

Determination 2006/24

Refusal of a code compliance certificate for a building with a monolithic cladding system at 17A Hubert Henderson Place, Remuera



1 The dispute to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004¹ (“the Act”) made under due 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 Mr Yu Li (“the applicant”), and the other party is the Auckland 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 2-year-old 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 The Building Act 2004 is available from the Department’s website at www.dbh.govt.nz

² The Building Code is available from the Department’s website at www.dbh.govt.nz

- 1.3 The questions to be determined is whether I am satisfied on reasonable grounds that the 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 wall cladding as installed” I mean the components of the system (such as the backing sheets, the flashings, the joints and the coatings) as well as the way the components have been installed and work together.
- 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 consists of a two-storey detached house situated on a sloping stepped site in a low wind zone for the purposes of NZS 3604³. Construction is generally conventional light timber frame, with a concrete slab and foundations, monolithic cladding and aluminium windows. The upper level of the 15° concrete tile roof has stepped gables, with lower roof projections forming lean-tos against upper walls. Except for deeper overhangs above the living room, garage and entry doors, eave and verge projections are generally 300 mm excluding gutters and fascias. The upper floor includes three enclosed decks with membrane floors and monolithic-clad balustrades, which are located above living and garage areas below.
- 2.2 The applicant has submitted copies of invoices from the timber supplier, which indicate that the external wall framing supplied for the house was H1 treated, with the bottom plates H3 treated. The expert noted that there was no evidence provided as to the treatment level of the deck framing timber. Based on this evidence, I consider that the bottom plates of the external wall framing used on the house are H3 treated. However, given the date of construction of the house, I am unable to determine the particular level and type of treatment that is described as “H1” in the invoices from the timber supplier. I therefore consider that the wall framing of this house, excluding the bottom plates, are unlikely to be treated to a level that will provide resistance to fungal decay.
- 2.3 The cladding is a monolithic cladding system described as stucco over a solid backing. In this instance it consists of 4.5 mm “Hardibacker” sheets fixed through the building wrap directly to the framing timbers, which contributes towards the structural bracing of the walls. The backing sheets are covered by a slip layer of building wrap, metal-reinforced 20 mm thick solid plaster and a flexible paint coating.
- 2.4 The plasterer, Lester Plastering Ltd., has provided a producer statement, dated 10 October 2003, for the stucco cladding attesting to the system’s durability for 5 years.

³ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

3 Sequence of events

3.1 The territorial authority issued a building consent for the house on 2 July 2002, and carried out various inspections during construction, including several cladding and flashing inspections in September 2003, including inspection of the hardibacker bracing on 15 September 2003. The house appears to have been completed in March 2004, although the final inspection was not undertaken until 27 November 2004. This inspection identified a number of outstanding items, noted that another inspection was needed in regard to the cladding and “advised owner that Council do not accept monolithic type cladding systems”.

3.2 On 2 February 2005, the territorial authority conducted a cladding inspection of the house. In a letter to the applicant, dated 8 February 2005, the territorial authority outlined concerns about the weathertightness of monolithic cladding, and noted that:

Council cannot be satisfied that the cladding system on the above building meets the Functional Requirement of Clause E2 External Moisture of the Building Code...

3.3 A Notice to Rectify, dated 8 February 2005, attached to the letter provided a detailed list and photographs of defects, with the final item being:

There seems to be insufficient drainage or ventilation allowed for in the installation of the monolithic cladding.

3.4 Despite additional work undertaken to remedy some of the defects identified in the Notice to Rectify, it appears that the territorial authority still refused to issue a code compliance certificate. The applicant applied for a determination, which was received by the Department on 29 August 2005.

3.5 During November and December 2005, the applicant undertook further work to remedy the remaining items of the Notice to Rectify. In addition, the expert commissioned by the Department to inspect the cladding (“the expert”) noted that a moisture detection system had been installed by Moisture Detection Company Ltd. on 10 January 2006.

4 The submissions

4.1 In a statement titled “Matter of doubt or dispute” the applicant outlined the history of the building, including the various inspections undertaken and work apparently approved during construction, and questioned why the territorial authority:

... first approved my building site with the proposed cladding systems, followed by 2 subsequent approvals from 2 separate council inspectors on 2 separate occasions of my building with unaltered cladding plan, and then suddenly changed its mind after the work has finished. The Council cannot expect people to tear their houses down to fit constantly changing building codes. Surely 3 approvals were enough.

4.2 The applicant forwarded copies of:

- some of the drawings
- some of the consent documentation
- some of the inspection records
- some of the correspondence with the territorial authority
- the Notice to Rectify and Particulars of Contravention with photographs
- various technical details, invoices and other statements.

4.3 The territorial authority forwarded copies of:

- the drawings
- some of the consent documentation
- the Notice to Rectify and Particulars of Contravention with photographs

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.

5 The expert's report

5.1 The expert inspected the cladding on 3 November 2005, 11 November 2005 and 19 December 2005, and furnished a report that was completed on 25 January 2006. The expert noted that the defects identified during the first two inspections had been remedied by the date of the third inspection.

5.2 The expert noted that the “quality of workmanship has been completed to a high standard”, with no evidence of cracks in the cladding, which appeared to be installed according to the manufacturer’s instructions. The expert observed that clearances from the cladding to adjacent ground paving or deck floors were generally adequate, penetrations appeared well sealed, deck weatherproofing appeared adequate and the roof appeared to be appropriately flashed. The expert noted that window and doors appeared adequately flashed, with head, jamb and sill flashings installed.

5.3 The expert noted that the territorial authority inspection records indicated that, following earlier identification of defects, a specific inspection of saddle flashings to balustrade to wall junctions was undertaken on 24 September 2003, and the flashing installation was approved at that time. I accept that this inspection and approval is sufficient to avoid the need for further invasive investigation of the deck balustrade to wall junctions.

- 5.4 The expert took non-invasive moisture readings at skirting level and under windows throughout the house, and no elevated readings or signs of moisture were noted.
- 5.5 An additional 40 invasive moisture readings were taken through the cladding at locations considered at risk of leakage, and slightly elevated readings of 18.5% beside garage doors were noted. By the next inspection on 19 December 2005, remedial work had been undertaken and the expert noted that the moisture readings had dropped.
- 5.6 The expert inspected the areas where defects had been identified in the Notice to Rectify and noted that, by the date of the third inspection on 19 December 2005, all defects had been appropriately addressed by the owner. The expert included the following specific comments:
- although the clearance under the living room cladding is slightly less than required, the area is well-drained and sheltered under a large overhang
 - although the capillary break at the base of the cladding is less than the required 6 mm at some locations, these areas have cladding clearance well above the required 150 mm and are unlikely to experience moisture penetration.
- 5.7 The expert noted that the hardibacker sheets of the cladding form a large part of the bracing to the house.
- 5.8 The expert noted that the “House Moisture Report” dated 10 January indicated that readings in the 26 installed probes were recorded at less than 13%, and noted that a minimum of two moisture readings per annum should be taken, in accordance with the installer’s recommendations.
- 5.9 Copies of the expert’s report were provided to each of the parties.

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 in 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.

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.

- Usually, when there is non-compliance with one provision of an Acceptable Solution, it will be necessary to add some other provision to compensate for that in order to comply with the Building Code.

6.1.2 The approach in determining whether building work is weathertight and durable and is likely to remain so, is to apply the principles of weathertightness. This involves the examination of the design of the building, the surrounding environment, the design features that are intended to prevent the penetration of water, the cladding system, its installation, and the moisture tolerance of the external framing. The Department and its antecedents, the Building Industry Authority, have also described weathertightness risk factors in previous determinations (refer to Determination 2004/1 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 may 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.

6.2 Weathertightness risk

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

- is built in a low wind zone
- is a maximum of two storeys high
- has three enclosed decks, situated above living and garage areas
- is fairly complex in plan and in form
- has monolithic cladding which is fixed directly to the framing
- has eaves projections of 400 mm overall and verge projections of 300 mm above most walls, with deep overhangs above some lower wall areas
- has external wall framing that is treated to a level that would provide limited protection against decay if the framing absorbs and retains moisture.

6.2.2 When evaluated using the E2/AS1 risk matrix, these weathertight features show that three elevations of the building demonstrate a high weathertightness risk and one a moderate 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, with well-constructed junctions, edges and penetrations.
- 6.3.2 I note the expert's comments on the clearance from the bottom of the cladding to the paving at the living room doors, and agree that the clearance provided is adequate in this situation as the junction is well drained and sheltered under a deep overhang.
- 6.3.3 I note the expert's comments on the limited capillary gap at some areas of cladding, and agree that the gap provided is adequate as the junctions are at locations where the ground clearance is well above the minimum required. I also note that there is no evidence of moisture penetration into the H3 treated bottom plates.
- 6.3.4 I note the expert's comment regarding the structural bracing provided by the backing sheets of the cladding. I note that the hardibacker bracing passed inspection by the territorial authority as noted in paragraph 3.1. I therefore consider that this bracing is outside the scope of this determination.
- 6.3.5 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 building has upper floor, eaves and verge projections that provide some protection to the cladding areas below them.
 - The building has framing that is treated to a level that is unlikely to provide resistance to the onset of decay if the framing absorbs and retains moisture.
 - A moisture monitoring system has been installed that should, if the system is used as recommended by the manufacturer, provide the owner with an early warning if moisture penetrates into the external framing.
- 6.3.6 I consider that these factors help compensate for the lack of a ventilated cavity and can assist the building 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 cladding is adequate because it is preventing water penetration into the building at present. I am also satisfied that there are no cladding faults on this building which are likely to allow the ingress of moisture in the future. Consequently, I am satisfied that the cladding system as installed on the building complies with clauses E2 and B2 of the Building Code.
- 7.2 I note that effective maintenance of 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.

- 7.3 As the external wall framing (excluding bottom plates) is treated to a level that is unlikely to provide resistance to fungal decay, periodic checking of its moisture content should be carried out as part of normal maintenance.
- 7.4 I note that a moisture monitoring system has been installed. I observe that the presence of such a system will not of itself contribute to weathertightness of the building but, if effective, may provide the owner with the means to monitor the ongoing performance of the cladding.
- 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.
- 7.6 In the circumstances, 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 complies with clause E2 and clause B2 of the Building Code. Accordingly, I instruct the territorial authority to issue a code compliance certificate.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 28 March 2006.

John Gardiner
Determinations Manager