Determination 2005/80

Refusal of a code compliance certificate for a building with a "monolithic" cladding system: House 70

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 applicants are the owners of the property (referred to throughout this document 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 The question to be determined is whether on reasonable grounds the external monolithic wall cladding as installed ("the cladding"), to the walls of this house, 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 Act or the building code.

1.6 The house itself is described in paragraphs 2.1 to 2.3, and paragraph 8 sets out the decision.

2 PROCEDURE

The building

2.1 The building is a split-level part one-storey and a part two-storey detached house situated on a sloping excavated site in a medium wind zone defined in terms of NZS 3604: 1999 "Timber framed buildings". The house is of conventional light timber frame construction on a concrete block foundation wall. The external walls and the pergola column are sheathed with monolithic cladding. It is of a relatively simple shape with an integral main roof and one small low-level lean-to roof that has junctions with the cladding above it. There is a monolithic clad full-height external chimney that is set into the main roofline. The drawings show two chimneys but one of these has been omitted. The aluminium windows have incorporated permanent ventilation slots, which can provide a measure of protection from condensation when the house is occupied. The higher-level roof has been extended to form a small gable with an end window and monolithic-clad side gable walls. This configuration differs from the consent drawings, which showed the roof as continuous with an inset roof window. There is a pergola secured to the house consisting of a monolithic-clad H3 treated timber post corner column supporting timber beams and rafters, which are also secured to the cladding. A tiled patio and steps lead up to the main entrance. The eaves and gables have 100 mm wide projections, with the attached spoutings affording a further 125 mm projection to the eaves.

2.2 The drawings indicate that the wall studs are H3 treated. However, the owner has stated that the framing in the exterior walls is kiln dried. I note that if the studs are H3, and the timber is kiln dried, the treatment is likely to be H3 LOSP. It is possible that kiln dried untreated timber was used in the external framing, notwithstanding the requirement for H3 treated wall studs. I also note that the plate and dwang framing are not specified to be to be treated.

2.3 The external walls of the building are clad with what is described as monolithic cladding. In this instance it incorporates 4.5 mm thick fibre-cement backing sheets

fixed through the building wrap directly to the framing timbers and finished with 25 mm thick solid plaster reinforced with galvanised reinforced mesh. The plaster in turn is finished with an acrylic paint system. I note that the consent plans required the mesh and plaster to be applied over Tanalised H3 battens, which would have provided a drained and ventilated cavity behind the cladding. However, as backing sheets fixed directly to the framing were substituted for the battens, this cavity has not been formed.

Sequence of events

2.4 The territorial authority issued a building consent in January 2002, based on a certificate provided by a building certifier.

2.5 I have not been given any evidence that the cladding was inspected at any stage by either the building certifier or the territorial authority. However, the building certifier issued an interim code compliance certificate on 8 March 2004, which stated:

> This is:
>
> An interim code compliance certificate in respect of part only of the building work under the above building consent as specified below:
>
> Excludes exterior wall cladding.

2.6 The owner forwarded a copy of a letter from the plasterer, dated 22 June 2004, to the territorial authority, which stated:

> This statement is to confirm that the house at [the Address] was Solid Plastered from April 2002 to a high standard in accordance with best trade practice and in compliance with the NZ building code of the time (passed by [the territorial authority]) including all necessary flashings, expansion joints and reinforced corners.
>
> With no indication of water damage and passing inspection at the time there is no reason why this house should not be given compliance.

2.7 The territorial issued a Notice to Rectify dated 24 May 2004, and the "Particulars of Contravention" attached to the Notice to Rectify noted that in regard to the cladding:

> 1. The following items have not been installed per the manufactures [sic] specifications
>
> - Control joints at a maximum of 4.0M centers vertically from internal and external corners and at floor joist level horizontally are required. Control joints have not been installed vertically, and confirmation is required that horizontal control joints have been installed.
>
> - Expansion joints at a maximum of 12.0M centers vertically are required. No expansion joints have been installed.
>
> - A 6mm gap (horizontally) is required between the back of the cladding and the foundation wall. This has not been achieved.
>
> - The bottom edge of the cladding system is to finish minimum of 100mm above paved surfaces and 175mm above unpaved surfaces. The cladding has been taken closer that these measurements.

2. The following items have not been installed per the acceptable solutions of the building code, (no alternative solutions have been applied for)

   - Buildings shall have claddings that are waterproof. There appears to be cracking around (*sic*)

   - The minimum finished floor level to finished ground level is 150mm to paved surfaces, and 225mm to unprotected ground. This clearance has not been achieved.

   - Stairways of over three risers are required a handrail to be installed. The stairs to the front entry has no handrail.

3. The following items have not been installed per accepted trade practice

   - Penetrations through the cladding system shall be as waterproof as the cladding itself. There are a number of penetrations through the cladding that should be protected with rubber flanges and silicon. In the case of extractor fan and meter box flashings have not been installed.

   - All flashings are to be installed in such a way as to direct water away from the building, and prevent ingress of moisture, at the junction between the lower front roof and deck wall this has not be achieved.

   - The junction between window head flashing and bottom edge of the cladding should be left with 20mm gap. This junction has been sealed.

   - Sill flashings are to be taken 30mm pass (*sic*) the edge of the window joinery. This has not been achieved.

   - Head flashings above window are to be taken 30mm pass (*sic*) the edge of window joinery. This has not been achieved.

   - Drip edges are required to prevent surface drips off the cladding, preventing capillary action, gravity or wind pressure. Drip edges have not been installed.

   - The finished cladding system is to be taken up behind barge, facial (*sic*) boards and the like. This has not been achieved.

   - Where attachments such as clotheslines are attached to the framing behind the cladding they shall be packed off the cladding for drainage. The clothesline has been attached directly through the cladding system.

4. Ventilated cavity system

   - The Council has recently received information which shows that monolithic cladding systems without a drainage plane/cavity, provision for adequate ventilation, drainage and vapour dissipation will, in the likelihood of leakage and/or the effects of residual moisture, cause irrevocable damage to the structural elements of the building.

The territorial authority also noted:

> The Council cannot be satisfied that the above building meets the performance requirements of Clauses B1 Structure, B2 Durability, E2 External Moisture, E3 Internal Moisture, G4 Ventilation and H1 Energy Efficiency Provisions of the Building Code…This is in breach of Sections 7(1), of the Building Act 1991…

Also that the owner was required to:

1. Provide adequate ventilation to the monolithic cladding and into the wall frame space by means of either a ventilated cavity or alternative approved system, and ensuring all issues related to the above are resolved.

2. Lodge with council an application, within 28 days from the date of this notice, for an amended building consent, and provide all necessary information that may be requested to allow this consent application to be processed, alternatively.

3 Confirm to council, within 28 days from the date of this notice, your intention to apply to the Building Industry Authority for a determination in accordance with the Building Act 1991

The territorial authority also provided a set of photographs relating to the cladding

2.8 The owner applied for a determination on 24 June 2004.

3 THE SUBMISSIONS

3.1 The owner made a submission that briefly set out the background leading up to this determination. The owner referred to the points raised in the Notice to Rectify and noted:

- Control joints and vertical expansion joints had been installed, a gap between the back of the cladding and the foundation wall can be installed and ground clearances can be increased;
- The surface cracking, which is likely to be superficial "crazing" has been sealed with an elastomeric paint;
- The sill flashings extend 30 mm past the edges of the window joinery and a 20 mm gap can be installed between the head flashings and the cladding;
- Drip edges can be installed if necessary;
- The penetrations can have flashings installed; and
- The clothesline attachment can be modified.

3.2 The owner queried the territorial authority's reference to a "deck" flashing, as the house did not have a deck and the reference to the cladding not having been "taken up behind barge, facial (sic) boards and the like". The owners concluded by listing factors that they wished the Authority to consider and pointed out that there is no evidence of moisture in the house.

3.3 The owner also provided copies of:

- The building plans;
- The interim code compliance certificate;

- The Notice to Rectify;
- The cladding applicator's "producer statement"; and
- Some pages from Acceptable Solution E2/AS1.

3.4 The territorial authority forwarded a lengthy submission. The bulk of the submission was a general comment on monolithic cladding, although some of the material related to this particular house, and stated that:

- The principle design and current construction methods are the primary failure in the stucco wall system comprising stucco, backing boards building paper, timber frame, fibreglass insulation (batts) and plasterboard in that it is defectively designed as in Auckland conditions it results in a RH (relative humidity) in the timber wall cavity sufficiently high for mould and rot to grow. Current construction methods do not provide for ventilation and a drainage plane.
- The secondary failure is that work in excess of normal maintenance is required to keep the stucco and wall elements of sufficiently low moisture content to prevent the effects of the primary failure from reoccurring even if all the water entry points were eliminated.
- The third failure of the stucco system is that it is an inflexible cladding and does not allow for the expected movement associated with timber frame construction, and thereby cracks form and sealants tear letting water in.
- Fourthly the building materials in the wall assembly are inadequate and there is no allowance for the consequence of failure of the system components or the system as a whole. Especially the timber frame the end result means the timber will degrade and be incapable of lasting 50 years as required by the Building regulations.
- The [territorial authority] points out that there are already numerous defects in the cladding envelop and even if all these were repaired this will not alter the four principle failures identified above and the building will remain in contravention of the Building Act.

3.5 The submission also included a copy of the Notice to Rectify and a set of photographs, illustrating some of the territorial authority's concerns.

3.6 The territorial authority felt that it must refuse to issue a code compliance certificate on the grounds that there was insufficient scientific evidence on the performance of these building elements.

3.7 The territorial authority in a letter to the Authority, dated 19 August 2004, elaborated on its original submission and stated that its areas of concern were those itemised in the Notice to Rectify and then listed them in detail. The territorial authority, using the risk matrix contained in the revised Acceptable Solution E2/AS1, calculated the weathertightness risk to the house to be moderate. The territorial authority also commented on the letter of 22 June 2004 from the plasterer as described in paragraph 2.6. It noted that this letter was not a producer statement and as the author was not on the territorial authority's register of plasterers, the territorial authority could not accept the letter as a means of establishing compliance. The territorial authority also commented on aspects of the owner's submission. Apart from further generalised comments, the territorial authority noted that the plaster cladding was on a rigid backing, which differed from the non-rigid backing with a cavity shown on the

consented plans. In addition, the territorial authority was not satisfied that the control joints have been installed.

3.8 The copies of the submissions and other evidence were provided to each of the parties. The territorial authority did not comment further, but the owner did make a response in a letter to the Authority, dated 26 October 2004. The owner disagreed with the risk matrix results supplied by the territorial authority. I have noted the owner's comments and point out that I have undertaken my own risk analysis as set out in paragraph 6.14.

3.9 In a letter to the Department dated 2 May 2005, the territorial authority commented on aspects of the Draft Determination. In particular, the territorial authority is concerned that paragraphs 5.1, 6.10 and 8.2 indicate a scope of work required to make the house code compliant. The territorial authority claims that this is not part of the determination.

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 clause E2.3.2 of the building code (First Schedule, Building Regulations 1992) is correct. The relevant provisions of the building code provide:

Clause B2—DURABILITY

B2.3.1 Building elements must, with only normal maintenance, continue to satisfy the performance requirements of this code for the lesser of the specified intended life of the building, if stated, or:

(a) The life of the building, being not less than 50 years, if:

(i) Those building elements (including floors, walls, and fixings) provide structural stability to the building, or

(ii) Those building elements are difficult to access or replace, or

(iii) Failure of those building elements to comply with the building code would go undetected during both normal use and maintenance of the building.

(b) 15 years if:

(i) Those building elements (including the building envelope, exposed plumbing in the subfloor space, and in-built chimneys and flues) are moderately difficult to access or replace, or

(ii) Failure of those building elements to comply with the building code would go undetected during normal use of the building, but would be easily detected during normal maintenance.

Clause E2—EXTERNAL MOISTURE

E2.1 The objective of this provision is to safeguard people from illness or injury, which could result from external moisture entering the building.

E2.2 Buildings shall be constructed to provide adequate resistance to penetration by, and the accumulation of, moisture from the outside.

E2.3.2 Roofs and exterior walls shall prevent the penetration of water that could cause undue dampness, or damage to building elements.

4.2 There are no Acceptable Solutions that have been approved under section 49 of the Act 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 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. I note that had the original specification been followed, with the plaster system being applied over wire mesh and battens, the cladding would have complied with the requirements of the revised acceptable solution E2/AS1.

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; and

- Usually, however, 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. The report noted that the quality of the stucco finish itself was good. The expert removed a small section of the plaster to examine a sill/jamb intersection of one exterior joinery unit, and found the jamb flashing correctly installed to discharge any moisture over the sill flashing, but that the sill flashing lacked a raised stop end. A further investigation was made of a vertical control joint and the expert was of the opinion that the detail, which consisted of a scratched out groove filled with sealant, was close to one of "the many methods used to form control joints" that were described in a recognised stucco plaster guide. I accept that these exposed details are

likely to be representative of the remaining control joints and joinery unit flashings. The expert's report made the following specific comments on the cladding:

- There was evidence of extensive cracking to the cladding on all elevations of the house, some of which had been repaired with strips of a coating system. Many of the cracks could not be attributed to underlying control joints, which had been installed at spacings not greater than 4000mm centres required by E2/AS1;

- There was no evidence of the horizontal control joint that is required at the first floor level;

- The chimney cladding was also cracked and there were deposits of cementicious salts under some of them, indicating leaks out of the plaster at that point;

- There are flashings to the heads, jambs and sills of the exterior joinery units, but there are no raised stop ends to the sill flashings. However, the expert considered that as the jamb flashing was positioned in front of the sill flashing, which itself had a reasonable fall to the outside, that the flashings as installed are adequate;

- The ends of some head flashings are buried in the plaster;

- The end of an apron flashing on the east side of the house is finished into the plaster, which could cause water to be absorbed into the cladding;

- There was insufficient clearance to the base of the cladding at 3 locations and the base of the chimney cladding did not extend sufficiently over the bottom plate; and

- There was no flashing to the top of the pergola column, and there is an unsealed joint between the post and the cladding.

5.2 The expert carried out a series of moisture tests of the interior linings of the exterior walls throughout the building using a non-invasive meter and some "borderline" readings were obtained. The expert took invasive readings at a total of 15 locations and only one of these exceeded 18 %. This was at the sub floor stud under bedroom 4 where the reading was 28.8%. I note that there is a flush joint at the junction of the timber and block walls at this location with no obvious control joint or separation. The expert considered that further investigation of this joint and the adjacent timber wall should be undertaken to ensure its continuing structural viability and compliance. Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure.

5.3 Copies of the expert's report were provided to each of the parties. The territorial authority did not respond and the owner provided comments in the letter to the Authority of 26 October 2004. The owner identified timbers that had been H3 treated, and commented on the issues of flashings, control joints, paint finish, the cracks in the plaster and an area that had recorded a high moisture reading. The

owner also pointed out that the cladding has remained waterproof and that the standard of workmanship achieved on the house was well above accepted good trade practice. As the house now had a stable envelope, the moisture content had stabilized and a high build paint system can now be applied. Potential moisture damage could be prevented by regular surveillance and maintenance of the cladding. The owner concluded that it would be contrary to the principles of justice and fairness if a code compliance certificate was not issued.

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 B2.3.1 and E2.3.2, 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.

Weathertightness risk

6.2 Recent research and experience, both international and local, indicates that the impact of weathertightness problems in monolithic-clad houses can be minimised if good and effective design and construction practices are followed.

6.3 The installation of exterior cladding to manufacturer's specifications and to accepted good trade practice is an important but not the only requirement to ensure good weathertightness performance.

6.4 The next priority is to reduce the ability of moisture to get through the cladding by using design measures that minimise the effects of the rain impacting on the walls:

6.5 Important matters for consideration are:

- Data shows a strong relationship between the width of the eaves and the incidence of wall leaks. An effective deflection mechanism, such as eaves greater than 600 mm wide, has been shown by Canadian data to manage more than 90% of rain incidence;

- While most reported leaks are substantially caused by defects in the cladding that require little or no wind pressure differential, it is believed that buildings in high and very high wind zones (as defined by NZS 3604) are likely to experience wind pressure differentials and thus a higher risk of water ingress;

- Taller buildings result in an effective increase in the catchment area of the wall. Available data suggests a clear correlation between higher number of storeys and an increased incidence of leaking;

- Complex roofs and overall envelope shapes where the roofs frequently intersect with the walls on upper floors create opportunities for leaks to directly penetrate into the wall; and

- Recent data also shows that decks and balconies that are exposed in plan and/or cantilevered from the external walls are the most frequent location for water leaks.

6.6 Any likely penetration of moisture through the cladding can then be countered by a combination of effective drainage, ventilation of the drainage cavity and moisture tolerance in the external wall framing timber. In particular:

- The structure should allow water that has penetrated the cladding to drain out as quickly as possible. It is believed that generally a drainage cavity should be provided behind the outer cladding barrier in monolithic construction;

- The design of the outer walls should allow walls to dry to the outside once moisture penetrates the cladding and the moisture barrier. If walls do not dry, decay fungi can become established in as little as 3 months. Until scientific data on the optimum depth and configuration of the ventilation mechanism in New Zealand conditions is available, I consider that the drainage cavity should be not less than 20 mm deep; and

- The external walls should have some degree of decay resistance or moisture tolerance to allow for situations when moisture circumvents the cladding and moisture barriers and moisture levels in the timber rise to more than 18%.

6.7 In relation to these characteristics, I find that this house:

- Has 100 mm wide eaves and gable projections that provide very little protection to the cladding;

- Is in a medium wind zone;

- Is two stories high;

- Has no raised stop ends to the sill flashings of the exterior joinery units and the ends of some head flashings are buried in the plaster;

- Has an overall envelope that is relatively simple in plan;

- Has no balconies;

- Has a pergola fastened directly to the cladding; and

- Has, in the absence of any clear evidence to the contrary, external walls constructed with timber treated to a level that is ineffective in delaying the onset of decay.

Weathertightness performance

6.8 I have carefully considered the principal points in the territorial authority's main submission (and outlined in paragraph 3.3).

6.9 The territorial authority's general submission effectively questions the technical basis of a number of the benchmarks for assessing the likely code compliant performance of timber-framed construction in New Zealand and proposes that an alternative (and more conservative) benchmark be used to assess likely building code compliance for monolithically-clad buildings within its jurisdiction. The Authority has considered and commented on these issues in Determination No 2004/41. In essence, the Authority determined that the performance of building elements as installed in a house should be based on code compliance benchmarks established in the new external moisture Acceptable Solution E2/AS1, together with observations of the current state of the building, and not on the higher performance levels suggested by the territorial authority. Accordingly, this is the approach that I have followed in this determination.

6.10 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, which are set out in paragraph 5.1 and in the expert's report, which have contributed to the penetration of the moisture already evident in one specific area and in the chimney cladding. I am particularly concerned with the extensive cracking that is present throughout the cladding taking into account that the house has a concrete block wall and concrete slab foundation, which should provide a stable platform for the external walls. I note that the expert observed that at least one crack penetrates the entire thickness of the plaster and is unable to conclude whether this is indicative of other areas of cracking. I suggest that there should be a systematic investigation of the remaining cracks to ascertain their depth, and that any deep cracks be satisfactorily remedied. I note that the cracking could be caused by an incorrect plaster mix used or poor application and curing. In addition, the external wall framing timber is not treated to an extent that can delay the onset of decay.

6.11 I accept the expert's opinion that the flashings to the exterior joinery units as installed adequately cope with any water ingress around the units, and that stop ends are not necessary. I also note that the expert has confirmed that the cladding and coating was continuous behind spouting and plumbing, which was a concern of the territorial authority.

6.12 I also consider that a 6 mm gap is required between the base of the cladding where it adjoins the foundation wall to eliminate the risk of capillary moisture ingress. In addition, the clothesline fixings are required to be examined to ensure that they are adequately sealed.

6.13 I observe that in some instances details critical to ongoing weathertightness were not constructed according to the consented details. In particular, I note that the consent plans include the requirements for a cavity and this was not installed. I am concerned that:

- The critical building work deviated from the approved construction details; and

- The inspections of the cladding apparently did not uncover the obvious differences between the consented and the as-built details.

6.14 I have carefully considering the owner's comments set out in the letter of 26 October 2004, but considers that the rectification of the defects as set out in paragraphs 5.1 and 6.12 are necessary to ensure the ongoing code compliance of the cladding.

6.15 I note that two elevation of the building demonstrate a moderate weathertightness risk rating and the other two elevations a low risk rating when calculated by the E2/AS1 risk matrix. The matrix is an assessment tool that is intended to be used at the time of application for consent, but must be supplemented at the time of issuing a code compliance certificate by careful inspection of the building as actually built.

7 CONCLUSION

7.1 I am satisfied that the performance of the cladding is inadequate because it has not been installed according to good trade practice. In particular, it demonstrates the key defects listed in paragraphs 5.1 and 6.12. 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 structure does 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 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 the house are allowing the ingress of moisture, the house does not comply with the durability requirements of clause B2.

7.3 I find that because of the apparent complexity of the faults that have been identified with this cladding, it is unable to conclude, with the information available to it, that remediation of the identified faults, as opposed to partial or full recladding, could result in compliance with clause 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 their 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.

7.4 I agree 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 its determination.

7.6 I also note the expert's concerns regarding the continued compliance of the sub floor wall under bedroom adjacent to where moisture had penetrated the cladding and suggest that this area be closely examined.

7.7 In response to the territorial authority's letter to the Department of 2 May 2005, I consider that I am entitled to determine whether proposed building work complies with the code, and in fact I have done so in this case. However, the question of whether the work has been properly completed and is code compliant requires careful inspection. I have received no evidence that the building certifier or the territorial authority inspected the cladding during construction.

7.8 The Notice to Rectify issued on 14 April 2004 listed Particulars of Contravention that are set out in paragraph 2.7.

7.9 I am disturbed to note that these obvious building defects were not discovered during the construction of the house. They are also issues that are unrelated to the question of a cavity that the territorial authority has raised. It can also be seen that the expert's report provides confirmation of the building's shortcomings that should have been detected during the construction period.

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 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.

8.2 The territorial authority has issued a Notice to Rectify requiring a ventilated cavity or an alternative approved system. Under the Act, a Notice to Rectify can require the owner to bring the house 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 to Fix 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 listed in paragraphs 5.1 and 6.10 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.

8.3 Continuing maintenance of the cladding will be required to ensure its continuing building code compliance.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 30 May 2005.

John Gardiner

Determinations Manager