

Determination 2005/92

Refusal of a code compliance certificate for a building with a “monolithic” cladding system: House 82

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 C Metcalfe (referred to throughout this determination as “the owner”), and the other party is the Waitakere City Council (referred to throughout this determination as “the territorial authority”). The application arises from the refusal by the territorial authority to issue a code compliance certificate for a 7-year old house unless changes are made to its monolithic cladding system.

1.2 I am aware that the territorial authority notified the owner of some 20 items needing to be rectified, and that the applicant did not specify in detail the matter to be determined. Nonetheless it is clear from reading the territorial authority’s Notice to Rectify dated 16 June 2004, that the question to be determined is whether on reasonable grounds the monolithic wall cladding as installed to the 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 . . .”

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.

- 1.4 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.
- 1.5 In making my decision, I have not considered any other aspects of the Act or the building code.

2 PROCEDURE

The building

- 2.1 The building is a detached house situated on a steeply sloping excavated site in a high wind zone in terms of NZS 3604. The house is on three levels, with a basement, main ground floor level and partial upper floor. Construction of the house is conventional light timber frame, with concrete block retaining walls, concrete foundations, and a concrete slab to the part basement, with timber subfloor framing elsewhere. The walls are sheathed in monolithic cladding, with aluminium windows and doors. The low-pitched profiled metal upper level roof has parapets with metal cappings on three sides. The house shape is fairly complex in plan, and the roof includes lower level roofs that provide a number of complex roof to wall junctions. The upper roof parapets form a deep band that projects 300 mm beyond lower walls on three elevations, while there are no eave projections above the lower level roofs. There is a small enclosed deck with monolithic clad balustrades on the upper floor, which is set above living areas below. The two free-draining timber decks on the main ground floor level, have monolithic clad balustrades.
- 2.2 The specification calls for external wall framing to be H1 boric treated, but no other evidence has been provided as to what treatment, if any, has been applied.
- 2.3 The monolithic cladding system is “Harditex”, which incorporates fibre cement sheets fixed through the building wrap directly to the framing timbers and finished with a jointing, textured coating and painting system. The manufacturer’s instructions include details for flashings at various junctions. All coating products and the associated components are supplied by companies approved by the manufacturer.
- 2.4 There is no evidence of warranties or “Producer Statements” for the cladding system.

Sequence of events

- 2.5 The territorial authority issued a building consent on 9 December 1997. There were no specific requirements relating to the cladding attached to this consent.

- 2.6 The territorial authority made various inspections during construction, including preline and gibnail, with construction completed during 1998. No further inspections appear to have been made until the owners requested a Code Completion Certificate in June 2004. The territorial authority carried out a final inspection of the building on 15 June 2004.
- 2.7 The territorial authority wrote to the owner on 19 June 2004, providing a list of 20 items to be completed prior to a further inspection. The territorial authority attached a Notice to Rectify, dated 16 June 2004, to this letter. The “Particulars of Contravention” attached to the Notice required the owner to:
- Provide adequate ventilation to the monolithic cladding and into the wall framing space by means of either a ventilated cavity or alternate approved system; or
 - Remove the monolithic cladding and replace with an approved cladding system...
- 2.8 The territorial authority carried out a further inspection on 4 August 2004, which was noted as “failed” in the inspection “Field Sheet”. Another was carried out on 6 October 2004, which also failed, with the inspection record noting:
- Refer Notice to Rectify. Risk Matrix applied to elevations of dwelling. Result shows dwelling to be high risk therefore cavity required as per E2/AS1. Also items from previous final 15/6/05...
- 2.9 The owner applied for this determination on 24 December 2004.

3 THE SUBMISSIONS

- 3.1 In a letter dated 1 February 2005, the owner responded to the items raised by the territorial authority and included the following points:
- The territorial authority reviewed and approved the plans and specifications, which complied with the code requirements in 1997.
 - The rules have now been changed and the territorial authority is trying to enforce new requirements retrospectively.
 - The inspection of 10 October 2004 found no fault in the house’s weathertightness.
 - The list of 20 items that the territorial authority required to be attended to following the June final inspection have now all been completed.

The owner went on to note:

This situation has cost me 4 sale contracts on my home and the current contract is conditional upon my Code of Compliance being issued. I have found this situation frustrating and depressing and at times non-sensical as I am having to prove the weather tightness of my home and I am not qualified to put this to you.

The owner concluded by noting:

In summary I do not believe it is reasonable and justifiable that my home, which meets all the requirements under a building code, should now be made to conform under new regulations.

3.2 The owner forwarded copies of:

- Specifications and incomplete plans of the building;
- Correspondence with the territorial authority;
- The inspection checklist summary; and
- Statements from the builder and designer.

3.3 In a covering letter to the Department dated 15 February 2005, the territorial authority outlined the events leading up the refusal to issue a Code Compliance Certificate, the changed inspections procedures and the matter for the determination:

In the absence of the additional inspections implemented as a consequence of those changed inspection procedures, and in the absence of a cavity as a first line of defence, the Council does not believe it is able to be satisfied, on reasonable grounds, that the cladding applied to this dwelling will achieve the functional requirements of Clause E2.2 or the functional requirements of Clause E2.3.2, of the Building Code.

3.4 The territorial authority forwarded copies of;

- The building consent documentation;
- The building inspection records; and
- The correspondence with the owner.

3.5 Copies of the submissions and other evidence were provided to each of the parties.

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 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 can 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 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 Department commissioned an independent expert ("the expert") to inspect and report on the cladding. The expert inspected the building on 11 May 2005 and furnished a report that was completed on 23 May 2005. The expert noted that the textured coating application appeared acceptable, and that the windows appeared to be in accordance with the manufacturer's instructions at the time of installation.

5.2 The expert took interior non-invasive moisture readings of exterior walls around all openings and at skirting level throughout the house. No raised moisture levels were detected, and no visible signs of leaks were identified. A further 37 invasive readings were taken at potentially vulnerable areas in exterior walls, and 12 readings over 18% were recorded. These elevated readings may be grouped as follows:

- Below roof parapets: 19%, 23%, 24%, 28%, 29%
- Bottom plates: 22%, 25%
- Inter-storey band: 25%
- Clad balustrades: 20%, 25%, 54%, 60%

Other readings ranged from 8% to 17%. Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure.

5.3 The expert made the following specific comments on the cladding:

- There is cracking at vertical sheet joints at numerous locations, pointing of sheet joints on the north elevation, evidence of past repairs of cracks and temporary repairs with sealants;
- There appears to be no control or relief joints although a number of walls, including one which exceeds 16 metres, are beyond the minimum areas specified by the manufacturer as requiring control or relief joints;
- There are many unsealed penetrations through the wall cladding, none of which appear to be sealed;
- The textured coating does not extend behind fascias or the decorative timber inter-storey bands. The bands have flat tops and cracking has occurred at the wall junction in a number of locations, with evidence of moisture entry;
- Metal roof parapet cappings have no cross fall, and fixings are unsealed;
- The textured coating has been applied after capping installation, resulting in a number of vulnerable junctions;

- A verge flashing over an internal corner starts above the upper roof level, allowing water to pond in the lower level of the adjacent trough;
- There is evidence of sealant repairs to roof flashings at various locations;
- The base of wall cladding above apron flashings has clearance of only 15 mm;
- There appears to be no saddle flashings at balustrade to wall junctions;
- The base of wall cladding over the subfloor space on the east and west elevations is buried below ground level;
- The timber decking butts against the wall cladding, with no drainage gap;
- The rear timber deck has monolithic clad balustrades, with flat tops, to part of the deck. There is no clearance from this cladding to the timber decking. High moisture contents were recorded in the balustrade framing; and
- The stringer supporting the timber entrance walkway has unsealed fixings.

5.4 Copies of the expert's report were provided to each of the parties and both accepted the report.

6 DISCUSSION

General

6.1 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 taken these comments into account in this determination.

Weathertightness risk

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

- is built in a high wind zone;
- is a maximum of three storeys high;
- is reasonably complex in plan and form, with complex roof to wall junctions;
- has parapets to three sides of the upper roof;

- has no eave projections to provide protection to the walls below. However, the high-level parapet projections do provide some cladding protection;
- has an enclosed deck, with clad balustrades, set over habitable space;
- has two attached free-draining decks with clad balustrades;
- has external windows and doors that have aluminium head flashings and purpose made uPVC jamb and sill flashings;
- has monolithic cladding to external walls, which is fixed directly to the framing with no drainage cavity; and
- may have untreated external wall framing, which would provide no resistance to the onset of decay if the framing absorbs and retains moisture.

Weathertightness performance

6.3 I find that the monolithic cladding in general does not appear to have been installed according to good trade practice. As a result, there are a number of identified defects, set out in paragraph 5.3 and in the expert's report, which have contributed to the moisture penetration already evident in many locations in the external walls and balustrades of the house. The main areas of concern are:

- The poorly installed metal parapet cappings;
- The poorly constructed solid balustrades to the rear ground floor deck;
- The lack of textured coating under cappings, fascias, decorative inter-storey bands and other components;
- The lack of control or relief joints in the wall cladding;
- The areas of present and past cracking in the cladding;
- The unsealed penetrations through the wall cladding;
- The abutment of timber deck slats against the wall cladding; and
- The inadequate cladding clearance from ground or paving surfaces.

In addition, the external wall framing is likely to be untreated, and unable to resist the onset of decay if the timber becomes wet.

6.4 I note that the elevations of the house demonstrate a high 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 constructed is assessed for the purposes of issuing a code compliance certificate.

7 CONCLUSION

- 7.1 I am satisfied that the current performance of the cladding is inadequate because it has not been installed according to good trade practice, and is allowing water penetration into wall and balustrade framing at numerous locations at present. In particular, it demonstrates the key defects listed in paragraph 6.3. I have also identified the presence of a range of known weathertightness risk factors in this design. The presence of the risk factors on their own is not necessarily a concern, but they have to be considered in combination with the significant faults identified in the cladding system. It is that combination of risk factors and faults that indicate that the structure does not have sufficient provisions that would compensate for the lack of a drained and ventilated cavity. Consequently, I am not satisfied that the cladding system as installed complies with clause E2 of the building code.
- 7.2 In addition, the building is also required to comply with the durability requirements of clause B2. Clause B2 requires that a building continues to satisfy all the objectives of the building code throughout its effective life, and that includes the requirement for the house to remain weathertight. Because the cladding faults in this building are allowing the ingress of moisture at present, and there is no effective cavity behind the cladding, the house does not comply with the durability requirements of clause B2.
- 7.3 I find that, because of the extent and apparent complexity of the faults that have been identified with this cladding, I am unable to conclude, with the information available to me, that remediation of the identified faults, as opposed to partial or full re-cladding, could result in compliance with clause E2. I consider that final decisions on whether code compliance can be achieved by either remediation or recladding, or a combination of both, can only be made after a more thorough investigation of the cladding. This will require a careful analysis by an appropriately qualified expert. Once that decision is made, the chosen remedial option should be submitted to the territorial authority for its comment and approval. If the territorial authority chooses to reject the proposal, then the owner is entitled to seek a further determination on whether the proposed remedial work will comply with the requirements of clauses E2 and B2.
- 7.4 I note that, once the building has been made compliant with the building code, 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.
- 7.5 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 20 of the Building Act 1991, I hereby determine that the monolithic cladding system as installed does not comply with clauses B2 and E2 of the building code, and accordingly confirm the territorial authority's decision to refuse to issue a code compliance certificate.
- 8.2 I note that the territorial authority has issued a Notice to Rectify requiring provision for adequate ventilation to the monolithic cladding and into the wall framing space. Under the Act, a Notice to Fix can require the owners 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. A new 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 are to be remedied. How that is done is a matter for the owner to propose and for the territorial authority to accept or reject, with either parties entitled to submit doubts or disputes to the Chief Executive for another determination.
- 8.3 The Authority has in the past issued a public warning about the danger to people caused by moisture-induced timber decay in deck and balcony construction. I reiterate these concerns in regard to the structural integrity and safety aspects of the deck balustrade framing, in this house and emphasise the need for a full investigation of their current state, proper rectification and ongoing inspection and maintenance.
- 8.4 Finally, I consider that, once the building is made code compliant, the cladding will require on-going maintenance to ensure it remains compliant with the building code. This is particularly important, as the cladding has now been in place for 7 years.

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

John Gardiner
Determinations Manager