

Determination 2006/97

The validity of a Code Compliance Certificate issued for a monolithic-clad building at 145 Wynyard Crescent, Fernhill, Queenstown



1 The dispute to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004¹ (“the Act”) made under due authorisation by me, John Gardiner, Determinations Manager, Department of Building and Housing (“the Department”), for and on behalf of the Chief Executive of that Department. The applicant is the owner Mr McLennan (“the applicant”), and the other party is Queenstown Lakes District Council (“the territorial authority”). I have included within “the territorial authority” the contractor Civic Corporation Ltd., which acts as an agent to provide building regulatory services on behalf of the territorial authority.
- 1.2 The dispute for determination is whether the agent’s decision to issue a code compliance certificate (on behalf of the territorial authority) for a 4-year-old house

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

because it was satisfied that the building complied with the Building Code² (First Schedule, Building Regulations 1992) is correct.

1.3 The questions to be determined are:

1.3.1 Issue 1: The existing code compliance certificate

1.3.1.1 Whether I should confirm the validity of the code compliance certificate, which was issued by the territorial authority under section 43(3) of the Building Act 1991, for the building.

1.3.2 Issue 2: The exterior claddings

1.3.2.1 Whether I am satisfied on reasonable grounds that the exterior claddings as installed to the external walls of the building (“the cladding”), complies with clauses B2 “Durability” and E2 “External Moisture” the Building Code (see sections 177 and 188 of the Act). By “the wall cladding as installed” I mean the components of the system (such as the backing materials, the flashings, the joints, the plaster and the coatings) as well as the way the components have been installed and work together.

1.3.3 Issue 3: Other compliance issues

1.3.3.1 Whether I am satisfied on reasonable grounds that the various other items within the house, as raised by the applicant in his application (refer paragraph 4.1), comply with the Building Code.

1.4 In making my decisions, 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 information using a framework that I describe more fully in paragraph 6.1. I have considered those aspects of the Act or the Building Code that apply to a building of this configuration.

1.5 In his submission the owner listed a number of points which he titled “Claim”, in regards to a number of design features. In general these points are more of a contractual claim or a claim under tort. As a determination is solely around Building Code compliance these points cannot be dealt with in this process.

2 The building

2.1 The house is an L-shaped building situated on a south-facing steeply sloping site in a moderate wind zone for the purposes of NZS 3604³. The house is 2-storeys high at the south with a single-storey bedroom wing to the east, which is stepped up the slope of the site. A basement area at the road front provides garage, storage and laundry areas. Construction of the basement is specifically engineered, with concrete slab and foundations, steel and timber framing, and reinforced polystyrene concrete block walls and retaining walls. Steel framing is also used to accommodate full-

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

height sloping-top glazing units in the south wall above. The remaining areas are generally conventional light timber frame, with stepped concrete slabs and foundations, polystyrene concrete block part-height retaining walls, monolithic cladding and aluminium windows with decorative perimeter bands. The building shape is reasonably simple, with four separate skillion roof planes. The 15° monopitched roofs are clad in profiled metal with eaves projections of about 400mm, and verge projections of about 100mm. A timber framed chimney structure extends through the west roof to accommodate the flue from a gas fire in the living room.

- 2.2 A steel and timber framed cantilevered deck extends from the living areas of the first floor over the garage and entrance below. The deck has monolithic-clad wing walls under each end, which are linked with a curved monolithic-clad front band that extends to form an upstand between the metal supports to the metal and glass balustrades. The deck floor pavers are laid over a membrane on a compressed fibre cement underlay, and turn up against the deck upstand.
- 2.3 The expert has noted that the timber framing throughout the house appears to be “NZ Oregon”. I have received no written evidence as to the treatment, if any, of the external wall and deck framing timber. Given the date of construction of this building, I consider that the external wall and deck framing is likely to be untreated.
- 2.4 The cladding over the timber-framed walls is a monolithic cladding system that may be described as stucco over a rigid backing. In this instance it consists of fibre cement sheets fixed through the building wrap directly to the framing timbers, and covered by a slip layer of building wrap, over which has been installed metal-reinforced 20 mm thick solid plaster and a flexible paint coating.
- 2.5 The basement and retaining walls are a proprietary wall system formed from 250mm thick polystyrene (EPS) block shells that form permanent formwork to reinforced concrete. The blocks (“polyblocks”) have interlocking castellated joints and the system includes purpose-made components. The BRANZ Appraisal Certificate No. 362 (2000) for a similar system notes that the polyblocks must be finished on the exterior with a proprietary external finish that is approved for use over EPS blocks.
- 2.6 I have seen no evidence of producer statements or warranties for the cladding.

3 Sequence of events

- 3.1 The territorial authority, issued a building consent (which I have not seen) for the house on 18 February 2000, and carried out various inspections during the course of construction, including prior to lining installation on 16 August 2000 and a drainage inspection on 1 November 2000.
- 3.2 A final inspection was carried out on 7 January 2003 and, in a letter to the first owner Mr Hogg (“the first owner”) dated 7 January 2003, the territorial authority noted that several items required attention. The inspection record has ticks against these items (indicating satisfactory completion), and the territorial authority subsequently issued a code compliance certificate dated 20 September 2005 “in respect of all the building work under the above building consent”.

3.3 The applicant subsequently purchased the house from the first owner and, in an email to the territorial authority dated 5 December 2005, noted problems regarding the:

- lack of tanking to the retaining walls to the north
- lack of stormwater connection to the northeast gutter
- leaking into the deck framing.

The applicant attached a report on these issues, and expressed his surprise that a code compliance certificate had been issued for the house.

3.4 Following a series of emails over the next few months, the territorial authority emailed the applicant on 16 March 2006, advising that the building had been inspected, agreeing that there were problems and noting:

Whilst all the items do appear to be a problem relating to workmanship which should have been worked through with the tradesmen, I have taken the opportunity to advise our insurers of the existence of the problems, and I would hence need to forward any further correspondence to them in due course.

3.5 Following further correspondence, in an email dated 22 May 2006 the territorial authority noted that it had sought advice from the Department, which indicated that a notice to fix could not be issued as a code compliance had been issued for the house.

3.6 An application for a determination was received by the Department on 14 June 2006.

4 The submissions

4.1 The applicant noted in the application that the matter for determination was whether the territorial authority had issued a code compliance certificate for a building that did not comply with the Building Code or the Act. The applicant attached a photographic report, and explained that the specific items for determination were:

- the retaining walls not built in compliance with the consent documents
- the drainage not installed in compliance with the consent documents
- the dangerous gas fire and lack of an inspection certificate
- the leaking deck
- the change in flooring from the consent documentation
- the lack of as-built drainage or floor plans
- the lack of compliance of the spa pool
- the lack of tanking to the east and west retaining walls

4.2 The applicant forwarded copies of:

- the drawings
- some of the territorial authority's inspection records
- correspondence with the territorial authority
- correspondence with the gas supplier
- various other statements, photographs and information.

4.3 The territorial authority made no submission.

4.4 Copies of the applicant's submission and other evidence were provided to the territorial authority, which made no submission in response.

4.5 A copy of the draft determination was sent to the parties for comment on 19 September 2006. The applicant accepted the draft.

4.6 In a letter to the Department dated 26 September, the territorial authority accepted the general findings of the draft determination, but noted the following points:

- The downpipe in the northeast corner had apparently been connected to the gutter at the time of inspection, although not to the stormwater drain.
- The deck and deck drainage would likely have appeared to be code compliant, with the poor workmanship not visible at the time of inspection.
- The use of the risk matrix to assess weathertightness risk is questionable, as it did not exist when the building consent was issued (refer paragraph 6.2.3).

4.7 Immediately prior to the issue of the determination I received a copy of an email sent by the applicant to the territorial authority on 12 October 2006. The email included the advice that:

We have just observed that water is entering the large bedroom to the rear of the house causing damp carpets and the growth of mould. This is the bedroom behind the incomplete and unsealed rear retaining wall.

The territorial authority acknowledged the email in a reply to the applicant of the same date. I recommend that this matter be added to the other items requiring to be rectified and therefore identified in the notice to fix to be issued by the territorial authority, refer paragraph 12.1.

5 The expert's report

5.1 The expert inspected the cladding on 11 August 2006, and furnished a report that was completed on 25 August 2006. The expert noted that the house generally accorded with the consent drawings, with the exception of minor planning changes. The

expert noted that the underlying construction of the framing, blockwork and roof appeared “to be a good standard and no obvious defect or major distortion was viewed”, and that the interior finishing was generally of a good standard. However, the expert noted that the exterior cladding was not in good condition considering “the extent of patching and crack repair and leaching of pigment and appears to have only lasted three years”. The expert also noted that some areas of the exterior appeared to “have not had appropriate regard for providing full weathering and weathertightness detailing”.

- 5.2 The expert noted moisture dripping from behind the plaster at the bottom of the deck band, and removed a soffit panel to inspect the framing below the deck. The expert noted that the timber framing and fibre cement substrate were stained and very wet (with signs of early decay in the framing), and the pipe from the deck drainage outlet was leaking at the joint. The expert recorded moisture readings in the framing that ranged from 32% to more than 50%.
- 5.3 The expert inspected the interior of the house, and noted no evidence of dampness or mould with the interior appearing “dry and sound and free from major defects”. The expert took 2 invasive moisture readings through the stucco plaster into the bottom plate on the east elevation, and recorded 26% at the northern end of the bottom plate. Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure.
- 5.4 The expert made the following specific comments on the house:

The retaining wall tanking

- There was inadequate weatherproofing to the polyblock retaining walls around the north bedroom, with inadequate mulseal, no DPM and no fibre cement sheet protection as specified in the structural drawings.
- The polyblocks had been left exposed in some areas, and the plasterwork stopped short of the north wall, and it appeared that the rear walls of the north bedroom had never been completed.

Stormwater

- The downpipe at the northeast corner of the north bedroom was lying on the ground and has never been connected to stormwater drains (which did not appear to extend the full length of the east elevation), with the gutter draining directly onto the ground.
- There was no evidence that as-built drainage plans have been supplied.

The stucco plaster

- Too few or inadequate control joints had been provided in the stucco for the numerous walls where dimensions exceed the 4 metre length limit recommended in NZS 4251, the Code of Practice for solid plastering.
- There was extensive uncontrolled cracking in the plaster.

- The horizontal cracking of the plaster at the junction between the blockwork and the timber framing, indicated that the horizontal control joints were missing or inadequate.
- Clearances from the bottom of the cladding to the paving or ground were inadequate in some areas.
- The paintwork was in poor condition, and the leaching of paint pigments indicates moisture entry into the plaster.

The windows

- The windows had been face-fixed against the cladding with head flashings, but with no sill flashings.
- The decorative band at the sill protruded beyond the sill flange, preventing any moisture entering the jambs from draining to the outside.

The deck

- The deck drainage outlet was poorly weatherproofed and positioned above the level of the underlying deck membrane.
- The pipe from the deck outlet lacked fall, with the junction unsealed and leaking.
- The deck membrane was crimped and peeling from the tiled perimeter upstand
- The membrane was not sealed around the base of the balustrade supports, and mortar had been used to filled the gaps.

Roof to wall junctions

- Clearances to the base of the stucco to apron flashings were inadequate in some areas, with some flashings sloping towards the wall cladding – and stains on the paintwork indicated moisture penetration into the plaster in some areas.
- The apron flashings over verges and oblique eaves were embedded into the plaster, with inadequate flashings or weatherproofing of the junctions. Where verge flashings sloped towards the cladding, moisture can drain against the base of the plaster.

Gas heater

- Remedial work to the flue of the living room gas fire appeared to have been completed and tested, but a certificate of compliance had not yet been supplied.

5.5 The expert also noted that, while the architectural drawings indicated Hibond flooring above the basement, the flooring system as constructed complied with the structural drawings and engineering calculations dated 30 January 2000, which

formed part of the conditions of the building consent. The expert therefore considered that the flooring system was in accordance with the building consent.

- 5.6 The expert also noted that the spa pool on the upper deck was not included in the consent documentation and he was not able to establish when it had been installed. The expert noted that the balustrades and doors to the upper deck did not comply with building code requirements.
- 5.7 A copy of the expert's report was provided to the parties on 4 September 2006.

6 Evaluation for code compliance

6.1 Evaluation framework: exterior cladding

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, in this case E2/AS1, which will assist in determining whether the 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 in less extreme cases 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.

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 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 Department and its antecedent, the Building Industry Authority, have also described weathertightness risk factors in previous determinations (refer to Determination 2004/1 et al) 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 may be less robust. In any event, there is a need for both the design of the cladding system and its installation to be carefully carried out.

6.2 Weathertightness risk

6.2.1 In relation to these characteristics I find that the building:

- is built in a moderate wind zone

- is a maximum of two storeys high
- is reasonably simple in plan and in form
- has an exposed cantilevered deck
- has monolithic cladding which is fixed directly to the framing
- has eaves projections of 400mm and verges of 100mm
- has external wall and deck framing that is untreated, so providing no protection against decay if the framing absorbs and retains moisture.

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

6.2.3 I note the territorial authority's comment in paragraph 4.6, and, while I accept that the E2/AS1 risk matrix could not have been used at the consent stage of this house, an assessment of the weathertightness risk is nevertheless important when assessing the code compliance of the house as it was actually built.

6.3 Weathertightness performance: exterior cladding

6.3.1 Generally the cladding appears to have been installed in accordance with reasonable trade practice. However, some junctions, penetrations and edges are not well constructed according to the standard applying now or at the time of construction (NZS 4251, the Code of Practice for solid plastering), and these areas are described in paragraph 5.4 and in the expert's report as being the:

- inadequate weatherproofing, and lack of plaster finish to the polyblock retaining walls around the upper north bedroom
- lack of stormwater connection to the northeast end of the gutter
- lack of adequate vertical and horizontal control joints to the cladding
- numerous cracks to the cladding
- inadequate clearances from the ground, paving and roof cladding to the base of the cladding in some areas
- poor condition of the paint coating to the cladding

- lack of sill flashings to the windows to drain moisture to the outside, beyond the face of the decorative bands
- poorly positioned and weatherproofed deck drainage outlet, including the leaking pipe junction under the deck
- inadequate condition of the underlying deck membrane, including gaps, crimping, peeling and poor sealing around balustrade support posts
- inadequate apron flashings and weatherproofing of the roof to wall junctions
- lack of as-built drawings
- lack of compliance certification for the gas fire.

6.3.2 I note the expert's comments in paragraph 5.2 with regard to significant moisture penetration into the deck and the signs of initial decay in the deck framing, and draw this to the attention of the territorial authority. I urge the territorial authority to investigate the condition of the deck substrate and framing, and to instigate any remedial work that might be required to ensure the structural stability of the deck structure.

6.3.3 I also note the expert's comment in paragraph 5.5, and accept that the flooring system over the basement has been constructed in accordance with the building consent.

6.3.4 I accept the expert's conclusion in paragraph 5.6 that the spa pool installation was not part of the building consent and this item is therefore not considered further in this determination. However, I note the expert's comments on the apparent non-compliance of the balustrades and doors to the upper deck on which the spa pool is located and draw this to the attention of the territorial authority.

6.3.5 Notwithstanding the fact that the cladding is fixed directly to the timber framing, thus limiting drainage and ventilation behind the cladding, I have noted certain compensating factors that assist the performance of the cladding in this particular case:

- The monolithic cladding has generally been installed to fair trade practice.
- There is little evidence of moisture penetration at present apart from the deck.
- The house design does not lead to high weathertightness risks.

7 Conclusions

7.1 I am satisfied that the current performance of the cladding is not adequate because it is allowing water penetration into the building at a number of locations at present.

Consequently, I am satisfied that the building does not comply 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 on the building are likely to allow the ingress of moisture in the future, the house does not comply with the durability requirements of clause B2.
- 7.3 Subject to further investigations that may identify other faults, I consider that, because the faults that have been identified with the cladding system occur in discrete areas, I am able to conclude that satisfactory rectification of the items outlined in paragraph 6.3.1 should be expected to result in the building becoming and remaining weathertight and in compliance with clauses B2 and E2.
- 7.4 Effective maintenance of claddings (in particular of monolithic claddings) 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.
- 7.5 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 should 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.
- 7.6 As the external wall framing of this building is untreated, periodic checking of its moisture content should also be carried out as part of normal maintenance.
- 7.7 In the circumstances, I decline to incorporate any waiver or modification of the Building Code in this determination.

Issue 1: The existing code compliance certificate

8 Discussion

- 8.1 As outlined in paragraph 3.2, the territorial authority issued a code compliance for this house on 20 September 2005. I note that the validity of a code compliance

certificate is dependent on whether the building work complied with the building code at the time it was issued. If that was not the case, then the code compliance certificate was improperly issued at the time.

8.2 I consider that the expert's report has provided evidence that the exterior cladding does not comply with the building code. I also note that the applicant had identified problems less than 3 months after the code compliance certificate was issued (refer paragraph 3.3), and I therefore consider that the house did not comply with the building code at the time the code compliance certificate was issued.

8.3 I conclude that the code compliance certificate was improperly issued at the time, and hence does not constitute a valid code compliance certificate.

9 The decision

9.1 I determine that the code compliance certificate dated 20 September 2005 that was issued by the territorial authority under section 43(3) of the Building Act 1991 for this house does not constitute a valid code compliance certificate, and I instruct the territorial authority to withdraw that code compliance certificate.

Issue 2: The exterior claddings

10 The decision

10.1 In accordance with section 188 of the Act, I hereby determine that the exterior cladding systems, including the deck, as installed do not comply with clause E2 of the Building Code. There are a number of items to be remedied to ensure that the house becomes and remains weathertight and thus meets the durability requirements of the code. Consequently, I find that the house does not comply with clause B2.

10.2 I also find that rectification of the items outlined in paragraph 6.3.1 will consequently result in the house becoming and remaining weathertight and in compliance with clauses B2 and E2. Work to correct these items may expose additional associated defects that are not yet apparent. All rectification work is to be completed to the approval of the territorial authority.

10.3 Finally, I consider that the cladding will require on-going inspection, maintenance and moisture monitoring to ensure its continuing code compliance.

Issue 3: Other compliance issues

11 The decision

11.1 In accordance with section 188 of the Act, I hereby determine that the drainage system as installed does not comply with clause E1 "Surface Water" of the Building Code. There are a number of items to be remedied to ensure that the house meets the

drainage requirements of the code. Consequently, I find that the house does not comply with clause E1.

- 11.2 I also find that rectification of the items included in paragraph 6.3.1 will consequently result in the house complying with clause E1. Work to correct these items may expose additional associated defects that are not yet apparent. All rectification work is to be completed to the approval of the territorial authority.
- 11.3 I also determine that the flooring system above the basement was constructed in accordance with the building consent.
- 11.4 I also determine that the installation of the spa pool did not fall within the building consent considered in this determination.

12 Future action

- 12.1 When the existing code compliance certificate has been withdrawn, the territorial authority should issue a notice to fix requiring the owner 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 that 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.
- 12.2 I would suggest that the parties adopt the following process to meet the requirements of paragraph 12.1. Initially, the territorial authority should withdraw the code compliance certificate. It should then issue a notice to fix, listing all the items that the territorial authority considers to be non-compliant. The owner should then produce a response to this in the form of a detailed proposal, produced in conjunction with a competent and suitably qualified person, as to the rectification or otherwise of the specified issues. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 13 October 2006.

John Gardiner
Determinations Manager