (“the Chief Executive”) under section 17 of the Building Act 1991 (“the Act”) as amended by section 424 of the Building Act 2004. The applicants are the joint-owners Gayle Cook and Albert De Vries, who was also the builder, (“the applicants”), and the other party is the Christchurch City Council (“the territorial authority”). The application arises from the refusal by the territorial authority to issue a code compliance certificate for four 8-year-old units in two separate buildings (“the town houses”). The units in question are referred to as Units 1 and 2, which are contained in one building and Units 3 and 4, which are contained in the second building.
- 1.2 The question to be determined is whether the roofing and the cladding will be durable for a further 15 years in accordance with clause B2 of the Building Code (see sections 18 and 20 of the Act), considering the age of the construction.
- 1.3 This determination is made under the Building Act 1991, subject to section 424 of the Building Act 2004. That section came into force (“commenced”) on 30 November 2004, and its relevant provisions are:
- “ . . . on and after the commencement of this section,—
- “(a) a reference to the Authority in the Building Act 1991 must be read as a reference to the chief executive; and
- “(b) the Building Act 1991 must be read with all necessary modifications to enable the chief executive to perform the functions and duties, and exercise the powers, of the Authority . . . ”
- 1.4 It should be noted that the new legislation does not amend the determination process set out under the 1991 Act, other than to transfer the power to make a determination from the Building Industry Authority (“the Authority”) to the Chief Executive.

- 1.5 This determination refers to the former Authority:
- (a) When quoting from documents received in the course of the determination, and
 - (b) When referring to determinations made by the Authority before section 424 came into force.
- 1.5 In making my decision, I have not considered any other aspects of the Act or the Building Code.

2 Procedure

2.1 The building

- 2.1.1 The building work consists of two semi-detached two-storey pairs of townhouses, separated by two single storey garages that share a common party wall. The townhouses are situated on a level site that is in a low to moderate-wind zone in terms of NZS 3604: 1999 “Timber framed buildings”. The townhouses are of a relatively simple shape on plan but with some complex features. The steeply pitched main roofs, which drain into large internal gutters, have hip and valley junctions and there are low parapet walls at the gable ends. There are low-pitched roofs over the garages and none of the roofs have eaves projections. The exterior walls are of conventional light-timber frame construction built on concrete ground floor slabs or intermediate timber-framed floors, and are mainly sheathed with monolithic cladding.
- 2.1.2 Each unit has either cantilevered or post and beam projecting upper floor protrusions, which are clad with horizontal timber weather boards. A small open timber-framed balcony is situated at the first floor level of Unit 1 and this is constructed over the garage and is set into the garage roof area. The balcony has a timber-framed balustrade that is lined with monolithic cladding on its inner face and with weatherboards on its outer face. Each unit has a pergola constructed with timber posts, beams, and rafters at the junction of two elevations.
- 2.1.3 The applicants have provided invoices showing that the timber wall framing is H1 treated. The specification states that all treated timber is to be H1 Tanalith treated unless otherwise specified.
- 2.1.4 The majority of the timber-framed external walls of the house that are the subject of this determination are clad with a system that is described as monolithic cladding. In this instance it incorporates “Hardibacker” fibre-cement backing sheets fixed through the building wrap directly to the framing timbers. The sheets are finished with a galvanised chicken wire mesh reinforced solid plaster followed by a final flexible paint system. The expert commissioned by the Department to inspect the cladding (the “expert”, see also paragraph 5.1) noted that the plaster thickness generally varied from 16 to 20mm but was up to 30mm thick for Units 1 and 2. The applicants claim that the plaster was a 3-coat application. However, based on his inspections, the expert is of the opinion that the plaster as applied is a two coat system.

- 2.1.5 The horizontal weatherboards attached to the balconies and some feature areas are ex 150 x 25 timber and are fixed through the building wrap directly to the framing timbers.

2.2 Sequence of events

- 2.2.1 The territorial authority issued a building consent on 17 October 1996.
- 2.2.2 According to the applicants, construction commenced in October 1996 and the plaster to Units 3 and 4 was completed by June 1997 and for Units 1 and 2 by November 1997. A different plasterer plastered each townhouse. The territorial authority carried out a final building inspection in January 1998. However, as the stair headroom was not acceptable, a code compliance certificate was not issued at this time. This problem was fixed in December 2003. In June 2004, the territorial authority wrote to the applicants requesting them to employ an accredited building surveyor to inspect the property and establish the moisture content of the buildings. On 9 July 2004 the applicants requested the territorial authority to waive this inspection as there was no evidence of a weathertightness problem.
- 2.2.3 The territorial authority issued a Notice to Rectify dated 2 August 2004, which did not specify the individual items that were required to be rectified.
- 2.2.4 The applicants applied for a determination on 27 January 2005 although final documentation allowing me to progress the determination was finally received in early July 2005.

3 The submissions

- 3.1 The territorial authority made a submission in the form of a letter to the Department dated 7 March 2005, stating that it was unable to issue a code compliance certificate for the following reason:

The Council is unable to be assured that the building envelope will comply with the B Code clause B2 Durability requirements. The materials have been in service for approximately eight years and the code requires that at the time of signing the code compliance certificate the roofing and cladding will be durable for a further fifteen years.

- 3.2 In an attachment to the application, the applicants noted that the townhouses have been completed and occupied for over 6 years and do not leak because they are “of good design, faultless workmanship and superior quality materials”. The application for a code compliance certificate had been delayed because two minor points required to be addressed.
- 3.3 The applicants provided additional information in a letter to the Department dated 12 February 2005. The applicants described the cladding and its finish and set out a construction timeline.

3.4 The applicant supplied copies of:

- the plans and specification
- the Notice to Rectify
- invoices for materials used to construct the external walls.

3.5 The copies of the submissions and other evidence were provided to each of the parties. Neither the owners nor the territorial authority made any further submissions in response to the submissions of the other party.

3.6 Following the issue of the draft determination, the territorial authority wrote to the Department on 12 January 2006 noting that there was a minor typing error in the draft.

3.7 The applicants also responded to the draft in a letter to the Department dated 16 January 2006. In general terms, the applicants:

- claimed that the townhouses do not leak.
- did not agree that “the expert expressed serious reservations about the cladding”.
- did not accept that the plaster is retaining moisture and were of the opinion that the lower internal readings negated the higher exterior readings. The two highest readings were, in their view, likely attributable to the flooding of the bathroom, gas fires and poor ventilation.
- did not believe that the expert’s report clearly established that the cladding is unsatisfactory and that there were only two, and not many, high levels of moisture.
- did not believe that moisture had entered the framing.
- alleged that the expert’s report did not mention any deficiency in the weatherboard cladding.
- requested that the reference in paragraph 8.3 in the draft to a notice to fix should be changed to a Notice to Rectify.

3.8 The applicants also forwarded a copy of the Notice to Rectify of 2 August 2004.

4 The relevant provisions of the Building Code

4.1 The dispute for determination regarding this issue is whether the territorial authority’s decision to refuse to issue a code compliance certificate because the roofing and the cladding may not be durable for a further 15 years in accordance with clause B2 of the Building Code is correct.

- 4.2 There are no Acceptable Solutions that have been approved under section 22 of the Act or section 49 of the Building Act 1991 that cover the monolithic cladding. The current Acceptable Solution, E2/AS1, allows for solid plaster systems with fibre cement backing sheets, but requires that they be fixed on battens to create a 20mm cavity between the sheet and the framing. The previous acceptable solution E2/AS1, which was in force when this consent was issued, allowed for mesh reinforced solid plaster to be applied to fibre cement backing sheets that were face fixed to the framing. The cladding is not currently accredited under section 59 of the Act. Because the as built installation differs from E2/AS1, I am of the opinion that the cladding system as installed must now be considered to be an alternative solution.
- 4.3 In several previous determinations, the Department has made the following general observations, which remain valid in this case in my view, about Acceptable Solutions and alternative solutions.
- 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; and
 - 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.

5 The expert's report

- 5.1 The expert inspected the building on 5 August 2005 and furnished a report that was completed on 19 August 2005. The expert expressed serious reservations about the monolithic cladding. Of particular concern, is the quality of the plaster applied to the buildings, the fact that it consists of two coat when the required standard is three coats, and the poorly positioned mesh reinforcing, which is showing signs of corrosion, The other areas of concern are the lack of control joints, the evidence of cracking, the ground clearances, the cladding penetrations, and the inadequate flashing and sealing of the external joinery units. While the timber weatherboards were finished to an acceptable level, there is an ineffective junction with the monolithic cladding at the Unit 4 garage and there are no flashings or sealants installed around the external joinery units. The support posts to the weatherboard clad walls on the west elevation lack saddle or cap flashings.
- 5.2 The expert was of the opinion that the roofing, taking account of the absence of visible internal damage or water staining, could be rated as a low-risk element. In addition, the apron flashings are well installed and have adequate clearances from the base of the cladding.
- 5.3 The expert took non-invasive readings at the exterior plaster cladding of both buildings and high moisture readings were recorded at several locations, indicating that the plaster is retaining moisture. Further invasive readings were taken at various

locations through the exterior plaster of all units and the following moisture readings over 18 % were recorded:

- 19.4% at Unit 2
- 21%, and 23% at Unit 4

- 5.4 Levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure. Surface fungi are also growing on the soffit of the Unit 2 pergola ribbon plate. The expert also recorded high moisture levels at the ceiling of the bathroom of Unit 4 but attributed these mainly to condensation problems within the bathroom.
- 5.5 Copies of the expert's report were provided to each of the parties. The territorial authority did not respond and the owner wrote to the Department on 4 September 2004. The owner noted that a heavy morning dew on the day the readings were taken would "more than likely have distorted the moisture readings especially on the south side". The owner also queried why there was a need to cut around all the windows when only two were found to be faulty. The owner also questioned the need to fix the metal cap flashings and balcony balustrade cappings when there were no leaks recorded at these locations. The owner intended to rectify the bathroom extractor fan to Unit 4 so that it came on with the light and noted that a previous tenant had flooded the bathroom and this could be a factor contributing to the excess moisture in this area.

6 Discussion

6.1 General

- 6.1.1 I have considered the submissions of the parties, the expert's report, and the other evidence in this matter. The approach in determining whether building work complies with clauses B2 and E2 is to examine 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 Building Industry Authority and the Department have described the weathertightness risk factors in previous determinations (Refer to Determination 2004/01 *et al*) relating to monolithic cladding, and I have taken these comments into account in this determination.

6.2 Weathertightness risk and performance

- 6.2.1 It is clear from the expert's report that the monolithic cladding installed on this complex is unsatisfactory in terms of its weathertightness risk and performance perspectives and considerable work is required to make the Building Code compliant. The high levels of moisture in the plaster at many locations and also in the framing are also of concern. Further investigation is urgently required to ensure that the structural integrity of the affected elements has not been compromised.

- 6.3 The concerns set out in paragraph 6.2 are increased when I note that three elevations of the complex demonstrate a moderate weathertightness risk rating and the remaining elevation a high risk rating using the E2/AS1 risk matrix. 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 constructed is assessed for the purposes of issuing a code compliance certificate.

7 Conclusion

- 7.1 As a result of the various investigations, including the expert's report, I am satisfied that the current performance of the monolithic cladding is inadequate and is allowing high levels of water penetration into the plaster at least 3 locations at present and also into the timber framing. I have also identified that the complex demonstrates a moderate to high risk rating. Consequently, I am not satisfied that the monolithic cladding systems as installed comply with clause E2 of the Building Code.
- 7.2 Based on the expert's report, I am prepared to accept that, at the time of determination, the roofing systems are code compliant with the exception of the bathroom skylight flashings to Unit 4, which require further investigation to ensure their effectiveness.
- 7.3 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 complex to remain weathertight. I note that in addition to the monolithic cladding the weatherboard cladding is also deficient in some areas. Because the cladding faults in this building are so manifest, I find that neither the monolithic or weatherboard claddings comply with the durability requirements of clause B2.

8 The decision

- 8.1 In accordance with section 20 of the Building Act 1991, I hereby determine that the monolithic cladding system as installed does not comply with clauses B2 and E2 of the Building Code, and that the weatherboard cladding system does not comply with clause B2. Accordingly, I confirm the territorial authority's decision to refuse to issue a code compliance certificate. I also find that the roofing system is code compliant at the present time, subject to the durability time requirements of the Building Code.
- 8.2 I have considered the owner's comments in relation to the expert's reports in making my decision. The questions raised regarding the windows, cap flashings and balustrade cappings relate to the future durability of the components in question. While there may not be any evidence of leaking at present, the concerns raised by the

expert and endorsed by me relate to the threat to the future durability of the building that these areas may pose. Accordingly, these have been brought to the attention of the parties and are subject to future discussions as to their viability.

- 8.3 In regard to the response to the draft determination from the applicants, I comment as follows:
- a) While the higher moisture reading of up to 23% are not vastly above the 18% limit, they should be considered in the context of the majority of the other readings, which were in the vicinity of 12%. As the invasive probes are taken into the framing it must follow that the framing contains moisture. I do accept that there are only isolated areas that have higher moisture readings and I have amended the determination accordingly.
 - b) I cannot accept that there are not serious reservations regarding the monolithic cladding. The plaster, which is the main component of the cladding, was found to be of two coat application (rather than three), is soft and crumbly, the reinforcing mesh is heavily corroded and the plaster lacks control joints. While the “finish” to the plaster was found to be generally “good” this is only one factor. In general terms, the plaster itself is of a poor quality, justifying the concerns set out in the draft determination.
 - c) I cannot accept that the expert’s report does not mention any deficiency in the weatherboard cladding. While the cladding itself may be adequate its ultimate durability relies on the junctions with other claddings and the correct flashing of the windows. As described in the report, these areas are not code-compliant.
- 8.4 I note that the territorial authority has issued a Notice to Rectify that does not specify the areas that are required to be rectified. The territorial authority should now issue a new notice to fix, and the owner is then obliged to bring the building up to compliance with the Building Code. 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, with appropriate assistance, to propose, and for the territorial authority to accept or reject.
- 8.5 I note that the expert’s report is based on a limited inspection. Accordingly, 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 Notice to Fix, listing all the items that the territorial authority considers to be non-compliant. The notice should indicate that this list may not cover all items of non-compliance and that further investigation by a competent and suitably qualified person will be required. The owner, with suitable assistance, should then produce a response to this in the form of a technically robust proposal. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.
- 8.6 Finally, I consider that the cladding will require ongoing maintenance to ensure its continuing code compliance.

- 8.7 I note that the relevant provision of clause B2 of the Building Code is that building elements must, with only normal maintenance, continue to satisfy the performance requirements of the Building Code for certain periods “from the time of issue of the applicable code compliance certificate”.
- 8.8 As set out in paragraph 3.1, the territorial authority has questioned whether the roofing and the cladding will be durable for a further 15 years in accordance with clause B2 of the Building Code (see sections 18 and 20 of the Act), considering the age of the construction. I am of the opinion that the territorial authority should amend the original building consent by making it subject to a waiver of the Building Code in accordance with section 34(4) of the Act. This is to be to the effect that the durability of the roofing and cladding elements that the territorial authority does not require to be replaced with new components is to be measured from the date of the substantial completion of the building instead of from the time of the issue of the code compliance certificate. For any element for which a durability requirement may have expired under the above criteria, consideration should be given to waiving the B2 requirement for these items. The land information memorandum relating to this house should also be amended in line with the above. For the purposes of this determination I am of the opinion that “substantial completion” of the building is achieved when the building is ready for occupation.
- 8.9 I therefore determine that the territorial authority is to amend the original consent to incorporate a waiver of clause B2 of the Building Code to the effect that the required durability periods for the roofing and external wall elements that are not to be rectified are to be measured from the date of the substantial completion of the building and not from the date of the issue of a code compliance certificate.
- 8.10 Following this amendment, any code compliance certificate subsequently issued by the territorial authority should be issued in line with the amended building consent.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 1 March 2006.

John Gardiner
Determinations Manager