Determination 2006/65

Refusal of a code compliance certificate for a house with a monolithic cladding system at 10 St Leonards Road, Mount Eden, Auckland

1 The dispute to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004[1] ("the Act") made under due authorisation by me, John Gardiner, Determinations Manager, Department of Building and Housing, for and on behalf of the Chief Executive of that Department. The applicant is the owner Baxter Property Investments Ltd acting through its legal advisor ("the applicant"), and the other party is the Auckland City Council ("the territorial authority"). The application arises because the territorial authority declines to issue a code compliance certificate for a relocated and extended house, unless changes are made to its monolithic cladding system and other building elements.

1.2 The question to be determined is whether I am satisfied on reasonable grounds that the territorial authority's decision to decline to issue a code compliance certificate for an existing house relocated and extended 6 years ago because it was not satisfied that

[1] The Building Act 2004 is available from the Department's website at www.dbh.govt.nz.

certain elements complied with clauses B1, B2, E1, and E2 of the Building Code[2] (First Schedule, Building Regulations 1992) is correct.

1.3 In order to determine the question in paragraph 1.2, I must determine the following questions:

Issue 1: The cladding on the new extension

1.3.1 Whether I am satisfied on reasonable grounds that the monolithic wall cladding as installed to the external walls of the garage extension ("the cladding"), complies with the building code. By "the monolithic wall cladding as installed" I mean the components of the system (such as the backing materials, the flashings, the joints and the coatings) as well as the way the components have been installed and work together.

Issue 2: The cladding on the relocated building

1.3.2 Whether I am satisfied on reasonable grounds that the new cladding ("the overlaid cladding") as installed over the original asbestos cement shingle cladding of the relocated house will, under section 112 (1) (b) of the Act, "continue to comply with the other provisions of the building code to at least the same extent as before the alteration".

Issue 3: The structure and surface water

1.3.3 Whether I am satisfied on reasonable grounds that the sub-floor construction and some drainage components of the building comply with the building code.

Issue 4: The additional durability considerations

1.3.4 Whether certain building elements, which have 5 and 15-year durability requirements, comply with clause B2 of the Building Code, considering the time that has elapsed since the original house was relocated and the additional elements were constructed.

1.4 In making my decision, I have considered the submissions of the parties, the report of the independent expert commissioned by the Department to advise on this dispute ("the expert"), and the other evidence in this matter. I have evaluated the question of weathertightness information using a framework that I describe more fully in paragraph 6.1. I have not considered any other aspects of the Act or the Building Code, beyond those described in paragraph 1.

2 The building

2.1 The building work consists of the re-location of, and subsequent alterations to (including an extension), an existing detached single-storey house. The house is situated on an excavated slightly sloping site that is in a low wind zone in terms of NZS 3604[3]. The new extension is a garage attached to the south of the house. Except for the addition of a new gable over the original roofline, the relocated house has been altered within the original building envelope. Construction is of conventional

[2] The Building Code is available from the Department's website at www.dbh.govt.nz.
[3] New Zealand Standard NZS 3604: 1999 "Timber framed buildings".

light-timber framing, with a concrete slab to the garage and timber piled and framed floors to the house. The original timber windows have been retained, new French doors have been added to the north elevation, and the walls of the house and new garage are sheathed in monolithic cladding. The resulting building is simple in plan and form, with a new 27.5^{o} pressed metal tile roof that has gables to the house and a lower level hipped roof to the new garage. The eaves and verge projections are generally 500mm wide.

2.2 Three new timber slat decks are constructed at the ground floor level, and are supported on timber piles and beams. A timber pergola, constructed over the north deck, is attached to the house.

2.3 The original dwelling is more than 30-years old, so I consider that the original wall framing is likely to be boric treated. The expert has noted that he found no evidence of treatment on the new timber he was able to inspect. I have not received any information as to the treatment, if any, of the timber used to construct the external walls of the new garage. However, given the date of construction of the garage extension, I accept that the new external wall framing is unlikely to be treated.

2.4 The wall cladding is a monolithic cladding system described as stucco over a solid backing. The original house had asbestos cement shingles fixed over battens, which has been retained as the solid backing for the overlaid stucco plaster. For the new garage walls, the solid backing consists of "Hardibacker" fibre-cement backing sheets fixed through the building wrap directly to the framing timbers. All external walls have been finished with a solid plaster system, with an increased thickness providing a uniform finish over the existing asbestos cement siding. The plaster applications are finished with a final paint system.

2.5 As described by the territorial authority, the consented plans do not indicate that the existing cladding is to be covered with new stucco plaster. This is an issue that needs to be considered regarding an amendment to the original consent. I also note that this issue does not appear to have been addressed by the territorial authority during its initial inspection processes.

3 Sequence of events

3.1 The territorial authority issued a building consent in late 1998.

3.2 The territorial authority carried out various inspections during the construction of the house and the stucco cladding (including the overlaid cladding) was passed on 25 March 1999. The territorial authority carried out a final inspection of the house on 9 June 1999. The "Final Inspection Check List" relating to this final inspection passed all the elements of the house with the exception of the sub-floor ventilation.

3.3 The territorial authority carried out a further inspection of the property on 30 November 2005. In a letter to the owner dated 15 December 2005, the territorial authority regretted that the house might not comply with the Building Code in a number of respects. The territorial authority attached a notice to fix, also dated 15 December 2005, 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 in accordance with the relevant acceptable/alternative solutions approved under the building consent.
3. Items not installed per accepted trade practice.
4. Drainage and ventilation.
5. Changes to the building consent.
6. Durability requirements.

The notice also set out the actions that the applicant was to undertake to remedy the contravention or items of non-compliance.

3.4 The owner's application for a determination was received by the Department on 14 February 2006.

4 The submissions

4.1 The applicant made a submission regarding the matter of doubt or dispute. The applicant noted that the territorial authority had carried out a final inspection of the house and had only failed the sub-floor ventilation. The applicant requested that the Department require the territorial authority to issue a code compliance certificate at the date that the building was completed and also require the territorial authority to withdraw the notice to fix. The applicant did not think that it was appropriate or legal for the territorial authority to retrospectively impose today's revised standards for work carried out some years before such revisions were implemented.

4.2 The owner forwarded copies of:

- some of the territorial authority's inspection documentation
- the notice to fix
- the correspondence from the territorial authority.

4.3 In a covering letter to the Department dated 17 February 2006, the territorial authority described the Particulars of Contravention.

4.4 The territorial authority also forwarded copies of the:

- plans
- notice to fix
- correspondence with the applicant.

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

4.6 The draft determination was sent to the parties for comment on 1 June 2006.

4.7 The applicant responded to the draft determination in a letter to the Department dated 12 June 2006. The applicant made the following submissions:

- The main thrust of the application was whether it was appropriate, reasonable and legal for the territorial authority to refuse to issue a code compliance certificate for work that it had inspected and passed
- The draft determination has overlooked this issue, and is therefore irrelevant to the application
- All outstanding issues, other than subfloor ventilation, advised in the territorial authority's final inspection report have been remedied
- The territorial authority is legally bound to issue a code compliance certificate as soon as it is satisfied that the subfloor ventilation is adequate. All other issues that have since become apparent are irrelevant.

I have considered these comments, and respond to them in paragraph 7.4.1.

4.8 The territorial authority responded to the draft determination in a letter to the Department dated 13 June 2006. The territorial authority commented on several minor points in the draft determination. I have considered these comments and have amended the draft as I consider appropriate.

5 The expert's report

5.1 The expert inspected the cladding and other relevant elements of the building on 20 and 21 March 2006 and furnished a report that was completed on 8 April 2006. The expert was of the opinion that the cladding was unsatisfactorily installed and noted that it had not been painted since it was originally installed. The expert removed an area of the plaster over the existing shingles adjacent to one window and an area of plaster over the "Hardibacker" below a pergola rafter. I am prepared to accept that these examples are representative and apply to similar details throughout the house.

5.2 The expert noted that the dry weather conditions experienced for the 12 weeks prior to the inspection of the property would have likely allowed the building to dry out. Accordingly, the expert concentrated on areas where damaged materials were present. The expert found evidence of timber decay in a cavity batten where the cladding on the existing structure was removed during the invasive inspection. However, I note that there is no confirmation that this decay was a result of the re-cladding of the building.

5.3 The expert made the following comments regarding the cladding:

- the cladding lacks control joints
- the cladding is cracked at all elevations
- the base of the cladding has insufficient ground clearance at some locations
- the base of the cladding to the garage is in contact with the foundations and lacks a bond-breaker
- the base of the cladding finishes hard onto the timbers of the north and east decks
- the head flashings to the exterior joinery units are finished flush with the jambs

- there are no jamb or sill flashing installed to the exterior joinery units
- the end of the apron flashing at the garage lacks a kick-out extension
- the pergola beams are not flashed or waterproofed where they penetrate the cladding
- apart from the garage area, the cladding is supported by timber pile foundations, which should be subject to a specific engineering design.

5.4 The expert noted that the non-mandatory NZS 3604, the building standard for light timber-framed buildings, requires that medium weight claddings such as stucco be supported on a continuous foundation. This cladding, supported on pile foundations, would need to be subject to a specific design to be acceptable. Such a design would need to take into account the amount of ground water reportedly on this site.

5.5 The expert also noted problems associated with dampness under the building. These were:

- the inadequate clearance between the ground and the sub-floor framing
- the visible wetness of the soil under the building and the wicking of moisture up the timber piles
- some of the site and house drains discharging under the house
- the inadequate cross flow to the sub-floor ventilation
- the construction of the drainage gullies, which allows surface water to enter under the building.

5.6 A copy of the expert's report was provided to each of the parties on 12 April 2006.

5.7 The territorial authority responded in a letter dated 20 April 2006 querying the expert's reference that the "exterior of the dwelling has been renovated generally in accordance with the consented building plans". The territorial authority noted that the consented plans did not indicate that the existing cladding was to be plastered. The only notation referring to cladding was that concerning the new garage extension. Apart from this observation, the territorial authority accepted the expert's report.

6 Evaluation for code compliance

6.1 Weathertightness evaluation framework

6.1.1 In evaluating the design of a building and its construction, it is useful to make some comparisons with the relevant Acceptable Solution[4], in this case E2/AS1, which will assist in determining whether the named features of this house are code compliant. However, in making this comparison, the following general observations are valid:

- Some Acceptable Solutions cover the worst case, so that they may be modified

[4] An Acceptable Solution is a prescriptive design solution approved by the Department that provides one way of complying with the Building Code. The Acceptable Solutions are available from The Department's Website at www.dbh.govt.nz.

in less extreme cases 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 may be necessary to add some other provision to compensate for that in order to obtain compliance with the Building Code.

6.1.2 The approach in determining whether building work is weathertight and durable and is likely to remain so, is to apply the principles of weathertightness. This involves the examination of the overall design of the building, the surrounding environment, the detailed 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 Department and its antecedent the Building Industry Authority, have also described weathertightness risk factors in previous determinations (refer to Determination 2004/1 *et al*)[5] relating to cladding and these factors are also used in the evaluation process.

6.1.3 The consequences of a building demonstrating a high weathertightness risk is that building solutions that comply with the Building Code will need to be more robust. Conversely, where there is a low weathertightness risk, the solutions will need to be less robust. In any event, there is a need for both the design of the cladding system and the quality of its installation to be carefully carried out.

6.2 Weathertightness risk

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

- is situated in a low wind zone
- is single storey and is of a simple shape on plan
- has 500mm wide eaves projections that provide good protection to the cladding beneath them
- has three timber decks
- has external wall framing to the original walls that is likely to be treated to a level that is effective in helping resist decay if it absorbs and retains moisture
- has external wall framing to the new walls that is unlikely to be treated to a level that is effective in helping resist decay if it absorbs and retains moisture.

6.2.2 When evaluated using the E2/AS1 risk matrix, these weathertight features show that all elevations of the building demonstrate a low weathertightness risk rating. 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.

[5] Copies of all determinations issued by the Department can be obtained from the Department's website.

6.3 Building performance

6.3.1 Weathertightness

6.3.1.1 It is clear from the expert's report that the cladding installed on the house is unsatisfactory in terms of its weathertightness risk and performance perspectives and considerable work is required to make the building code compliant. However, there is no firm evidence that the house is leaking at the present time.

6.3.2 Other moisture problems

6.3.2.1 The moisture evident under the building is another matter of concern. Further investigation is urgently required to ensure that the structural integrity of the affected elements has not been compromised.

6.3.3 Possible structural problems

6.3.3.1 In particular, I am concerned that the cladding support for the overlaid cladding to the original wall cladding of the relocated house may not have been subject to the required specific engineering design.

7 Discussion

7.1 External moisture

Issue 1: The cladding on the new extension

7.1.1 I am satisfied that the current performance of the cladding to the garage extension is inadequate because it has not been installed according to good trade practice and has numerous defects at present. In particular, it demonstrates the key defects listed in paragraph 5.3. While there are few of the known weathertightness risk factors present in this house, this has to be considered in combination with the significant faults identified in the cladding system. It is these major faults that indicate the structure does not have sufficient provisions to compensate for the lack of a drained and ventilated cavity in the new structures. However, I have not received sufficient evidence to show that the cladding is allowing the ingress of moisture and, as a consequence, I conclude that it does comply with clause E2 of the Building Code.

Issue 2: The cladding on the relocated building

7.1.2 I am satisfied that the current performance of the cladding over the original cladding of the relocated house is inadequate because it has not been installed according to good trade practice and has numerous defects at present. While the requirements may be lower (under section 112 (1) (b) of the Act) than those applying to the cladding of the garage extension, the overlaid cladding demonstrates key defects similar to those referred to in paragraph 7.1.1. While the overlaid cladding may not be currently allowing the ingress of moisture, the original cladding was not designed to support the overlaid cladding and is therefore unlikely to comply with the building code to the same extent as it did prior to the addition of the new cladding. The presence of decay in the battens of the existing structure indicates that the cavity that they form may not be fully effective.

Issue 3: Structure and surface water

7.2 Structure and surface water

7.2.1 The building is also required to comply with the structural requirements of clause B1. Because of the sub-floor faults in the original dwelling described in paragraph 5.4 and with regard to the concerns to the support of the overlaid cladding discussed in paragraph 6.3.3.1, the house does not comply with the requirements of clauses B1.

7.2.2 The building is also required to comply with the surface water requirements of E1. I find that, because of the sub-floor faults described in paragraph 5.5, the building does not comply with the requirements of clause E1.

7.3 Durability

7.3.1 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 this building are likely to allow the ingress of moisture in the future, the building does not comply with the requirements of clause B2.

7.4 The applicant's comments on the draft determination

7.4.1 I responded to the applicant's comments on the draft determination, summarised in paragraph 4.6, in a letter to the applicant dated 30 June 2006. I accept that the territorial authority inspected and passed the construction of the house during 1999, with the exception of the sub-floor ventilation (refer paragraph 3.2).

7.4.2 However, notwithstanding those earlier inspections, I consider that, on the basis of its subsequent inspection in 2005, the territorial authority was entitled to refuse to issue a code compliance certificate if it could not be satisfied that the building complied with the building code.

7.4.3 The construction of this building is such that it must be evaluated for compliance with the building code as an alternative solution, and I have done so in this determination. I consider that the building did not comply with the building code in 1999 and it does not comply now (due to the defects listed in paragraph 5.3), and I therefore make no change to the decisions presented in paragraph 9.

8 Conclusion

8.1 I find that, because of the extent and apparent complexity of the faults that have been identified with this cladding, I am unable to conclude, with the information available to me, that remediation of the identified faults, as opposed to partial or full re-cladding, could result in compliance with the relevant clauses of the Building Code. I consider that final decisions on whether code compliance can be achieved by either remediation or re-cladding, or a combination of both, can only be made after a more thorough investigation of the cladding. This will require a careful analysis by an appropriately qualified expert. Once that decision is made, the chosen remedial option should be submitted to the territorial authority for its comment and approval. If the territorial authority chooses to reject the proposal, then the applicant is entitled

to seek a further Determination on whether the proposed remedial work will led to compliance with the requirements of clauses B1, B2, and E1.

8.2 Effective maintenance of claddings (in particular monolithic cladding) is important to ensure ongoing compliance with clauses B2 and E2 of the Building Code and is the responsibility of the building owner. Clause B2.3.1 of the Building Code requires that the cladding be subject to "normal maintenance", however, that term is not defined in the Act.

8.3 I take the view that normal maintenance is that work generally recognised as necessary to achieve the expected durability for a given building element. With respect to the cladding, the extent and nature of the maintenance will depend on the material, or system, its geographical location and level of exposure. Following regular inspection, normal maintenance tasks shall include but not be limited to:

- Where applicable, following manufacturers' maintenance recommendations
- Washing down surfaces, particularly those subject to wind-driven salt spray
- Re-coating protective finishes
- Replacing sealant, seals and gaskets in joints.

8.4 As the external wall framing of the new garage extension is not treated to a level that will resist the onset of decay if it gets wet, periodic checking of its moisture content should also be carried out as part of normal maintenance.

9 The Decision

9.1 In accordance with section 20 of the Building Act 1991, I hereby determine that the building does not comply with clauses B1, B2, and E1 of the Building Code, and accordingly confirm the territorial authority's decision to refuse to issue a code compliance certificate.

9.2 I note that the territorial authority has issued a notice to fix that also required provision for adequate ventilation and drainage. A new notice to fix should be issued requiring the owners to bring the house into compliance with the Building Code. The notice to fix may list the items to be rectified but it should not specify how compliance is to be achieved as this is for the owner to propose and for the territorial authority to accept or reject. It is important to note that the Building Code allows for more than one method of achieving compliance.

9.3 I would suggest that the parties adopt the following process to meet the requirements of clause 9.2. Initially, the territorial authority should issue the notice to fix, listing all the items that the territorial authority considers to be non-compliant. The applicant 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.

Issue 4: The additional durability considerations

10 Discussion

10.1 I note that the relevant provision of clause B2 of the building code requires that building elements must, with only normal maintenance, continue to satisfy the performance requirements of the code for certain periods "from the time of issue of the applicable code compliance certificate".

10.2 As set out in paragraph 3.3, the territorial authority has concerns about the durability, and hence the compliance with the Building Code, of certain elements within the building, taking into account the completion of the building in 2000. In the draft determination sent to the parties in July 2006 I made an interim decision on the matter of the durability by determining that there be a waiver or modification of the Building Code requirements relating to durability. Since then, I have received some general legal advice on waivers and modifications. As this advice is not clear, I subsequently have sought clarification of some aspects of that advice.

10.3 Until I receive the clarification I will suspend making a decision about the additional durability considerations. This will enable me to now determine matters related to the compliance of the cladding so that the steps outlined in paragraph 9.3 can commence. I will issue a second determination limited to the durability considerations as soon as possible.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 12 July 2006.

John Gardiner
Determinations Manager