

Determination 2008/15

Dispute about the code compliance of one of seven houses built under a single consent at 33 G Waimapu St, Tauranga



1. The matter 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 applicants are the occupiers and potential owners Mr and Mrs Ratima (“the applicants”) and the other party is the Tauranga City Council (“the territorial authority”). A related party is the owner of the house, Habitat for Humanity Ltd., (“the owner”).

1.2 The matter for determination is whether the applicants’ claim that the territorial authority, in carrying out its functions under the Act, has failed to ensure the code

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

compliance of a 6-year-old house with respect to Clauses B1 “Structure”, B2 “Durability”, E1 “Surface water”, E2 “External Moisture,” E3 “Internal Moisture” and G4 “Ventilation “of the Building Code² (First Schedule, Building Regulations 1992) is correct.

- 1.3 The question of compliance with these clauses can be determined by considering the following 4 matters:

Matter 1: The structure

Whether the timber sub-floor framing, retaining walls and framing of the house (“the structure”), comply with the Building Code (see sections 177 and 188 of the Act).

Matter 2: Internal moisture

Whether the interior of the house complies with the Building Code.

Matter 3: The cladding

Whether the fibre-cement weatherboard cladding as installed to the walls of the house (“the cladding”), complies with the Building Code. By “the weatherboard cladding as installed” I mean the components of the system (such as the weatherboards, the flashings, the joints and the coatings) and the way the components have been installed and work together.

Matter 4: Surface water

Whether the house and its site-works (including the retaining walls), as built, comply with the Building Code (see sections 177 and 188 of the Act).

- 1.4 In completing the application for this determination the applicants referred to a wide range of matters that they thought should be considered. I have distilled the matters to do with code compliance into the four matters listed above in paragraph 1.3. In the course of determining these matters I have also considered, in the light of the evidence submitted, the decisions made and actions taken by the territorial authority at the various stages of the building process, including the issuing of the consent and a notice to fix. In my decision (paragraph 14.4) I have given advice relating to a new notice to fix, and (in paragraph 14.5) advice as to the process that should be followed to ultimately result in the issuing of a code compliance certificate.
- 1.5 In making my decision, I have considered the submissions of the parties, including those I heard at the hearing, the report of the independent expert (“the expert”), the engineer responsible for the design of the retaining walls (“the engineer”), and an independent firm of consulting engineers (“the consultants”), the report from the applicant’s assessor, the territorial authority’s assessor, and the other evidence in this matter. Both the engineer and the consultants were commissioned by the Department to advise on this dispute.
- 1.6 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 Code is available from the Department’s website at www.dbh.govt.nz.

2. The building

- 2.1 The house is one of a group of 7 similar units and is a small, simple one-storey detached house situated on a sloping north-facing site, which is in a medium wind zone for the purposes of NZS 3604³. The basement was designed to provide an open carport only, and contains no habitable spaces. Construction is conventional light timber frame, with treated timber pile foundations, timber sub-floor framing, aluminium windows, and fibre-cement weatherboard cladding. The round posts of a timber retaining wall support floor joists above the basement carport, which is excavated into the slope at the south end of the house. The 15° pitch corrugated steel gable roof has eaves projections of 600mm, with a deeper overhang above the deck, and there are no verge projections.
- 2.2 A small timber-framed deck with a timber slat floor and open timber balustrades extends from ranchsliders in the west wall of the living room. It is accessible by timber steps from the ground and forms the main entrance to the house. Other timber steps provide access to the rear entrance on the east elevation.
- 2.3 The expert has noted that he found no markings to indicate treatment of the timber he was able to inspect. I have received no written evidence as to the treatment, if any, of the external wall framing timber. Given the date of construction in 2000, I consider that the external wall framing is unlikely to be treated.
- 2.4 The walls of the house are clad with fibre-cement weatherboards fixed through the building wrap to the framing, with an acrylic paint finish applied over the boards. There are compressed foam seals between the joinery and the weatherboards. The gable ends are clad with flat fibre-cement sheets, with plastic jointers at the sheet junctions.

3. Background

- 3.1 The territorial authority issued a building consent (number 1610) on 27 January 2000 for the construction of the 7 units. It undertook various inspections during construction including a sub-floor retaining wall footing inspection on 29 February 2000 and a preline inspection on 2 December 2000. There is no record of a final inspection and no code compliance certificate was issued. I understand that the other six houses have been granted certificates of acceptance and that when this house complies with the building code the territorial authority intends to grant a code compliance certificate to each of the seven houses.
- 3.2 In regard to the matter of the certificates of acceptance, I note that under the Act the onus for applying for a code compliance certificate or a certificate of acceptance is on the owner. An owner who disputes a decision by a territorial authority to issue or refuse to issue a code compliance certificate or a certificate of acceptance is entitled to seek a determination on the matter. The owners of the other six houses referred to in paragraph 3.1 have not applied for such a determination. Section 96 of the

³ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

Building Act 2004 sets out the criteria that must be met before the issuing of a certificate of acceptance is appropriate. If the circumstances of the other six houses replicate those of the house in question, I doubt that those certificates of acceptance meet the criteria set out in section 96.

- 3.3 It is not clear when the applicants first occupied the house, but it appears that an agreement for sale and purchase of the house was made between the owner as vendor and the applicants as purchasers on 27 August 2004. The agreement provided for the issue of a code compliance certificate for the house as a condition of the purchase.
- 3.4 The applicants had concerns about various matters regarding the house, and arranged an inspection to be undertaken by an experienced builder, (“the applicants’ assessor”). The applicants’ assessor provided a written report that identified a number of items considered to be defects in the house (refer paragraph 1.5).
- 3.5 The territorial authority subsequently arranged for an inspection to be undertaken by a firm of assessors (“the territorial authority’s assessor”), who provided a “Safe and Sanitary Report” dated 9 September 2004. The report concluded that the building was generally built to the building code applicable at the time of construction and that the house could not be classified as a “Dangerous or Unsanitary Building under Section 64 of the Building Act 1991”. The territorial authority’s assessor noted several defects, made a number of recommendations and commented on the applicants’ concerns as follows:
- With regard to creaking, the house was designed to the minimum standards and will therefore be safe although some deflection will be experienced.
 - With regard to coldness, the installation of insulation was sighted by the owners and it is therefore presumed that the house is insulated to the minimum requirements of the time.
 - With regard to mould, this is not caused by faulty building work but by internal sources of moisture that must be dealt with.
 - With regard to a broken bracing sheet, the applicants need to pursue this with the owners.
- 3.6 The applicants subsequently complained to the Community Health and Disability Services with regard to concerns that the house was causing respiratory problems and skin irritations. A Health Protection Officer visited the house on 21 September 2004. In a letter to the applicants dated 28 October, the officer noted that the insulation material coming from the sarked ceiling had been tested as wood cellulose (which may cause irritation when disturbed) and also noted an unflued gas heater. I note that unflued gas heaters are known to release considerable quantities of water vapour into the air in buildings in which they are used. If such water vapour is not removed immediately by ventilation, it may add to moisture generated by cooking, bathing and washing/drying processes and lead to extensive interior condensation on windows and other cold surfaces. This could lead to mildew, mould and dampness problems.

- 3.7 In a letter to the owner dated 24 January 2005, the territorial authority attached a Notice to Rectify that required remedial work to be carried out to the window drainage channels, the damaged timber reveals and the insulation material entering the living spaces. The territorial authority also noted concerns raised by the applicants with regard to the timber retaining walls.
- 3.8 The applicants sought advice on the basement retaining wall from a firm of registered engineers (“the engineer”), who wrote to the applicants on 22 February 2006 confirming that the firm had designed exterior timber retaining walls for the development but had not designed the basement retaining wall, noting:
- It would appear that the retaining wall that supports part of your house subfloor was built without specific design and approval unless support documentation is available which is absent on the files.
- 3.9 I have received no record of what, if any, remedial work was carried out as a result of the Notice to Rectify. It appears that the applicants were still not satisfied with the condition of the house as they subsequently took the matter to the Office of the Ombudsmen. In a letter to the Office of the Ombudsmen dated 24 February 2006, the territorial authority noted that the house has been visited and a meeting of all parties held. The territorial authority noted that a “thorough inspection” had been undertaken and the only items to be remedied were barge boards and two windows, noting that:
- Habitat for Humanity was more than happy to rectify these matters as soon as [the applicants] would allow them access to the dwelling. Until [the applicants] allow this to happen, Council is unable to move this forward. As from my observations, the dwelling is neither unsafe nor in-sanitary in accordance with the Building Act 2004.
- 3.10 According to the solicitor acting for the applicants, (“the applicants’ lawyer”), the solicitor acting for the owner, (“the owner’s lawyer”) sent a settlement notice dated 30 May 2006 (which I have not seen) to the applicants. The notice required settlement to take place within 12 working days (refer paragraph 3.13 and paragraph 3.16).
- 3.11 An application for a determination from the applicants was received by the Department on 6 June 2006.
- 3.12 In a letter dated 7 June 2006, the Department notified the owner that the applicants had applied for a determination, and noted that the owner was a party to the determination. In a letter to the Department dated 15 June 2006, the owner’s lawyer requested further information on the roles and functions of the Department.
- 3.13 According to the applicants’ lawyer, the owner’s lawyer sent a letter dated 22 June 2006 (which I have not seen) to the applicants. That letter purported to cancel the sale and purchase agreement of 27 August 2004 for non-compliance with the settlement notice (refer paragraph 3.10). The applicants’ lawyer responded in a facsimile dated 23 June 2006. The applicants’ lawyer questioned the validity of the notice to cancel as the original settlement had been superseded by negotiation and the dispute involved obligations under the contract to build the house. The applicants’ lawyer noted that:

The building is to be inspected by the Department of Building and Housing for the purposes of a determination as to its compliance with the code. No doubt Habitat, in accordance with its declared purposes will be concerned that it should comply. Accordingly, it is requested that your notice be immediately withdrawn or revoked, for the time being at least.

- 3.14 In a letter to the Department dated 26 June 2006, the owner's lawyer noted that the applicants did not own the property and that the owner instructed:
- that it does not require nor does it intend to be part of the Determination process; and
- that no further action is to be taken by the Department of Building and Housing in respect of the Determination.
- 3.15 In a letter to the owner's lawyer dated 3 July 2006, the Department noted that the application for a determination was acceptable as the applicants are occupiers and potential owners of the house. (I note that, under Section 7 of the Building Act 2004, the definition of owner includes "any person who has agreed in writing, whether conditionally or unconditionally, to purchase the land or any leasehold estate or interest in the land or to take a lease of the land and who is bound by the agreement because the agreement is still in force").
- 3.16 In response to an emailed query, the applicants' lawyer wrote to the Department on 19 July 2006. He outlined the applicants' position with regard to the property, describing the issuing of a settlement notice by the owner (refer paragraph 3.10). The applicants' lawyer attached a list of defects agreed between the applicants and the owner (noting that the applicants did not accept that this is a complete list of defects).
- 3.17 I prepared a draft determination which was sent to the parties on 20 September 2006. The owner and the territorial authority both accepted the draft.
- 3.18 The applicants did not accept the draft and requested a hearing at which those concerned could speak and call evidence (refer paragraphs 7.1 to 7.9)
- 3.19 I prepared a second draft determination, taking account of the evidence I heard at the hearing held on 9 February 2007. The second draft was sent to the parties on 7 March 2007. The territorial authority accepted the second draft.
- 3.20 The applicants did not accept the second draft and submitted comments on certain paragraphs in it. In particular, the applicants believed that the engineer was in "a conflict position in relation to this matter". As described in paragraphs 1.5 and 8.1, I have engaged the consultants to address this specific concern and I have responded as appropriate to all the matters raised by the applicants in this determination.
- 3.21 By letter dated 13 February 2008 I received a further submission on the second draft determination from a new lawyer representing the applicants ("the new lawyer"). The new lawyer noted that his predecessor had addressed the applicants' concerns in some detail in earlier correspondence. Nonetheless he commented on the applicants' concerns about the moisture damage in the house and suggested that the cladding should be made good given that the framing is untreated timber. He also said he did

not wish to add to his predecessor's comments structural matters and structural unsafety. He concluded by noting that the slippery steps (refer paragraph 13.1) were still a problem, one of the applicants having slipped and fallen on them only recently.

3.22 I have considered the submission made by the new lawyer in the course of making this determination.

4. The submissions

4.1 Within the application, the applicants appear to require the territorial authority to issue a notice to fix that requires the owner to remedy all of the items that the applicants have identified as defects and faults in the house, maintaining that the territorial authority has failed to:

- ...exercise its power to deal with a dangerous retaining wall being the foundations of the house.
- ...enforce and monitor a notice issued.
- ...exercise its powers to ensure our health and safety were not at risk.
- ...protect us.

4.2 The applicants forwarded copies of:

- the plans
- the applicants' assessor's report
- the "Safe and Sanitary Report"
- the correspondence from the Community Health and Disability Services
- the notice to rectify
- the letter dated 22 February 2006 from the engineer
- the applicants' list of additional faults
- various other statements.

4.3 The territorial authority made no submission and forwarded copies of:

- the building consent for the 7 units
- the applicants' assessor's report
- the "Safe and Sanitary Report"
- the notice to rectify
- the letter dated 22 February 2006 to the Office of the Ombudsmen.

- 4.4 Copies of the submissions and other evidence were provided to each of the parties. Neither party made any further submission in response to the submission of the other party.

5. The expert's report

- 5.1 The expert noted that his inspection of the house was limited to compliance with Clauses B1, B2, E1, E2 and E3 of the Building Code, and that issues of workmanship not related to building code compliance were not covered in detail within the report. The expert also noted the matters covered in the Safe and Sanitary Report dated 9 September 2004 were “generally in keeping with my own findings and recommendations”. With regard to the report made by the applicants’ assessor, the expert agreed with the comments on the timber retaining wall supporting the corner of the house, but considered that “other comments generally relate to workmanship issues which are a concern between the owners and the builder.”
- 5.2 The expert inspected the house on 23 and 27 June 2006, and furnished a report that was completed on 12 July 2006. The expert described the house as “standard low budget construction”, noting that it was “constructed of budget materials and built to minimum standard requirements of the NZ Building Code” and that the general “standard of workmanship is satisfactory” but that some attention to general maintenance and painting would be beneficial.
- 5.3 The expert noted that the windows were face-fixed with satisfactory head flashings, no sill flashings and compressible foam seals at the jambs. I note that the manufacturer’s instructions at the time of construction did not require sill flashings or scribes, but recommended them as “good trade practice”.
- 5.4 The expert noted moisture damage (some severe) to the interior timber window reveals and trim, as well as signs of moisture damage to the shower linings. Invasive moisture readings were taken below the jambs of the windows in two bedrooms, where the moisture damage was most severe, and readings were less than 17% (indicating that no moisture had penetrated the cladding). Further readings were taken in the bottom plates of the shower and the exterior wall of the bathroom, and all readings were below 17%. The expert concluded that there was no moisture penetration from the outside, and that the moisture damage, mould and condensation were a result of internal moisture (which was likely to be the result of inadequate ventilation and heating).
- 5.5 The expert made the following specific comments on the house:
- The compressible foam seals used at the window jambs and the corners of the weatherboards are unlikely to provide adequate weatherproofing over time, and timber scribes should be fitted.
 - The windows require additional drainage holes from the condensation channel to drain water to the outside.
 - There are areas of severe damage to the timber reveals of the windows.

- Moisture is penetrating between the shower door frame and the shower lining, and the linings are deteriorating prematurely.
- 5.6 The expert also noted that the timber retaining wall that supports the corner of the house, together with the associated sub-floor structure, requires an assessment to be carried out by a structural engineer.
- 5.7 The expert also made the following comments:
- Cracks such as those in the sub-floor retaining wall support posts are commonly seen, and do not appear to weaken the structure.
 - The cracks such as those in some interior linings are commonly seen and do not appear to be of any structural concern. (I note here that the engineer confirmed that the house is structurally sound).
 - The use of 75mm x 50mm framing for houses of this construction, situated in medium wind zones, complies with NZS 3604.
 - The slippery steps are a maintenance matter that can be fixed with the use of an appropriate algae remover, and the application of an anti-slip coating.
 - Adequate ventilation and heating is necessary to limit the amount of internal moisture generated within the house.
 - The matter of the ceiling insulation dust cannot be commented on, as there was no evidence noted during inspections.
 - The carport had been partly closed in since construction, and was not designed to be waterproof.
 - No matters concerning surface water were noted.
- 5.8 Copies of the expert's report were provided to each of the parties on 13 July 2006.
- 5.9 In a letter to the Department dated 19 July 2006 (refer paragraph 3.16) the applicants' lawyer requested that the time for comment on the expert's report be extended so "they have an opportunity of considering the comments made by Tauranga City Council before responding".
- 5.10 In a letter to the Department dated 10 August 2006, the applicants' lawyer commented on the expert's report, including the following:
- The house was not constructed in accordance with the consent drawings, with an extra window added, the living room windows extended to floor level and major changes to the retaining walls.
 - The house is not inadequately ventilated or over-heated – it is inherently damp and cold, with a dehumidifier working continuously to reduce severe condensation.

- The territorial authority has issued a notice to rectify which it now refuses to enforce.
- There are many cracks in walls and ceilings, which are serious enough to go beyond a common occurrence.
- The cracks in some of the foundation posts run through the length of the timber and must have some affect on structural integrity. (I take this to be a reference to the visible splits in the imbedded poles supporting the retaining walls.)
- The steel bracing cut into the load-bearing exterior walls must reduce the structural stability to some extent, notwithstanding that 75 x 50 framing complies with the standard.
- The report did not show the rot, moisture test results and damage to linings in the bathroom.
- If the workmanship is considered satisfactory, then the materials and lack of compliance with the building code must be causing the problems.

I have considered the applicants' comments during the preparation of this determination.

6. The engineer's report

- 6.1 The Department commissioned the engineer responsible for the design of the exterior timber retaining walls (refer paragraph 3.8) to assess the timber retaining wall and associated sub-floor (basement) framing under the house. The engineer inspected the sub-floor area of the house on 22 August 2006, and reported his findings in a letter to the Department dated 12 September 2006.
- 6.2 I am satisfied that because the engineer had previously been involved in this building (as designer of the retaining wall along the east elevation) there was considerable value in his advising me on the as-built construction of the retaining wall and adequacy of the sub-floor framing. His report provided part of the information on which I relied when forming a view as to the compliance of the house with the Building Code (refer paragraph 1.4). As I have made clear in paragraph 1.5, the engineer's report is only part of the information I have considered in making this determination.
- 6.3 Nonetheless I recognise the applicants' strong concern that there is a conflict of interest when I receive advice from an engineer who has had prior involvement in the design of the house and the retaining walls. For that reason I engaged another firm of consulting engineers ("the consultants"), who has had no prior involvement with the work, to peer review the engineer's report (refer paragraph 8.1).
- 6.4 The engineer noted that the initial consent drawings for the house showed a south entry to the sub-floor carport, which had subsequently been amended to the west. Amended plans and elevations had been received by the territorial authority on 12

November 1999. Those plans showed the excavated carport area bounded on the east and part of the north by a timber retaining wall (“the subfloor retaining wall”).

- 6.5 The engineer noted that the 2.1m exterior retaining wall (“the exterior retaining wall”) was about 1.8m behind the east wall of the house. Although there was some minor misalignment or bowing of lower planks, the engineer noted that the wall shows “no evidence of rotation or displacement and currently provides adequate support to the ground behind.” The engineer also noted that the surface seepage water possibly contributes to some of the dampness in the sub-floor (basement) area.
- 6.6 The engineer noted that the subfloor retaining wall was constructed from 325mm poles at 1200mm centres (with 200mm wide planks between) and, although the depth of embedment could not be verified, the territorial authority had inspected the footings and had passed them as satisfactory. The engineer noted that there were “no visible signs that translation or rotation of this wall has occurred”, despite the additional imposed loading from the upper external retaining wall.
- 6.7 The engineer noted that the 250 x 50 floor joists at 450mm centres meet the span limits of NZS 3604, with the bearers meeting the strength and deflection requirements of the Standard. The engineer also noted that, while three subfloor braces shown in the bracing calculations had not been installed, this was compensated for by the poles at each end of the east wall and the stiffness of the wall.
- 6.8 The engineer inspected the cracks in the interior linings, and concluded that these were due to differential thermal effects or the initial shrinkage of framing timbers. The expert also considered that the creaking floors were the result of flexibility due to the floor joists being at the upper limit of the recommended spans in NZS 3604.
- 6.9 The engineer also inspected the cracks in the subfloor retaining wall poles (noting no evidence of permanent lateral or vertical movement), and concluded that the cracks do not reduce the structural integrity of the retaining wall.
- 6.10 The engineer also noted that the subfloor space was originally intended to be open, but had since been partly closed in and used for storage. This had reduced ventilation and contributed toward the dampness already resulting from site seepage. The engineer recommended that polythene sheet be installed over the exposed soil to reduce the problem.
- 6.11 Based on his investigations, the engineer concluded that “the house is adequately supported and that no issues relating to these components currently exist that would deem the house unsafe to occupy.”
- 6.12 Copies of the engineer’s report were provided to each of the parties on 15 September 2006.

7. The Hearing

- 7.1 At the request of the applicants a hearing was held on 9 February 2007. At the hearing were the applicants, their solicitor, and their assessor. The territorial authority was represented by a building official and a legal adviser. The hearing was held before the Determinations Manager and one of the Department's referees. Also at the hearing were three officials from the Department. Although they had been notified of the hearing, the owners of the house did not attend or send a representative.
- 7.2 During the hearing I heard argument concerning details of the status of the agreement between the current building owner and the applicants. I consider such matters to be outside the scope of this determination, the purpose of which is to establish whether the house is code compliant and whether certain decisions and actions taken by the territorial authority were correct. It appears that the contract between the owner and the applicant (refer paragraph 3.2) requires the owner to obtain a code compliance certificate before the applicant completes the purchase. In any event I can only determine those matters described in section 177 of the Act. In this particular case I have made a determination concerning the code compliance of the house, and the issuing of a notice to fix and a code compliance certificate.
- 7.3 The applicants gave their approval for all those at the hearing to visit the house. With the exception of the representative of the territorial authority and the legal adviser, those present then visited the house to clarify aspects of the submissions. I adjourned the hearing before the visit, and reconvened it later. The representatives of the territorial authority did not attend the reconvened hearing which concluded after a short period.
- 7.4 At the hearing the applicants quoted from a recent Departmental publication and related those quotations to the condition of the house and some of the items installed in it. I explained that, as the applicants' house was subject to the Building Act 1991, the implied warranties provisions in the Building Act 2004, to which they appeared to be referring, did not apply. In the course of commenting on the second draft determination issued after the hearing, the applicants queried that statement. In response I draw attention to section 436 of the Act which says that when considering an application for a code compliance certificate for building work carried out under the former (1991) Act, as is the case with the house in this determination, the application must be considered and determined as if the Building Act 2004 had not been passed.
- 7.5 It became apparent to me after the hearing that the applicants believed that building work that differed from what was shown on the consent drawings was unlawful. In fact that is not the case because, for building work consented under the Building Act 1991, as in this case, the essential requirement is for the work to comply with the Building Code. The situation is different for building work consented under the Building Act 2004 which requires the work to comply with the consent.

7.6 The submissions made at the hearing helped me to understand the different categories of matters with which the applicants are dissatisfied.

7.7 It became clear that one such category consists of matters that relate to building code compliance and are therefore matters I can determine. Matters in this category include:

- the internal moisture problems causing condensation that resulted in decay of interior window sills
- the 1.8 metre high pole-supported retaining wall system that runs approximately north-south on the east side of the house. This wall cuts across the steep slope of the site above the house and intercepts the storm-water flows, that would otherwise flow onto the building platform for this house. Although there is a small yard sump near the foot of this wall, there is no continuous cut-off channel along the top of the wall, or at its foot, to intercept rain-water run-off and conduct it to the sump. As a result some of the water is likely to flow under the east side of the house (nearest the retaining wall) and into the basement area below
- the sub-floor retaining wall that cuts into the bank at the south-east corner of the house to provide for the carport. Although this wall is not intended to be water-tight (since the basement was not designed to be habitable), the moisture behind this wall would be reduced by better control of the water at the foot of the retaining wall above and behind it
- the sparking at electrical switches
- the absence of a flashing at the head of the meter box
- adequate external weatherproofing of the window jambs
- a reported broken brace lining
- cracks to internal wall linings
- creaking floors.

7.8 It was also clear that there are some matters that are more to do with building quality, (and are therefore really contractual matters to be settled between the current owner and builder and the applicants), than with code compliance. There are also some matters that may have more to do with the management or use of the building. Matters in these categories include:

- the leaks around the shower
- the leak at the base of the electric hot water cylinder
- insulation dust dropping from the ceiling

- the house being cold
- the electric range and other items not being brand new
- the reported dampness under the house (which may in part be caused by the obstruction of the basement ventilation by partitioning and large stored objects).

7.9 I have taken account of these matters, and the submissions on them, in this determination.

8. The consultants' report

8.1 Subsequent to the hearing, the applicants expressed some concerns as to the independence of the engineer. Consequently, the Department commissioned consultants to peer review the engineer's report. The consultants inspected the retaining wall and the sub-floor area of the house and reported their findings in a letter to the Department dated 12 July 2007.

The retaining walls

8.2 The consultants described the construction of the upper and lower retaining walls and stated that they were unable to verify the depth of pole embedment. The consultants noting that any intrusive investigation to establish the depth of embedment would have an adverse impact on the stability of the walls.

8.3 Following an analysis of the walls, the consultants were of the opinion that the upper wall had adequate stability. The consultants considered that, based on an "optimistic" load transfer value from the upper to lower wall, the lower wall has adequate stability. However, if "pessimistic" values were applied, the lower wall still provided adequate levels against wall rotation but may not provide normally accepted levels of reserve strength in bending.

8.4 The consultants concluded that a wall with a very low margin of safety would have exhibited evidence of deflection or distress over a 6-year period of service. Both the upper and lower walls showed no signs of "poor performance" over this period of time, despite being subject to several to several severe weather events. In summary, the consultants noted that Clauses B1.3.1 and B1.3.2 state that a structure should have a low probability of undergoing rupture or loss of amenity. Based on their inspection and analysis, the consultants considered that, while the structures may not be in full compliance with verification method VM4, they are in compliance with the intent of Clause B1.

The sub-floor structure

8.5 The consultants reviewed the as-built sub-floor structure and noted that there were some differences when compared to the consented plans. Using NZS 4203: 1992⁴

⁴ New Zealand Standard NZS 4203: 1992 Code of practice for general structural design and loadings for buildings

and NZS 3603: 1993⁵, the consultants calculated the strength and stiffness of the floor joists, the bearers, and the floor structure to retaining wall at the rear of the carport, which all differed in some respect from the consented plans. The conclusion was that all these elements had adequate strength and stiffness.

- 8.6 The remaining posts and footings appeared to be in line with the details shown on the consented plans, and as such were adequate.

The engineer's report

- 8.7 The consultants also peer-reviewed those sections of the engineer's report related to its own inspections and analysis and found that, apart from minor variations, the engineer's description of site observations was consistent with the consultants' findings. The minor variations were not considered to have any major bearing on the final conclusions that had been reached.
- 8.8 Copies of the consultants' report were forwarded to the parties on 16 July 2007.
- 8.9 The applicants' lawyer acknowledged receipt of the consultant's report by letter dated 19 July 2007. He said he had no instructions from his client regarding the report at that time. The lawyer expressed concern about the consenting processes of the territorial authority in relation to the retaining walls and the lack of information held on the territorial authority's "as built" records. He had raised this matter in an earlier letter to me in June 2007 in which he asked me to direct the consultants to investigate the matter. As the consenting processes of the territorial authority are not the subject of this determination and as I have no jurisdiction over those processes under section 177 of the Act I did not give such a direction to the consultants.
- 8.10 When no response to the consultants' report was received from the applicants by 11 October 2007 I wrote again to the applicants noting that I had allowed a number of extensions to the time allowed for a response.
- 8.11 On 29 October 2007 I received a fax from the applicants' new lawyer (refer paragraph 3.21) and sought a further extension of time until mid-November 2007. I agreed to that extension.
- 8.12 On 14 December 2007 I received a letter from the applicants' new lawyer seeking a further extension until later in January 2008. I agreed to such an extension.
- 8.13 On 8 February 2008 the applicants' new lawyer made a submission. He reiterated the comments his predecessor had made about the lack of pole embedment depth on the territorial authority's files. He also referred to the lack of evidence of other aspects of the walls' design and the recent ongoing seepage. The applicants' new lawyer did not submit any evidence that altered my view that, as the consultants' report confirms, the retaining walls are code compliant.

⁵ New Zealand Standard NZS 3603: 1993 Timber structures standard

Matter 1: The structure

9. Discussion

9.1 I consider that the engineer's report, as outlined in paragraph 6, and as verified by the peer-review by the consultants as described in paragraph 8, establishes that the house complies with the structural provisions of the building code. Dealing specifically with the concerns raised by the applicants, I conclude, in the light of the available evidence, the following:

- The retaining walls are compliant with the Building Code. They are not designed to be watertight but to allow moisture to seep through. Consequently there is no need for a drainage system behind the base of the walls. In reaching this conclusion, I am prepared to accept that, due to the "low probability" risks described in paragraph 8.4, the lower retaining wall is in compliance with the intent of Clause B1.
- The visible cracks in the poles are a normal consequence of the drying and shrinkage process.
- The cracks to the interior plaster walls do not indicate any structural problem and are not unusual in a pole-platform building as minor settlement and shrinkage occurs.
- As verified by the consultants, the amendments made to the sub-floor structure are code compliant. Accordingly, the territorial authority should amend the original consent to accommodate these changes.
- The creaking floors may be the result of the particle-board flooring sheets rubbing together at their edges, or flexing of the floor joists, (which can lead to loosening of the sheet fixings and consequent squeaking), or a mixture of both. Various remedies, including refixing the sheets with glue and screws, are possible, but these are not essential to compliance with the Building Code because the flooring system is currently structurally sound.

Matter 2: Internal moisture

10. Discussion

10.1 I consider that the expert's report has established the source of the moisture that has caused damage to the window reveals in the house. Dealing specifically with the concerns raised by the applicants, I conclude, in the light of the available evidence, that:

- provision of ventilation sufficient to deal, at source, with the volumes of water vapour inevitably produced by a family's cooking, showering and washing activities, will lead to compliance with Clauses E3 and G4. It will also reduce

the volume of condensation on the inside face of the windows so that the drainage channels are less likely to be overfilled. I observe here that, given the relatively small volume of the house and the number of occupants, the interior of the house will inevitably have undesirably high concentrations of moisture in the air at various times, unless the moist air is quickly ventilated from the house

- it is not for me to state how the problem is to be fixed and compliance is to be achieved. However, I suggest that the installation of extractor fans over the cooker and close to the shower will ensure that the water vapour can be immediately removed from the house even when the windows are closed for security reasons or because of cold weather
- the condensation channels on the aluminium windows should be checked to ensure drainage holes are sufficient in number and that the channels are working.

Matter 3: The cladding

11. Discussion

11.1 Evaluation of the cladding for code compliance

11.1.1 In evaluating the design of a building and its construction, it is useful to make some comparisons with the relevant Acceptable Solution⁶, 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.

11.1.2 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 determinations⁷ (refer to Determination 2004/1 *et al*) relating to cladding and these factors are also used in the evaluation process.

⁶ 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.

⁷ Copies of all determinations issued by the Department can be obtained from the Department's website.

11.1.3 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.

11.2 Weathertightness risk

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

- is built in a medium wind zone
- is a maximum of one storey high
- is very simple in plan and form
- has eaves of more than 600mm and no verge projections
- has fibre-cement weatherboards which are fixed directly to the framing
- has external wall framing that is unlikely to be treated, so providing no resistance to the onset of decay if the framing absorbs and retains moisture.

11.2.2 When evaluated using the E2/AS1 risk matrix, which is concerned with the risk of *external* moisture entering a house through the cladding, all elevations of this house demonstrate a low weathertightness risk. 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. The matrix does not relate to *internally* generated moisture that may make a house damp (refer paragraph 10.1) or to dampness caused by surface water (refer paragraph 14.1). I note here that the E2/AS1 risk matrix was not introduced until 1 July 2005, so, in this case, it could not have been used to assess the house at the time the application for building consent was made in 1999/2000.

11.2.3 I note that E2/AS1 does not require the provision of a drained cavity for the fibre-cement weatherboard wall cladding installed to the walls of this house.

11.3 Weathertightness performance

11.3.1 Generally the cladding appears to have been installed in accordance with reasonable trade practice. However, some junctions, edges and penetrations are not well constructed, and these areas are as described in paragraph 5.5 and in the expert's report as being the:

- lack of window jamb scribes
- inadequate drainage holes from the window channels

- damage to the timber reveals of the windows

11.3.2 I also note the expert's additional comments in paragraph 5.7, and note that the house appears to comply with Clause E1. I accept that the remaining issues are not matters that affect compliance with the Building Code and that other items of workmanship that concern the applicants are matters to be settled between the owner and the applicants and do not affect compliance with the requirements of the Building Code.

11.3.3 I consider that the expert's report establishes there is no evidence of external moisture entering the house, and accordingly, that its cladding does comply with Clause E2 at this time.

11.3.4 However, the house 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.

11.3.5 Because the faults that have been identified with the cladding system occur in discrete areas, I can conclude that properly fixing the items outlined in paragraph 11.3.1 will result in the house remaining weathertight and in compliance with Clauses B2 and E2. Any other defects that are discovered while fixing these items should also be repaired.

11.4 Conclusion

11.4.1 I determine that the house is weathertight now and therefore the cladding complies with Clause E2. However, as there are a number of items to be remedied to ensure it remains weathertight and thus meets the durability requirements of the Building Code, I find that the house does not comply with Clause B2.

11.4.2 I also find that rectification of the items outlined in paragraph 11.3.1 to the approval of the territorial authority, along with any other associated faults that may become apparent in the course of that work, will consequently result in the house remaining weathertight and in compliance with Clauses B2 and E2.

11.4.3 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. 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.

11.4.4 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 sealants, seals and gaskets in joints.

Matter 4: Surface water

12. Discussion

- 12.1 I consider that the expert's and the engineer's reports indicate that the house complies with Building Code Clause E1. The confirmation by the consultants of the engineer's findings regarding the retaining walls and sub-floor structure, gives me confidence in the engineer's findings in respect of this matter. Surface water is not entering the house and the house has not exacerbated the flow of surface water across the site.
- 12.2 From the applicants' description it appears that there is an unusually high volume of surface water flowing down the slope above the house under certain conditions. While that is not a Building Code matter in respect of this house, I strongly suggest the territorial authority should investigate the matter.

Other matters

13. Discussion

- 13.1 In this category are some other matters raised by the applicants that I believe could be dealt with as follows:
- The surface moisture problem could be reduced by installing a shallow drain along the foot of the rear retaining wall so as to intercept seeping water and channel it to the existing storm water collection sump. (I observe here that the matter of the apparent volumes of water running off the bank above the retaining wall is one to be taken up with the territorial authority (refer paragraph 14.1).
 - The reported dampness under the house may be made worse by the quantity of stored objects under the house and the partial obstruction of free air flow which would normally ventilate the basement area and help to keep it dry.
 - The reported sparking at electrical switches should be checked by the original electrician who should supply an Energy Certificate to confirm that the electrical system is safe.
 - The absence of a flashing over the meter box should be checked by the territorial authority and a flashing installed if considered necessary.

- The ongoing problems with the slipperiness of the steps at the front of the house which may be the result of lack of maintenance of the steps, or an inherent design or construction flaw. The territorial authority should inspect the steps and decide whether they comply with the requirements of the Building Code.

13.2 The matters described in paragraph 7.8 are in my view ones that fall outside the scope of this determination because they are to do with contractual matters or with maintenance.

14. The decision

14.1 In accordance with section 188 of the Act, I hereby determine that:

Matter 1: The structure

the house complies with Clause B1 of the Building Code.

Matter 2: Internal moisture

the house does not comply with Clauses G4 and E3 of the Building Code.

Matter 3: The Cladding

the house complies with Clause E2 of the Building Code. However there are several items to be fixed to ensure that the house continues to comply and thus meet the durability requirements of the code. Consequently I find that the house does not comply with Clause B2 of the code.

Matter 4: Surface water

the house complies with Clause E1 of the Building Code. This finding does not mean that the water flows down the site, as reported by the applicants, are acceptable. The extent and cause of the water flows, and the responsibility for them, should be investigated by the territorial authority as a matter of urgency.

14.2 I also find that rectification of the items outlined in paragraph 11.3.1 will consequently result in the house remaining weathertight and in compliance with Clauses B2 and E2.

14.3 I also find that rectification of the ventilation and window drainage matters discussed in paragraph 10.1 will result in the house complying with Clauses G4 and E3 of the code.

14.4 A new notice to fix, which includes any outstanding items from the earlier Notice to Rectify (refer paragraph 3.7) and any matters arising from the territorial authority's investigation of the items listed in paragraph 13.1, should now be issued 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.

- 14.5 I would suggest that the parties adopt the following process to meet the requirements of paragraph 14.4. Initially, the territorial authority should issue a notice to fix, listing all the items that the territorial authority considers to be non-compliant. The owners should then produce a response to this in the form of a 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 12 March 2008.

John Gardiner
Manager Determinations