

Determination 2005/145

Refusal of a code compliance certificate for a house with a “monolithic” cladding system at 14B Marigold Place, Mairangi Bay, North Shore City – House 122

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 applicant is the owner Mr S Riddle, acting through Property Projex Ltd, (“the owner”), and the other party is the North Shore City Council (“the territorial authority”). The application arises from the refusal by the territorial authority to issue a code compliance certificate for an 11-year-old house unless changes are made to its monolithic cladding system.

1.2 The questions to be determined are:

1.2.1 Issue 1

1.2.1.1 Whether I am satisfied on reasonable grounds that the external cladding as installed (“the cladding”), that is applied to the external walls, columns, and beams of this house complies with the Building Code (see sections 18 and 20 of the Act). By “external 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.

1.2.2 Issue 2

1.2.2.1 Whether certain building elements, which have 5 and 15-year durability requirements, comply with clause B2 of the Building Code considering the time that has elapsed since the elements were constructed.

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.

1.6 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 is a two-storey detached house, with a developed garage and lobby basement area, situated on an excavated sloping site, which is in an undetermined wind zone. The external walls are of conventional light timber frame construction built on concrete block foundation and retaining walls, or on timber-framed floors, and are sheathed with monolithic cladding. The house is of a fairly complex shape, and the pitched roofs are at varying levels with numerous hip, valley, and wall-to-roof junctions. Generally, the eaves have 450mm wide projections, but there are minor locations without projections.

2.1.2 Timber-framed open boarded external decks are constructed at the ground and first floor levels, and a flight of timber steps leads up to the upper deck. The lower deck is supported on timber piles and beams, and the upper deck and the stairs are supported on monolithic clad timber-framed posts and beams. The upper deck and stairs have metal balustrades with intermediate monolithic-clad timber-framed extensions from the support columns. An upper roof is extended over the main entrance and is supported by a metal corner post.

2.1.3 Based on the evidence provided by a technologist, I accept that the external wall framing is Borate treated.

2.1.4 The cladding system is what is described as monolithic cladding, and is a 7.5mm thick “Harditex” system fixed directly to the framing over a building wrap, and

finished with an applied textured system. I note that the plans describe the external cladding as being cedar weatherboards. The territorial authority does not appear to have referred to the cladding change in its correspondence to the owner.

2.2 Sequence of events

- 2.2.1 The territorial authority issued a building consent on 23 March 1994. There were no conditions attached to the consent that pertained to the cladding.
- 2.2.2 The territorial authority carried out inspections during the course of construction. A final inspection was undertaken on 2 December 1994, and the house did not pass this inspection.
- 2.2.3 The territorial authority wrote to the owner on 2 December 1994, noting that during its inspection that day, the territorial authority identified that certain items had not been carried out in accordance with the Act and/or the Resource Management Act. The territorial authority then listed the issues, some of which related to the cladding.
- 2.2.4 In a letter to the owner dated 11 March 2004, the territorial authority stated that, as the cladding was monolithic and faced fixed, the territorial authority could no longer verify that the cladding fully complied with the Building Code. Accordingly, it was unable to issue a code compliance certificate. The territorial authority also listed the various weathertightness risk factors, and noted the defects to be remedied.
- 2.2.5 The owner applied for a code compliance certificate in September 2004. In a memo dated 8 September 2004, the territorial authority stated that, following a final building, plumbing and drainage inspection, it confirmed that all work had been completed as per the approved plans. This included work described as being outstanding in the territorial authority's 2 December 1994 letter. The territorial authority noted that the cladding would be subject to a weathertightness inspection and that a code compliance certificate may not be issued.
- 2.2.6 The owner arranged for an "above ground visual inspection" of the house by an independent building inspection company ("the inspection company"). The inspection company produced a report dated September 2004. The report commented on aspects of the interior and exterior of the property, and concluded that the home "appears of generally sound condition with some low maintenance materials noted in its exterior construction". I note that this report did not identify many of the non-compliance issues discovered during the inspection of the building by the independent expert commissioned by the Department ("the expert").
- 2.2.7 Following a request from the owners, the inspection company carried out a "safe and sanitary" inspection of the house on 13 September 2004. Subsequent to this inspection, the inspection company wrote to the territorial authority on 28 September 2004. The inspection company was of the opinion that apart from the upper rear deck area, the house would generally comply with the Building Code of "approximately 1994". As regards the deck, there was no evidence that there was any water entry or leakage. The inspection company concluded that the building works are neither dangerous nor insanitary.

- 2.2.8 Following the taking of drill samples from the framing timber of the house on 6 October 2004, a consulting technologist concluded that the wall framing was treated with a Borate timber preservative. The technologist also took humidity readings from the wall cavities at 4 locations and two readings of 94% and two readings of 94.5% were recorded. The technologist concluded that, based on these readings, as the humidity would reach 100% if water were present, it was unlikely that there was free water leakage into the cavity.
- 2.2.9 The territorial authority did not issue a Notice to Rectify as required under section 43(6) of the Act.
- 2.2.10 The owner applied for a Determination on 10 February 2005.

3 The submissions

- 3.1 In a covering letter to the Department dated 10 February 2005, the owner described some of the background to the dispute. The letter noted that the house was 10 years old, and as it did not leak, its durability and external moisture resistance had been proved. In addition, the house is constructed with treated timber and testing had not revealed the presence of “free water”.
- 3.2 The owner supplied copies of:
- the plans
 - some of the consent documentation
 - the correspondence with the territorial authority
 - the building inspection report
 - the safe and sanitary report
 - the technologist’s reports
 - the “Harditex” technical information
 - a set of photographs.
- 3.3 The territorial authority made a submission in the form of a letter to the Authority dated 4 April 2005, which summarised the consent and inspection processes relating to the house. The territorial authority noted that, due to the type of monolithic cladding applied to the house, together with its attendant risk factors, the territorial authority was unable on reasonable grounds to accept the compliance of the cladding. The territorial authority noted that the matters of doubt were:
- Whether the installed cladding system complies with clauses B2.3.1 and E2.3.2 of the Building Code.

- Whether building elements, which have 5 and 15-year durability requirements comply with clause B2 of the Building Code, considering the age of construction.

3.4 Further to the second matter of doubt raised by the territorial authority as described in paragraph 3.3, following a request from the Department, the territorial authority faxed the Department on 7 July 2005. This fax gave details of the specific elements of the building that the territorial authority considered would not comply with clause B2, considering the time that has elapsed since the elements were constructed. The elements are the:

- cladding, including flashings
- pressed metal roofing
- deck membranes
- wet area membranes
- particle board flooring in wet areas
- external gutters and downpipes
- shower linings.

3.5 The territorial authority supplied copies of the:

- plans
- consent and inspection documentation
- correspondence with the owner.

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

3.7 I issued the Determination as a draft to the parties for comment. Both parties accepted the draft.

Issue 1: The cladding

4 The relevant provisions of the Building Code

4.1 The dispute for Determination is whether the territorial authority's decision to refuse to issue a code compliance certificate because it was not satisfied that the cladding complied with clauses B2 and E2 of the Building Code (First Schedule, Building Regulations 1992) is correct.

- 4.2 No Acceptable Solutions have been approved under section 49 of the Act that cover this cladding. The cladding is not accredited under section 59 of the Act. I am therefore 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.
 - 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 Department commissioned an independent expert ("the expert") to inspect and report on the cladding. The expert inspected the building on 16 May 2005 and 12 June 2005, and furnished a report that was completed in June 2005. It stated that the quality of the textured surface finish is regular and consistent and the paint film is uniform and in reasonable condition. However, there was some evidence of some locally touched up areas. The expert investigated the jambs and sills at three randomly selected windows and found that these were sealed but not flashed. I accept that the details exposed by these inspections are representative of other similar locations throughout the building. The report made the following specific comments on the cladding:
- one 1000mm wide wall of the building is of a height that requires a horizontal control joint as recommended by the manufacturer
 - there is minor cracking adjacent to the window frames and in the face of the cladding at some locations
 - the clearance to the lower edge of the cladding is inadequate adjacent to the paving at some locations
 - the head flashing over the French doors to the main bedroom is cut flush with the window jamb
 - there are no jamb or sill flashings to the exterior joinery units
 - the cladding is poorly finished at the junction with the head flashings of the exterior joinery units at some locations

- the fascia/gutter above the garage door is embedded in the cladding and the apron flashing at this location lacks an end “kick out”.
- 5.2 The expert carried out a series of moisture tests to the interior of the house using a non-invasive meter and one elevated reading was recorded in the entrance lobby area. A further penetration test revealed a reading of 28% at this point. Prior to the expert’s second site visit, the owner had cut away the plasterboard at the lobby location and a penetration moisture reading in the timber frame of the window jamb in the lobby recorded 19.5%. Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure.
- 5.3 Copies of the expert’s report were provided to each of the parties and the territorial authority did not comment on the report. The owner forwarded a response to the Department on 1 July 2005. In this response, the owner noted that the house was 10 years old and was watertight and in good condition. The owner was of the opinion that normal care and maintenance would ensure the building’s durability for a further 15 years. The owner also noted that the timber framing used to construct the house was treated and that according to the Building Act 2004, the building work need only comply with the original consent. The owner stated that where the cladding adjoined the paved areas any external moisture is channelled away from the cladding.
- 5.4 Regarding the owner’s comment in paragraph 5.3 concerning the 2004 Act, I note that this Determination is subject to the transitional sections of that legislation. Accordingly, the provisions of the 1991 Act still apply in general terms to this Determination.

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

- 6.2.1 In relation to the weathertightness characteristics, I find that the house:
- has generally 450mm wide eaves projections, which provide good protection to the cladding areas below them
 - is in an undetermined wind zone

- is maximum two-storeys high
- is of a fairly complex shape on plan with roofs having hip, valley and wall-to-roof junctions
- has open decks to the ground and first floor levels
- has external wall framing that is treated to a level that would help prevent decay if it absorbs and retains moisture.

6.3 Weathertightness performance

6.3.1 Generally, the cladding appears to have been installed according to reasonable trade practice, but some junctions, edges, and penetrations are not well constructed. These areas are described in paragraph 5.1, and in the expert's report, as being:

- the wall of the building that is of a height to require a horizontal control joint
- the minor cracking adjacent to the window frames and in the face of the cladding at some locations
- the inadequate clearance to the base of the cladding adjacent to the paving at some locations
- the head flashing over the French doors to the main bedroom being cut flush with the window jamb
- the lack of jamb or sill flashings to the exterior joinery units
- the poorly finished cladding at the junction with the head flashings of the exterior joinery units at some locations
- the fascia/gutter above the garage door being embedded in the cladding and the lack of an end "kick out" to the apron flashing at this location.

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 find that there are compensating factors that assist the performance of the cladding in this particular case:

- the cladding appears to have been installed according to reasonable trade practice
- the house has 450mm wide eaves that provide some protection to the cladding areas below them
- the house has external wall framing that is treated to a level that would help prevent decay if it absorbs and retains moisture.

- 6.3.3 I find consider that these factors help compensate for the lack of a drainage and ventilation cavity and can assist the house to comply with the weathertightness and durability provisions of the Building Code.
- 6.3.4 I note that one elevation of the building demonstrates a low weathertightness risk rating and the remaining three elevations a medium rating as calculated 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 actually built is assessed for the purposes of issuing a code compliance certificate.

7 Conclusion

- 7.1 I am satisfied that the current performance of the monolithic cladding on the building is not adequate because it is allowing water penetration into the building in at least one location, which could affect the cladding. 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 also is 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 building to remain weathertight. Because the monolithic cladding faults on the building have already allowed the ingress of water, or will allow the ingress of moisture in the future, it does not comply with the durability requirements of clause B2 of the Building Code.
- 7.3 Subject to further investigations during the remediation process that may identify other faults, I consider that, because the faults that have been identified with this cladding by the expert occur in discrete areas, I am able to 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, repainting, replacing sealants, and so on.
- 7.5 It is emphasised 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.

8 The decision

- 8.1 In accordance with section 20 of the Building Act 1991, I hereby determine that the cladding system as installed on the building does not comply with clause E2 of the Building Code. There are also a number of items to be remedied to ensure that it remains weathertight and thus meet the durability requirement of the Building Code. Consequently, I find that the building does not comply with clause B2. Accordingly, I confirm the territorial authority's decision to refuse to issue a code compliance certificate in regard to the cladding.
- 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.
- 8.3 I note that the territorial authority has not issued a Notice to Rectify. The territorial authority should now issue a notice to fix, and the owner is then obliged to bring the house 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 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 are 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.
- 8.5 Finally, I consider that the cladding will require ongoing maintenance to ensure its continuing code compliance.

9 Issue 2: The additional durability considerations

- 9.1 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".
- 9.2 As set out in paragraphs 3.3 and 3.4, 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 date of the building in 1994. 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 to the effect that the durability of the elements listed in paragraph 3.4 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. The land information memorandum relating to this house should also be amended in line with the above. For the purposes of this Determination “substantial completion” is achieved when the building was completed and ready for occupation as determined by the territorial authority.

9.3 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 following elements 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:

- the cladding, including flashings, but excluding the items of rectification set out in paragraph 6.3.1
- the pressed metal roofing
- the deck membranes
- the wet area membranes
- the particle board flooring in wet areas
- the external gutters and downpipes
- the shower linings.

9.4 I note that, as the 5-year durability period relating to the external gutters and downpipes would have expired under the above criteria, consideration should be given to waiving the B2 requirement for these items.

9.5 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 10 November 2005.

John Gardiner
Determinations Manager