

Determination 2010/039

The refusal to issue a code compliance certificate for 14-year-old house at 4 Bosun Place, Te Atatu Peninsula, Auckland



1. The matters 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, Manager Determinations, Department of Building and Housing (“the Department”), for and on behalf of the Chief Executive of that Department. The applicant is the owner D Hawkridge (“the applicant”), and the other party is the Waitakere City Council (“the authority”), carrying out its duties 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 and to issue a notice to fix for a 14-year-old house because it was not satisfied that it complied with certain clauses² of the Building Code (First Schedule, Building Regulations 1992).

¹ The Building Act, Building Code, Compliance documents, past determinations and guidance documents issued by the Department are all available at www.dbh.govt.nz or by contacting the Department on 0800 242 243.

² 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.

1.3 The matters to be determined³ are therefore whether the authority's decisions to refuse to issue a code compliance certificate and to issue a notice to fix were correct. In deciding these matters, I must consider:

1.3.1 Matter 1: The external envelope

Whether the external claddings to the house ("the claddings") comply with Clause B2 Durability and Clause E2 External Moisture of the Building Code. The claddings include the components of the systems (such as the monolithic wall cladding, the windows, the parapets, the roof cladding, the gutter and all of the flashings), as well as the way the components have been installed and work together. (I consider this matter in paragraph 6.)

1.3.2 Matter 2: Other requirements of the Building Code

Whether various other items identified by the authority comply with the relevant clauses of the Building Code; and whether unauthorised changes to the building work have been carried out. (I consider this matter in paragraph 7.)

1.3.3 Matter 3: The durability considerations

Whether the elements that make up the building work comply with Building Code Clause B2 Durability, taking into account the age of the house. (I consider this matter in paragraph 10.)

1.4 During the course of investigations for this determination, various changes to the consent drawings in the as-built have been identified, which are included within Matter 2. A significant change to the wall system of the building is addressed further in paragraph 8.

1.5 In making my decisions, I have considered:

- the submission of the applicant
- the report of the building consultancy company engaged by the applicant ("the consultant")
- the report of the expert commissioned by the Department to advise on this dispute ("the expert")
- the other evidence in this matter.

In regard to the external envelope, I have evaluated this information using a framework that I describe more fully in paragraph 6.1.

2. The building work

2.1 The building work consists of a single-storey detached house, which is situated on a flat site in a medium wind zone for the purposes of NZS 3604⁴. The wall structure is a proprietary wood-based panel system, with a concrete slab, monolithic wall cladding, aluminium windows and profiled metal roofing over a timber framed roof.

2.2 The house is reasonably simple in plan and form, with all of the external walls extending to form parapets at roof level. The skillion roof cladding curves over the

³ Under sections 177(b)(i) and (iii) of the Act

⁴ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

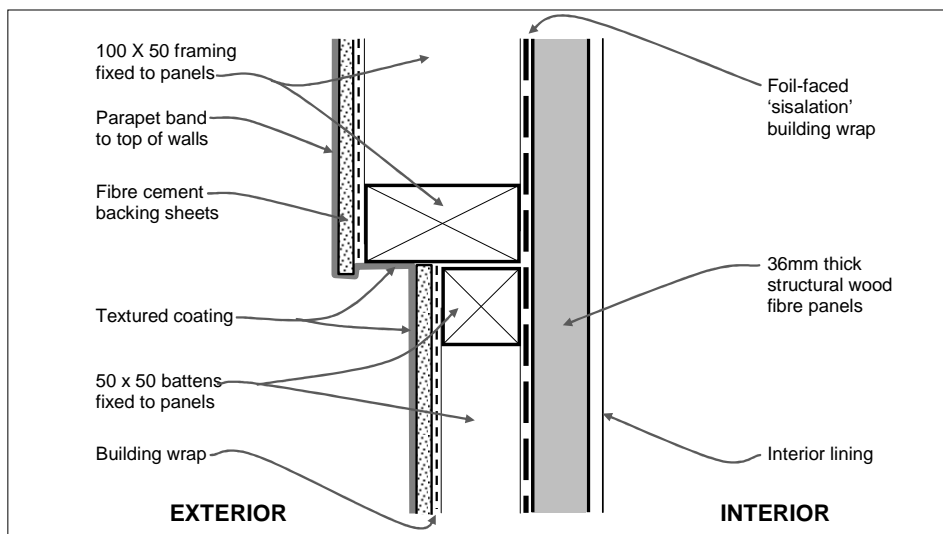
apex and falls at less than 4° towards internal gutters along the north and south parapets and across the garage. Two timber pergolas are attached to walls on the north and south elevations. The north pergola has a monolithic-clad border and clear corrugated roofing.

- 2.3 At the northwest corner a carport shown in the consent drawings has been closed in with timber framing to form a garage. The garage roof projects beyond the main roof, with an internal gutter at the intersection. The house is assessed as having a moderate weathertightness risk (refer paragraph 6.2).

2.4 The wall structure and cladding

- 2.4.1 The wall structure is a wood-based panel system (“the panel system”) formed from wood-based structural panels. The panel system consists of 4000mm x 2450mm x 36mm thick panels formed from reconstituted wood fibres with an inner core of wood strands sandwiched between surface layers of medium density fibre. I note that the BRANZ Appraisal Certificate for the system states that ‘...exterior cladding systems, including joints, openings and perimeter junctions must be maintained to ensure adequate protection is continually provided against water ingress’.

- 2.4.2 The general construction of the external walls is shown in the following sketch (the extend of the panel system itself is shaded):



- 2.4.3 The exterior wall panels are covered by a ‘sisalation’ wrap that incorporates a foil layer to the outer face. 50mm x 50mm horizontal and vertical timber battens are nail-fixed through the wrap to the wall panels. 100mm x 50mm framing is fixed to the top of the external wall panels to form a 600mm high decorative “parapet band”.

- 2.4.4 The wall cladding is a form of monolithic cladding, which consists of 7.5mm thick fibre-cement sheets fixed to the battens and parapet framing; and finished with an applied textured coating system. The timber battens and parapet framing provide 50mm to 100mm deep cavities behind the cladding that allow some air circulation to assist drying, although drainage is restricted by the continuous horizontal members.

- 2.5 The only conventional timber framed exterior walls are to the garage, which the expert noted appeared to be boric treated. Test results for samples taken from the battens and framing behind the cladding confirmed that these were also boric treated. I therefore consider that the timber in the exterior walls is likely to be boric treated, although I am unable to determine the level of treatment.

3. Background

- 3.1 The authority issued a building consent (No. ABA-1994-3765) on 9 May 1994 under the Building Act 1991. The consent was approved on drawings which called for conventional timber framed walls.
- 3.2 During construction the structure of the walls was changed from timber framing to the wood fibre panel system. Various other changes were also made during construction, including the installation of a woodburner with a wetback and the addition of pergolas to the north and south walls. The inspection records indicate that the authority was aware of these changes, although there are no records of any approved amendments to the building consent.
- 3.3 The authority carried out various inspections during construction, including a pre-line inspection on 8 July 1994. The inspection summary for that inspection notes:
- Preline: insulation in ceiling. Triboard [the wood fibre board] to all walls. Letter to be sent confirming this as plan shows gib to exterior walls. Harditex to all exterior walls.
- 3.4 It appears that the house was completed during 1994, although no further inspections were carried out until the property sold in October 1996. However, I note that the inspection summary records visits in February 1997 and August 1998, when access was not possible, with the latter visit noting that a note had been left.
- 3.5 A final inspection was carried out on 21 October 1996 and, in a letter to the original owners dated 29 November 1996, the authority stated that some items 'require attention before the file can be finalised'. Although the list of outstanding items did not include any mention of the change in the wall structure, the following was noted:
- Wood fire heater and pergola structures at front and rear of the dwelling have been erected without the authority of a Building Consent. These structures will need to be cleared by a request for a Safe and Sanitary inspection (application form enclosed).
- 3.6 There was no further correspondence about the building work and additional changes were subsequently made to the house. These included closing in the carport with timber-framed walls to form a garage, adding clear roofing to the north pergola and various interior alterations. .
- 3.7 The applicant purchased the property at the end of 2003. In 2009 the property was offered for sale and the applicant became aware that the house lacked a code compliance certificate. In a letter to the applicant dated 17 July 2009, the authority explained that a LIM report request from a prospective buyer had established the incomplete status of the building work and confirmed that an inspection could be requested.

3.8 The notice to fix

3.8.1 The authority inspected the house on 30 July 2009 and wrote to the applicant on 12 August 2009 stating:

There are some areas of concern with regard to the monolithic cladding system that has been installed, without any inspections having been undertaken.

On this basis, Council is unable to be satisfied that the cladding, as installed, complies with clause E2 (External Moisture) of the New Zealand Building Code and has to refuse to issue the Code Compliance Certificate on the dwelling, "as is".

3.8.2 The authority gave the applicant the option of applying for a determination or to:

Address the areas of concern as per the attached Notice to Fix, requiring you to bring the dwelling up to a Code Compliant standard and assure the Council that moisture penetration of the external envelope of the building has not occurred.

3.8.3 The attached undated notice to fix cited contraventions of Clauses B1, B2, E2, E3 and F2 of the Building Code, with the 'particulars of contravention or non-compliance' associated with the following areas:

- ... cladding system does not contain a 20mm cavity ... (item 1)
- ...cladding system does not have adequate ... vertical control joints ... (item 2)
- Apron flashings do not have appropriate stop ends. (item 3)
- No gap/drainage ... between ... cladding ... and head flashing. (item 4)
- No ... flashings to exterior joinery. (item 5)
- No [seals] between exterior joinery and cladding ... (item 6)
- ... cladding system is not sufficiently clear of [exterior] ground levels. (item 7)
- Exterior paving/ground levels do not slope away from building. (item 8)
- Bottom edge of cladding system has not been sealed. (item 9)
- Penetrations through cladding have not been sealed/flushed correctly. (item 10)
- Top parapet wall does not have a slope. (item 11)
- Downpipe bracket fixings are not sealed. (item 12)
- No safety glass to bathroom window. (item 13)
- Seal top of basin to toilet (item 14)
- Cover exposed framing at end of internal gutter on garage end wall. (item 15)
- There is significant cracking of the joints to the ... cladding. (item 16)
- The carport has been converted to a garage and the garage converted to a bedroom. ... a bathroom partition and shower have been added, all without ... a building consent. (item 17)

3.9 The consultant's report

3.9.1 The applicant sought advice about the notice to fix from a building consultancy company ("the consultant"). The consultant visited the property, reviewed the authority's records and reported to the applicant on 13 November 2009.

3.9.2 The consultant considered that the cladding installation was similar to 'other claddings of this type' that were 'signed off without issue'; the consultant considered

that a code compliance certificate would have been issued if requested on completion. He therefore considered that items 1, 2 and 11 in the notice to fix could be challenged.

- 3.9.3 With regard to the changes from consent drawings (item 17), the consultant considered that a certificate of acceptance would need to be sought, while the other items could be 'attended to by remedial works', which were described and estimated.
- 3.10 The Department received an application for a determination on 12 January 2010..

4. The submissions

4.1 The applicant made a submission in the form of a letter dated 7 January 2010, explaining the background and noting the financial implications.

4.2 The applicant forwarded copies of:

- a CD-Rom containing the authority's 'property file' containing:
 - the building consent
 - the consent drawings and specification
 - other documentation from the consent application

(I note that the property file contained no inspection records or correspondence related to the construction of the house.)

- the recent correspondence from the authority
- the notice to fix issued on 12 August 2009.

4.3 The authority acknowledged the applicant's submission, but made no submission in response.

4.4 The Department's sought further information from the authority about the construction of the house. On 17 March 2010, the authority forwarded copies of:

- the inspection summary
- letters to the original owners.

4.5 A draft determination was issued to the parties for comment on 26 March 2010. Both parties accepted the draft without comment.

5. The expert's report

5.1 As mentioned in paragraph 1.5, I engaged an independent expert to assist me 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 10 February 2010 and provided a report that was completed on 19 February 2010.

5.2 General

5.2.1 The expert noted numerous variations from the 1994 consent drawings, including:

External envelope

- conventional timber framed exterior walls changed to wood fibre panels
- the original carport boxed beam replaced with a thin walled hollow steel beam
- the top of the parapets altered in shape
- pergolas added to the north and south walls
- the bay window to the north not constructed
- various changes to windows and doors
- the carport closed in with timber framing to form a garage (after completion)

Interior

- 'solar tubes' added over the passage way
- a woodburner, with a wetback installed
- the original garage changed to a bedroom and ensuite bathroom
- various other interior layout changes.

5.2.2 The expert noted that the 'maintenance on the building was average', with the cladding showing 'repeated attempts to seal the many vertical cracks'. The roof was generally in a 'relatively poor state' and the expert noted that, while it may have originally been reasonable, it was now in 'a somewhat dilapidated state'.

5.2.3 The expert noted that, although the south pergola is attached to the walls by a timber ribbon plate fixed directly through the cladding, the projecting parapet band directly above the junction provided some protection to the junction. The north pergola was protected by the clear roofing, with an apron flashing above the junction.

5.3 The walls

5.3.1 The expert removed a section of cladding at the bottom plate beneath a west window to observe the underlying construction, and was able to observe the battens, the 'sisalation' and the structural wood fibre board.

5.3.2 The expert lifted the bottom of the sisalation, and was able to observe an aluminium angle that appeared to connect the wood fibre board walls to the concrete slab.

5.4 Windows and doors

5.4.1 The windows are face-fixed against the fibre cement backing sheets, with metal head flashings. The expert removed a small section of sealant at the edge of a jamb, noting that the windows had been installed against unsealed fibre cement with no seals under the flanges, the coating applied after installation, and a fillet of sealant applied at the edge of the jamb flange.

- 5.4.2 The expert noted that, at the time of installation in 1994, there was little available installation information or recommendations provided by the fibre cement manufacturer, with no details available for face-fixed windows.
- 5.4.3 Two glass block panels are installed to the west and south walls of the garage. The expert removed a small section of coating at the edge of the frame and noted that the metal frame had a seal between the backing sheet and the flange.

5.5 The roof

- 5.5.1 The expert removed sections of the cladding at the bottom of the wall and at the roof side of the parapet to observe the underlying construction, noting the timber battens or framing fixed against the wall panels, the cladding joints and the building wrap.
- 5.5.2 The expert was also able to see the original metal gutters, which were heavily corroded at the lapped joints. It was apparent that the gutters had leaked in the past and had been repaired by overlaying the metal gutter with membrane.

5.6 Moisture levels

- 5.6.1 The expert observed no visible signs of moisture entry in the interior. As his inspection followed a prolonged dry period, he did not carry out non-invasive moisture testing as this was unlikely to provide reliable evidence of moisture levels.
- 5.6.2 The expert therefore took 47 invasive moisture readings using long probes through the interior linings to within about 10mm of the cladding at areas considered at risk, noting that the equilibrium moisture content (“emc”) in dry areas was 10% to 12%.
- 5.6.3 Taking into account the dry weather conditions leading up to the inspection, I consider that some lower readings are also likely to be higher during wetter periods and therefore consider the following readings, in this situation, to be elevated:
- 6 at 16% to 17% in the east bottom batten
 - 2 at 17% and 4 at 18% in the west bottom batten
 - 16% in the north bottom batten
 - 7 at 16% to 17%, 1 at 18% and 1 at 20% in the south bottom batten

Moisture levels which vary significantly from an emc range generally indicate that external moisture is entering the structure and investigation is required.

5.7 Timber sample testing

- 5.7.1 The expert extracted 3 timber samples from the bottom batten, the soffit framing and the parapet framing; and forwarded these to a testing laboratory for analysis. All samples were confirmed as boric treated (the batten likely to be equivalent to H3.2 and the others to H1.2 (the latter with a lower level of Boron)).
- 5.7.2 The parapet sample was found to contain ‘pockets of early to advanced soft rot across the depth’ despite its H1 boric treatment. The other samples were sound, although traces of decay were found in the outer 1 to 2mm of the soffit sample.

5.8 Weathertightness defects

5.8.1 Commenting specifically on the claddings, the expert noted that:

Wall cladding - general

- the cladding joints are not mesh-reinforced, the original unidentified jointing compound is soft and the fibre-cement sheet joints line up with window jambs
- there are no cladding control joints provided and many cladding joints are cracked, with obvious repairs undertaken in the past
- the heavily textured coating is uneven and very thin in places, with some areas at sheet joints not adhering correctly
- clearances below the bottom of the cladding to the ground or paving are insufficient, with some areas reduced to less than 10mm or in contact
- the bottom plate of the unlined garage is only 30mm above the adjacent paving, which is likely to cause moisture problems should walls be lined in the future
- there is a large gap at the soffit where the garage parapet band is stepped out around a downpipe
- many penetrations through the cladding are either unsealed or poorly sealed

Window and doors

- the joinery is face-fixed against unsealed fibre cement with the coating applied after, resulting in no drainage gaps above head flashings or under sill flanges
- there are no seals installed under the jamb flanges, with a small fillet of sealant applied after the coating has been applied
- the head flashing is continuous above the laundry door and window, with a large cladding gap beneath the flashing, exposed building wrap and gaps behind adjacent jamb flanges
- the garage door lacks a head flashing, which I note could lead to moisture problems should the walls be lined in the future
- there is no head flashing to the exposed top of the glass block panel in the west garage wall

Roof - general

- the roof is very low-pitched and has been dented in places, resulting in ponding, and the large flashings around the skylight are also ponding
- the end of the apron flashing at the garage to house internal gutter is not weatherproof, with no extension into the gutter and gaps apparent

Roof - gutters

- the membrane-lined gutters have little fall, resulting in ponding
- the membrane at the ends of the gutters is not dressed into the overflow pipes or into the rusting dropper from the underlying original metal gutter, and gaps are apparent at some ends, where the membrane has just been pushed into corners

- the overflow from the south gutter discharges into the down-pipe, preventing any early warning of blockages

Roof - parapets

- the gutter membrane upstand under the parapet cladding is taken over the building wrap and the upstand height is insufficient in some areas, with the membrane just folded up against the bottom cladding in some areas
- there are insufficient clearances to flashings or the gutter bottom and the cladding is deteriorating, with peeling paint exposing unsealed cladding, degrading fibre cement and fungal growth (including on the inside face)
- some cladding joints are not weatherproof, with degraded building wrap observed at the removed panel, black water marks on the framing and decay found.
- the parapet cappings are flat and water is ponding at lapped joints, steps and corner mitres, with most if not all joints depending solely on sealant.

5.9 Other code compliance matters

5.9.1 The expert assessed compliance with other relevant clauses of the Building Code and commented on some aspects noted during his inspection.

5.9.2 Clause B1: Structure

- The fixings of the aluminium angles attaching the wood fibre board walls to the concrete slab could not be inspected and assessed.
- The steel beam over the original carport penetrates the west garage wall, and the inside of the hollow section is heavily corroded. The beam has also been changed from that shown in the consent documents.

5.9.3 Clause C: Fire safety

- The woodburner is not restrained and the corners are only 40mm and 60mm away from the wall lining, which is not fire resistant.
- A corner of the woodburner is 'rusted right away', with a loose side panel.

5.9.4 Clause E1: Surface water

In addition to identified weathertightness defects, the gutter system is unlikely to comply with E1 as it does not comply with the following aspects of E1/AS1⁵:

- The cross section of the internal gutters is 3000mm², which is well below the minimum of 4000mm² (E1/AS1: paragraph 5.1.4).
- The tops of the overflow outlets are above the top of the gutter, instead of at least 50mm below the top (E1/AS1: paragraph 5.5.1).

5.9.5 Clause E3: Internal moisture

- The hand basin in the separate toilet is not sealed against the wall.

⁵ The acceptable solution to Clause E1

5.9.6 Clause F2: Hazardous building materials

- There is no safety glass in bathroom windows, which have sills less than 1500 mm above floor level.

5.9.7 Clause H1: Energy efficiency

The ceiling above the hot water cylinder is insulated with 60mm polystyrene, while the wall is made up from the outer cladding, the 50mm to 100mm cavity, the outward-facing foil-faced 'sisalation' to the cavity, the 36mm particle board and the plasterboard lining.

5.10 A copy of the expert's report was provided to the parties on 23 February 2010.

Matter 1: The external envelope**6. Weathertightness**

6.1 The approach in determining whether building work is weathertight and durable and is likely to remain so, 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.

6.2 Weathertightness risk

6.2.1 This house has the following environmental and design features which influence its weathertightness risk profile:

Increasing risk

- the house has parapet walls that include complex junctions and internal gutters
- the walls have no eaves to provide shelter to the walls

Decreasing risk

- the house is in a medium wind zone
- the walls have monolithic cladding fixed over 50mm to 100mm cavities that provide some capacity for drying (but not drainage) behind the cladding
- the single-storey house is fairly simple in plan and form
- the external cavity timbers and the garage wall framing are likely to be treated to a level that provides some resistance to decay if it absorbs and retains moisture.

6.2.2 When evaluated using the E2/AS1 risk matrix, these features show that the elevations of the house demonstrate a moderate weathertightness risk rating. I note that, if the details shown in the current E2/AS1 were adopted to show code compliance, the monolithic cladding on this building would require a drained cavity. However, I also note that this type of cladding was not within the scope of E2/AS1 at the time of construction.

6.3 Weathertightness performance

- 6.3.1 It is clear from the expert's report that the external envelope is unsatisfactory in terms of its weathertightness performance, which has resulted in moisture penetration and decay to some of the parapet framing. The wall and roof cladding systems have not been installed in accordance with the manufacturer's instructions or to good trade practice at the time of construction. Taking into account the expert's report, I conclude that the areas outlined in paragraph 5.8 require rectification.
- 6.3.2 The inadequate weatherproofing of many joints and junctions (including between fibre-cement sheets) has contributed to a systemic failure and considerable work is required to make the external envelope weathertight and durable. Further investigation is necessary, including the systematic survey of all at-risk locations, to determine the full extent of moisture penetration, timber damage and the repairs required.

6.4 Weathertightness conclusion

- 6.4.1 I consider the expert's report establishes that the current performance of the building envelope is not adequate because it is allowing water penetration at present. Consequently, I am satisfied that the house does not comply with Clause E2 of the Building Code.
- 6.4.2 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. Because the cladding faults on the house are likely to allow the ingress of moisture in the future, the building work does not comply with the durability requirements of Clause B2.
- 6.4.3 In particular, the claddings demonstrate the key defects included in paragraph 5.8, which are likely to contribute to the moisture penetration through the external envelope. I have also identified the presence of known weathertightness risk factors for this house. The presence of the risk factors on their own is not necessarily a concern, but they have to be considered in combination with the faults identified in the cladding systems.
- 6.4.4 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 authority for its approval.
- 6.5 I note that the Department has produced a guidance document on weathertightness remediation⁶. I consider that this guide will assist the owners in understanding the issues and processes involved in remediation work to the monolithic cladding in particular, and in exploring various options that may be available to them when considering the upcoming work required to the house.

⁶ External moisture – A guide to weathertightness remediation. This guide is available on the Department's website, or in hard copy by phoning 0800 242 243

- 6.5.1 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 owner. The Department has previously described these maintenance requirements (for example, Determination 2007/60).
- 6.5.2 Should remedial work to the building be acceptable to the authority and the house made code compliant, then periodic checking of the moisture content of the structural wood fibre panels should also be carried out as part of normal maintenance as the wood fibre panels are unable to withstand moisture without incurring damage.

Matter 2: Other requirements of the Building Code

7. Discussion

- 7.1 The notice to fix also cited contraventions of Clauses B1 Structure, E1 Surface water, E3 Internal Moisture and F2 Hazardous building materials (refer paragraph 3.8.3). The expert has reported on the other relevant code clauses, including the particular items identified by the authority, and I refer to these clauses in paragraph 7.4.
- 7.2 The notice to fix also identified several variations from the consent drawings, which are confirmed and added to by the expert (see paragraph 5.2.1). I consider that most of these changes are such that they are able to be assessed for compliance and I leave these to the parties to resolve. I note that the closing in of the carport framing can be assessed for structural compliance, as the garage is unlined.
- 7.3 However, during his invasive investigations the expert also identified a change to the walls of the house from conventional timber framing to a panel system. Due to the significant of this change, I have considered this separately in paragraph 8.

7.4 The other clauses

- 7.4.1 Taking account of the expert's report, I conclude that the following items require attention (the associated Building Code clauses are shown in brackets):
- Investigation into the adequacy of the corroding steel beam in the garage (Clause B1).
 - The unsafe wood burner and its installation (Clause C1).
 - The inadequate roof gutters and overflows (Clause E1).
 - The lack of sealing of the hand basin to the wall (Clause E3).
 - The lack of safety glass in bathroom windows (Clause F2).
- 7.4.2 I have considered the expert's comments in paragraph 5.9.7 regarding the insulation of the walls and ceiling above the hot water cylinder, and I note the following:
- the relevant insulation standard in 1994 was NZS 4218P⁷

⁷ NZS 4218P:1977 Minimum thermal insulation requirements for residential buildings

- the panel system would have been classified in NZS 4218P as ‘Type B’ solid walls, with lower minimum R-values of R0.6, which would be met by the walls of this house
- in regard to the ceiling, the authority recorded ‘insulation in ceiling’ during its pre-line inspection on 8 July 1994 and the expert observed 60mm polystyrene insulation where it was exposed above the hot water cylinder.

Based on the above, I am satisfied that the insulation of the walls and ceiling would have met the requirements of Clause H1 at the time of construction.

8. The use of the panel system

- 8.1 The building consent gave approval to the owner ‘to undertake building work in accordance with the attached plans and specifications so as to comply with the provisions of the building code’. Any significant deviations from the approved consent should have been submitted to the authority for consideration and approval before work commenced on site.
- 8.2 The building consent was issued for a conventional timber framed building but was built using the panel system. It appears no approval was sought for the use of the panel system; however, the authority appears to have been aware of its use on site (refer paragraph 3.3). No amendment to the building consent for this change was applied by the owner, nor approved by the authority.
- 8.3 The panel system appears to have been an established construction system at this time, but one that required to be installed in accordance with the manufacturer’s details. The manufacturer’s construction details do not appear to have formed part of the consent documentation, and it is unclear how the on-site verification of the work was achieved, but the authority was satisfied that compliance had been achieved.
- 8.4 The inspection record of the pre-line inspection on 8 July 1994 clearly shows that the authority was aware of this change to the structure of the building. While noting that a letter was to be sent about the change, this was not formally followed-up. There was also no mention made in the final inspection record (despite noting other changes) or in any subsequent correspondence.
- 8.5 During the pre-line inspection, the junctions and fixings of the panel system were visible for inspection. No problems with the panel system were identified and the inspection was recorded as ‘OK’. The expert could not inspect the fixings of the aluminium angles attaching the walls to the floor slab, or the other specific features of the system. However, the expert noted no evidence of moisture penetration into the wood fibre panels.
- 8.6 In this case, I consider that the authority’s inspection of the panel system during its construction, the satisfactory performance of the system since its completion in 1994, and the limited inspection by the expert together provide sufficient grounds on which to be satisfied that the panel system is likely to be code compliant. However, it would be prudent for this to be confirmed when the remedial work to the cladding is completed.

9. As-built changes to the approved consent drawings

- 9.1 Item 17 of the notice to fix refers to various changes to the approved consent drawings. I note that the consented plans label what is now a bedroom as 'Bedroom/ Garage' with a wash hand basin and a toilet. The as-built drainage plan also clearly shows drainage services connections for these sanitary facilities. In my opinion the intended use of this space should have been clarified at the time the application for building consent was made.

Matter 3: The durability considerations

10. Discussion

- 10.1 There are also concerns regarding the durability, and hence the compliance with the building code, of certain elements of the house taking into consideration the completion of most of the building work in 1994.
- 10.2 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).
- 10.3 In previous determinations (for example Determination 2006/85) I have taken the view that a modification of this requirement can be granted if I can be satisfied that the building complied with the durability requirements at a date earlier than the date of issue of the code compliance certificate, that is agreed to by the parties and that, if there are matters that are required to be fixed, they are discrete in nature.
- 10.4 However, in conjunction with this I also need to consider the nature and extent of the defects, the length of time that they may have been evident, and their consequential impact on the building's compliance with other Building Code clauses, particularly Clauses B1 Structure and E2 External Moisture.
- 10.5 Because of the extent of the defects in the external envelope, and the possible consequential impact on the building's structure, I am not satisfied that there is sufficient information on which to make a decision about a modification of the B2 Durability periods at this time.

11. What is to be done now?

- 11.1 Although I am satisfied that the authority made an appropriate decision to refuse to issue a code compliance and to issue a notice to fix, I consider that the notice did not fully address some aspects of this building. The notice should therefore be modified and reissued to the owner to take account the findings of this determination, identifying the areas listed in paragraph 7.4.1 and referring to any further defects that might be discovered in the course of investigation and rectification, but not specifying how those defects are to be fixed. It is not for the notice to fix to specify how the defects are to be remedied and the building brought to compliance with the

Building Code. That is a matter for the owner to propose and for the authority to accept or reject.

- 11.2 In addition to the above I consider the notice to fix should also require the building consent to be amended to take account of the amended floor plan (refer also paragraph 9.1), and the use of the panel system.
- 11.3 I suggest that the parties adopt the following process to meet the requirements of paragraph 11.1. Initially, the authority should issue the notice to fix. The applicant 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 matters. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.

12. The decision

- 12.1 In accordance with section 188 of the Building Act 2004, I hereby determine that:
- the external envelope does not comply with Building Code Clauses B2 and E2
 - the gutter system does not comply with Building Code Clauses B2 and E1
 - the toilet hand basin does not comply with Building Code Clause E3
 - the bathroom window glass does not comply with Building Code Clauses F2
 - the wood burner does not comply with Building Code Clause C1.
- 12.2 Accordingly, I confirm the authority's decision to refuse to issue a code compliance certificate. I also determine that the authority is to modify the notice to fix, issued on 12 August 2009, to take account of the findings of this determination.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 11 May 2010.

John Gardiner
Manager Determinations

13. Appendix: The legislation

13.1 With regard to the unauthorised structural changes to this house, the relevant section of the former Act was Section 32(1), and of the current Act is:

40 Buildings not to be constructed, altered, demolished, or removed without consent

- (1) A person must not carry out any building work except in accordance with a building consent.
- (2) A person commits an offence if the person fails to comply with this section.

13.2 With regard to the possibility of a certificate of acceptance for the structure of this house, the relevant section of the Act is:

96 Territorial authority may issue certificate of acceptance in certain circumstances

- (3) A territorial authority may, on application, issue a certificate of acceptance for building work already done—

if—

the work was done by the owner or any predecessor in title of the owner; and
a building consent was required for the work but not obtained...

- (4) A territorial authority may issue a certificate of acceptance only if it is satisfied, to the best of its knowledge and belief and on reasonable grounds, that, insofar as it could ascertain, the building work complies with the building code.