Determination 2005/128

Refusal of a code compliance certificate for a building with a "monolithic" cladding system at 9 Glencarron Place, Bethlehem, Tauranga – House 109

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 K Williams (referred to throughout this determination as "the owner"), and the other party is the Tauranga 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 5-year old house constructed from a proprietary kitset, unless changes are made to its monolithic cladding systems.

1.2 The question to be determined is whether on reasonable grounds the monolithic wall cladding as installed to the external walls and columns 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 work consists of a two-storey "kitset" house, situated on a slightly exposed sloping site. The external walls are of conventional light timber frame construction built on concrete block foundation walls, and are sheathed with monolithic cladding. The house is generally of a reasonably simple shape, and the pitched roofs are set at two levels, with several wall to roof junctions. There are no eaves or verge projections, but there are upper floor, deck, and entrance roof projections. The windows on the west elevation have planted textured finished polystyrene band surrounds.

2.2 The house has a cantilevered balcony at the upper floor level that is also partially constructed over a habitable space, and this has a timber-framed balustrade. A timber framed slatted deck runs along two elevations at ground floor level. A low-pitched roof is constructed over the main entrance and this is supported on two circular monolithic clad columns, and is surrounded by parapet walls. I note that on the original plans the cantilevered upper balcony was shown as being supported on timber columns. The owner has supplied details if this change, but there has not been any documentation supplied to show that the territorial authority accepted this amendment.

2.3 I have not received any evidence as to the treatment, if any, of the timber purchased to construct the external wall or deck framing.

2.4 The timber-framed external walls of the house that are the subject of this determination are clad with what is described as a monolithic cladding. In this instance it incorporates 7.5mm thick "Harditex" sheets fixed through the building wrap directly to the framing timbers, finished with a spray textured application and a further paint system.

2.5 The original cladding coating applicator issued a "Producer Statement" dated 25 January 2005, in relation to the jointing system applied to the backing sheets.

Sequence of events

2.6 The territorial authority issued a building consent on 17 November 2000.

2.7 According to the owner, the original cladding coating applicator was dismissed for lack of progress after applying the coating base coat. A second applicator was then appointed to complete the coating.

2.8 Bay Building Certifiers Ltd, ("the building certifier"), carried out various inspections on behalf of the territorial authority during the construction of the house. A final building inspection undertaken on 8 August 2002 failed the house for several reasons, including the lack of a producer statement for the cladding textured finish.

2.9 The owner wrote to Plaster Systems Ltd on 7 July 2004, stating that the owner required verification of the materials and system used for the cladding textured coating. The owner listed the materials purchased and noted that a company representative had visited the site on two occasions when the jointing system was being applied. The owner also set down the background to the finalisation of the coating application.

2.10 On 29 July 2004, the building certifier wrote to the owner listing 9 items relating to the cladding that required resolution before a code compliance certificate could be issued. Alternatively, the owner could get verifications from James Hardie, the manufacturer of the textured coatings, and the window manufacturer, as to the compliance of their respective products.

2.11 On 4 August 2004, the metal window supplier wrote to the owner stating that the flashings supplied for the house met the building code requirements of 2001 to 2002 when delivered, and still met the requirements as at the date of the supplier's letter.

2.12 The owner e-mailed the building certifier on 17 August 2004, stating that James Hardie were prepared to sign that their products used on the house had been properly installed. The owner also listed items of rectification that would be carried out, and reported that James Hardie had no problems concerning the deck being in contact with the cladding, nor with the ground clearances. The owner also queried whether, if he supplied product verification from James Hardie and the window manufacturer, a code compliance certificate would be issued?

2.13 On 31 August 2004, the building certifier wrote to the owner, stating that once the 9 issues raised in the 29 July 2004 letter had been resolved to the building certifier's satisfaction, a code compliance certificate would be issued.

2.14 On 20 September 2004, James Hardie Ltd faxed the building certifier, stating that there were a number of cracks at the backing sheet joints, there were no control joints evident, and some remedial work was required. Advice had also been given as to how and where to place control joints. In a further fax dated 18 October 2004, James Hardie noted that the owner should get a code compliance certificate when the

control joints had been inserted, and the cracks and ground clearances at the rear of the house remedied.

2.15 The building certifier wrote to the owner on 20 October 2004, stating that the information provided by James Hardie and the window manufacturer was not sufficient to ensure the issuing of a code compliance certificate. The building certifier required confirmation that the products supplied were installed in accordance with the building code. The issue with the windows not only involved the head flashing, but also the drainage from below the windowsill.

2.16 The owner wrote to the building certifier on 9 November 2004 expressing disappointment that he had to use the determination process regarding the cladding issues. The owner discussed certain of the issues that had arisen in regard to the cladding and noted that after 4 years there was no evidence of moisture ingress. Invasive moisture testing had not revealed any moisture readings above 14%. The owner also noted that after the final inspection, the building certifier had not raised any cladding issues, other than for the provision of a producer statement for the textured coating.

2.17 The building certifier wrote to the owner on 11 January 2005, stating that a code compliance certificate would not be issued because the cladding was not placed on a drained cavity, and that a small parapet area required further water proofing. I note with surprise that the building certifier in this letter states that the Authority published changes to the building code specifying that the type of cladding used on the house should be placed on a drained cavity. While the Authority did publish the Approved Document E2/AS1 in February 2005 that required a cavity for monolithic claddings in higher risk situations, this was not a change in the building code. In addition, I note that the systems described in E2/AS1 describe only one method of complying with the code and are not mandatory. I am surprised that the building certifier was not aware of this fact.

2.18 Plaster Systems Ltd faxed the owner on 19 January 2005, attaching the jointing "Producer Statement" from the original cladding coating applicator. The company stated that, as it did not view the application of the jointing, it could not issue a statement regarding the original coating applicator's workmanship or procedures. The company also noted that at the time of construction it was not necessary to use licensed applicators to apply jointing systems over fibre-cement sheeting.

2.19 James Hardie Ltd faxed the owner on 24 January 2005, stating that control joints had been cut in the cladding at the required positions and sealed with a flexible sealant in accordance with the Harditex fixing recommendations.

2.20 The owner applied for a determination on 16 January 2005.

3 THE SUBMISSIONS

3.1 The owner provided a detailed submission to the Department that set out the history of the construction process, and described the dealings with the building certifier that are covered in the correspondence listed above.

3.2 The owner forwarded copies of:

- the plans
- some of the consent and inspection documentation
- the correspondence with the building certifier and the manufacturers
- the original coating applicator's "Producer Statement".

3.3 The building certifier forwarded copies of:

- one of the inspection documents
- the correspondence with the owner.

3.4 The owner forwarded a copy of a letter to the owner from a firm of civil and structural engineers dated 15 January 2001 that provided details of the specific design that changed the upper balcony into one that was cantilevered.

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 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 must now 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 appointed an independent expert ("the expert") to investigate the cladding. The expert visited the property on 24 May 2005, and furnished a report that was completed on 30 May 2005. The report noted that the textured coating and painting is evenly applied and there is no evidence of bare/over-applied patches. The general quality of the carpentry, texture and painting is satisfactory. The cladding thicknessing around the windows and doors at the west elevation, in the opinion of the expert, give a secondary protection against water penetration The expert removed a small section of cladding from a window jamb/cladding intersection, and I am prepared to accept that this example is typical of the remaining similar situations. The expert made the following specific comments on the cladding:

- there are no vertical control joints as required by the manufacturer's recommendations inserted in the cladding to several walls that exceed 5.4 metres in length
- widespread vertical hairline cracks are evident at the north, east, and west elevations
- not all the backing sheets are installed in accordance with the manufacturer's instructions
- almost the whole of the perimeter of the base of the cladding lacks adequate ground clearance
- the cladding behind the metal fascias are not coated, the fascia coverage over the cladding is inadequate, and no capillary gap is provided at these locations
- there are no "kick out" returns fitted to the ends of the apron flashings
- the top of the entrance roof parapet wall is flat and lacks adequate weather protection
- the flashing installed between the cantilevered balcony and the wall cladding is inadequate
- the deck threshold height at the cantilevered balcony is too narrow
- the fixings through the timber balcony balustrade capping are not effectively sealed
- there are no sill flashings installed to the external windows and doors, no inseal strip has been installed between the jamb overlap and the cladding, and these is no evidence that a bead of silicone was applied before installing the units
- the ends of the spoutings and fascias at the east elevation are buried into the cladding.

5.2 The expert carried out a series of non-invasive moisture tests to the interior of the external walls, and no elevated readings were recorded. Invasive tests were also taken at 7 "at risk" external locations. The higher recorded readings were:

- 20.9% below the living room window
- 20.9% at the top of the balcony balustrade
- 21.8% at a bottom plate of the garage.

Moisture levels above 18% at the exterior of the external walls after cladding is in place generally indicate that external moisture is entering the cladding.

5.3 Copies of the expert's report were provided to each of the parties. The territorial authority did not make a response and the owner wrote to the Department on 10 June 2005. The owner noted that the rainfall had been particularly heavy about the time that the expert carried out the inspection. The owner commented on the aspects of the house construction and its location and considered the cracking in the cladding to be minor. The owner referred to a previous determination that considered the question of control joints. The owner was prepared to install a parapet flashing at the main entrance porch, amend the deck flashing and carry out the other recommended remedial work if required to do so. The owner had already carried out some work to alleviate the ground clearance issues and was prepared to continue this process. The owner considered that the deck balustrade capping was properly installed.

6 THE HEARING

6.1 The owner requested a hearing, which was held before a tribunal consisting of the Determinations Manager and one Referee acting for and on behalf of the Chief Executive by delegated authority under section 187(2) of the Building Act 2004. At the hearing, Mr Williams was present, together with the builder. The territorial authority was represented by one of its officers. A staff member of the Department and a consultant employed by the Department were also in attendance. The owner and the territorial authority spoke and called evidence at the hearing, and evidence from those present enabled me to amplify various matters of fact that were identified in the draft. As the building certifier's practice had been liquidated, the building certifier did not appear at the hearing

6.2 The owner described the various final inspections carried out by the building certifier and the amended lists of remedial items that were raised after such inspections. The owner noted that he was unable to provide the producer statement for the plaster application as requested by the building certifier but eventually, the building certifier informed the owner that in any case as there was no cavity behind the cladding, the building was no longer code compliant. This was the first indication that the owner had that such a requirement was necessary. The owner also expressed dissatisfaction over the actions of the building certifier.

6.3 The owner stated that he will carry out any remedial work in line with the expert's report but will not entertain the re-cladding of the building. The owner also noted

that the moisture readings undertaken by the expert were taken after a period of intense rainfall and if the moisture readings could be adjusted downwards to accommodate the accepted variances, the house would be compliant.

6.4 The territorial authority stated that it could issue a notice to fix under the existing building consent, so there would be no need to apply for a new consent. The notice could be "open" as regards the time for implementation but if the process were drawn out, the territorial authority would look less favourably on the situation. The territorial authority had not yet been to the site but would do so. Any subsequent consultancy report provided on behalf of the owner regarding rectification would be peer reviewed by the territorial authority's own consultants. While the territorial authority would assess any consultant report it was likely to ultimately require a cavity. This could necessitate the need for a second determination. The issuing of a certificate of acceptance, as set out in item 96 of the Act might be an option but this could depend on a final inspection. As such, the territorial authority would be limiting its liability.

6.5 The tribunal explained the role of the Department in the determination process and also discussed with the parties how best to resolve any issues that arose in the notice to fix, and which are described in detail in paragraph 9.3. In addition, the owner was advised to obtain the services of an independent qualified person and to obtain costing figures to see what were the best options open to the owner. The tribunal also noted that only items contained in the notice to fix that could not be resolved by the parties themselves would be subject to a second determination.

7 DISCUSSION

General

7.1 I have considered the submissions of the parties, the expert's report and the other evidence in this matter, including the owner's submission on the expert's report and the issues raised at the hearing. 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

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

- has no eaves or verge projections that would provide protection to the cladding below them, but does have some upper floor, balcony and entrance roof projections;
- is on an exposed site

- is two storeys in height
- is generally of a reasonably simple shape on plan, with several wall to roof junctions
- has one cantilevered balcony constructed partially over a habitable space, and a deck at the ground floor level
- has lower level roof spaces in restricted areas only that could provide some ventilation to the walls above them
- has external wall and deck framing that is unlikely to be treated to a level that would help prevent decay if it absorbs and retains moisture.

Weathertightness performance

7.3 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 5.1 and in the expert's report, which have contributed to the levels of moisture penetration already evident in many locations in the external walls of the house. The main areas of concern are the lack of control joints and adequate flashings to the external windows and doors, the cracking at cladding joints, the inadequate finish and clearances at the base of the cladding, concerns with the balustrade cappings, and the finish at the fascias and apron flashings. In addition, the external wall framing timber is in all likelihood not treated, and thus unable to delay the onset of decay if it gets wet.

7.4 As previously noted, the as built upper balcony is cantilevered, and there does not appear to have been any change to the original consent concerning this issue. I therefore recommend that the territorial authority carry out a full investigation of the balcony's current state.

7.5 I note that one elevation of the house demonstrates a low weathertightness risk rating, one elevation a medium rating, and the remaining two elevations a high 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 actually built is assessed for the purposes of issuing a code compliance certificate.

8 CONCLUSION

8.1 I am satisfied that the performance of the monolithic cladding is inadequate because it has not been installed according to good trade practice. In particular, it demonstrates the key defects listed in paragraph 5.1. I have also identified the presence of some 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 full drainage cavity. Consequently, I am not satisfied that the cladding system as installed complies with clause E2 of the building code.

8.2 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. The cladding faults in the house are allowing the ingress of moisture into the cladding itself. Accordingly, as there is not, in my opinion, an efficient cavity behind the cladding, I find the house does not comply with the durability requirements of clause B2.

8.3 I find that because of the 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 recladding, could result in compliance with clauses B2 and E2. I consider that any 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 as to the correct remedial option to be followed. Once that decision has been made, it 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 that will rule on whether the proposed remedial work will comply with the requirements of clauses E2 and B2.

8.4 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.

8.5 In the circumstances, I decline to incorporate any waiver or modification of the building code in its determination.

9 THE DECISION

9.1 In accordance with section 20 of the Act, 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 decision of the territorial authority to refuse to issue a code compliance certificate.

9.2 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 building 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.

9.3 I would suggest that the parties adopt the following process to meet the requirements of clause 9.2. 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 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. 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.

9.4 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 5 September 2005.

John Gardiner
Determinations Manager