Determination 2005/72

Refusal of a code compliance certificate for a building with a "monolithic" cladding system: House 62

1 THE DISPUTE TO BE DETERMINED

1.1 This is a determination by 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 the two joint owners (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 6-year old extension to a house ("the extension"), unless changes are made to its monolithic cladding system.

1.2 My task in this determination is to consider whether I am satisfied on reasonable grounds that the external monolithic wall cladding as installed ("the cladding"), to the walls of the extension complies with the building code (see sections 18 and 20 of the Act). By "external 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 Authority to the Chief Executive of the Department of Building and Housing.

1.4 This determination refers to the former Building Industry Authority ("the 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 No other aspects of the Act or the building code have been considered in this determination.

2 PROCEDURE

The building

2.1 The building is a lounge extension to an existing single-storey house situated on a level site in a low wind zone in terms of NZS 3604: 1999 "Timber framed buildings". The extension is of conventional light timber frame construction on a piled timber-framed floor. The walls of the building are lined with a monolithic cladding. The extension is of a very simple shape, with the pressed metal tile roof jointed into the existing roofing system. Second-hand aluminium windows and doors have been installed in the extension. A timber-framed close-boarded deck is constructed to two elevations of the extension and this has a metal balustrade fixed to its perimeters. I note that this deck was not detailed on the consent documents, but apart from concerns about the handrail set out in the Notice to Rectify, this addition has not been raised as an issue by the territorial authority. The eaves projections are 450mm wide, plus a 130mm wide attached gutter.

2.2 No evidence has been produced as to the treatment, if any, of the timber in the exterior walls of the extension.

2.3 The external walls of the extension are clad with what is described as monolithic cladding. In this instance it incorporates 7.5 mm thick "Hardiflex" backing sheets fixed through the building wrap directly to the framing timbers and finished with a textured finish, which in turn is finished with an acrylic paint system. No information has been provided as to what jointing, plaster and paint systems have been applied to the backing sheets.

Sequence of events

2.4 The territorial authority issued a building consent on 2 February 1998.

2.5 The territorial authority made various inspections during the course of construction, and passed the "Preline" inspection on 26 April 1999. A final code compliance certificate inspection took place on 29 April 2004. The territorial authority's "Field Sheet" for the latter inspection noted that the building had failed the inspection, and that there were "monolithic cladding NTR issues".

2.6 On 5 May 2004, the territorial authority wrote to the owner stating that there were 3 items of building work requiring attention. One of these noted:

> 3. This building has a Monolithic Cladding system. Therefore a Notice to Rectify will be issued in due course.

2.7 The territorial authority issued a Notice to Rectify, dated 1 June 2004, and the "Particulars of Contravention" were:

> Monolithic cladding systems without a 20 mm cavity, provision for adequate ventilation, drainage, and vapour dissipation will, in the event of leakage and/or the effect of residual moisture, cause irrecoverable damage to the structural elements of the building
>
> You are required to:
>
> - Provide adequate ventilation to the monolithic cladding and into the wall frame space by means of either a ventilated cavity or alternative approved system; or
> - Remove the monolithic cladding and replace with an approved cladding, system; and
> - Lodge with Council an application for and amended building consent and provide all necessary information that may be requested to allow this consent application to be processed."

2.8 The owner applied for a determination on 17 June 2004.

3 THE SUBMISSIONS

3.1 The owner wrote to the Authority on 15 October 2004, stating that suitably qualified builders had carried out the work, and approved materials complying with the building code were used. Since purchasing the property in June 2004, an experienced builder had inspected the extension and found no sign of water damage or poor workmanship, nor any evidence that inferior building materials had been used.

3.2 The owner provided copies of:

- The building plans;
- Some of the consent documentation;
- Some of the territorial authority's inspection sheets; and
- Correspondence with the territorial authority.

3.3 The territorial authority made a submission in the form of a letter, dated 20 October 2004, which confirmed that a building consent had been issued for the cladding and also stated:

> The work was undertaken during the period September 1998 to May 2004.

> Construction of the cladding was not the subject of the changed inspection procedures implemented by this Council as a consequence of a [Named] adjudication.
>
> 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 performance requirements of E2.3.2, of the Building Code…

3.4 The territorial authority also submitted copies of:

- The building consent;
- The Notice to Rectify; and
- Some of the territorial authority's inspection sheets.

3.5 The copies of the submissions and other evidence were provided to each of the parties and neither party made a further response.

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 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 Authority has made the following general observations about acceptable solutions and alternative solutions, which in my view remain valid in this case:

- 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; and
- 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 Authority commissioned an independent expert ("the expert") to inspect and report on the cladding. The expert inspected the building and furnished a report. It

noted that, apart from the overlaid joints on the east elevation, the cladding finish quality was acceptable and there was no evidence of cracking. There were no vertical control joints evident, but the expert was of the opinion that, in accordance with the technical recommendations published by the manufacturer of the backing sheets, such control joints were required to the north elevation wall only. However, this wall only exceeded the recommendations by 600mm, and the two large ranch sliders present in this wall reduced the square metre area of the cladding. The expert cut away a section of the cladding at window jamb location and confirmed the presence of a sealant. This inspection indicated that sealant had been applied prior to installation of the windows. The expert's report made the following specific comments on the cladding:

- The vertical jointing to the cladding on the east elevation has been overlaid some time after the initial installation of the cladding and these areas have not been repainted;
- The timber deck is fixed hard against the cladding; and
- The condition of the aluminium windows and doors is poor, and the thin joint seal at the bottom mitred corners of the west elevation window have failed and allowed the ingress of moisture.

5.2 The expert took moisture readings throughout the extension both at the interior linings and to the exterior of the external walls using a non-invasive meter. Raised moisture levels were recorded at the bottom corners of the west elevation window. The expert then took two further readings with an invasive meter at this window location, and the readings were 28% at the bottom left corner, and 40% at the bottom right corner. Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure. The expert also observed that a slight swelling of the jamb linings at the bottom corners had occurred internally adjacent to the west window.

5.3 Copies of the expert's report were provided to each of the parties and neither party made a response.

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.

6.2 In relation to these characteristics, I find that the extension:

- Has effectively 580mm wide eaves projections that provide good protection to the cladding areas below them;
- Is in a low wind zone;
- Is one storey high;
- Is of a very simple shape on plan;
- Has external windows and doors that have aluminium head flashings and are appropriately sealed at the jambs;
- Has one deck fixed hard against the cladding; and
- Has external wall framing that is not treated and therefore will not prevent decay if it absorbs and retains moisture.

Weathertightness performance

6.3 Generally, the cladding appears to have been installed according to good trade practice and to the manufacturer's instructions, but some items require rectification. These items are:

- The unpainted and overlaid vertical sheet joints of the cladding to the east elevation;
- The provision of a 12mm minimum gap between the deck and the cladding; and
- The bottom mitred joints to the aluminium window on the west elevation.

6.4 Notwithstanding the fact that the backing sheets are fixed directly to the timber framing, thus inhibiting drainage and ventilation behind the cladding sheets, I 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 and to manufacturer's specifications;
- The extension is single storey, is situated in a low wind zone, is of a simple shape and has adequate eaves; and
- The extension has flashed or sealed exterior windows and doors.

6.5 I consider that these factors help compensate for the lack of a drainage and ventilation cavity, and can allow the extension to comply with the weathertightness and durability provisions of the building code.

6.6 I note that one wall of the extension exceeds by some 600mm the length that the manufacturer recommends should contain a vertical control joint. However, as the area of this wall is broken up by two large ranch sliders, and there is no cracking

apparent in the cladding of this wall, which has been in place for 6 years, I consider that no vertical control joint need be inserted.

6.7 The expert notes that the condition of the external windows and doors, particularly at the mitred jambs, is generally poor. Accordingly, I suggest that in addition to the remedial work to the west elevation window already described, the remaining windows and doors be inspected and any defects remedied as required to ensure their continuing durability.

6.8 I note that all elevations of the extension demonstrate a low weathertightness 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.

7 CONCLUSION

7.1 I am satisfied that the current performance of the cladding is not adequate because it is allowing water penetration into the wall framing at one location at present. Consequently, I am not satisfied that the cladding system as installed complies with clause E2 of the building code.

7.2 I find that, because the faults that have been identified with this cladding occur in discrete areas, I am able to conclude that satisfactory rectification of the items outlined in paragraph 6.3, together with any remediation of the external windows and doors, is likely to result in the building being weathertight and in compliance with clauses B2 and E2, notwithstanding the lack of a drained and ventilated cavity

7.3 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.

7.4 I emphasise 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.

7.5 I decline to incorporate any waiver or modification of the building code in its determination.

8 THE DECISION

8.1 In accordance with section 20 of the Building Act 1991 I hereby determine that the cladding system as installed does not comply with clause E2 of the building code. There are also a number of items to be remedied to ensure that the extension remains weathertight and thus meets the durability requirement of the code. Consequently, I find that the extension 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 find that rectification of the items outlined in paragraph 6.3, together with any necessary remediation of the external windows and doors, 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 extension being weathertight and in compliance with clauses B2 and E2, notwithstanding the lack of a drained and ventilated cavity.

8.3 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 extension 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. A new Notice should be issued that requires the owner 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 described in paragraph 6.3, together with any defects found in the external windows and doors 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 of the parties entitled to submit doubts or disputes to the Chief Executive for another determination.

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

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 19 May 2005.

John Gardiner
Determinations Manager