

## **Determination 2005/157**

### **Refusal of a code compliance certificate for a building with a “monolithic” cladding system at 697 Richardson Road, Hillsborough, Auckland – House 128**

#### **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 Mr I Denby (“the owner”), and the other party is the Auckland City Council (“the territorial authority”). The architect was included as a person with a right or obligation under section 16(e) of the Building Act 1991. The application arises from the refusal by the territorial authority to issue a code compliance certificate for a 6-year and a 3-year-old alteration to an existing house (“the house”) unless changes are made to its monolithic cladding system.
- 1.2 My task in this determination is to consider whether I am satisfied on reasonable grounds that the external cladding as installed (“the cladding”), which is applied to some of the external walls and support columns of this house complies with the Building Code (see sections 18 and 20 of the Act). By “external 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 Act or the Building Code.

## **2. Procedure**

### **2.1 The building**

- 2.1.1 The building work consists of two separately staged alterations to an existing single-storey house, situated on a sloping site in a medium wind zone in terms of NZS 3604: 1999 “Timber framed buildings”. The resultant house is one storey with a garage and entry basement under it, and its external walls are of conventional light timber frame construction built on new and existing piled timber-framed suspended floors. The new and some of the existing timber-framed walls are sheathed with monolithic cladding. The house is generally of a reasonably simple shape, and the pitched roof has valley, wall to roof and new to existing roof junctions. There are 600mm wide eaves projections and 125mm verge projections. A large external deck with monolithic-clad timber-framed balustrades is constructed at the north and east elevations. The deck is supported on timber beams and posts. A timber-framed pergola supported on circular monolithic-clad posts is situated at the northeast elevation.
- 2.1.2 From the visual evidence provided by the expert commissioned by the Department to inspect the house (“the expert”), it is likely that the timber used to construct the new external wall framing is untreated, and the existing walls are framed with a mixture of Boric treated timber and untreated native timbers. The expert also noted that the column posts were H4 treated, and the timber to the deck and deck balustrade had a H3 Tanalised timber treatment.
- 2.1.3 The new and some of the existing 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” fixed through the building wrap directly to the framing timbers. A textured plaster and paint system is applied to the sheets. I note that the consented plans call for “Hardibacker” backing sheets finished with a 20mm plaster finish external cladding system. However, the territorial authority has not referred to this amendment in its Notice to Rectify.

### **2.2 Sequence of events**

- 2.2.1 The territorial authority issued two building consents, one on 26 March 1998 for certain alterations, and a second on 4 October 2002 for a revised bedroom layout and wood burner. This determination refers to the consent issued in 1998.
- 2.2.2 The territorial authority carried out various inspections during the construction of the house, and the pre-line inspection was passed on 13 April 1999. According to a “Final Check List” dated 17 April 2004, the territorial authority passed the exterior cladding with the exception of control joints and ground clearances. The List also noted that inspection records were required for the 2002 consent.
- 2.2.3 The territorial authority wrote to the owner on 29 June 2004, noting that, as the cladding was monolithic installed without a cavity, further investigation was required.
- 2.2.4 Following a further inspection on 11 June 2004, the territorial authority wrote to the owner on 14 July 2004, regretting that the building might not comply with the Building Code in a number of respects. The territorial authority attached a Notice to Rectify also dated 14 July 2004 to this letter, together with a set of photographs illustrating items of non-compliance. The “Particulars of Contravention” attached to the Notice to Rectify listed requirements under the following headings:
1. Items not installed per the manufacturer’s specifications
  2. Items not installed per the Acceptable Solutions of the Building Code (no alternative solutions had been applied for)
  3. Items not installed per accepted trade practice
  4. Ventilated cavity system
- 2.2.5 The Particulars of Contravention said that owner was also required, amongst other items 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, or alternatively
  2. Remove the monolithic cladding and replace with an approved cladding system...
- 2.2.6 The owner wrote to the territorial authority on 30 July 2004, noting that the territorial authority had passed both the pre and post-line inspections, and that the territorial authority had not advised of any required changes. The owner was concerned that aspects other than the cladding might not now be code compliant.
- 2.2.7 The owner applied for a determination on 7 October 2004.

### 3. The submissions

3.1 The owner forwarded copies of:

- the plans and specifications for the work covered by the 1998 consent
- correspondence with the territorial authority
- some consent and inspection documentation
- the Notice to Rectify.

3.2 In a covering letter to the Authority dated 4 November 2004, the territorial authority described the Particulars of Contravention and the specific construction defects.

3.3 The territorial authority also forwarded copies of:

- the plans and specifications for the work covered by the 1998 and the 2002 consents
- correspondence with the owner
- some consent and inspection documentation
- the Notice to Rectify.

3.4 Copies of the submissions and other evidence were provided to each of the parties.

3.5 In a letter to the Department dated 21 July 2005, the territorial authority commented on aspects of the draft determination:

“Over the last year the Department has issued a number of determinations relating to the code compliance of cladding as installed. In Council's experience, the matter in dispute has been inaccurately documented. In practice the matter in dispute is whether the scope of work necessary to achieve code compliance is that documented in Council's notice to fix or as identified by the department's assessor. Council's view is that to provide clarity and certainty for the applicant, the matter in dispute should be amended to reflect this. This change would need to be approved by the applicant as well as Council.”

3.6 In particular, the territorial authority is concerned that paragraphs 5.2 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.

3.7 The owner responded to the draft determination in a letter to the Department dated 25 July 2005. In this, the owner accepted the findings set out in the determination. However, the owner did not accept all the findings set out in the territorial authority's Notice to Rectify:

“The refusal by the Council to issue the CCC and the subsequent detailed notice to rectify was not based on any invasive testing, but rather on their perception of what was required to bring this building up to current standards. As I understand, Council is not entitled to apply today's solutions and standards that did not apply at the time the original

consent was issued (Section 436 of The Building Act 2004), nor can they insist on the introduction of a ventilated cavity installed behind the existing cladding system.”

- 3.8 In particular, the owner was concerned that the territorial authority had not carried out any invasive testing and on its insistence that a ventilated cavity be provided behind the cladding. The owner felt that as the building has low risk factors, direct fixing of the cladding was within the requirements of E2/AS1. The owner was disappointed that the Department had not set out any definitive requirements that would make the cladding code-compliant. The owner was also concerned that the territorial authority had not advised the owner that there were serious non-compliant issues present when it signed off the post-lining inspection in April 1999.

## **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 At the time of consent, the Acceptable Solutions that cover cladding did not include face-fixed fibre cement sheeting, nor had such systems been approved under section 22 of the Act or section 49 of the Building Act 1991. The latest version of E2/AS1, published on 1 February 2005, allows for such systems to be used in certain risk conditions. As described in tables 1, 2 and 3 of E2/AS1, this house can now be defined as a low risk dwelling. Accordingly I am therefore of the opinion that the cladding system as installed would now be described as an Acceptable Solution, although (as my expert points out later) there are aspects of the construction that vary from the current standard, so I must consider those aspects as 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 expert visited the property on 30 March 2005, and furnished a report that was completed on 6 May 2005. The report noted that the cladding finish is “patchy in as much as some areas look well painted with a thick paint film where other areas

appear slightly transparent and have ‘pin holes’ in the surface”. The general impression was of an attempt that failed to follow the manufacturer's requirements in some respects.

- 5.2 The expert removed a section of cladding from the top corner and under the sill of one window, from the inside of the deck balustrade, and under one pergola beam where it penetrates the cladding. I am prepared to accept that these examples are typical of the remaining similar locations. The expert also removed a portion of decking to expose the junction between the deck and the cladding. The expert made the following specific comments on the cladding:
- Horizontal and vertical relief and control joints as required in the manufacturer's recommendations have not been installed.
  - Some sheet joints are incorrectly located.
  - There is cracking in the surface of the cladding and at the jointing systems.
  - The back and edges of the backing sheets are not sealed.
  - The cladding is in contact with the paving at the area of the garage.
  - The windows lack the required 5 mm separation between the head flashing and the cladding, the head flashings are incorrectly installed and lack “Inseal” infilling, the sealant is incorrectly installed to the jambs, and the sill details are non-compliant with the manufacturer's recommendations.
  - The pergola beams are not flashed or sealed where they penetrate the cladding and the beams have not been installed to slope away from the cladding.
  - The deck framing and decking were installed before the cladding was plastered and painted.
  - There is no evidence that saddle flashings are installed to the deck balustrades.
  - The top of the deck balustrade is constructed with no cross-falls to shed water, as is the top of the deck support column.
  - There are a number of penetrations through the cladding not properly sealed.
- 5.3 The expert carried out a series of non-invasive moisture tests at the interior and the exterior of the external walls.
- 5.4 High readings of 21%, 27% (at 2 locations), 35% and 35% to 50% were obtained. Readings of over 40% were also obtained where the framing was exposed under a windowsill, and at a pergola beam/cladding junction. 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. The expert did note that the readings were taken after a prolonged dry period.

- 5.5 There was also evidence of decaying timber at some locations, and also of wet and damaged “Harditex” adjacent to the deck area.
- 5.6 Copies of the expert’s report were provided to each of the parties. The territorial authority acknowledged receipt of the report in a letter dated 17 May 2005, and the owner responded by letter on 25 May 2005. The owner basically noted that various inspections carried out during the construction of the house had passed items that were now disputed by the territorial authority. The owner also queried which manufacturer’s instructions had been referred to by the expert. In respect of this query, I note that manufacturer’s instructions for the cladding have not been amended from the time before the cladding was installed.

## **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 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 600 mm eaves and 250mm wide verge projections, which give moderate to good protection to the cladding areas below them
  - is 2 storeys high
  - is generally of a reasonably simple shape on plan, with roofs that have hip and wall to roof junctions
  - has one large external deck and a timber-framed pergola
  - has new external wall framing that is not likely to be treated to a level that would help prevent decay if it absorbs and retains moisture.

### **6.3 Weathertightness performance**

- 6.3.1 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 5.2 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 unsealed backing sheets, the cracking in the cladding and at the joints, the clearances at the base of the cladding, the inadequate penetration sealing, and the quality of the paintwork. In addition, the new external wall framing timber is in all likelihood not treated, and thus unable to delay the onset of decay, which is already apparent in some locations, if it gets wet.

- 6.3.2 I note that all elevations of the house demonstrate a low 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 actually built is assessed for the purposes of issuing a code compliance certificate.

## 7. Conclusion

- 7.1 I am satisfied that the performance of the monolithic cladding is inadequate because it has not been installed according to good trade practice, and is demonstrably leaking. In particular, it demonstrates the key defects listed in paragraph 5.2. 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 the structure does not have sufficient provisions to 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. The cladding faults in the house are allowing the ingress of moisture into the cladding itself. Accordingly, I find 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, 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.

- 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 Building 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. 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 In the circumstances, I decline to incorporate any waiver or modification of the Building Code in its determination.

## **8. The decision**

- 8.1 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.
- 8.2 In response to the territorial authority’s letter to the Department of 21 July 2005, I consider that I am entitled to determine whether the building work proposed by the owner to rectify the defects will likely comply with the code, and in fact I have done so in this case. However, as noted in paragraph 7.3, my concern in this case is also that the work described in paragraph 5.2 may not turn out to be sufficient to achieve compliance, and in any event whether the work has been properly completed and is code compliant is a matter that can only be determined after careful inspection.
- 8.3 The Notice to Rectify issued on 14 July 2004 listed Particulars of Contravention that included flashings.
- 8.4 The building defects are issues unrelated to the question of a cavity that the territorial authority has raised. It can be seen that the expert’s report provides the comprehensive description of the building’s outstanding shortcomings.
- 8.5 I have also noted the owner’s concerns regarding the actions of the territorial authority relating to its inspection procedures. However, I am unable to determine the issue of the territorial authority’s duty of care towards the owner. The owner has requested that the Department defines the extent of work required to address the defects raised by the expert. The territorial authority has also raised this issue. I note that the Building Industry Authority in Determination 1977/4 took the view that it was not for it to decide how a building was to be brought into compliance with the Building Code. I concur with that view, if only for the reasons set out in paragraph 8.2 above, and this is reflected in my decision.

- 8.6 I note that the territorial authority has issued a Notice to Rectify requiring provision for adequate ventilation, drainage and vapour dissipation. Under the Act, a notice to fix can require the owner to bring 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. I concur with that view. A new notice to fix should be issued that requires the owners to bring the cladding into compliance with the Building Code, without specifying the features that are required to be incorporated. It is not for me to dictate how the defects as described in paragraph 5.2 are to be remedied.
- 8.7 I would suggest that the parties adopt the following process to meet the requirements of paragraph 8.3. 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, produced in conjunction with an expert, as to the rectification or otherwise of the specified issues. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.
- 8.8 Finally, I consider that continuing maintenance of the cladding will be required to ensure its continuing code compliance.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 5 December 2005.

John Gardiner  
**Determinations Manager**