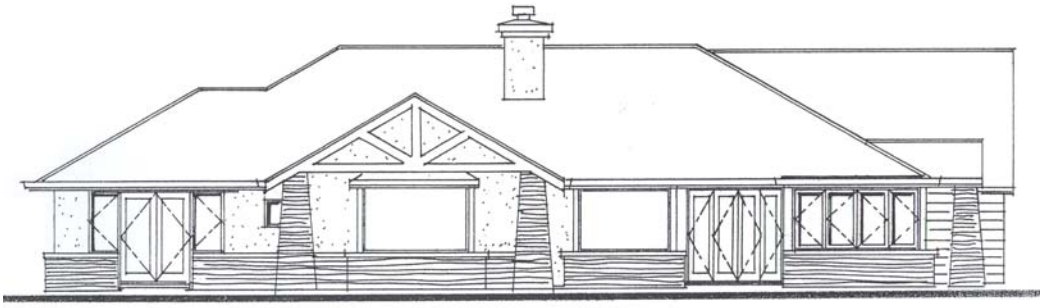
Determination 2008/67

Determination regarding the code compliance of a house at 23 Faith Place, RD1, West Melton



1. The matters 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, Manager Determinations, Department of Building and Housing ("the Department"), for and on behalf of the Chief Executive of that Department. The applicants are the owners, P and J Gardner ("the applicants"), and the other party is the Selwyn District Council ("the authority") carrying out its duties and functions as a territorial authority or building consent authority.

1.2 This determination arises from the decision of the authority to refuse to issue a code compliance certificate for a 5-year-old house because it was not satisfied that it complied with certain clauses of the Building Code[2] (First Schedule, Building Regulations 1992).

1.3 The authority has also made a late submission, as outlined in paragraph 4.7, that the durability of the house should be included in this determination.

1.4 I note that the authority has raised no matters relating to other elements in the building, and I have therefore limited this determination to matters relating to the exterior cladding and the durability provisions.

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

1.5 I therefore take the view that the matters for determination are:

1.5.1 Matter 1: The claddings

Whether the claddings as installed on the house comply with Clauses B2 and E2 (see sections 177 and 188 of the Act). By "the claddings as installed" I mean the components of the systems (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.

1.5.2 Matter 2: The durability considerations

Whether the building elements comply with Clause B2 "Durability" of the Building Code, taking into account the age of the building work.

1.6 In making my decision, I have considered the submissions of the parties, the report of the expert commissioned by the Department to advise on this dispute ("the expert"), and the other evidence in this matter. With regard to the external cladding, I have evaluated this information using a framework that I describe more fully in paragraph 6.1.

1.7 In this determination, unless otherwise stated, references to sections are to sections of the Act and references to clauses are to clauses of the Building Code.

2. The building

2.1 The building work consists of a single-storey detached house with an attached garage, which is situated on a gently sloping rural site in a high wind zone for the purposes of NZS 3604[3]. Construction is conventional light timber frame, with a concrete slab and foundations, monolithic cladding, isolated areas of stone cladding and aluminium windows. The building is moderately complex in plan and form, with a 40^{o} pitch pressed metal tile hipped and gabled roof that has eaves projections that are about 600mm overall to most walls, reducing to gutters only above some projecting walls.

2.2 The expert has noted no evidence of timber treatment and I note that the specification calls for "Laserframe Kiln dried or New Zealand Oregon". Given the date of construction in 2002 and the lack of other evidence, I consider the external wall framing to be untreated.

2.2.1 The wall claddings

2.2.2 The main cladding system to the house is EIFS[4] monolithic cladding. In this instance it is a "Rockcote Architectural Coatings" system, which includes purpose-made flashings to windows, edges and other junctions. The cladding consists of 60mm polystyrene backing sheets fixed directly to the framing over the building wrap, and finished with a mesh-reinforced plaster system and an acrylic paint coating system.

[3] New Zealand Standard NZS 3604:1999 Timber Framed Buildings
[4] External Insulation and Finish System

2.2.3 Isolated wall areas below some windows are clad in schist stone cladding, with projecting stone window sills. The stone veneer is about 150mm thick and is applied to fibre-cement backing sheets that are fixed directly to the framing over the building wrap.

2.2.4 The applicator of the EIFS cladding system has supplied a "Producer/Construction Statement" dated 26 February 2008, which states that the work was completed in accordance with the building code and notes that the cladding installation commenced on 16 June 2002. (However, I assume that the date is intended to be 16 June 2003, as the inspection records indicate that the concrete slab was not poured until September 2002). I note that the manufacturer's details dated 15 March 2002 would apply at the time that the cladding to this house was installed.

3. Background

3.1 The authority issued a building consent (No. 021001) on 13 September 2002, under the Building Act 1991, based on a building certificate (No. 02/278) issued by the building certifier on 7 August 2002.

3.2 The building certifier carried out the following inspections during construction:

- Pre-pour foundations on 24 September 2002 (which passed)
- Pre-pour slab on 27 September 2002 (which passed)
- Post-lining and bracing on 20 December 2002 (which passed)
- Drainage on 13 February 2003 (which passed)
- Final inspection on 17 February 2003 (which identified 2 outstanding items)
- Cladding inspection on 15 September 2003 (which passed)

3.3 The building certifier issued an interim code compliance certificate dated 15 September 2003, which noted:

> Interim Code of Compliance is for the purpose of compliance of the exterior cladding system only.

3.4 The building certifier carried out a recheck inspection on 14 July 2004, which confirmed that the outstanding work had been completed and noted "inspection OK". However, a producer statement for the cladding system remained outstanding.

3.5 In a facsimile to the authority dated 23 August 2004, the building certifier attached a building certificate for all building work. The facsimile noted that the certifier had :

> ...requested a Plaster Producer [statement] several times from [the builder] but have never received it, therefore [the building certifier] is now supplying Council with a Final Building Certificate for this job.

3.6 The attached building certificate (No. 02/278 dated 23 August 2004 stated that the building certifier was satisfied on reasonable grounds that:

> The building work complied with the listed provisions of the Building Code on the date of certification.
> (Foundation/Floor slab/Post Lining/Drainage/ Final/Cladding Interim ONLY)

(Plaster Producer Statement NOT supplied by Housing Company)

3.7 It appears that the applicants were not aware that a code compliance certificate had not been issued until they were arranging to sell the property and a prospective buyer required a code compliance certificate.

3.8 The parties agree that the request for a code compliance certificate, and the advice from the authority were verbal. According to the applicants they had been informed that:

> ...due to a producer/construction statement not being signed by Rockcote Plaster Systems the certificate could not be issued or filed and now 2 years had passed you could not get one. Although we had the final inspection completed.

3.9 According to the authority, the applicants did not seem aware that the building had been under the control of and inspected by a building certifier and the situation regarding responsibility for inspections of the construction was explained and the applicants were advised that:

> ...an Independent Report may be the best option to take to satisfy the prospective purchaser that the building was fully compliant with the Building Code.

3.10 The applicants arranged for the house to be inspected by a specialist building inspection company ("the inspection company") which inspected the house on 27 February 2008. The report to the applicants noted that no invasive testing had been carried out, noted that the wall cladding was in "excellent condition" and concluded:

> There were no problems found with this home. The home has been built to a very high standard in a good tradesman like manner, with good quality material. I believe this home would pass for compliance.

3.11 In a letter to the applicants' solicitor dated 14 March 2008, the solicitor acting for the prospective purchaser of the property confirmed that a code compliance certificate remained a condition for the sale of the property.

3.12 The Department received an application for a determination on 31 March 2008.

3.13 In a letter to the applicants dated 31 March 2008, the cladding suppliers attached a manufacturer's warranty and explained that, as they do not install the cladding systems, they were "unable to provide a 'retrospective' Producer Statement to any project".

4. The submissions

4.1 In a letter to the Department dated 28 March 2008, the applicants briefly outlined the background to the current situation, noted that they were awaiting a statement from the cladding supplier, and explained that they had been unaware of any outstanding requirements until they had received an offer for the property.

4.2 The applicants forwarded copies of:

- the specification and the consent drawings
- some of the consent documentation

- some of the inspection records
- the correspondence with the authority
- the inspection company's report
- various other information and statements.

4.3 The authority made a submission in the form of a letter to the Department dated 10 April 2008, which outlined the background to the situation and noted that the building certifier's certificate appeared to cover the complete building with the exception of the plaster system. The authority stated:

> As the Council has not carried out inspections during construction to ensure compliance with the Building Code in respect of the plaster system, it exercises under Section 91 of the Building Act 2004 the option of not issuing a Code Compliance Certificate on the above dwelling.

4.4 The authority forwarded copies of:

- the specification and the consent drawings
- the consent documentation
- the building certifier's inspection records
- the interim code compliance certificate for the wall cladding
- the interim final building certificate from the building certifier
- the correspondence with the applicants
- various producer statements and other information.

4.5 A copy of the applicant's submission was provided to the authority, which responded with the submission outlined in paragraph 4.3. The applicants made no further submission in response to the submission of the authority.

4.6 A draft determination was issued to the parties for comment on 3 June 2008.

4.7 The authority commented on the draft determination in a letter to the Department dated 9 June 2008. In its submission the authority noted that the original matter was that the building certifier had not issued a code compliance certificate due to the lack of a producer statement for the cladding. However, it now appeared that the "status of the [EIFS cladding] "is inconclusive". The authority asked that the "durability provisions of the Building Code be backdated to . . . when the [EIFS cladding] was completed". The authority noted some typographical errors. I have considered the comments, and have amended the determination as I consider appropriate.

4.8 I have added Clause B2 Durability as a matter to be determined which I specifically address in paragraph 8. However, I note that requirements of Clause B2 apply to all the building elements and not just the cladding.

4.9 The applicants responded to the draft determination in a letter to the Department dated 12 June 2008. The applicants generally accepted the draft but noted the following:

- On the west side of the house, which is the most exposed, the capping to the stone veneer has a fall across its depth of 30mm to 40mm. In adverse weather, the only part of the stone to get wet is the west side, which is why a greater fall is provided.
- The north side has lower falls, but is well protected by the eaves and very rarely gets wet at all, and the other walls are not affected by the prevailing winds. The elevation references of the stone veneer photographs in the expert's report are miss-labelled.

(With respect to the matter of durability, the applicants verbally advised the Department that they moved into the house on 14 February 2003.)

4.10 Following the authority's request to include durability as a matter to be determined I sent a second draft determination to the parties for their comment on 20 June 2008. The second draft was issued for comment and for the parties to agree a date when the house complied with Building Code Clause B2 Durability. The applicants accepted the second draft on 21 June 2008.

4.11 The parties agreed that compliance with Clause B2 was achieved on 14 February 2003.

4.12 In a letter to the Department dated 24 June 2007, The authority generally accepted the second draft determination, but made some minor comments that included the following:

- The schist stone sills are not smooth, and water ponds at hollows and joints.
- The unknown construction behind the schist stone is concerning, considering the use of untreated timber and part of the stone sills may need removing to ensure that moisture is not penetrating to the underlying framing.
- Appropriate documentation of the amended stone construction will be required for the records.

I have considered the comments, and have amended the determination as I consider appropriate.

5. The expert's report

5.1 As mentioned in paragraph 1.6, I engaged an independent expert to provide an assessment of the condition of those building elements subject to the determination. The expert is a member of the New Zealand Institute of Building Surveyors. The expert inspected the house on 2 May 2008 and furnished a report that was completed on 15 May 2008.

5.2 The expert noted that, although construction was "generally carried out to a reasonable standard" and the cladding finish was generally "even and uniform and in an above average condition", various areas did not accord with the cladding manufacturer's instructions at the time of construction and some areas of roof flashings were "poorly fixed".

5.3 The expert also noted the following changes from the consent drawings:

- The cladding on the garage had changed from cedar weatherboards to EIFS.
- The roofing had changed from concrete tiles to pressed metal tiles
- The stone veneer under the window sills had not been installed over a cavity as shown in the drawings (refer paragraph 5.5).

5.4 The expert noted that control joints were not necessary for the wall dimensions in this house.

5.5 The expert removed a section of internal lining and wrap from the south wall of the dining room, and noted that the fibre-cement backing sheets to the stonework had been fixed directly to the framing. The expert also observed that the window opening had not been 'wrapped' and that no air seals had been installed.

5.6 The expert noted that the windows are recessed by the thickness of the cladding, with metal head flashings and that uPVC door jamb flashings were visible at door sills. The expert removed a small section of cladding at the jamb to sill junction of an east garage window, and noted uPVC sill and jamb flashings with no sealant or corner soakers at the junction. I accept that the exposed junctions are typical of similar locations elsewhere in the building.

5.7 The expert inspected the interior of the house, taking non-invasive moisture readings internally, and no evidence of moisture was observed. The expert took invasive moisture readings through the cladding below the window sills and noted that the readings ranged from 9% to 12%, with the drillings "firm and the swarf clean".

5.8 Commenting specifically on the wall and roof claddings, the expert noted that:

- the window details are not in accordance with the manufacturer's instructions at the time of installation as:
  - the sill flashing does not extend under the jamb flashings
  - there is no sealant applied at the junction of the jamb and sill flashings
  - there is no 5mm drainage gap at the sills to allow moisture to escape
- there are cracks in the window reveals at the lower corners
- the sills to the areas of stone cladding appear to lack sill flashings and are flat, with the rough stone surface and mortar joints allowing water to pond and penetrate into the fibre-cement backing sheets
- the meter box is inadequately sealed
- the membrane-lined internal gutter between the garage gable and the main house roof is ponding, with membrane lifting, metal flashings fixed through the membrane, crudely formed junctions and signs of corrosion
- the bottom of the apron flashings lacks adequate kickouts, with unsealed gaps apparent in some areas, and the ends of the gutters are embedded into the coating of the cladding
- the projecting roof above the dining room corner box window is clad with membrane that is not adhered to the plywood substrate, and the gutter fall at this corner prevents drainage to the downpipe.

5.9 The expert made the following additional comments:

- Although the bottom of the cladding butts into the asphalt for about 300mm at the sides of the garage door, these areas are sheltered beneath the verge overhang and have a relatively steep fall that ensures fast drainage away from the cladding.
- There are no air seals to the windows as required by the cladding manufacturer for a high wind area. However, I note that the inclusion of airseals was not a common practice at the time of construction of this house and I consider that the lack of moisture penetration after 5 years, despite the lack of air seals and inadequate window flashings, indicates that the interior lining and trim has been sufficiently well-sealed to provide adequate resistance to pressure differences between inside and outside air.
- The garage door lacks a head flashing. However, I note that the plaster coating is heavily textured and this rough surface should provide capillary breaks to resist movement of moisture across the underside of the 60mm deep reveal.

5.10 A copy of the expert's report was provided to the parties on 21 May 2008.

5.11 The authority commented on the expert's report in a letter to the Department dated 4 June 2008. The general content of the report was accepted but the conclusion was that schist cladding required further investigation and the internal gutters also require further investigation. These matters are covered in the draft.

6. Evaluation for code compliance

6.1 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 Solutions[5], 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.

6.2 Evaluation of external building envelope for E2 and B2 Compliance

6.2.1 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

[5] An Acceptable Solution is a prescriptive design solution approved by the Department that provides one way (but not the only way) of complying with the Building Code. The Acceptable Solutions are available from The Department's Website at www.dbh.govt.nz.

Department and its antecedent, the Building Industry Authority, have also described weathertightness risk factors in previous determinations[6] (for example, Determination 2004/1) relating to cladding and these factors are also used in the evaluation process.

6.2.2 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.

6.3 Weathertightness risk

6.3.1 In relation to these characteristics I find that this house:

- is built in a high wind zone
- is a moderately complex, single-storey building
- has monolithic cladding fixed directly to the framing
- has areas of stone cladding fixed over backing sheets directly to the framing
- has eaves and verge projections of about 600mm above most walls
- has external wall framing that is not treated to a level that provides resistance to the onset of decay if the framing absorbs and retains moisture.

6.3.2 The house has been evaluated using the E2/AS1 risk matrix. The risk matrix allows the summing of a range of design and location factors applying to a specific building design. The resulting level of risk can range from 'low' to 'very high'. The risk level is applied to determine what claddings can be used on a building in order to comply with E2/AS1. Higher levels of risk will require more rigorous weatherproof detailing; for example, a high risk level is likely to require a particular type of cladding to be installed over a drained cavity.

6.3.3 When evaluated using the E2/AS1 risk matrix, the weathertightness features outlined in paragraph 6.3.1 show that two elevations of the house demonstrate a medium weathertightness risk rating and the remaining elevations a low rating. I note that, if the details shown in E2/AS1 were adopted to show code compliance, the monolithic cladding to the medium risk elevations would require a drained cavity.

6.4 Weathertightness performance: exterior cladding

6.4.1 Generally the roof and wall claddings appear to have been installed in accordance with good trade practice. However, taking account of the expert's report, I conclude that remedial work is necessary in respect of the following:

- the windows, in regard to the sill to jamb flashing junctions, the cracks in the reveals, the lack of drainage gaps at the sills and the lack of air seals
- the rough flat stone sills above the areas of stone cladding (including any investigation of these areas)

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

- the inadequate weatherproofing of the meter box
- the internal gutter, associated flashings and lack of snowboards between the garage and main roof
- the inadequate weatherproofing at the bottom of the apron flashings and at the ends of the associated gutters
- the projecting roof and gutter to the corner box window.

6.4.2 I note the expert's comments in paragraph 5.9 above. I accept that these matters are adequate in this particular circumstance.

Matter 1: The wall and roof claddings

7. Discussion

7.1 I consider the expert's report establishes that the current performance of the claddings is adequate because they are currently preventing water penetration into the building. Consequently, I am satisfied that, as the cladding systems have met the performance requirements of the code for the past 5 years, the house complies with Clause E2 of the Building Code.

7.2 However, the building work 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. While the cladding has met the performance requirements of the code to date, the report has identified a number of faults on the house that may allow the ingress of moisture in the future, and these should be rectified to ensure the building work complies with the durability requirements of Clause B2.

7.3 Because the faults identified with the cladding system occur in discrete areas, I am able to conclude that satisfactory investigation and rectification of the items outlined in paragraph 6.4.1 will result in the house being brought into compliance with Clauses B2 and E2.

7.4 Effective maintenance of claddings is important to ensure ongoing compliance with Clauses B2 and E2 of the Building Code and is the responsibility of the building applicant. The Department has previously described these maintenance requirements, including examples where the external wall framing of the building may not be treated to a level that will resist the onset of decay if it gets wet (for example, Determination 2007/60).

Matter 2: The durability considerations

8. Discussion

8.1 The authority has concerns about the durability, and hence the compliance with the building code, of certain elements of the building taking into consideration the completion of the building during 2003.

8.2 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 Building Code for certain periods ("durability periods") "from the time of issue of the applicable code compliance certificate" (Clause B2.3.1).

8.3 These durability periods are:

- 5 years if the building elements are easy to access and replace, and failure of those elements would be easily detected during the normal use of the building
- 15 years if building elements are moderately difficult to access or replace, or failure of those elements would go undetected during normal use of the building, but would be easily detected during normal maintenance
- the life of the building, being not less than 50 years, if the building elements provide structural stability to the building, or are difficult to access or replace, or failure of those elements would go undetected during both normal use and maintenance.

8.4 It is not disputed, and I am therefore satisfied, that all the building elements complied with Clause B2 on 14 February 2003. This date has been agreed between the parties, refer paragraph 4.11.

8.5 In order to address these durability issues when they were raised in previous determinations, I sought and received clarification of general legal advice about waivers and modifications. That clarification, and the legal framework and procedures based on the clarification, is described in previous determinations (for example, Determination 2006/85). I have used that advice to evaluate the durability issues raised in this determination.

8.6 I continue to hold that view, and therefore conclude that:

(a) the authority has the power to grant an appropriate modification of Clause B2 in respect of all the building elements.

(b) it is reasonable to grant such a modification, with appropriate notification, because in practical terms the building is no different from what it would have been if a code compliance certificate for the house had been issued in 2003.

8.7 I strongly recommend that the authority record this determination and any modifications resulting from it, on the property file and also on any LIM issued concerning this property.

9. What is to be done now?

9.1 A notice to fix should be issued that requires the owners to bring the house into compliance with the Building Code, identifying the items listed in paragraph 6.4.1 and any defects that might be discovered in the course of that work. The notice to fix should not specify how those defects are to be fixed. That is a matter for the owner to propose and for the authority to accept or reject.

9.2 I would suggest that the parties adopt the following process to meet the requirements of paragraph 9.1. Initially, the authority should issue the notice to fix. 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.

9.3 I also note that the expert has identified various changes from the consent drawings (refer paragraph 5.3) and I draw the matter of appropriate documentation of these changes to the attention of the authority for resolution with the applicants.

10. The decision

10.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the building does not comply with Clause B2 of the Building Code, and accordingly confirm the authority's decision to refuse to issue a code compliance certificate.

10.2 I also determine that:

(a) all the building elements installed in the building, apart from the items that are to be rectified as described in this determination, complied with Clause B2 on 14 February 2003.

(b) the building consent is hereby modified as follows:

> The building consent is subject to a modification to the Building Code to the effect that, Clause B2.3.1 applies from 14 February 2003 instead of from the time of issue of the code compliance certificate for all building elements except the items to be rectified as set out in paragraph 6.4.1 of Determination 2008/67.

(c) the authority is to issue a code compliance certificate in respect of the building consent as amended, once the matters set out in paragraph 6.4.1 have been rectified to its satisfaction.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 22 July 2008.

John Gardiner
Manager Determinations