

Determination 2005/151

Refusal of a code compliance certificate for a building with a “monolithic” cladding system at 32 Omaha Road, Remuera, Auckland – House 125

1 The dispute to be determined

- 1.1 This is a determination of a dispute referred to the Chief Executive of the Department of Building and Housing (“the Chief Executive”) under section 17 of the Building Act 1991 (“the Act”) as amended by section 424 of the Building Act 2004. The applicants are J Patel and Trustee Nominees Ltd (“the owner”), and the other party is the Auckland City Council (“the territorial authority”). The application arises from the refusal by the territorial authority to issue a code compliance certificate for a 2-year-old addition to an existing house (“the house”), unless changes are made to its monolithic cladding systems.
- 1.2 The question to be determined is whether on reasonable grounds the monolithic wall cladding as installed to the new and existing timber-framed external walls of the house (“the cladding”), complies with the Building Code (see sections 18 and 20 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.
- 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 The building work consists of extensive alterations to an existing single-storey house, situated on a slightly sloping site in a medium wind zone in terms of NZS 3604: 1999 “Timber framed buildings”. The resultant house is 2-storeys high and its external walls are of conventional light timber frame construction built on a piled timber-framed suspended floor. The new and existing timber-framed walls are sheathed with monolithic cladding, and in the case of the existing walls, the weatherboard linings were removed prior to installing the cladding. The house is generally of a reasonably simple shape, but with some complex aspects, and the pitched roofs are set at two levels with hip and wall to roof junctions. A wide membrane-clad gutter divides the two main roof sections. There are generally 400mm wide eaves projections, the main roof has parapets to the verges, and the first floor is cantilevered over the ground floor at the north elevation and to sections at the east and west elevations.
- 2.2 The house has one balcony at the first-floor level that is partially constructed over a habitable space and is also partially cantilevered. The balcony has both solid timber-framed monolithic-clad and open metal balustrades. The balcony ‘floor’ is covered with a membrane overlaid with tiles. The main roof internal gutter discharges onto a flat roof area, which in turn forms a roof over a two-storey high portico over the main entrance, supported on two 400mm diameter monolithic-clad columns. A timber framed monolithic-clad parapet wall surrounds the portico extension. A tiled deck with attached steps is situated at the ground floor level and metal balustrades protect this. A small timber-framed pergola is fixed to one elevation of the house.
- 2.3 From the visual evidence provided by the expert commissioned by the Department to inspect the house (“the expert”), I am prepared to accept that the timber used to construct the new external wall framing is H3 treated. It is also likely that the existing wall framing is untreated.

- 2.4 The timber-framed external walls of the house that are the subject of this determination are clad with what is described as a monolithic cladding. In this instance it incorporates 60mm thick polystyrene sheets, with grooves on the back face, fixed through the building wrap directly to the framing timbers, and finished with a mesh reinforced Mineral Plaster Technologies System 300 plaster finish. I note that the consented plans call for an “Insulclad” external cladding system. However, the territorial authority has not referred to this amendment in its Notice to Rectify.
- 2.5 Mineral Plaster Technologies Ltd issued a “Producer Statement” dated 14 October 2003, and the system applicator issued a “Workmanship Guarantee” dated 15 January 2004, for a period of 5 years, both in relation to the cladding system.

2.2 Sequence of events

- 2.2.1 The territorial authority issued a building consent on 15 August 2002, and amended building consents on 10 January 2003 and 25 May 2003.
- 2.2.2 The territorial authority carried out various inspections during the construction of the house, and according to the owner, the house was completed in mid-September 2003. The territorial authority passed the pre-line building check on 22 April 2003 and passed the post-line check on 3 May 2003 and 5 July 2003. The territorial authority carried out a final inspection in November 2003 and its “Final Check List” dated 22 December 2003 failed several of the cladding elements. The list also noted:

It is required that the manufacturer provides a calculation confirming the amount of air circulation and ventilation throughout the cavity.

- 2.2.3 Following a further inspection on 12 July 2004, the territorial authority wrote to the owner on 17 August 2004, regretting that the building might not comply with the Building Code in a number of respects. The territorial authority attached a Notice to Rectify also dated 17 August 2004 to this letter, together with a set of photographs illustrating items of non-compliance. The “Particulars of Contravention” attached to the Notice to Rectify listed requirements under the following headings:

2. Items not installed per the manufacturer's specifications;
3. Items not installed per the Acceptable Solutions of the Building Code, (no alternative solutions had been applied for);
4. Ventilated cavity system.

- 2.2.4 The owner was also required, amongst other items to:

1. Provide adequate ventilation to the monolithic cladding and into the wall frame space by means of either a ventilated cavity or alternative approved system, and ensuring that all issues relating to the above are resolved...

- 2.2.5 The territorial authority also noted that the window placements to the south and west elevations differed from the approved plans, and that the owner had to lodge with the territorial authority “as built plans” showing these amendments.
- 2.2.6 The owner applied for a determination on 23 November 2004.

3 The submissions

- 3.1 In a covering statement, the owner set out the background to the dispute and considered that it was the territorial authority’s responsibility to advise the owner during the construction period if there was a requirement to change the cladding. The owner also commented on three of the issues raised in the Notice to Rectify, including the requirement for a cavity.
- 3.2 The owner forwarded copies of the:
- plans
 - correspondence with the territorial authority
 - Notice to Rectify
 - “Producer Statement” and the “Workmanship Guarantee” for the cladding system
 - “Mineral Plaster Technologies” technical information.
- 3.3 In a covering letter to the Authority dated 10 May 2005, the territorial authority described the Particulars of Contravention and the specific construction defects.
- 3.4 The territorial authority also forwarded copies of:
- the plans and some specifications
 - the consent and inspection documentation
 - the Notice to Rectify
 - the “Producer Statement” for the cladding system
 - a set of photographs.
- 3.5 Copies of the submissions and other evidence were provided to each of the parties.
- 3.6 In a letter to the Department dated 29 July 2005, the territorial authority commented on aspects of the Draft Determination. In particular, the territorial authority is concerned that paragraphs 6.3 and 8.2 (now paragraphs 7.3 and 9.2 in this determination) indicate a scope of work required to make the house code compliant. The territorial authority claims that this is not part of the determination.

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 There are no Acceptable Solutions 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 Authority 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 in less extreme cases they may be modified 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 visited the property on 11 April 2005, and furnished a report that was completed on 20 April 2005. The report noted that, in the expert's opinion, the coating is installed satisfactorily. The expert removed a small section of cladding from the bottom corner of one window and found that jamb and sill flashings were installed. I am prepared to accept that this example is typical of the remaining external windows and doors. The expert made the following specific comments on the cladding:
- the cladding is in contact with the ground in several locations
 - the waterproofing to the tops of the high-level roof and portico parapets is inadequate as they lack a metal capping, and there is a small area of building wrap exposed on the inside of the parapet at the west elevation
 - the head flashings are cut short at two window locations
 - the majority of the windows lack the required 5 mm separation between the sill flashing and the window frame to facilitate drainage, and also do not have sill flashing tape, sill trays and air seals
 - in relation to the first floor balcony:

- the deck has insufficient fall, however, the expert notes that the provision of a producer statement from the membrane manufacturer guaranteeing the product for 15 years could provide grounds for accepting this reduced pitch.
- the top of the balustrade is flat and lacks a metal capping
- there is only a 40mm freeboard between the deck and the internal floor level
- the deck tiles are not sealed around the edge of the balcony
- only one drainage outlet has been provided, whereas two are required.
- there is insufficient fall to the deck of the first floor balcony
- there are a number of penetrations through the cladding that are not protected by rubber flanges or flashings.

5.2 The expert also observed that there is inadequate fixing of the plywood substrate to the large main roof internal gutter, and there is evidence that the fixings are “popping”. The expert is of the opinion that these defects will ultimately cause the gutter membrane to fail.

5.3 The expert carried out a series of non-invasive moisture tests at the interior of the external walls, and three invasive tests at selected locations. Invasive readings of 11%, 12% and 15% were obtained. Moisture levels above 18% at the exterior of the external walls after cladding is in place generally indicate that external moisture is entering the cladding. The expert did note that the readings were taken after a prolonged dry period.

5.4 Copies of the expert’s report were provided to each of the parties. In a letter to the Department dated 5 May 2005, the territorial authority accepted the report. The owner submitted a letter from Mineral Plaster Technologies Ltd dated 24 May 2005, which described the cladding and the expertise of the cladding installer. The company noted the low moisture readings, and stated that metal cap flashings to parapets and balustrades were not a “contravention” of the requirements at the time of installation. The company stated that subsequent trades can reduce ground level clearances, and that the use of sill trays and flashing tapes were only a “wise option” at the time the windows were installed. The BRANZ Opinion on the cladding dated 10 June 2003 contained details that were not in use at the time of construction. The company pointed out that the dwelling was now nearly 2 years old and the cladding system is intact.

6 The hearing

- 6.1 The owner requested a hearing, which was held before a tribunal consisting of the Determinations Manager and one Referee acting for and on behalf of the Chief Executive by delegated authority under section 187(2) of the Building Act 2004. At the hearing, Mr Garg represented the owner and the designer and the cladding installer accompanied him. The territorial authority was represented by one of its officers. Two staff members of the Department and a consultant employed by the Department attended. The owner and the territorial authority spoke and called evidence at the hearing, and evidence from those present enabled me to amplify various matters of fact that were identified in the draft.
- 6.2 The designer presented the owner's submission, which had been forwarded to the Department prior to the hearing. There were 3 main issues raised by the owner.
- 6.3 The first of these related to the sill flashings, and it was submitted that neither sill trays nor air seals were manufacturer's requirements at the time the windows were installed. Likewise, while flashing tapes were a good option, they were not mandatory. The windows did have full jamb and sill flashings installed. The cladding installer described the method by which the windows were fixed.
- 6.4 The designer and the cladding installer described how the parapet tops had been constructed, which was the second issue raised by the owner. The owner did not wish to install metal cappings over the parapet tops.
- 6.5 Finally, the designer clarified the balcony situation, stating that the east balcony had a 0.5-degree fall, while the portico roof had a 3-degree fall. There is an overflow installed at the portico roof. The designer also referred to the latest E2/AS1 document that showed a 35mm freeboard and compared this with the 40mm freeboard actually installed. The designer was of the opinion that there was no requirement for an overflow to the balcony, as the water would overflow over the balcony edge before it could enter the house. The designer stated that the balcony membrane installer had issued a producer statement and this would be provided to the territorial authority and the Department.
- 6.6 The territorial authority stated that the draft determination had shown that the building was not code compliant. The territorial authority was prepared to work through the issues with the owner to reach a successful conclusion regarding the dispute. The territorial authority would carry out a further inspection and then invite the owner to talk over the issues and work through a "scope of works". Any items that cannot be resolved between the parties would be subject to a further determination. The re-inspection would look at the building as a whole and not just in relation to the cladding. The territorial authority had now revised its requirement that a cavity be installed behind the cladding. It may now accept permanent moisture probes that monitor possible moisture ingress, as a substitute for a cavity.
- 6.7 The cladding installer confirmed that the sill detail prepared by the tribunal represented the window sill details and agreed that any moisture passing down the jamb flashing discharges onto the sill flashing. The designer also clarified the upstand detail to the east balcony.

7 Discussion

7.1 General

7.1.1 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 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.

7.2 Weathertightness risk

7.2.1 In relation to the weathertightness characteristics, I find that the house:

- has 400 mm eaves and some locations where the top storey overhangs the lower storey, which together provide some protection to the cladding areas below them. However, the upper roof parapets do not provide any protection at their locations
- is in a medium wind zone
- is 2 storeys high
- is generally of a reasonably simple shape on plan, but with some complex aspects, and with roofs that have hip and wall to roof junctions
- has one balcony which is partially constructed over a habitable space
- the backs of the polystyrene sheets are grooved and provide a potential for drainage
- has lower level roof spaces that assist in the ventilation of the external wall cavities above them
- has new external wall framing that is likely to be treated to a level that would help prevent decay if it absorbs and retains moisture, but the existing framing is likely to be untreated.

7.3 Weathertightness performance

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

- the cladding being in contact with the ground in several locations

- the inadequate waterproofing to the tops of the high-level roof parapets, and the exposed small area of building wrap on the inside of the parapet at the west elevation
- the cut short head flashings at two window locations;
- the lack of the required 5 mm separation between the sill flashing and the window frame at the majority of the windows
- in relation to the upper balcony:
 - the lack of a metal capping to the top of the upper balcony balustrade, contrary to what is shown on the consented drawings;
 - the unsealed deck tiles around the edge of the balcony
 - the lack of a second drainage outlet.
- The unprotected penetrations through the cladding.

7.3.2 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. These are:

- generally, the cladding appears to have been installed according to good trade practice
- the house has lower level roof spaces that assist in the ventilation of the external wall cavities above them
- there are grooves in the back of the polystyrene panels that can assist in draining any moisture that enters the cladding system
- the extensions to the house have new external wall framing that is likely to be treated to a level that would help prevent decay if it absorbs and retains moisture.

7.3.3 I consider that these factors compensate for the lack of a full drainage and ventilation cavity and can allow the house to comply with the weathertightness and durability provisions of the Building Code, providing corrective measures are undertaken.

7.3.4 Based on the evidence presented at the hearing, I am prepared to accept that the lack of sill flashing tape, sill trays and air seals is offset by the installed jamb and sill flashings. In addition, the owner has now supplied a producer statement in regard to the membrane applied to the balcony and the gutter.

7.3.5 I also draw the parties' attention to the expert's comments regarding the high-level internal roof gutter, and recommend that suitable remedial work be undertaken if, on further examination, this is perceived to be a problem.

- 7.3.6 I note that all elevations of the house demonstrate a moderate weathertightness risk rating using the E2/AS1 risk matrix. The matrix is an assessment tool that is intended to be used at the time of application for consent, before the building work has begun and, consequently, before any assessment of the quality of the building work can be made. Poorly executed building work introduces a risk that cannot be taken into account in the consent stage, but must be taken into account when the building as actually built is assessed for the purposes of issuing a code compliance certificate.

8 Conclusion

- 8.1 I consider that the expert's report establishes there is no evidence of external moisture entering the house, and accordingly, that the monolithic cladding does comply with clause E2 at this time.
- 8.2 However, 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 house are likely to allow the ingress of moisture in the future, the house does not comply with the durability requirements of clause B2.
- 8.3 I also consider that because the faults in the house cladding occur in discrete areas, I am able to conclude that rectification of the identified faults will consequently bring the cladding into compliance with the code. Once the cladding faults listed in paragraph 7.3 have been satisfactorily rectified, this house should be able to remain weathertight and thus comply with both clauses E2 and B2.
- 8.4 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 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.
- 8.5 I emphasise that each determination is conducted on a case-by-case basis. 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.
- 8.6 I decline to incorporate any waiver or modification of the Building Code in this determination.

9 The decision

- 9.1 In accordance with section 20 of the Act, I determine that the house is weathertight now and therefore the cladding complies with clause E2. However, as there are a number of items to be remedied to ensure it remains weathertight and thus meets the durability requirements of the code, I find that the house does not comply with clause B2. Accordingly, I confirm the territorial authority's decision to refuse to issue the code compliance certificate.
- 9.2 I find that once the items of non-compliance that are listed in paragraph 7.3 are rectified to the approval of the territorial authority, together with any other instances of non-compliance that become apparent in the course of rectification, the cladding as installed on the house will consequently comply with the Building Code, notwithstanding the lack of a drainage cavity.
- 9.3 I note that the territorial authority has issued a Notice to Rectify requiring provision for adequate ventilation, drainage and vapour dissipation. Under the Act, a Notice to Rectify can require the owner to bring the house into compliance with the Building Code. The Authority has already found in a previous determination 2000/1 that the Notice to Rectify cannot specify how that compliance can be achieved. I concur with that view. The Notice to Rectify should now be withdrawn and 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 dictate how the defects as described in paragraph 7.3 are to be remedied.
- 9.4 I would suggest that the parties adopt the following process to meet the requirements of paragraph 9.3. 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 an expert, 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.
- 9.5 Finally, I consider that the cladding will require on-going maintenance to ensure its continuing code compliance.
- 9.6 In response to the territorial authority's letter to the Department of 29 July 2005, I consider that I am entitled to determine whether proposed building work complies with the code, and in fact I have done so in this case. However, the question of whether the work has been properly completed and is code compliant requires careful inspection. I do not believe in this case that the territorial authority's inspections meet this standard. I note that the territorial authority's inspection described in the preline building check list of 22 April 2003 passed ground clearances and that two postline checks were passed on 3 May 2003 and 5 July 2003.
- 9.7 The Notice to Rectify issued on 17 August 2004 listed Particulars of Contravention that included:
- floor clearances

- sill gaps
- ground clearances.

9.8 I am disturbed to note that these obvious building defects were not discovered during the preline and postline inspections. They are also issues that are unrelated to the question of a cavity that the territorial authority has raised. Furthermore, the expert has noted other omissions, such as the inadequate waterproofing of the parapet caps and problems with the upper balcony, which are not covered by the Notice to Rectify. It can be seen that the expert's report provides the comprehensive description of the building's outstanding shortcomings that should have been detected before or at the final inspection process and incorporated in the Notice to Rectify.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 16 November 2005.

John Gardiner
Determinations Manager