

Determination 2005/162

Refusal of a code compliance certificate for a house with a “monolithic” cladding system at 208 Rocky Cutting Road, RD5, Tauranga – House 132

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 Kingsland Family Trust (“the previous owner”), who was the owner at the time the application was made. The new owners are H and D Spee (“the owner”). The other party is the Western Bay of Plenty District Council (“the territorial authority”). The application arises because no code compliance certificate was issued by the territorial authority for a 7-year-old house and subsequent alterations and additions to it (“the property”).

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 property (“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 . . . ”

- 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 Building Act or the Building Code.

2. Procedure

2.1 The building

- 2.1.1 The building work as completed comprises an altered and extended two-storey detached house that is situated on a slightly sloping site in a high to very high wind zone in terms of NZS 3604: 1999 “Timber framed buildings”. The house is of conventional light timber frame construction on a timber-framed piled ground floor and the garage and stable blocks are of a similar construction but with concrete ground floor slabs. All the external walls are sheathed with monolithic cladding. I note that the garage and stable outbuildings that formed part of the second building consent have not yet been constructed.
- 2.1.2 The house is of a fairly complex shape and the pitched roofs have hip, valley, and wall-to-roof junctions. Most of the eaves have 300mm or 500mm wide projections. The house has four open timber-framed balconies situated at the first floor level. Two of these are at the west and southwest elevations. They are supported by timber posts and beams and have timber balustrades. A third balcony is situated at the east elevation and this has a metal and glazed balustrade and is accessed by a set of stairs with a timber handrail. A fourth small cantilevered balcony is constructed over the pool area deck and this has a metal and glass balustrade. Close-boarded timber-framed ground-floor decks are situated under the west and southwest balconies and adjoining the pool area. A portico is constructed adjoining the living room area and this comprises a ground floor close-boarded deck, a first floor timber-framed balcony with a metal and glazed balustrade, and a pitched roof. The deck and roof are supported on timber-framed monolithic-clad columns and beams and the roof has a monolithic clad gable end wall under it. A single-storey pergola consisting of a pitched roof and monolithic-clad timber-framed columns and beams is constructed over the main entrance.
- 2.1.3 The garage and stable blocks are of simple shapes with pitched roofs that have 500mm wide eaves projections and 300mm wide verge projections.

2.1.4 I have not been provided with any evidence as to the treatment, if any, of the external wall framing.

2.1.5 The cladding system to the exterior walls of the property is what is described as monolithic cladding and consists of 7.5mm fibre-cement backing sheets fixed directly to the framing over the building wrap, to which textured plaster and paint systems are applied. The horizontal sheet joints are fitted with PVC “H” section mouldings and these are also covered with textured finished and painted polystyrene bands. Similar bands have been planted adjacent to some of the jambs of the external joinery units and to the base of some wall elevations. There are also shaped polystyrene thicknessings at the gable ends of the house.

2.2 Sequence of events

2.2.1 The territorial authority issued two building consents for the project. The first of these was issued on 1 May 1998 for the original dwelling and the second on 25 August 1999 for subsequent alterations and additions to that dwelling. The conditions attached to the consents noted that the exterior joinery units were to be flashed correctly.

2.2.2 The territorial authority carried out various inspections throughout the construction of the property. The territorial authority passed the pre-line building inspection for the original dwelling on 20 October 1998.

2.2.3 The dwelling was substantially complete by the end of 2004. It was suggested by the territorial authority that in order to obtain a code compliance certificate, the previous owner needed to arrange for an independent inspection.

2.2.4 The previous owner then arranged for a visual inspection of the property by a firm of house inspectors. This firm produced an undated “Property Inspection Report”, which listed certain exterior items that required repair and/or maintenance. The items relating to the cladding can be summarised as being the:

- lack of a capping to the bottom edge of the polystyrene cladding
- insufficient sealing of cladding penetrations
- lack of textured coatings to some areas of the cladding
- ineffective sealing around the exterior joinery units
- insufficient clearance between the internal floor levels and the timber decking
- requirement for regular maintenance of the cladding.

2.2.5 The report noted a high moisture reading at the master bedroom ensuite shower area, which might be attributable to the operation of the shower.

2.2.6 The territorial authority did not issue a Notice to Rectify.

2.2.7 The previous owner applied for a determination on 28 November 2004.

3. The submissions

3.1 The previous owner provided copies of the:

- building plans
- “Property Inspection Report”.

3.2 In a letter to the Department dated 14 February 2005, the territorial authority noted that it had not received a request for, nor had it declined to issue, a code compliance certificate. The territorial authority noted that two separate building consents had been issued for the project and that the building work had been “ongoing” for some time. The “Harditex” cladding had been exposed to the weather for some months and the territorial authority could not verify the previous owner’s assertion that a sealant had been applied to the sheets as a protective measure.

3.3 The territorial authority provided copies of:

- the building plans
- some consent and inspection documentation.

3.4 Copies of the submissions and other evidence were provided to each of the parties. Neither the previous owner nor the territorial authority made any further submissions in response to the submissions of the other party.

4. The relevant provisions of the Building Code

4.1 The dispute for determination is whether I can be satisfied that the cladding complies with clauses B2 and E2 of the Building Code (First Schedule, Building Regulations 1992) so that a code compliance certificate can be issued for the property.

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 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 property on 25 July 2005 and furnished a report that was completed on 8 August 2005. It noted that there is a general lack of attention to details at the junctions of the cladding and other materials and the finish of the textured surfaces, which are unevenly coated, is substandard. However, there is no cracking evident in the cladding. The expert removed the cladding at various locations to expose details at the external joinery units and at various joist and junctions. I accept that the details exposed by these inspections are representative of other similar locations throughout the building. The report made the following specific comments on the cladding:

- some of the vertical control joints that are inserted in the cladding are poorly detailed and there are insufficient vertical control joints installed in some walls
- the edges of the fibre-cement sheets are not sealed at some locations
- the cladding and some of the polystyrene bands are carried down to the finished ground levels and onto the boarding of the decks
- there is insufficient clearance between the base of the cladding and the apron flashings
- the lower polystyrene bands are not fully sealed onto the fibre-cement, they lack base edge moulds, and there are cracks evident at these locations
- there are no jamb or sill flashings installed to the large two-section curved head windows and the intermediate head flashing only extends 15 mm past the window jambs
- the ends of the flashings to the smaller curved head windows are not returned and deliver water into the cladding
- the ends of the apron flashings lack kick outs
- the deck ribbon plates are fixed directly to the cladding, no flashings are installed at these locations, and the ranch slider door frames are hard down onto the boarding
- the balcony decks hold water and the outlets are poorly detailed. The butyl-rubber membranes are loose and the ranch slider door frames are hard down onto the membrane
- there are gaps and poor detailing to the gable end details
- some penetrations are ineffectively sealed.

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

- 20%, 21%, 22% (at 5 locations), 25%, 26%, 27%, 40% (at 2 locations), 45%, 46% (at 2 locations), 48%, 49%, 50% (at 2 locations), and 56%, at the ground floor
- 40%, 50% (at 2 locations), and 66% at the first floor.

5.3 These were followed by further invasive readings where cladding or other elements had been removed and these were:

- 22% in the foyer and adjoining the west deck, 24% at the large east elevation window, 30% in the northwest bedroom and adjoining the west deck, and 40% adjoining the east balcony.

5.4 Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure. The expert also noted that there were locations where the flooring, wall framing and cladding substrate are wet and mould is evident. The jamb liners of one ranch slider are also rotting.

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

5.6 The owners responded in a document received 14 September 2005. They had reviewed the report and in essence found it sound but were concerned that problem areas with high moisture readings identified throughout the house were seen by the expert as indicating that similar areas in the house were likely to leak, despite there being no high moisture readings in those similar areas to confirm that supposition. The owners provided a schedule of findings, which included proposals to fix the faulty areas.

6. Discussion

6.1 General

6.1.1 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 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 considered these comments in this determination.

6.2 Weathertightness risk

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

- has generally 300mm to 500mm wide eaves extensions that provide good protection to the cladding areas below them

- is two storeys high
- is in a high to very high wind zone
- is of a fairly complex shape on plan
- has four first floor balconies, three ground floor decks, and a portico comprising a deck and a balcony
- has external wall framing that is likely to be untreated, so is ineffective in resisting decay if it absorbs and retains moisture.

6.3 Weathertightness performance

- 6.3.1 I find that the 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 5.1 and in the expert's report, which have contributed to the high levels of moisture penetration already evident in many locations in the external walls of the property. There is also evidence of mould and rot at some locations.
- 6.3.2 The expert has recorded high moisture contents where the balconies adjoin the house. I recommend that the territorial authority fully investigate the condition of the balconies to establish whether any remedial work should be undertaken to ensure their continuing structural viability.
- 6.3.3 I note that one elevation of the altered building demonstrates a low weathertightness risk rating, one elevation demonstrates a medium risk, and the remaining two elevations demonstrate a high risk 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 inadequate because it has not been installed according to good trade practice, and is allowing water penetration into the framing of the property at several locations at present. In particular, it demonstrates the key defects listed in paragraph 5.1. 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 structures do 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 buildings are 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 property to remain weathertight. Because the cladding faults in the property are allowing the ingress of moisture at present, it 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 re-cladding, or a combination of both, can only be made after a more thorough investigation of the cladding. This will require a careful analysis by a competent and suitably qualified person. This finding is made, having given due consideration to the owner's further report dated 14 September 2005, as referred to in paragraph 5.6.
- 7.4 I note that, once the property 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, repainting, replacing sealants, and so on. As the external wall framing is not treated, periodic checking of its moisture content should be carried out as part of normal maintenance.
- 7.5 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 Act, I hereby determine that the monolithic cladding system as installed to the property does not comply with clauses B2 and E2 of the Building Code, and accordingly confirm that the territorial authority should refuse to issue a code compliance certificate.
- 8.2 I note that the territorial authority has not issued a Notice to Rectify. The territorial authority should now issue a notice to fix, and the owner is then obliged to bring the property up to compliance with the Building Code. It is not for me to decide directly how the defects are to be remedied and the cladding brought to compliance with the Building Code. That is a matter for the owner to propose and for the territorial authority to accept or reject.
- 8.3 I would suggest that the parties adopt the following process to meet the requirements of paragraph 8.2. Initially, the territorial authority should issue the notice to fix,

listing all the items that the territorial authority considers non-compliant. The owner should then produce a response to this in the form of a technically robust proposal (possibly incorporating the schedule of findings submitted by the owner in response to the experts report – see paragraph 5.6), produced in conjunction with a competent and suitably qualified person, 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.

- 8.4 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 9 December 2005.

John Gardiner
Determinations Manager