

Determination 2006/21

Refusal of a code compliance certificate for a building with a “monolithic” cladding system at 1/72 Heathcote Road, Milford, North Shore City

1 The dispute to be determined

- 1.1 This is a determination of a dispute under Part 3 Subpart 1 of the Building Act¹ 2004 (“the Act”) made under authorisation by me, John Gardiner, Determinations Manager, Department of Building and Housing, for and on behalf of the Chief Executive of that Department. The applicant is the owner Mrs Reid (“the applicant”) and the other party is the North Shore City Council (“the territorial authority”).
- 1.2 The dispute for determination is whether the territorial authority’s decision to decline to issue a code compliance certificate for a 7-year-old alteration to an existing house because it was not satisfied that the monolithic cladding complied with clauses B2 “Durability” and E2 “External Moisture” of the Building Code² (First Schedule, Building Regulations 1992) is correct.
- 1.3 The questions to be determined, therefore, is whether I am satisfied on reasonable grounds that:

Issue 1

The monolithic wall cladding as installed to the external walls, columns and beams of the building (“the cladding”), complies with the Building Code (see sections 177 and 188 of the Act). By “the monolithic cladding as installed” I mean the components of the system (such as the backing sheets, the flashings, the joints and the plaster and/or the coatings) as well as the way the components have been installed and work together.

Issue 2

All other elements incorporated in this building comply with clause B2 of the Building Code, considering the time when the house was constructed.

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 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. I have not considered any other aspects of the Act or the Building Code.

2 The building

- 2.1 The building work consists of alterations to an existing two-storey house situated on a sloping site, which is in a medium wind zone in terms of the NZS 3604³. The altered building is two-storey with an attached single-storey garage. The new and existing external walls are of conventional timber framing built on either concrete ground floor slabs or timber framed floors and are clad in monolithic cladding. The house shape is of a simple form with a single pitched roof, which has 380mm wide eaves projections and 600mm wide projections to the south elevation verge. There are no projections to the north elevation verge.
- 2.2 The house has a large deck that extends completely over the garage and which has a metal balustrade. The monolithic-clad timber-framed columns of the garage are extended to form balustrade supporting columns and a timber-framed pergola is secured to the main house wall over the deck. An existing deck with a metal balustrade is situated adjoining the first floor living room and the columns supporting this deck match those of the new deck. A third timber-framed deck is constructed outside bedroom 1 at the lower level and this has a timber handrail. The entrance porch is fully enclosed and has a flat roof over it and is accessed by a set of timber steps and handrails.
- 2.3 I have not received any information as to the treatment, if any, applied to the new external wall framing. The expert is of the opinion that the existing external wall framing is of untreated native timber that has shown itself to be durable up to the present time.
- 2.4 The cladding system to the new and existing external walls, columns, and beams of the house is what is described as monolithic cladding. The cladding consists of 40mm polystyrene Plaster Systems Ltd “Insulclad” panels fixed directly to the framing over the building wrap. The cladding is finished with a Plaster Systems Ltd “Ezytex” textured coating.
- 2.5 Plaster Systems Ltd has provided a “Producer Statement” dated 28 July 2005, and a 15-year “Material Components Guarantee” dated 21 July 2005, both in relation to the cladding system. The Producer Statement refers to a current BRANZ Appraisal Certificate and I note that such an appraisal is still extant. The licensed Insulclad contractor issued a 5-year “Workmanship Guarantee” dated 28 July 2005 for the cladding. I note that both the guarantees state that no responsibility is taken for consequential damage to any building component that has occurred as a result of the use of untreated framing.

³ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

3 Sequence of events

- 3.1 The territorial authority issued a building consent on 27 May 1998.
- 3.2 The applicant commissioned a consultant firm to inspect the house and this firm produced a report dated 13 June 2005. The report concluded that the house was “constructed to an acceptable standard for its time of construction...”. The report noted that all moisture readings fell within an acceptable range. As the seals around windows and doors can fail, the applicant was recommended to check moisture levels at regular intervals.
- 3.3 The territorial authority carried out various inspections during the construction process and passed the post-line inspection on 21 July 1998. Further final building inspections were carried out between July and September 2005. Following the last of these the territorial authority noted that it still had concerns regarding the external cladding.
- 3.4 In a letter to the applicant dated 6 July 2005, the territorial authority stated while that a final inspection of the property may have been carried out, as the house had a monolithic cladding without a cavity, the building works would be reviewed.
- 3.5 In a letter to the applicant dated 1 August 2005, the territorial authority stated that the Building Code required the durability of the cladding to be 15 years and that of the timber framing to be 50 years. The territorial authority also noted that the inspection process for monolithic claddings had changed since the time that the building consent for the house was processed. The territorial authority listed certain weathertightness risk factors identified with the building, together with a list of defects and other requirements for compliance. It also stated that, due to the uncertainties, risk factors and defects, it could not be satisfied on reasonable grounds that the cladding system complied with clauses E2 and B2 of the Building Code.
- 3.6 On 7 September 2005, the applicant sent an e-mail to the mayor of the territorial authority, expressing concern that the territorial authority was unable to issue a code compliance certificate. The applicant had attended to all the outstanding issues raised by the territorial authority and the external framing moisture readings were within acceptable limits. The house was professionally and properly constructed, it had never leaked, and the exterior cladding was subject to a 15-year warranty.
- 3.7 The territorial authority wrote to the applicant on 15 September 2005, noting that due to durability issues it would not normally issue a code compliance certificate for a building that is over 5 years old. Due to the risk factors described in its letter of 1 August 2005, the territorial authority could not be satisfied on reasonable grounds that the construction of the house or its exterior cladding complied with the requirements of the Building Code.
- 3.8 The territorial authority did not issue a notice to fix as required under section 164 of the Act.
- 3.9 The Department received this application for a determination on 26 September 2005.

4 The submissions

4.1 In a letter accompanying the application dated 4 November 2005, the territorial authority set out a short summary of events and noted that the matters of doubt are:

Whether the installed cladding systems comply with clauses B2 and E2 of the Building Code.

Whether all other elements incorporated in this building comply with clause B2 of the Building Code, considering the age of construction.

4.2 The territorial authority supplied copies of the:

- consent documentation
- inspection records
- correspondence with the owner.

4.3 The applicant supplied copies of the:

- 4 building plans and specifications
- 5 inspection records
- 6 correspondence with the territorial authority
- 7 consultant's report
- 8 list of contractors and trade persons
- 9 various producer statements and guarantees.

4.4 Copies of the submissions and other evidence were provided to each of the parties. Neither party made any further submissions in response to the submission of the other party.

Issue 1: The wall cladding

5 The expert's report

5.1 The expert inspected the claddings of the building on 25 November 2005 and furnished a report that was completed on 2 December 2005. The expert noted that the plaster is flat with neat arises and has a smooth surface. The coating is uniform and generally well adhered. The expert could not see any evidence of significant discolouration. The expert removed a portion of cladding at a window jamb and sill junction and considered that, based on this inspection; the external joinery units are adequately flashed. I accept that the location opened is typical of similar locations

around the building. The expert considered that no control joints were necessary in the cladding for a building with the dimensions of the house in question.

- 5.2 The expert took non-invasive moisture readings through the internal linings of the external walls and identified areas that were in the “borderline” range. Further invasive readings in the framing were taken at these locations and the following elevated readings were noted:
- 19% at the jack plate below the bedroom 1 ranchslider
 - 100% at the garage corner stud or strapping. The expert noted that this could be caused by either a tanking failure or by defects in the deck membrane or the wall cladding.
- 5.3 Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure. I note that the meter used by the expert can record readings of up to 100%. While such a reading may appear excessive, a reading of this magnitude is an indication that the timber in question is fully saturated and potentially subject to decay. The expert also observed that the jack stud at the ground level of the northwest corner is decayed.
- 5.4 The expert made the following specific comments on the cladding.
- there is a short crack in the north elevation cladding adjoining the garage
 - at some wall and column locations the base of the cladding is buried in the ground or the pavings, or is too close to the ground level
 - the roofing membrane over the entrance enclosure has an inadequate upstand against the main wall, the wall cladding has a minimum clearance over this membrane, and the membrane is inadequately secured at the open perimeters
 - the edge of the garage deck membrane is inadequately secured over the cladding
 - no flashing is installed where the bedroom 1 deck adjoins the wall cladding
 - no flashing or sealant is installed where the cladding adjoins the existing verge soffit
 - the base of the pergola posts and the pergola wall fixing blocks are inadequately sealed, and the deck membrane does not have upstands at the post locations
 - there are no flashings installed where the living room deck edge beams penetrate the cladding
 - some of the penetrations through the cladding are poorly sealed and lack flashings or sleeves
 - there is a lack of adequate ventilation to the sub-floor areas.

- 5.5 The expert did not agree with the territorial authority's observation that the garage deck substrate was in poor condition and was cracked. In the expert's opinion, the cracks were in the membrane paint application, rather than in the membrane itself.
- 5.6 Copies of the expert's report were provided to each of the parties. In a letter to the Department dated 25 January 2006, the territorial authority made one comment on the report. This assumed that the expert was referring to clause B2 of the Building Code in paragraph 6.14(a) rather than clause E2.

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 Solution⁴, which this case is 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; and
- Usually when there is non-compliance with one provision of an Acceptable Solution, it may be necessary to add some other provision to compensate for that in order to obtain compliance 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 the previous Authority have also described weathertightness risk factors in previous determinations (refer to Determination 2004/0 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 will need to be less robust. In any event, there is a need for both the design of the cladding system and the quality of its installation to be carefully carried out.

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.

6.2 Weathertightness risk

6.2.1 In relation to the weathertightness characteristics I find that the house:

- is built in a medium wind zone
- is two storeys high
- has three decks, one of which is constructed over the garage
- is simple in plan and form
- has 380mm wide eaves projections and a 600mm wide verge projection which together with one deck extension, provide good protection to the cladding below them. However there is a lack of protection at one verge and at the entrance enclosure roof edges
- has new external wall framing that is unlikely to be treated, so would have no level of resistance to the onset of decay if the framing absorbs and retains moisture.

6.2.2 When evaluated using the E2/AS1 risk matrix, these weathertight features show that two elevations of the building demonstrate a medium weathertightness risk rating and two elevations of the building a high risk rating. 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 according to good trade practice, but a number of junctions, edges and penetrations are not well constructed. These areas are all as described in paragraph 0 and in the expert's report as being the:

- short crack in the north elevation cladding adjoining the garage
- base of the cladding being buried in the ground or paving, or being too close to the ground level at some wall and column locations
- roofing membrane over the entrance enclosure having an inadequate upstand against the main wall, the wall cladding clearance over this membrane and the inadequately secured membrane at the open perimeters
- inadequately secured edge of the garage deck membrane
- lack of a flashing where the bedroom 1 deck adjoins the wall cladding

- lack of flashings or sealants where the cladding adjoins the existing verge soffit
- inadequately sealed base of the pergola posts and the pergola wall fixing blocks and the lack of deck membrane upstands at the post locations
- lack of flashings where the living room deck edge beams penetrate the cladding
- poorly sealed penetrations through the cladding are and the lack of flashings or sleeves
- lack of adequate ventilation to the sub-floor areas.

6.3.2 Notwithstanding the fact that the backing sheets are fixed directly to the timber framing, thus inhibiting drainage and ventilation behind the cladding sheets, I have noted certain compensating factors that assist the performance of the cladding in this particular case.

- the cladding generally appears to have been installed to good trade practice
- the eaves and verge projections to most walls and the deck extensions provide good protection to the cladding below them.

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

7 Conclusion

7.1 I am satisfied that the current performance of the monolithic cladding is not adequate because it is allowing water penetration into the building in at least two 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 house to remain weathertight. Because the cladding faults on the building are likely to allow the ingress of moisture in the future, the house does not comply with the durability requirements of clause B2.

7.3 Subject to further investigations that may identify other faults, I consider that, because the faults identified with the cladding system occur in discrete areas, I can conclude that satisfactory rectification of the items outlined in paragraph 6.3.1 is likely to result in the building being weathertight and in compliance with clauses B2 and E2.

- 7.4 I note that effective maintenance of monolithic claddings is important to ensure ongoing compliance with clause B2 of the Building Code. That maintenance is the responsibility of the building owner. The Building Code assumes that the normal maintenance necessary to ensure the durability of the cladding is carried out. For that reason clause B2.3.1 of the Building Code requires that the cladding be subject to “normal maintenance”. That term is not defined and I take the view that it must be given its ordinary and natural meaning in context. In other words, normal maintenance of the cladding means inspections and activities such as regular cleaning, re-painting, replacing sealants, and so on. As the external wall framing is not likely to have been treated to a level that will delay the onset of decay if it becomes wet, I would recommend that periodic moisture content checks be carried out to all areas of the external cladding.
- 7.5 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.
- 7.6 I decline to incorporate any waiver or modification of the Building Code in this determination.

8 The decision

- 8.1 In accordance with section 188 of the Act, I hereby determine that the cladding system as installed on the house does not comply with clauses B2 and E2 of the Building Code. Accordingly, I confirm the territorial authority's decision to refuse to issue a code compliance certificate.
- 8.2 I also find that rectification of the items outlined in paragraph 6.3.1 to the approval of the territorial authority, along with any other faults that may become apparent in the course of that work, will consequently result in the house being weathertight and in compliance with clauses B2 and E2, notwithstanding the lack of a ventilated cavity.
- 8.3 I note that the territorial authority has not issued a notice to fix. A notice to fix should be issued that requires the owners to bring the cladding into compliance with the Building Code, without specifying the features that are required to be incorporated. 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 to propose and for the territorial authority to accept or reject.
- 8.4 I would suggest that the parties adopt the following process to meet the requirements of paragraph 8.3. Initially, the territorial authority should issue the 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 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.

Issue 2: The additional durability considerations

9 Discussion

- 9.1 I note that the relevant provision of clause B2 of the Building Code requires 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”.
- 9.2 As set out in paragraph 3.1, the territorial authority has concerns about the durability, and hence the compliance with the Building Code, of certain elements of the house, considering the building work was completed in 1998. My opinion is 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 67(1) of the Act. This must be done to the effect that the durability of the elements it may have concerns about is measured from the date of the substantial completion of the house, instead of from the time of the issue of the code compliance certificate. The land information memorandum for this house should also be amended in line with the above. For the purposes of this determination “substantial completion” of the house is achieved when the house was completed and ready for occupation as determined by the territorial authority.

10 Decision

- 10.1 I determine that the territorial authority is to amend the original consent, issued in 1998, to incorporate a waiver of clause B2 of the Building Code to the effect that the required durability periods for the building elements put in place in the course of work carried out under that consent 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. For the avoidance of doubt I determine that this waiver is not to be applied to elements that have been renewed or replaced since the original construction and for which little of the required durability period has elapsed at the time of this determination.
- 10.2 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 22 March 2006.

John Gardiner
Determinations Manager