Determination 2006/14

Refusal of a code compliance certificate for a building with a "monolithic" cladding system at 17 Nigel Road, Browns Bay, 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 Act 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 applicants are Mr Faulkner ("the owner"), and the other party is the North Shore City Council ("the territorial authority"). The application arises because no code compliance certificate was issued by the territorial authority for this 5-year-old house.

1.2 The questions to be determined are:

Issue 1

1.3 Whether I am satisfied on reasonable grounds that the monolithic wall cladding as installed to the external walls of the building ("the cladding"), complies with the Building Code (see sections 177 and 188 of the Act). By "the monolithic wall 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

1.4 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 of the 5-year-old house were constructed.

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 a detached house situated on a flat site. Construction is generally conventional light timber frame, with a concrete slab and foundations, monolithic wall cladding, aluminium windows bordered with decorative bands and 27^{o} fibreglass shingle gable and hipped roofs. The two-storey house is a reasonably simple "U" shape, with parapet walls at gable ends and no eaves. A monolithic clad chimney structure projects from the north elevation, with gutters butting into both sides at the upper roof level. A single storey garage, with a parapet at the gable end, extends at an acute angle from the south wall of the house.

2.1.2 Two small cantilevered decks, with membrane floors and monolithic clad balustrades, extend to the east from first floor bedrooms, and are situated partly over the lower level living areas. The balustrades have EIFS cladding to the tops and outer faces, with flush finished fibre cement on the inner faces. A third deck, with a membrane floor and metal balustrades, extends from the first floor family room.

2.1.3 The drawings call for wall framing to be untreated, and the territorial authority and the owner note that the timber is "chemfree". Based on this evidence, I consider that the external wall framing is not treated.

2.1.4 The cladding system is what is described as monolithic cladding, and consists of 60 mm "Insulclad" polystyrene backing sheets fixed directly to the framing over the building wrap, and finished with a mesh reinforced plaster. The system includes purpose-made flashings to windows, edges and other junctions.

2.1.5 Plaster Systems Ltd provided a "Completion Certificate" dated 28 September 2000, which included a 15-year guarantee for the material components of the cladding.

2.1.6 I note that 3 elevations of the building demonstrate a high weathertightness risk and 1 elevation a moderate risk 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.

2.1.7 Accordingly I consider this face-fixed EIFS cladding to be an alternative solution (refer to paragraph 4.2).

2.2 Sequence of events

2.2.1 The territorial authority issued a building consent for the house on 6 March 2000, and carried out various inspections during construction, including pre-line and post-line. The house appears to have been completed late in 2000, although the final inspection, which identified a number of outstanding items, was not undertaken until 20 February 2003.

2.2.2 At the "recheck" inspection on 20 February 2004, one item from the original list remained outstanding. During the visit, the territorial authority also carried out a visual cladding inspection and gave the owner a standard letter which advised that:

> Existing properties in North Shore City using any type of monolithic cladding without a cavity, that have not had specific inspections to deal with weathertightness issues, will be reviewed on a case-by-case basis before determining if a code compliance certificate can be issued…

2.2.3 In a letter to the owner dated 5 May 2004, the territorial authority explained its concerns about the weathertightness of monolithic claddings and stated that the Building Code required the building work to remain durable for specific periods of time. The territorial authority also noted that:

> As your building is face fixed (monolithic) construction with no cavities we are unable to verify that it fully complies with the Building Code requirements, manufacturer's details applicable at the time and that it will remain durable for the required period.

2.2.4 The territorial authority outlined risk factors associated with the house and identified defects, concluding that it could not be satisfied on reasonable grounds that the cladding system complied with clauses E2 and B2 of the Building Code.

2.2.5 The territorial authority did not issue a Notice to Rectify as required under section 43(6) the Building Act 1991.

2.2.6 In a letter to the territorial authority dated 23 August 2005, the owner's lawyer briefly summarised events and noted that the Building Code did not require cavities when the building consent was issued, concluding that:

> In my submission, it is totally inappropriate for Council to now be imposing upon my clients a requirement for cavities prior to issuing the house with a CCC. Council can only apply the code as it existed in March 2000, not May 2004 nor August 2005.

2.2.7 The owner applied for a determination, which was received by the Department on 7 September 2005.

3. The submissions

3.1 In a letter dated 9 August 2005 to "whom it may concern", the owner noted the provisions of section 436 of the Act and submitted that the items noted in the territorial authority's letter dated 5 May 2004:

> …are all outside the time frame of our application for building consent and CCC final inspection and recheck are all preceding the Building Act 2004, for which the new code applies.

3.2 The owner noted the following points in response to the territorial authority's letter.

- Only one item was outstanding at the final recheck inspection, and retrospective requirements were issued after final sign off.

- The cladding was properly installed by a licensed contractor.
- All required inspections were carried out at the time.
- The wind zone was approved as low at consent stage.
- The decks were properly waterproofed by "Equus Industries Ltd".
- Untreated timber was part of council's requirements at the time.
- In regard to cladding clearance, the 500 mm length of in-ground cladding had been flashed before the recheck, but was not inspected from the inside where access for viewing was available.
- Two layers of building wrap were used over the balustrade framing, and appropriate uPVC flashings were installed as part of the cladding.
- Service penetrations have been sealed with high quality sealants.

3.3 The owner noted that he was the designer and builder of the house, and was confident that it complies with the Building Code, concluding that:

> We therefore feel we have been placed in a "Catch 22" position by the council. We find it incomprehensible that because of a time lag between the CCC check and recheck for the final CCC inspection, that the council are attempting to make retroactive amendments to work that they have already authorised as per plans.

3.4 The owner's agent forwarded copies of:

- the drawings
- the correspondence with the territorial authority
- the inspection records
- various producer statements and other statements.

3.5 The territorial authority made a submission in the form of a letter to the Department dated 17 October 2005, which summarised the consent and inspection processes related to the house, and noted that:

> In regards to this application for a determination, the matters of doubt are:
>
> - Whether the installed cladding system complies with clauses B2.3.1 and E2.3.2 of the Building Code.
> - Whether other building elements, which have 15-year durability requirements, comply with clause B2 of the Building Code, considering the age of construction. Specifically external joinery units, flashings, plumbing and piping, showers and internal wet areas.

3.6 The territorial authority forwarded copies of:

- some of the consent documentation
- the inspection records.

3.7 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.

3.8 The territorial authority wrote to the Department on 7 February 2005, commenting on certain aspects of the draft determination. The territorial authority said that the waiver of Clause B2 should apply to all building elements and that it would write to the owner requesting an urgent investigation of the matters referred to in paragraph 7.4.

3.9 I note the drawings supplied do not meet the minimum standard required for building consent purposes.

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 B2.3.1 and E2.3.2 of the Building Code (First Schedule, Building Regulations 1992) is correct.

4.2 There are no Acceptable Solutions that have been approved under section 22 of the Act that cover the monolithic cladding as installed on this house. The cladding is not currently certified under section 269 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 in my view remain valid in this case, 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 expert inspected the cladding on 31 October 2005 and 2 November 2005, and furnished a report that was completed on 9 November 2005. The expert noted that the cladding generally appeared to be installed according to the manufacturer's instructions with the coating "generally good with minor defects" and the finish "in fair condition" with some cracking and signs of discolouration. Penetrations through the cladding were generally well sealed. The expert noted that the wall areas present in this house are of dimensions that do not require control joints in order to comply with the manufacturer's instructions. The expert noted that the owner had cut out a section of lining at the bottom of the wall adjacent to the south end of the garage door. The expert scraped away small sections of plaster at the sill to jamb and jamb to head junctions of a window to examine the flashings. I accept that the location opened is typical of similar locations around the building.

5.2 The expert took non-invasive moisture readings through interior linings at skirting level throughout the house, and noted elevated readings in the north east corner of bedroom 1 below the parapet, with rusting of carpet fixings and soft particle board flooring. Elevated readings were also noted in the south wall of the ground floor family room near the junction with the garage wall, and in the garage, where water marks on the concrete floor were noted.

5.3 More than 80 invasive moisture readings were taken through the wall cladding, and the following elevated moisture contents were recorded in the framing.

- 2 at 32% in the garage at the junction with the family room wall
- 19% at the top and 40% at the bottom of the south corner of the garage
- 26% and more than 40% at the cut-out beside the garage door
- 18% at the north end of the garage door
- More than 40% at the solid balustrade to wall junctions at the ends of both decks from bedrooms 1 and 2
- More than 40%, with signs of decay, at the outer corners of the balustrades to the decks from bedrooms 1 and 2
- 20% to 34% under the outer corners of the decks from bedrooms 1 and 2
- 26% under the north end of the parapet above bedroom 2
- more than 40% under the south end of the parapet above bedroom 1
- 22% under the north end of the parapet above bedroom 1.

5.4 The expert made the following specific comments on the cladding.

- Clearances from the cladding to adjacent ground or paving are inadequate in some locations, with the cladding butting against the paving in two locations; to the left of the garage door and to the left of the garage side door.
- There is exposed timber showing under the side door to the garage.
- The uPVC flashings at the window head to jamb junction do not intersect in accordance with manufacturer's instructions. The jamb to sill flashing intersection is sealed, but has no corner soaker as required in the manufacturer's instructions. However, there are no signs of water penetration.
- The gutter ends of the roof parapets to the house and the garage have unsealed gaps, poor flashings, no kickouts and poor sealants at some locations, with high moisture contents in the framing below and signs of water damage noted.
- The east junction of the garage roof to the house wall is inadequately flashed and weatherproofed, with visible signs of leaking and high moisture contents recorded.
- The apron flashings at the sides of the chimney lack kick-outs.
- There are cracks in the coating along windows sills, along the top edges of the outer faces of balustrades, and at several other locations.
- The uncapped tops of the balustrades are not constructed according to manufacturer's instructions as they fall towards the deck side with little slope, and have poor weatherproofing of the junction between the EIFS top and the inner fibre cement face. Very high moisture contents and decay were noted.
- The membrane lining of the deck outlets have no drip or overlap into the rainwater heads, and high moisture contents were recorded below.
- The membrane of the deck from bedroom 2 is blistering at the gutter.
- There is no head flashing, but the meterbox appears well sealed, with no sign of moisture penetration. The grilles to the extractor vents are vulnerable to water penetration.

5.5 Copies of the expert's report were provided to each of the parties.

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 considered these comments in this determination.

6.2 Weathertightness risk

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

- is built in a high wind zone
- is a maximum of two storeys high
- has an enclosed deck with metal balustrades, and two cantilevered decks with monolithic clad balustrades, which are partially situated above living areas
- is fairly simple in plan and in form
- has parapets at gable ends and eaves projections of the gutter width only
- has monolithic cladding which is fixed directly to the framing
- has external wall framing that is untreated, so providing no resistance to the onset of decay if the framing absorbs and retains moisture.

6.3 Weathertightness performance

6.3.1 Generally the cladding appears to have been installed satisfactorily, apart from the faults identified in paragraph 5.4. However some junctions, edges and penetrations are not well constructed, and these areas are as described in paragraph 5.4 and in the expert's report as being the:

- inadequate clearances below the cladding at some locations
- lack of adequate weatherproofing under the side door to the garage
- lack of adequate weatherproofing at the gutter ends of the parapets
- lack of adequate weatherproofing of the junction of the garage roof to the wall of the house
- lack of kickouts to the apron flashings at the sides of the chimney
- cracks to the wall cladding at window sills, balustrades and other locations
- poorly weatherproofed tops to the monolithic clad balustrades
- lack of adequate weatherproofing of the deck outlets at the rainwater heads

- blistering of the deck membrane to bedroom 2**.**

6.3.2 I note the expert's comments in regard to the window flashings, and accept that the flashings provided appear to be performing to the Building Code requirement with no evidence of water penetration.

6.3.3 I note the expert's comments in regard to the lack of a head flashing to the meterbox, and accept that the sealing provided appears to be performing adequately with no evidence of water penetration.

6.3.4 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 satisfactorily.
- The house is reasonably simple in plan and in form.

6.3.5 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 significant water penetration into the building at a number of locations at present. Consequently, I am satisfied that the cladding system as installed on the building does not comply 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 that have been 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 is likely to result in the building becoming and remaining weathertight and in compliance with clauses B2 and E2.

7.4 I draw to the attention of the territorial authority the evidence of timber decay and particle board flooring damage, with the likelihood that further investigation may reveal further decay of the untreated wall framing, which could compromise the structural integrity of the building and the safety of the deck balustrades.

7.5 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 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 checking, cleaning, re-painting, replacing sealants, and so on.

7.6 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.

7.7 In the circumstances, I decline to incorporate any waiver or modification of the Building Code in this determination.

Issue 1: The cladding

8. The decision

8.1 In accordance with section 188 of the Act, I hereby determine that the monolithic cladding system as installed does not comply with clause E2 of the Building Code. There are a number of items to be remedied to ensure that the house becomes and remains weathertight and thus meets the durability requirements of the Building Code. Consequently, I find that the house does not comply with clause B2. 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, is likely to result in the house becoming and remaining weathertight, and in compliance with clauses B2 and E2.

8.3 I note that the territorial authority has not issued a Notice to Rectify. 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 a 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.

8.5 Finally, I consider that the cladding will require on-going maintenance to ensure its continuing code compliance.

Issue 2: The additional durability considerations

9. Discussion

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 paragraph 3.5, the territorial authority has concerns about the durability and hence its compliance with clause B2 of the Building Code, of certain elements within the building, taking into consideration the completion date of the building in 2000.

9.3 I am of the opinion that the territorial authority should amend the original building consent for the building by making it subject to a waiver of the Building Code in accordance with section 67 of the Act to the effect that the durability of the elements 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 the building should also be amended in line with the above.

Issue 2: The additional durability considerations

10. The decision

10.1 I determine that the territorial authority is to amend the consent for the building to incorporate a waiver of clause B2 of the Building Code to the effect that the required durability periods for the building elements are to be measured from the date of the substantial completion of the building, and not from the time of the issue of the code compliance certificate.

10.2 Following this amendment, any code compliance certification 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 6 March 2006.

John Gardiner
Determinations Manager