Determination 2005/93

Refusal of a code compliance certificate for a building with a "monolithic" cladding system: House 83

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 one of the joint-owners (referred to throughout this determination as "the owner"), and the other party is 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 I am aware that the territorial authority notified the owner of more than 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 letter to the owner dated 8 December 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 partially excavated steeply sloping site in a medium wind zone in terms of NZS 3604. The house is on two levels, with basement bedrooms, bathroom and family areas, and upper floor master bedroom, ensuite, living, dining and garage areas. The front of the house is one storey high and the rear is two storeys, with a free-draining timber deck attached to the upper level. Construction of the house is conventional light timber frame, with concrete block retaining walls, a concrete slab and foundations to the part basement floor, and treated timber piles supporting the remaining upper level. Windows and doors are aluminium, the roof is of corrugated steel and the walls are sheathed in monolithic cladding. The house shape is fairly complex in plan and form, with the curved roof broken into varying levels and incorporating a number of complex roof to wall intersections. Verge projections are 150 mm, while eaves are 400 mm overall.

2.2 The drawings call for untreated timber to be used for exterior wall framing, and the expert commissioned by the Department is of the opinion that the framing is untreated. The owner has supplied copies of timber invoices indicating that H3 tanalised timber has been used for the deck framing of the house.

2.3 The cladding system is what is described as monolithic cladding. The cladding is EIFS "Insulclad", which incorporates 40 mm thick polystyrene backing sheets fixed through the building wrap directly to the wall framing and finished with a proprietary mesh reinforced plaster system. The system includes purpose-made flashings to windows, edges and other junctions.

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 15 November 2001, based on a certificate provided by a building certifier dated 2 November 2001.

2.6 The building certifier made various inspections during the course of construction, including prior to lining installation and following lining installation, with the exterior linings approved on 2 April 2002. The last inspection, for drainage and stormwater, appears to have taken place on 14 May 2002, and the certifier's inspection record notes all final inspections as "pending". The building certifier returned all documents to the territorial authority on 26 February 2004. The present owner entered into an agreement to purchase the house on 2 November 2004.

2.7 The territorial authority undertook a final inspection of the building on 26 November 2004, which noted a number of outstanding items including the requirement for a further cladding inspection.

2.8 Following a site cladding inspection on 1 December 2004, the territorial authority wrote to the owner on 8 December 2004 advising that it was unable to issue a code compliance certificate as it could not be satisfied, on reasonable grounds, that the monolithic cladding would comply with clauses E2 and B2 of the building code. The territorial authority described its concerns in regard to weathertightness and durability in regard to monolithic cladding systems and identified a number of risk factors for the house. The territorial authority also identified a number of engineering defects, together with outstanding producer statements and engineering certificates.

2.9 In regard to the cladding, the territorial authority noted the following defects:

- Deck wall plate bottom Z flashings to be installed as per manufacturers details.
- Cladding not to be in contact with concrete ramp.
- Down pipe and light fixings to be sealed in an approved manner.
- Timber decking and retaining posts to be clear of cladding.
- Paint coatings to be applied at end of spoutings, behind decking boards and deck posts.
- Saddle flashings required to barge flashings.
- Side roof apron flashing lapped wrong way.
- Install kick outs to apron flashing.
- Repair leaking spouting.

The territorial authority went on to say:

> If you still wish to seek a Code Compliance Certificate, you may request a determination from the Department of Building and Housing as per Section 17 of the Building Act 1991, to determine the following compliance requirements.
>
> 1. Compliance of the installed cladding system with the relevant clauses of the New Zealand Building Code.
>
> Information and application forms are available from…

2.10 The territorial authority did not issue a Notice to Rectify as required under section 43(6) of the Act.

2.11 The owner applied for this determination on 25 February 2005.

3 THE SUBMISSIONS

3.1 The owner forwarded copies of:

- The plans of the building;
- Some of the building inspection records;
- The correspondence with the territorial authority; and
- Various producer statements and other statements.

3.2 In a covering letter to the Department dated 1 March 2005, the territorial authority outlined the events leading up the refusal to issue a Code Compliance Certificate and noted the matters of doubt for the determination as:

> In regards to this application for a determination, specifically in this case the matter of doubt is:
>
> - Whether the installed cladding system complies with clauses B2.3.1 and E2.3.2 of the Building Code.

The territorial authority also referred to structural and drainage issues beyond the scope of the owner's application for this determination, which is restricted to matters involving wall and roof claddings.

3.3 The territorial authority forwarded copies of;

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

3.4 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 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 Department commissioned an independent expert ("the expert") to inspect and report on the cladding. The expert inspected the building on 12 May 2005 and furnished a report that was completed on 16 May 2005. The expert noted that the finish to the cladding appeared to have been installed satisfactorily, and the doors and windows have been fitted with aluminium head flashings.

5.2 The expert removed a small section of the plaster at the jamb to sill junction of a window to examine the flashings and noted that purpose made uPVC jamb and sill flashings have been used. A section of internal lining was also removed, and the expert noted that no sill trays or flashing tape has been installed. The expert found no evidence of water entry associated with the windows.

5.3 The expert took non-invasive moisture readings at interior linings of exterior walls throughout the house. All readings were found to be at an acceptable level. Two further invasive moisture readings were taken through external wall claddings, which recorded at levels of 20% and 22%. Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure.

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

- The timber beams and stringers supporting the deck are embedded into the EIFS cladding. Moisture readings of wall framing below this area were recorded as 20% and 30%, indicating water entry into the wall. The skirting and carpet edging in an adjacent bedroom showed signs of moisture damage, and lime leaching from the plaster above the door beneath the deck was evident;
- The spaced timber decking is finished hard up against the cladding plaster, with no gap to allow drainage;
- There is no clearance from the concrete of the driveway to the base of the cladding. However, the driveway is suspended over a crawl space and slopes away from the cladding; and there is no sign of water entering the wall;
- The curved roof above the entrance is finished poorly, with the roofing edges unsupported and gaps in the roof underlay at the gutter, which allow water entry as confirmed by water staining of the purlins;

- The roof to wall junction at the end of the southern roof verge is missing sealant;

- The top of the curved roof cladding has insufficient fall in various areas, but there is no evidence of water entry associated with the roof; and

- The ends of the apron flashings at roof to wall junctions lack kickouts.

5.5 Although the expert's report made no comment about it, a photograph in the report clearly showed an un-filled hole in the cladding at a junction of the wall with the southern roof.

5.6 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 medium wind zone;

- is a maximum of two storeys high;

- is fairly complex in plan and form;

- has verge projections of 150 mm, and eaves of 400 mm overall;

- has one free-draining deck over open space;

- has external windows and doors that have aluminium head flashings and purpose made uPVC jamb and sill flashings;

- has monolithic cladding which is fixed directly to the framing with no drainage cavity; and

- has untreated external wall framing that will offer no resistance to the onset of decay if the framing absorbs and retains moisture.

Weathertightness performance

6.3 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 5.4 and in the expert's report as being:

- The embedding of deck framing into the wall cladding;
- The lack of a drainage gap between timber decking and the EIFS plaster;
- The inadequate weatherproofing at the edge of the roof over the entry;
- The lack of adequate sealing of verge to wall junctions; and
- The inadequate treatment of the ends of apron flashings.

I also note the territorial authority's concerns regarding:

- The down pipe and light fixings, and agree that these must be adequately sealed;
- The leaking spouting, and agree that repairs are required; and
- The incorrect lapping of the side roof apron flashing, and agree this is inadequate.

Further, I note the photographic evidence (in the expert's report) of a hole in the cladding.

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 do not accept that the lack of a drainage and ventilation cavity in itself prevents the house from complying with the weathertightness and durability provisions of the building code.

6.5 I note the expert's comments regarding:

- the lack of clearance near the entry and garage doors, and accept that these areas are well drained, over sub-floor spaces and show no evidence of water entry; and
- the lack of roof flat in some areas of the curved roof, but accept that there is no evidence of water entry associated with the roof.

6.6 I acknowledge the territorial authority's concerns regarding:

- the continuity of paint coatings behind gutter ends, but consider that, in this case, the continuity of the polystyrene sheets and plaster should prevent moisture entry;

- the lack of saddle flashings at barge flashings, but accept that, if sealed, well-maintained and currently weathertight, the junctions should continue to prevent water entry; and

- the structural and drainage defects, but consider that these are beyond the scope of this determination, which is restricted to issues in regard to the cladding.

6.7 I note that the elevations of the house demonstrate a low to medium 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 not adequate because it is allowing water penetration into the wall framing at several locations at present. 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 likely to allow the ingress of moisture in the future, the house does not comply with the durability requirements of clause B2.

7.3 I consider that, because the faults that have been identified with the cladding system 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 remaining weathertight and in compliance with clauses B2 and E2, notwithstanding the lack of a ventilated cavity.

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, 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 clause E2 of the building code. There are a number of items to be remedied to ensure that the house becomes and remains weathertight and thus meets the durability requirements of the code. Consequently, I find that the house 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, is likely to result in the house being weathertight and in compliance with clauses B2 and E2, notwithstanding the lack of a ventilated cavity.

8.3 I note that the territorial authority has not issued a Notice to Rectify. A Notice to Fix should now 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 of the parties entitled to submit doubts or disputes to the Chief Executive for another determination.

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

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

John Gardiner
Determinations Manager