

Determination 2005/127

Refusal of a code compliance certificate for a building with a “monolithic” cladding system at 209C, 209D & 209E St Andrews Road, Epsom, Auckland

1 THE DISPUTE TO BE DETERMINED

- 1.1 This is a determination by 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 developer Cynotech Securities Ltd; acting on behalf of the owners of 3 separate houses, (referred to throughout this determination as “the owners”) and the other party is the Auckland 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 3 two-year old houses (“the Units”) unless changes are made to their monolithic cladding system.
- 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 (“the cladding”) to the walls, and to some of the columns of the three Units (described in this determination as Units C, D, and E respectively) 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 No other aspects of the Act or the building code have been considered in this determination.

2 PROCEDURE

The buildings

- 2.1 Each of the Units is a three-storey house situated on a steeply sloping site in an exposed situation. The Units are of conventional light timber frame construction on either piled concrete foundations, or timber-framed timber floors supported on piles or poles. The timber-framed external walls and some of the columns of the buildings are sheathed with a monolithic cladding. The Units are of a relatively simple form.
- 2.2 Units C and D have concrete block external lower floor walls to three elevations and low pitched roofs surrounded by parapet walls. Each of these Units has a balcony situated at the upper level constructed over a habitable area with a glazed metal balustrade. Timber-framed and boarded decks are also constructed to two elevations of each Unit at the lower and intermediate levels.
- 2.3 Unit E has pole supports to its timber-framed floors and pitched roofs set at varying levels with numerous wall to roof junctions. There are eaves up to 350mm wide to the west elevation, but elsewhere there are no eaves projections, although some narrow higher floor overhangs provide a limited protection to the lower claddings. A balcony is constructed over a habitable space at the upper level, and a cantilevered balcony is constructed at the intermediate level. Timber-framed and boarded decks are constructed at both ends of the building, and one of these is designed for parking. The upper balcony has a timber-framed balustrade, and the other balcony and the decks have timber balusters and handrail surrounding them.
- 2.4 The owner has confirmed that the majority of the framing used on the project was chemical free (untreated) timber. The invoices provided by the owner showing that certain timbers used were treated, do not include timber sizes that would generally apply to wall framing. Accordingly, I have concluded that untreated timber was used in the construction of the exterior walls.

- 2.5 The monolithic cladding system incorporates Insulclad polystyrene backing sheets fixed through the building wrap directly to the wall framing, finished with a coating system applied by a licensed applicator approved by Plaster Systems, followed by a final paint finish. I note that the consented drawings show solid plaster applied to the exterior walls for Units C and D. For Unit E, the elevations show stucco plaster on either rigid backing sheets fixed directly to the framing, or on a non-rigid backing fixed to vertical battens. On the other hand, the sections through this Unit indicate that weatherboard cladding is to be applied. The territorial authority has referred to these changes in its Notice to Rectify.
- 2.6 I note that, according to the owner, Plaster Systems confirmed that they would not provide a warranty for the cladding, as the cladding installer had not been paid.

Sequence of events

- 2.7 The territorial authority issued a building consent for all the Units on 24 September 2001. The consent noted that the territorial authority required certain inspections to be carried out.
- 2.8 The work commenced in October 2001 and the territorial authority informed the developer on 11 October 2002 that there were problems with the Units. The developer took over the project and employed its own builders in November 2002 and rectified some of the identified building defects.
- 2.9 The territorial authority carried out various inspections during the construction of the Units.
- 2.10 The developer employed a firm of building certifiers to inspect the Units and this inspection was carried out on 10 January 2003 and on 13 January 2003, at a time when the majority of the internal linings were yet to be installed. The building certifier furnished a report on 22 January 2003. The report noted various defects in all of the Units and locations where moisture had entered the buildings. The building certifier stated that the construction had generally been carried out in accordance with good trade practice, all flashings should be checked, and the decks should be recovered and additional flashings installed. The building certifier suggested that a warranty should be obtained for the cladding.
- 2.11 The building certifiers wrote to the developer on 23 February 2004, stating that the building certifier had carried out a further inspection of the cladding on 5 February 2004, noting that certain remedial work had been carried out, and that no leaks were evident. No excessive moisture readings were found after testing each Unit with a moisture meter. The building certifier assumed that the external window and door flashings were correctly installed, as a registered "Insulclad" installer had installed them. The building certifier was of the opinion that the cladding generally complied with the requirements of the building code for weathertightness and durability, provided that normal maintenance was carried out. The building certifier also recommended that appropriate warranties be obtained from the cladding installer.

2.12 The territorial authority carried out further site cladding inspections on all 3 Units on 26 May 2004. In a “Final Checklist” dated 9 October 2003, the territorial authority passed all items relating to the exterior of the Units, with the exception of ground clearances. This document also noted that some remedial work was required in relation to the cladding. In a further “Final Checklist” dated 13 January 2004, the territorial authority passed all items relating to the exterior of the Units, with the exception of the painting of the cladding.

2.13 The territorial authority issued three separate Notices to Rectify dated 6 April 2004. The “Particulars of Contravention” attached to all the Notices to Rectify listed requirements under the following headings:

- Changes to the building consent;
- Items not installed per the manufacturer's specifications;
- Items not installed per the acceptable solutions of the building code, (no alternative solutions had been applied for, other than for the cladding system previously approved);
- Items not installed per accepted trade practice; and
- Ventilated cavity/ drainage plane system.

The Particulars of Contravention said that the owners were also required, amongst other items, to:

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...

2.14 The developer wrote to the territorial authority on 1 June 2004, requesting a meeting to discuss issues relating to a code compliance certificate. The developer enclosed an application for a building consent, described how the ground clearances could be obtained, and stated that the deck/house junction and the handrail penetrations would be remedied.

2.15 The territorial authority wrote to the developer on 9 June 2004, stating that a retrospective building consent could not be issued. The territorial authority also commended the developer for agreeing to undertake certain remedial work. However, the territorial authority noted that it still required a ventilated cavity or a drainage plane. The territorial authority set out its reasons for such a requirement in the context of the Units’ construction.

2.16 The owners applied for a determination for all 3 Units on 13 September 2004.

3 THE SUBMISSIONS

- 3.1 The owners in a covering letter to the Department dated 13 September 2004, provided some background information regarding the dispute, noted that discussions had been undertaken with the territorial authority, and listed the points that the owners were trying to resolve.
- 3.2 The owners wrote again to the Department on 30 March 2005, describing the background to the dispute, the cladding specifications, the level of timber treatment, and the timeline of construction progress. The owners were of the opinion that the Units complied with the building code at the time that the consent was issued, and noted that the territorial authority had signed off all items on the code compliance certificate, except for the issue of weathertightness.
- 3.3 The owners forwarded copies of:
- The plans;
 - Some consent documentation and territorial authority inspection records;
 - The Notice to Rectify;
 - The correspondence with the territorial authority and the building certifier;
 - Some producer statements;
 - The timber supplier's invoices; and
 - A set of photographs.
- 3.4 In a covering letter to the Authority dated 1 November 2004, the territorial authority described the Particulars of Contravention and the specific construction defects.
- 3.5 The territorial authority also forwarded copies of:
- Some plans;
 - Some of the consent documentation;
 - Some of the territorial authority's inspection records;
 - The Notice to Rectify; and
 - The correspondence with the owner.
- 3.6 Copies of the submissions and other evidence were provided to each of the parties.
- 3.7 In three letters to the Department, each dated 1 July 2005, the territorial authority commented on aspects of the Draft Determination. In particular, the territorial authority is concerned that paragraphs 6.6 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. The territorial authority repeated its concerns in a second letter to the Department dated 8 July 2005.

- 3.8 The owner in a letter to the Department dated 7 July 2005, noting the territorial authority's response. The owner stated that the territorial authority had not been prepared to meet the owner on site or anywhere else to discuss the matters that are at issue.

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; and
 - 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 buildings on 4 May 2005 and 6 May 2005, and furnished a report that was completed on 13 May 2005. The expert was of the opinion that the coating is applied satisfactorily to all 3 Units, although the paint coating has yet to be fully completed. The expert removed a small section of plaster from a lower corner of one window in each of the Units and also removed an architrave from one window of Units C and E. From these inspections, the expert was able to confirm that jamb and sill flashings had been installed to the external windows and doors. The expert also removed sections of the cladding adjacent to the balconies and internal linings adjacent to where high moisture readings had been obtained in Units C and D. The expert's report made the following specific comments on the cladding:

All Units

- No sill trays have been installed to the external windows and doors; and
- The grilles installed on the east elevations of the Units are not hooded.

Units C and D

- The cladding abuts the paved areas at some locations, and is fixed hard onto the balcony edge flashings;
- There is ponding on the south upper deck of Unit D, and limited or nil falls have been provided towards the deck outlet;
- Only one of the two required outlets are provided to the balcony decks, and the secondary overflow relief outlets are also inadequate;
- The handrail stanchion screw fixings to the balconies penetrate the metal capping around the decks and the penetrations lack gaskets; and
- There is a leaking drainpipe under the south deck of Unit C.

Unit E

- The cladding finishes close to the ground on the east elevation and partly covers a slot drain;
- The ground adjacent to the north elevation is built up against the cladding;
- The north elevation deck is finished hard against the cladding, and the top coat of paint is not continued behind the decking;
- The finish to the ends of some of the apron flashings are inadequate, and there is at least one hole evident in these flashings; and
- There are high-risk penetrations through the cladding where the south elevation lower deck framing is attached to the building.

5.2 The expert also noted that the roof to Unit C may have been altered, and the resultant roof slope is less than that recommended by the manufacturers.

5.3 The expert took moisture readings through the interior of the monolithic-clad external walls throughout each Unit using a non-invasive meter. The expert then carried out further invasive testing through the exterior cladding and the following higher readings were obtained:

Unit C

- A reading of 26% at the north elevation deck;
- A reading of 26% at the west elevation bedroom; and

- A reading of 40% below the west elevation balcony outlet.

Unit D

- A reading of 30% at the north elevation deck;
- A reading of 40% at the south elevation deck; and
- A reading of 40% below the west elevation balcony outlet.

Unit E

- A reading of 24% at a support post at the front entrance.

Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure. The expert also noted evidence of water leakage, fungal growth, and badly decayed timber where the external cladding and internal linings had been removed adjacent to the decks and balconies of Units C and D. The expert also stated that the moisture readings were taken after a prolonged period of relatively dry weather.

- 5.4 Copies of the expert's report were provided to each of the parties. In a letter to the Department dated 26 May 2005, the territorial authority acknowledged receipt of the report.

6 DISCUSSION

General

- 6.1 I have considered the submissions of the parties, the expert's report and the other evidence in this matter. The approach in determining whether building work complies with clauses B2 and E2, is to examine the design of the building, the surrounding environment, the design features that are intended to prevent the penetration of water, the cladding system, its installation, and the moisture tolerance of the external framing. The Authority and the Department have described the weathertightness risk factors in previous determinations (Refer to Determination 2004/01 *et al*) relating to monolithic cladding and I have taken these comments into account in this determination.

Weathertightness risk

- 6.2 In relation to the weathertightness characteristics, I find that:

Each Unit:

- Is in an exposed situation;
- Is 3 storeys high;

- Is of a relatively simple shape on plan; and
- Has external wall framing that is unlikely to be treated to a level that would help prevent decay if it absorbs and retains moisture.

Units C and D have:

- No eaves or verge projections that could protect the cladding under them; and
- Balconies constructed partially over habitable spaces, and external decks.

Unit E has:

- Some eaves projections and projecting upper floors that provide limited protection to the cladding under them;
- Roofs with numerous wall to roof junctions;
- Lower level roof spaces that assist in the ventilation of the external wall cavities above them; and
- A balcony constructed over a habitable space, a cantilevered balcony, and external decks.

Weathertightness performance

Units C and D

- 6.3 I find that the monolithic cladding in general to both Unit C and Unit D 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 several locations in the external walls of the Units. 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.
- 6.4 The expert has pointed out the low angle of pitch to the roofing of Unit C. Accordingly, I suggest that this matter also be further investigated, and if required, remedial work is undertaken.
- 6.5 I note that three elevations of each Unit demonstrate a medium weathertightness risk rating and the remaining elevation of each Unit demonstrates a high risk 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.

Unit E

6.6 I find that, generally, aspects of the cladding applied to this Unit appear to have been installed according to good trade practice and to the manufacturer's instructions, but some junctions, edges, and penetrations are not well constructed. These areas are:

- The cladding finishing close to the ground on the east elevation;
- The built up ground adjacent to the north elevation cladding;
- The north elevation deck being finished hard against the cladding and the non-continuous top coat of paint behind the decking;
- The inadequate finish to the ends of some of the apron flashings and the holes evident in these flashings;
- The high-risk penetrations through the cladding where the south elevation lower deck framing is attached to the building;
- The lack of sill trays to the external windows and doors;
- The non-hooded grilles installed on the east elevations; and
- The completion of the painting.

6.7 Notwithstanding the fact that the backing sheets are fixed directly to the timber framing, thus inhibiting drainage and ventilation behind the cladding sheets, I find that there are compensating factors that assist the performance of the cladding in this particular case:

- The cladding generally appears to have been installed according to good trade practice;
- The Unit is of a relatively simple shape on plan;
- The eaves projections, in conjunction with the additional floor projections, provide some protection to the cladding; and
- The Unit has lower level roof spaces that assist in the ventilation of the external wall cavities above them.

6.8 I consider that these factors help compensate for the lack of a drainage and ventilation cavity, and can allow Unit E to comply with the weathertightness and durability provisions of the building code, providing that corrective measures are undertaken.

6.9 I note that two elevations of this Unit demonstrate a medium weathertightness risk rating, one elevation a high risk, and the remaining elevation a very high risk, as calculated using the E2/AS1 risk matrix.

7 CONCLUSION

Units C and D

- 7.1 I am satisfied that the performance of the monolithic cladding of both Unit C and Unit D 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 5.1. 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 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 house to remain weathertight. The cladding faults in the Units are allowing the ingress of moisture into the cladding itself. Accordingly, I find the Units do 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 the cladding applied to both Units, 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.

Unit E

- 7.4 I am satisfied that the current performance of the cladding is not adequate because it is allowing water penetration into the wall framing at least at one location. Consequently, I am not satisfied that the cladding system as installed on this Unit complies with clause E2 of the building code.
- 7.5 In addition, the Unit is also required to comply with the durability requirements of clause B2 as set out in paragraph 7.2. The cladding faults in the Unit are allowing the ingress of moisture into the cladding itself. Accordingly, I find the Unit does not comply with the durability requirements of clause B2.
- 7.6 I consider that because the faults that have been identified with the cladding of this

particular Unit occur in discrete areas, I can conclude that satisfactory rectification of the items outlined in paragraph 6.6 is likely to result in the Unit being weathertight and in compliance with clauses B2 and E2, notwithstanding the lack of a ventilated cavity.

General

- 7.7 I note that effective maintenance of monolithic claddings is important to ensure ongoing compliance with clause B2 of the building code. That maintenance is the responsibility of the building owner. The code assumes that the normal maintenance necessary to ensure the durability of the cladding is carried out. For that reason clause B2.3.1 of the building code requires that the cladding be subject to "normal maintenance". That term is not defined and I take the view that it must be given its ordinary and natural meaning in context. In other words, normal maintenance of the cladding means inspections and activities such as regular cleaning, re-painting, replacing sealants, and so on.
- 7.8 It is emphasised that each determination is conducted on a case-by-case basis. Accordingly, the fact that a particular cladding system has been established as being code compliant in relation to a particular building does not necessarily mean that the same cladding system will be code compliant in another situation.
- 7.9 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 on all the Units 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 I also find that rectification of the items outlined in paragraph 6.6 to the approval of the territorial authority, along with any other faults that may become apparent in the course of that work, will consequently result in Unit E being weathertight and in compliance with clauses B2 and E2, notwithstanding the lack of a ventilated cavity. However, in view of the faults evident in the cladding of Units C and D, I am unable to make the same finding in respect of these two Units.
- 8.3 I note that the territorial authority has issued Notices to Rectify requiring provision for adequate ventilation, drainage and vapour dissipation. Under the Act, a notice to fix can require the owners to bring the Units 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. New notices to fix should be issued that require 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 5.1 are to be remedied.

- 8.4 I would suggest that the parties adopt the following process to meet the requirements of clause 8.3. Initially, the territorial authority should issue the notices to fix, listing all the items that the territorial authority considers to be non-compliant. The owners 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. 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 the notices to fix, including the territorial authority's requirement, if any, for a ventilated and drained cavity or equivalent.
- 8.5 Finally, I consider that the cladding will require on-going maintenance to ensure its continuing code compliance.
- 8.6 In response to the territorial authority's letters of 1 July 2005 to the Department, 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 do not believe in this case that the territorial authority's inspections meet this standard. I note that the territorial authority's inspection described in the three "Final Checklists", each dated 13 January 2004, passed the following items in respect of the exterior of the building:
- Floor clearance from ground level;
 - Cladding clearance from ground level;
 - Secondary flow path;
 - Window scribes;
 - Flashings; and
 - Control joints.
- 8.7 In addition, these territorial authority's inspections did not note the change in cladding from that shown on the consent plans.
- 8.8 The three Notices to Rectify issued on 6 April 2004 listed Particulars of Contravention that included:
- Floor clearances;
 - Ground clearances; and
 - Flashings.

- 8.9 I am disturbed to note that these obvious building defects were not discovered during the January 2004 final inspection. They are also issues that are 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 that should have been detected before or at the final inspection process and incorporated in the Notices to Rectify.

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

John Gardiner
Determinations Manager