Determination 2005/123

Refusal of a code compliance certificate for a building with a "monolithic" cladding system at 25 Onemana Way, Te Atatu Peninsula – House 107

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 current owner Ms Sesilia Kim, acting through a lawyer, (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 2-year-old house, 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 on all the timber framed external walls and columns of the house ("the cladding"), 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 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 Building Act or the building code.

2 PROCEDURE

The building

2.1 The building is a two-storey detached house situated on a level site in a high wind zone in terms of NZS 3604: 1999 "Timber framed buildings". The house is of conventional light timber frame construction on concrete ground floor slabs, and all the external walls are sheathed with monolithic cladding. The house is of a fairly simple shape but with some complex features, and the pitched roofs are at two main levels, with hip, valley, and wall-to-roof junctions. The eaves and verges have 450mm or 600mm wide projections. An open balcony with a metal balustrade is constructed at the first floor level over a habitable space and is also cantilevered 250mm over the lower wall. A timber-framed monolithic-clad full-height chimney, which is set into the upper-level roof, is situated on the north elevation. A full-height pergola consisting of a pitched roof and monolithic-clad timber-framed gable walls and circular support columns, is constructed over the main entrance.

2.2 The plans note that all external framing is to be H1 LOSP treated. In a fax to the original owner dated 24 July 2003, the timber supplier confirmed that the exterior wall framing was H1 LOSP treated.

2.3 The cladding system to the exterior walls is what is described as monolithic cladding and consists of 4.5mm "Hardibacker" fibre-cement backing sheets fixed directly to the framing over the building wrap, to which 20mm thick, "Riblath" reinforced, solid plaster is applied. The plaster is finished with a 3-coat acrylic paint coating system. I note that the consent plans call for a "Harditex Fine Finish" external cladding system. I have not seen any documentation showing that this amendment has been referred to by the territorial authority.

2.4 Mint Plastering Ltd issued a 5-year "Guarantee" dated 27 May 2003, in respect of the plastering work applied to the cladding system.

Sequence of events

2.5 The territorial authority issued a building consent on 16 January 2003. There were no conditions attached to the consent that referred to the cladding.

2.6 The territorial authority carried out various inspections throughout the construction of the house. The territorial authority passed the pre-line building inspection on 6 May 2003 and the plaster exterior cladding inspection on 9 May 2003. The house did not pass the final building inspections undertaken by the territorial authority on 8 December 2003 and 8 March 2004. The report relating to the 8 December 2003 inspection noted that cracks in the plaster required attention and that an appropriate cavity system was required.

2.7 The territorial authority issued a Notice to Rectify dated 23 March 2004, and the "Particulars of Contravention" required the owner to provide either a ventilated cavity, or remove the cladding and replace with an approved cladding system. The Notice also required all cracks in the cladding to be repaired.

2.8 The previous owner wrote to the Authority on 20 June 2004, noting that the house had been sold but the sale was conditional on a code compliance certificate being issued. The previous owner stated that the minor cracking had been professionally repaired and that the house is sound and weathertight.

2.9 The original owner applied for a determination on 20 June 2004 The determination was transferred to the current owner at a later date.

3 THE SUBMISSIONS

3.1 The original and current owners provided copies of the:

- Building plans;
- Building consent and inspection information;
- Notice to Rectify;
- Correspondence with the territorial authority;
- Detailed cross-section through the base of the cladding;
- Plasterer's guarantee; and
- Fax from the timber supplier of 24 July 2003.

3.2 In a letter to the Department dated 16 July 2004, the territorial authority referred to the building consent, the dates that work commenced, and when the final inspection was carried out. The territorial authority noted that the cladding was installed without a cavity and due to changed inspection procedures and it was unable to be satisfied on reasonable grounds that the cladding was code compliant.

3.3 Copies of the submissions and other evidence were provided to each of the parties. None of the parties responded to the submissions.

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 22 of the Act or section 49 of the Building Act 1991 that cover this cladding. The current Acceptable Solution, E2/AS1, allows for solid plaster systems with fibre cement backing sheets, but requires that they be fixed on battens to create a 20mm cavity between the sheet and the framing. The previous acceptable solution E2/AS1, which was in force when this consent was issued, allowed for mesh reinforced solid plaster to be applied to fibre cement backing sheets that were face fixed to the framing. The cladding is not currently accredited 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 remain valid in this case in my view, 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 Department commissioned an independent expert ("the expert") to inspect and report on the cladding. The expert inspected the building on 13 July 2005 and furnished a report that was completed on 17 July 2005. It stated that despite details that were contrary to good trade practice, the overall impression was that the cladding tradesmen were "sincerely committed to good quality work". The final coat of plaster was of a reasonable standard but with some "waviness" showing up in some lighting situations. The expert removed the plaster at the head and the sill of one window, at an apron flashing, and at a horizontal control joint. I accept that the details exposed by these inspections are representative of other similar locations throughout the building. The expert noted that vertical control joints had been

installed in the plaster. The report made the following specific comments on the cladding:

- There are many small cracks in the plaster, which the expert considered could be caused by shrinkage or inadequate curing;
- The uPVC base mould is installed on top of the backing sheet and in many locations the base of the sheet is unsealed. The mould is not perforated and therefore does not allow for drainage;
- There are no adequate horizontal control joints installed in the cladding and the retrospectively cut horizontal control joints are too shallow;
- There is no drip mould formed in the plaster above the garage doors and head flashings are not installed at these locations;
- There is inadequate sealing between the garage door frames and the cladding;
- A capillary break has not been formed between the base of the cladding and the concrete slab adjacent to the main garage door;
- The base of the cladding is in contact with the paving adjacent to the smaller garage;
- The ends of the head flashings to the external joinery units are buried in the plaster and the mesh is close to the surface of the plaster at these locations;
- There are no upturns to the ends of the external joinery unit sill flashings;
- The ends of some gutters are buried in the plaster;
- The ends of the apron flashings are ineffectively finished at some locations;
- The deck nib wall is in direct contact with the cladding and the balustrade fixings into the nib may not be properly sealed;
- There is no overflow installed to the balcony deck gutter;
- The chimney cap flashing details are not adequate;
- The chimney plaster is too close to the internal roof gutters;
- There is no flashing installed over the meter box;
- Some penetrations are ineffectively sealed; and
- There is a large hole through the plaster at the TV aerial connection.

5.2 The expert carried out a series of moisture tests to the interior of the house using a non-invasive meter. These were followed by further invasive readings through the exterior of the plaster. The following invasive readings over 18% were recorded:

- 20% at the west elevation;
- 19% and 20% at the north elevation; and
- 19%, 20%, 21% and 22% at 2 locations on the east elevation.

Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure. The expert noted that the readings were taken after a period of prolonged rainfall.

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

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 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 taken these comments into account in this determination.

Weathertightness risk

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

- Has generally 450mm eaves and verge projections, which together with the balcony cantilever and the roofed pergola, provide protection to the cladding areas below them;
- Is in a high wind zone;
- Is maximum two storeys high;
- Is of a fairly simple shape on plan, but with some complex features, and with roofs having hip, valley and wall-to-roof junctions;
- Has one high-level open balcony that is constructed over a habitable space; and
- Has external wall framing that is likely to be treated to a level that would help prevent decay if it absorbs and retains moisture.

Weathertightness performance

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

- The many small cracks in the plaster;
- The un-perforated uPVC base mould being installed on top of the backing sheet and the unsealed base of the sheets;
- The lack of adequate horizontal control joints installed in the cladding and the retrospectively shallow cut horizontal control joints;
- The lack of a head flashings and a drip mould to the plaster above the garage doors;
- The inadequate sealing between the garage door frames and the cladding;
- The lack of a capillary break between the base of the cladding and the concrete slab adjacent to the main garage door;
- The base of the cladding being in contact with the paving adjacent to the smaller garage;
- The ends of the head flashings to the external joinery units being buried in the plaster and the mesh being close to the surface of the plaster at these locations;
- The lack of upturns to the ends of the external joinery unit sill flashings;
- The ends of some gutters being buried in the plaster;
- The ineffectively finished ends of the apron flashings at some locations;
- The deck nib wall being in direct contact with the cladding and the questionable sealing of the balustrade fixings into the nib;
- The lack of an overflow to the balcony deck gutter;
- The inadequate chimney cap flashing details;
- The chimney plaster being too close to the internal roof gutters;
- The lack of a flashing over the meter box;
- Some ineffectively sealed penetrations; and
- The large hole through the plaster at the TV aerial connection.

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:

- The cladding appears to have been installed according to reasonable trade practice;
- The house generally has 450mm eaves and verge projections, which together with the balcony cantilever and the roofed pergola, provide protection to the cladding areas below them; and
- The house has external wall framing that is likely to be treated to a level that would help prevent decay if it absorbs and retains moisture.

I find consider that these factors help compensate for the lack of a drainage and ventilation cavity and can assist the house to comply with the weathertightness and durability provisions of the building code.

6.5 I note that all elevations of the building demonstrate a medium 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 monolithic cladding on the building is not adequate because it is allowing water penetration into the building at several locations, which could affect the cladding. Consequently, I am not satisfied that the cladding system as installed on the building complies with clause E2 of the building code.

7.2 In addition, the building also is 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 building to remain weathertight. Because the monolithic cladding faults on the building have already allowed the ingress of water, or will allow the ingress of moisture in the future, it does not comply with the durability requirements of clause B2 of the building code.

7.3 I consider 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 is likely to result in the building being weathertight and in compliance with clauses B2 and E2.

7.4 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, repainting, replacing sealants, and so on.

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 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 cladding system as installed on the building does not comply with clause E2 of the building code. There are also a number of items to be remedied to ensure that it remains weathertight and thus meet the durability requirement of the code. Consequently, I find that the building 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 to the approval of the territorial authority, along with any other faults that may become apparent in the course of that work, will consequently result in the house being weathertight and in compliance with clauses B2 and E2.

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 fix can require the owner to bring each Unit into compliance with the building code. The Building Industry Authority had 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 described in paragraph 6.3 are to be remedied. That is for the owner to propose and the territorial authority to accept or reject.

8.4 I would suggest that the parties adopt the following process to meet the requirements of clause 8.3. 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. As indicated earlier in this determination, the Chief Executive might already have decided upon some of the issues that may be raised by the territorial authority in its notice to fix, including the territorial authority's requirement, if any, for a ventilated and drained cavity or equivalent.

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

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 15 August 2005.

John Gardiner
Determinations Manager