Determination 2008/104

26 November 2008

Determination regarding the weathertightness of remedial work after storm damage to a 24-year-old house at 16A Lyall Parade, Lyall Bay, Wellington

1. The matter to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004[1] ("the Act") made under due authorisation by me, John Gardiner, Manager Determinations, Department of Building and Housing, for and on behalf of the Chief Executive of that Department. The applicants are the owners, S Sandhu and N Roy ("the applicants"), and the other party is Wellington City Council ("the authority") carrying out its duties and functions as a territorial authority or building consent authority. The applicants have identified the builder, Mr J Argue ("the builder"), as a person with an interest in this matter. I have also included the insurer, AMP General ("the insurer"), as a person with an interest in this matter.

1.2 The applicants dispute whether repair work carried out to part of a house that was damaged in a storm complies with certain requirements of the Building Code[2] (Schedule 1, Building Regulations 1992).

1.3 The storm damage to the house was restricted to the linking structure between two separate wings of the house ("the link structure"). Apart from the gable end walls, and other areas adjacent the link structure that has also suffered water damage, the other parts of the house are not considered in this determination.

1.4 Damage to, or associated with, the link structure has arisen from three causes:

(a) Storm damage – defects that arise directly from the February 2004 and August 2004 storms.

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

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

(b) Consequential damage – defects that arise indirectly from the storm damage, as a consequence of damage and deterioration which has occurred indirectly as a result of the delays in repairing the storm damage.

(c) Pre-existing damage – defects that arise from longstanding deterioration in adjacent building elements that do not arise from (b).

1.5 The determination is limited to the remedial work necessary to repair the storm damage and the consequential damage. The determination does not include the repair of any pre-existing damage.

1.6 I therefore consider that the matter for determination is whether the repaired building work complies with Building Code Clause B2 Durability and E2 Weathertightness.

1.7 In making my decisions, I have considered the submissions of the parties, the report of the expert commissioned by the Department to advise on this dispute ("the expert"), the consultants' reports commissioned by the parties, and the other evidence in this matter. I have evaluated this information using a framework that I describe more fully in paragraph 6.

1.8 Reports commissioned by the parties

The submissions include various reports commissioned by the parties as below.

For the applicants:

- the report by a plumber/roofer on the initial storm damage ("the applicants' roofer")
- reports by a specialist property inspection company ("the applicants' surveyor")
- the report by a biodeterioration specialist ("the applicants' decay specialist")

For the insurer:

- reports by a specialist property inspection company ("the insurer's surveyor")
- reports by a biodeterioration consultant ("the insurer's decay specialist")
- the report by the corrosion consultant ("the insurer's corrosion specialist")
- the report by the architect for the building work ("the insurer's architect").

2. The building

2.1 The 2-storey detached house was originally part of a group of houses built in about 1984 and situated on a flat site in a very high wind zone in terms of NZS 3604[3]. The original group of small houses appears to have been identical in plan and form, being simple box shapes on plan with 45° gable roofs that accommodate upstairs bedrooms within the roof line.

[3] New Zealand Standard NZS 3604:1999 Timber Framed Buildings

2.2 The house that is the subject of this determination was issued a building permit in September 1984, with the drawings showing two of the units joined together with a single-storey "link structure" with a low-pitched roof sloping towards the rear and a dotted outline noted as "future link-span by owner". A number of changes to the planning and claddings appear to have been made without as-built drawings being submitted to the authority.

2.3 The construction is conventional light timber frame, with concrete foundations and slab, masonry roof tiles, fibre-cement weatherboards and aluminium windows.

2.4 The link structure

2.4.1 The link structure originally appears to have been single-storey and provided a garage, carport and entry foyer. The link structure was clad to match the house and a butyl rubber membrane to the flat roof was laid over a particle board substrate.

2.4.2 A "conservatory walkway" built above the north side of the link roof was added some time after the link structure was built. The walkway links the two separated upper floors, with sliding aluminium doors opening from the walkway onto a tiled deck.

2.4.3 The original weatherboards and membrane floor were retained in the conservatory walkway as the internal linings and flooring. The expert has commented that the original weatherboards and butyl rubber membrane floor was intended to remain as the "primary weathering" surfaces.

2.4.4 I note that the authority has no record of any building permit or consent for this work.

2.4.5 The specification for the repair work included the replacement of the deck substrate, membrane and tiles, the addition of new deck balustrades, the replacement of exterior door joinery and the repair and/or replacement of weatherboards, damaged timber framing, timber trim, gutters and various other elements.

2.5 Given the original date of construction in 1986, and the lack of other evidence, I consider that the original external wall framing of the wings and the ground floor of the link structure is likely to be boric treated. The insurers arranged for timber samples from exterior wall and roof framing in the link structure to be forwarded to a testing laboratory for analysis which confirmed two of the wall framing samples as "almost certainly CCA-treated" and one as "probably treated with boron". The roof framing timber sample was untreated and was "tentatively identified as Douglas-fir".

3. Background

3.1 In February 2004, a severe southerly storm affected the link structure, damaging the south fascia, the roof membrane and the deck membrane. The applicants lodged a claim with their insurer and the assessor's form dated 5 March 2004 notes the following actions to be undertaken:

> To report to insurers
> To instruct builders to
> 1. Clean sand
> 2. Repair damage
> 3. Repair roof.

3.2 The claim was accepted by the insurer, which requested a brief report "on cause and a scope of repairs to storm damaged deck from a registered roofer or builder". The applicants arranged for an inspection to be carried out by a roofer.

3.3 In a letter to the applicants dated 13 May 2004, the applicant's roofer reported on the damage caused by the storm, and concluded that the following summarised repair work was required to the link structure and associated areas:

- replacement of the deck membrane and tiles
- replacement of the deck particle board substrate with plywood
- replacement of the bottom 600mm of the rear walls around the deck
- the addition of a metal bar to the exposed edge of the membrane
- repainting "at the very least" of the ground floor ceilings.

3.4 No repair work was carried out. In August 2004, a second storm caused further damage to the link structure. Following that storm, some temporary work was carried out to secure the edge of the membrane roof. However, it appears that the link structure was not made weathertight, and no repairs were carried out to the deck area.

3.5 Early in 2005 the insurers commissioned a surveyor ("the insurer's surveyor") to inspect and report on the causes of and remedies for the leak into the entry hall. The insurer's surveyor inspected the link structure on 3 February 2005 (a year after the original storm damage), and provided a report dated 10 February 2005, noting that many of the deck tiles were cracked and that the membrane was likely to have future defects due to its age and lack of maintenance. The insurer's surveyor also noted that the deck sloped away from the drainage outlet, with ponding water able to penetrate an unsealed junction in the deck membrane.

3.6 The insurer commissioned an architect ("the insurer's architect") to prepare consent documentation for repair work to the link structure, apparently based on the scope of work outlined in paragraph 3.3. However the documentation, as outlined in paragraph 2.4.5, included some additional work and described the work as being "Maintenance repair work to existing roof terrace and water damaged areas", but was not clear as to the extent of any work required to the conservatory walkway.

3.7 The authority issued a building consent (No. 131317) on 28 July 2005, with the building work described as:

> Replacing ranch slider, deck substrate, deck cladding butynol and tiles, build new handrail to deck.

3.8 It seems that repair work did not commence until November 2005 (some 20 months after the original damage) and I am not aware of when the construction was "closed

in". The authority's site report dated 26 October 2005 records an inspection prior to any claddings being removed, which noted that the roof deck appeared to be falling "towards house", and stated:

> There is reason to believe floor joists have been affected by moisture.

3.9 According to the applicants, when the repairs were carried out some framing timber was found to be saturated and decayed, and the replacement deck substrate and other claddings were installed over the decayed framing, despite the specification calling for any decayed timber to be replaced with H3.1 treated timber. I have not seen any of the authority's inspection records indicating that the exposed framing was inspected prior to lining and cladding.

3.10 Following further leaks, the insurer's surveyor inspected the link structure on 6 and 7 November 2006, and provided a report dated 13 November 2006, noting that his inspection was limited to the leaking area and not a general weathertightness assessment. The insurer's surveyor carried out water-testing at various areas, removed a section of the original weatherboards to take samples for testing from framing exposed to moisture penetration and concluded that the leaking was the result of the lack of sealing and maintenance of original junctions, noting:

> Although we are of the opinion that we have located the most likely source of water ingress either side of the ranch slider to the first floor conservatory (as observed by the owner of the house) we are of the opinion that the house is clad in an inappropriate cladding system for the location of the dwelling and due to the obvious lack of maintenance carried out to the house.

3.11 The insurer's surveyor arranged for decay analysis of the timber samples by a specialist ("the insurer's decay specialist") and sought an opinion on the condition of the cladding sample from the fibre-cement manufacturer. I note that the samples were taken from the framing 32 months after the original storm damage in February 2004. For at least 20 months of that period, the framing was exposed to severe, prolonged moisture penetration, with meteorological records showing 288 days of rain.

3.12 The fibre-cement manufacturer's facsimile to the insurer's surveyor, dated 5 February 2007, concluded that the deterioration of the sample weatherboards appeared to be caused by "prolonged exposure to external moisture".

3.13 The insurer's surveyor attached the insurer's decay specialist's report, and opinion on the cladding in a report to the insurer dated 8 February 2007, noting that these both supported his earlier conclusions. The insurer's decay specialist's report indicated that one of the samples contained "advanced decay" with the others showing fungal infection, and concluded that the condition "suggested intermittent moisture for at least 10 years".

3.14 The applicant expressed his concerns about the quality of the building work to the authority in an email dated 16 April 2007, asking that a code compliance certificate not be issued.

3.15 The authority carried out a final inspection of the building work on 21 May 2007, and the site report noted "rotten timber in deck replaced", although there is no record

of that work being carried out or inspected. The report identified outstanding items, noting that the specification called for repairs to the building wrap, the bottom plates and the studs; and stated that the "specification is part of building consent".

3.16 The applicants commissioned a building surveyor ("the applicant's surveyor") to inspect the repair work. The applicant's surveyor inspected the work on 18 September 2007 and provided a report dated October 2007. The applicant's surveyor considered that damaged timber had not been replaced in accordance with the consent documents and concluded that the damage observed in the timber could have occurred as a result of allowing the timber to stay wet for a prolonged period following the storm damage.

3.17 In an email to the applicants dated 8 October 2007, the authority noted that it had advised the builder that "the [code compliance certificate] has been suspended until the matter has been resolved to Council's satisfaction", and a meeting on site with the applicants was arranged.

3.18 In October 2007, the applicants filed a compliant against the insurer with the insurance ombudsman. According to the applicants, the claim related to the handling of the insurance claim and the compliance of the repair work. According to the insurer, the insurance dispute was about which aspects of the repairs constituted a valid claim.

3.19 In a letter to the applicants dated 28 November 2007, the authority reported on a site meeting with the applicants noting, amongst other things, that:

- The applicant has requested that a code compliance certificate not be issued until the unresolved matters have been addressed and rectified.
- The authority noted that some damaged materials had not been replaced in accordance with the consent specification.
- Various other items were identified as not complying with the Building Code (air seals, the door sill flashing, the edge of the deck membrane, the membrane at the rainwater head).
- A notice to fix would be issued to address the identified issues.

3.20 On 28 November 2007 the authority issued a notice to fix which stated that the building work did not comply with "E2/AS1 external moisture" and required a final inspection to be carried out after the following work:

> Install the Air seals and Sill flashings as per E2 AS1 details and fix back the Butynol in accordance with the manufacturer's requirements.

3.21 Under cover of a letter to the authority dated 4 December 2007, the applicants provided a copy of the applicant's surveyors report and pointed out that, since the site meeting (refer paragraph 3.19), the damaged living room wall had been painted without removing the damaged lining or checking the condition of the timber behind.

3.22 Following further communication, the authority emailed the applicants on 7 February 2007, noting that work was considered necessary to repair the storm damage and the inspection record (refer paragraph 3.15) showed that the authority's inspector was

satisfied that "the appropriate works had been undertaken as approved by the building consent documents", with other damage considered to be outside the building consent. The authority stated that no further notices to fix would be issued, noting:

> There appears to be a dispute about damage caused by the storm and pre-existing damage as a result of ingress of moisture over a long period of time although the photos and laboratory findings would suggest that some of the damage is a result of long term exposure to moisture, the Council will not be drawn in on this matter.

3.23 The applicants responded in an email to the authority on 7 February 2007, noting that the authority's inspector had been "very disappointed with the quality of the work and the fact that the consent wasn't followed"; and the report had clearly stated that the specification called for repairs to the building wrap, the bottom plates and the studs, none of which was carried out. The applicants requested the authority to inspect the exposed timber.

3.24 On receiving a copy of the applicant's surveyors report, the insurer asked its architect and surveyor to review the report. The architect reported to the insurer in a letter dated 7 March 2008, noting that old water staining, damage and lack of maintenance was evident during his early site visit, and concluding that most damage was longstanding and incremental. The architect considered that it would have been prudent to replace any rotting timber found during the repair work

3.25 The insurer's surveyor reviewed the applicant's surveyor's report and reported to the insurer on 31 March 2008, confirming the opinions expressed in his earlier reports and concluding:

> Having reviewed these documents we remain of the opinion that the water ingress . . . did not initiate in 2004. The damage which has occurred to the timbers in these areas is, in our opinion, the result of long term intermittent exposure to moisture which initiated a significant amount of time prior to 2004.

The insurer's consultant also considered that the conservatory and deck appeared to have been constructed without a permit or consent and there was evidence of a "general long term lack of maintenance".

3.26 The insurers surveyor attached a follow-up report dated 5 March 2008 from the insurer's decay specialist, which reviewed the applicant's surveyor's report and concluded:

> [the applicant's surveyor's] conclusion that the extent and types of decay and fungi present occurred during a 32 month continuous moisture exposure period were unsubstantiated . . . and are not consistent with the detailed observations contained in the reports of [the insurer's decay specialist] and [the insurers surveyor]. [The applicant's surveyor's] conclusion is therefore not tenable.

3.27 The insurer's surveyor also attached a report dated 7 March 2008 from the insurer's corrosion specialist which reviewed expanded photographs of corroded metal fixings taken in November 2006, and concluded:

> The extent of corrosion damage on the three tie-downs indicated that the stud fixings had been corroding steadily for many years, possibly since the building was nearly new.

3.28 The applicants then commissioned their surveyor to revisit the building work and take timber samples. Four samples from framing at various areas adjacent to the deck were forwarded to applicant's decay specialist. I also note that the samples were taken from the framing almost 4 years after the original storm damage.

3.29 The applicant's decay specialist's report, dated 29 March 2008, identified moderate to advanced decay in all the samples, with confirmed that the timber from which the samples were taken was unsound and should be replaced, recommending that internal walls be tested for the presence of *Stachybotrys atra*. The laboratory report noted that the condition of the samples "was typical of Radiata pine following continual exposure to moisture levels above 18% for at least one year or longer".

3.30 The applicant's surveyor's report dated April 2008 attached applicant's decay specialist's test report and photographs of areas from where timber samples were taken, noting signs of water damage in the rooms below those areas. The report confirmed the concerns expressed in the October 2007 report (refer paragraph 3.16).

3.31 The applicants forwarded a copy of the applicant's surveyor's second inspection and applicant's decay specialist's test report to the authority accompanied by a letter dated 7 April 2008. The applicants stated that linings were still removed to allow inspection of the severely decayed timber and noting:

> We have been repeatedly advised that as dwelling owners the onus is on us to ensure that all the repairs are done as per the building code, which as you are aware we have vigorously been trying to do.
>
> However, if the Code Compliance Certificate is issued despite all the findings in these reports then we would like you to note that the onus to uphold the standards of the building code in our repairs will be on [the authority] completely.

3.32 The builder called for an inspection of the work and the authority inspected the building work on 11 April 2008. The authority approved the sill flashing, the head flashing and the tape at the door opening. The site record notes that the authority discussed the matter of replacement of decayed timber with the builder and recommended that a meeting be held with all the parties, to inspect the areas involved and to resolve the extent of the timber replacement. The authority would then inspect the areas before they are covered in.

3.33 In a letter to the applicants dated 16 April 2008, the authority noted the reports by the applicants' surveyor and decay specialist and advised that most of the matters raised constituted a civil dispute between the parties. The authority noted that the full extent of the repair work in the consent documents was not clear, and advised the applicant to call for a meeting with the builder, the insurer's architect and the insurer to inspect the areas involved and to resolve the extent of replacement that should occur. The authority would then be called to inspect those areas before they are covered in.

3.34 On 19 May 2008 an application for a determination was received by the Department.

3.35 On 17 July 2008 the authority issued a notice to fix for "work . . . that does not comply with the Building Code namely E2 external moisture and B2 for durability". The notice to fix required that action be taken to:

> Complete all works as outlined in the building consent and as outlined in the specifications from [the insurer's architect] and also the items of non compliance outlined in the inspection reports by [the applicant's surveyor] dated October 2007 and on 28/03/03 [sic] and Test results from the samples taken and sent to [applicant's decay specialist] dated 29/03/08.
>
> The following inspections are required with respect to the remedial work;
> Once any of the framing is replaced, and other remedial items, Council shall be called in to inspect the new framing before lining/covering over the new materials.

4. The submissions

4.1 In their application, the applicants briefly outlined the history of the repair work, the background of the dispute and their concerns regarding decayed timber framing and other areas of non-compliance. The applicants asked that the authority be directed to issue a new notice to fix to ensure that the repair work complies with the building code, adding:

> We also believe that there have been no timely WCC inspections called for as per the addendum to the consent, while the repair works were carried out. Especially when exterior cladding around the deck and the deck substrate was opening up for the first time.

4.2 The applicants forwarded copies of:

- the consent drawings and specification
- the building consent
- the applicants roofer's report dated 13 May 2004
- the insurer's decay specialist's report dated 19 December 2006
- the applicant's surveyor's report dated October 2007
- applicant's decay specialist's report dated 29 March 2008
- the applicant's surveyor's report dated April 2008
- the authority's site reports
- the notice to fix dated 28 November 2007
- correspondence with the authority
- various other statements and information.

4.3 The authority made a submission in a letter to the Department dated 6 June 2008, which outlined the background to the dispute, noting that any additional repairs and maintenance carried out during the repair work may not have needed a building consent but would still need to comply with the Building Code. The authority advised that it intended to issue a further notice to fix for the non-complying work identified in the applicant's surveyor's reports. (I note that this notice has now been issued as outlined in paragraph 3.35).

4.4 The authority forwarded copies of:

- the building consent

- the consent drawings
- the notice to fix dated 28 November 2007
- the notice to fix dated 17 July 2008
- the letter to the applicant dated 16 April 2008.

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

4.6 A draft determination was issued to the parties for comment on 18 July 2008.

The authority's response

4.7 The authority generally accepted the draft on 1 September 2008, providing some comments and additional information on the house's history which I have incorporated as I consider appropriate. The authority attached copies of the permit drawings for the original house.

The insurer's response

4.8 In response to the draft determination, the insurer made a submission in a letter to the Department dated 26 September 2008. The submission included the following summarised points that the insurer considered should be taken into account in the determination:

- The advice received from the various specialists and consultants confirms that the leaks are more related to the lack of maintenance and the inappropriate cladding in a very exposed site, than to storm damage or delays in repairs.
- If the damage is the result of pre-existing defects and gradual deterioration, then insurance cover is excluded. It was never the intention to accept responsibility for replacement of decayed timber or to generally make the building weathertight.
- The delays in initiating repairs were not entirely attributable to the insurer. Concerns were raised with the applicants that some work was necessary that was unrelated to the storm damage.
- As some pre-existing damage needed to be addressed, the applicants were offered a cash settlement, which was refused. It was then reluctantly agreed to engage a builder to begin repairs, in order to progress the matter.
- The dispute about which aspects of the repairs constitute a valid claim was before the insurance ombudsman prior to the applicants' application for a determination. This process halted once the applicants had referred the matter to another forum, leaving the insurance dispute unresolved.
- It would be difficult for the insurer and the applicants to work together to resolve the compliance problems, due to the unresolved insurance dispute.
- The insurer is not obliged to carry out further repairs beyond those related to good trade practice or to meeting manufacturers' specifications.

I have considered the insurer's submission, and have amended the determination as I consider appropriate.

4.9 The insurer forwarded copies of:

- the insurer's surveyor's first report dated 10 February 2005
- the insurer's surveyor's second report dated 23 November 2006
- the insurer's surveyor's third report dated 8 February 2007
- the insurer's surveyor's fourth report dated 31 March 2008, attaching:
  - the insurer's decay specialist's second report dated 5 March 2008
  - the insurer's corrosion specialist's report dated 7 March 2008
- the insurer's architect's report dated 7 March 2008
- various other photographs and technical information.

4.10 The insurer also sought guidance as to who might have ultimate responsibility for bringing the house into compliance with the Building Code. I consider this matter in paragraph 7.4.

The applicants' response

4.11 In a letter to the Department dated 14 October 2008, the applicants commented on the draft determination, expanding on the background to the repair work, the insurance dispute and commenting on the other parties' submissions.

4.12 In addition to information covered elsewhere in this determination, the applicants included the following summarised points:

- The insurer has never taken any responsibility for delays, while the applicants have always tried to expedite matters and to promptly bring concerns to the insurer's attention.
- The insurer's surveyor saw the unrepaired house 11 months after the initial storm, with the insurer's architect several months later, so concluding that the house was badly maintained was illogical.
- At more than four and a half years after the initial storm, some major repairs are still unfinished and the areas are unsafe, and the decay is starting to affect the family's health.
- The authority's plans of the original house do not reflect what was built, so some major amendments must have been made to the design at that time, including the upper level conservatory.
- Prior to the storm the deck sloped towards the floor drain, but the membrane damage allowed water into the underlying particle board substrate which swelled. This affected the deck fall and also caused the tiles to crack.

I have considered the applicants' submission, and have amended the determination as I consider appropriate.

4.13 The applicants forwarded copies of:

- some of the correspondence with the insurer
- a series of photographs showing the:
  - initial storm damage in February 2004
  - condition of the house prior to the commencement of the repairs
  - the deck framing exposed in November 2005
  - defects in repair work during construction
  - current condition of the repaired and adjacent areas.
- various other correspondence and other information.

5. The expert's report

5.1 As discussed in paragraph 1.7, I engaged an independent expert to provide an assessment of the condition of those building elements subject to the determination. The expert is a member of the New Zealand Institute of Building Surveyors. The expert inspected the repair work on 18 June 2008, and furnished a report that was completed on 4 July 2008. The report was limited to the link structure and the associated areas.

5.2 The expert noted that he was unable to inspect the condition of framing that was covered in, but which could be in similar condition to that in the exposed areas. The areas not inspected included framing:

- below the deck surface (above the entry porch and garage)
- below the conservatory walkway floor surface
- below the conservatory walkway roof
- within the walls adjoining the east side of the link structure.

5.3 The expert described the work done, and noted areas that differed from the consent drawings, including:

- moisture damaged materials not replaced (as shown in exposed areas):
  - decayed timber framing
  - corroded fixings
  - damaged building wrap
  - linings with black moulds on the back
  - damaged fibre-cement weatherboards
- lack of tapered batten to bottom weatherboard to north wall of deck
- edge of deck membrane fixed with aluminium strip in lieu of second fascia
- section of timber balustrade installed as removable
- gutter at south eaves not extended around corner to collect deck drainage
- no evidence of wind pressure and air leakage ratings of replaced joinery
- at least some air seals missing

- door hinges aluminium in lieu of stainless steel
- head flashing projections and scribers different from drawings
- broken fascia to conservatory walkway not replaced
- conservatory walkway roof membrane not clamped over fascia
- no sill flashing to entry door
- no rubber seal to bottom of garage door.

5.4 The expert also noted that, although not clear from the drawings that it was included in the consent repair work, no work had been carried out to the following areas:

- conservatory walkway roof membrane not replaced
- conservatory walkway roof membrane not lapped behind weatherboards
- membrane under the conservatory walkway floor
- the clear corrugated sloping conservatory roof.

5.5 The expert observed some water stains on the exposed roof framing to the conservatory walkway that appeared to be longstanding, with the timber currently dry and apparently sound.

5.6 Commenting specifically on the link structure and the associated adjacent areas, the expert observed that:

- there is severe decay in the exposed timber framing at the west of the link structure, and possible decay in areas currently covered over
- the exposed building wrap is severely degraded, with holes apparent and fixings corroding (and the condition may be similar in enclosed areas)
- the bottom weatherboards lack continuous packing strips with gaps apparent in some areas
- the air seals around the joinery are not continuous or effective and the inside face of the conservatory walkway wall is unlined, providing no air seal against wind pressures
- the head flashing and jamb scribers to the conservatory walkway doors are poorly weatherproofed and heavily reliant on exposed sealant
- the front door lacks a sill flashing
- the door/window joinery is not verified as appropriate for installation in a very high wind zone
- the bottom of the garage door lacks a bottom rubber seal to limit rain blowing in under the door, and the timber framing at the sides of the garage door is unprotected – with water stains and corroding fixings
- bottom weatherboards beside the deck have not been replaced, there are butt joints between weatherboards and the transition relies on glued membrane to the outside – with damaged framing and wrap directly behind the junction

- the deck drainage is not connected to the gutter system, with the downpipe discharging directly onto the paving and water able to blow back against the bottom of the wall
- the ends of the conservatory walkway membrane are not lapped behind the weatherboards, instead glued back with heavily applied sealant that is failing
- the broken timber fascia to the conservatory walkway has not been replaced, with the break partially sealed with sealant
- the edge of the membrane roof to the conservatory walkway has not been clamped in place, and holes have not been repaired.

5.7 A copy of the expert's report was provided to each of the parties on 10 July 2008.

6. Evaluation framework: the link structure

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

- Some Acceptable Solutions cover the worst case, so that they may be modified in less extreme cases and the resulting alternative solution will still comply with the Building Code.
- Usually, when there is non-compliance with one provision of an Acceptable Solution, it will be necessary to add some other provision to compensate for that in order to comply with the Building Code.

6.2 The approach in determining whether building work is weathertight and durable and is likely to remain so, is to apply the principles of weathertightness. This involves the examination of the design of the building, the surrounding environment, the design features that are intended to prevent the penetration of water, the cladding system, its installation, and the moisture tolerance of the external framing. The Department and its antecedent, the Building Industry Authority, have also described weathertightness risk factors in previous determinations[5] (for example, Determination 2004/1) relating to cladding and these factors are also used in the evaluation process.

6.3 The consequences of a building element 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.

[4] 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.
[5] Copies of all determinations issued by the Department can be obtained from the Department's website.

6.4 Weathertightness risk

6.4.1 In relation to these characteristics I find that the link structure (including the adjacent gable ends) in this building:

- is built in a very high wind zone
- is a fairly simple structure, but includes complex deck and roof to wall junctions
- has an enclosed deck, with open timber balustrades, which is situated partly over a garage area
- has no eaves or verge projections
- has monolithic cladding fixed directly to the framing
- has exterior wall and deck framing that is treated, so providing some protection against decay if the framing absorbs and retains moisture, although severe moisture penetration has led to decay in the timber.

6.4.2 The link structure has been evaluated using the E2/AS1 risk matrix. The risk matrix allows the summing of a range of design and location factors applying to a specific building design. The resulting level of risk can range from 'low' to 'very high'. Higher levels of risk will require more rigorous weatherproof detailing. When evaluated using the E2/AS1 risk matrix, the weathertightness features outlined in paragraph 6.4.1 show that the link structure demonstrates a high weathertightness risk rating.

6.4.3 I have taken this high level of weathertightness risk into account when addressing the weathertightness performance and assessing the relative importance of the defects identified in the link structure in paragraph 7.

7. Discussion

7.1 The storm damage and the consequential damage

7.1.1 Some of the remedial work undertaken to fix the storm damage has not been undertaken in accordance with good trade practice or to manufacturers' recommendations. Taking account of the expert's report together with the high weathertightness risk as assessed in paragraph 6.4.2, I conclude that further remedial work and investigation is necessary of the items outlined in paragraph 5.6.

7.1.2 I also note the areas identified by the expert, as outlined in paragraph 5.3, where the repair work is not in accordance with the building consent and I draw these to the authority's attention.

7.1.3 I consider that the expert's report has established that moisture is continuing to penetrate the building and is causing consequential damage, and I note the 20-month delay between the storm damage and the commencement of the repair work.

7.1.4 I also note the expert's comments, as outlined in paragraph 5.2, on other areas that may have suffered consequential damage, but which are currently enclosed and

unable to be assessed. I therefore consider it necessary to ensure that these are appropriately investigated, and remedial work undertaken if necessary.

7.2 The pre-existing damage

7.2.1 The rectification of any pre-existing damage is not part of this determination, however, I make the following observations:

- I consider is likely that pre-exiting damage has occurred taking into account the condition and defects related to the deck slope, the cladding, the deck membrane, and the deck tiles.
- Determining the extent of the pre-existing damage and when it occurred will be difficult to ascertain. I note the house is currently 24 years old.
- The application of the legislation to the rectification of the pre-existing damage is dependent on the nature of the defects and the time when they occurred. Detailed discussion on how the legislation applies is contained in Determination 2008/5.

7.2.2 I acknowledge the comments with respect to the pre-existing damage made by the authority referred to in paragraph 3.22. The authority may chose to take action under section 124 of the Act if it considers the building dangerous or insanitary.

7.2.3 If this threshold is not reached, the applicants may elect to fix the pre-existing damage. The applicant's should consult with the authority as to whether a building consent is required for this repair work. I note that all building work, irrespective of whether a building consent is required, must comply with the Building Code.

7.3 Compliance of the repair work to fix the storm damage

7.3.1 In the case of the code compliance of the repair work to the link structure and adjacent walls, it was important to look for evidence that establishes whether the repair work complies with the Building Code, as outlined in paragraph 1.5.

7.3.2 In this particular case, that evidence has come from:

- the applicants' roofer's report on the initial storm damage
- the length of time between the storm damage and the repair work
- the lack of authority inspections during the repair work
- the 4 reports by the insurer's surveyor
- the 2 reports by the insurer's decay specialist
- the insurer's corrosion specialist's report
- the 2 reports by the applicant's surveyor
- the report by applicant's decay specialist
- the expert's report.

7.3.3 I consider the expert's report establishes that the current performance of the remedial work to the high-risk link structure and adjacent walls is not adequate because it is allowing water penetration into the building at present. Consequently, I am satisfied that the link structure and adjacent walls do not comply with Clause E2 of the Building Code.

7.3.4 In addition, the link structure and adjacent walls are 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 decks to remain weathertight. Because the faults are likely to allow the ingress of moisture in the future, the link structure and adjacent walls do not comply with the durability requirements of Clause B2.

7.3.5 Because the faults identified with the repair work occur in discrete areas, I am able to conclude that satisfactory investigation and rectification of the items outlined in paragraph 5.6 and paragraph 7.1.4 will result in the link structure and adjacent walls being brought into compliance with Clauses E2 and B2.

7.3.6 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, including examples where the external wall framing of the building may not be treated to a level that will resist the onset of decay if it gets wet (for example, Determination 2007/60).

7.4 Responsibility for repair work

7.4.1 As outlined in paragraph 4.10, the insurer has sought guidance as to who might have ultimate responsibility for bringing the repair work into compliance with the Building Code. However, this is not a matter I can make a decision on under the provisions of the Act. The matter to be determined is whether the repair work is code compliant.

7.4.2 I consider that the question of responsibility is one for the insurer and the applicants to resolve. The insurer has stated that, prior to the application for this determination, the insurance dispute was in the process of being considered by the Insurance and Savings Ombudsman, which I consider to be the appropriate forum for such matters.

8. What is to be done now?

8.1 The authority should require the owners to bring the link structure and adjacent walls into compliance with the Building Code, by identifying the defects and consequential damage listed in paragraph 5.6 and paragraph 7.1.4 and referring to any further defects that might be discovered in the course of that work, but not specifying how those defects are to be fixed. It is not for me to decide directly how the defects are to be remedied and the link structure and adjacent walls brought to compliance with the Building Code. That is a matter for the owners (with their insurer) to propose and for the authority to accept or reject.

8.2 I suggest that the applicant and the authority adopt the following process to meet the requirements of paragraph 8.1. Initially, the authority should issue a new notice to fix. The owners (with their insurer) should then produce a response to this in the form of a detailed proposal, together with suitable amendments to the plans and specifications, 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.

9. The decision

9.1 In accordance with section 188 of the Act, I determine that the remedial work to repair the storm damage, including the consequential damage, does not comply with Clauses E2 and B2 of the Building Code.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 26 November 2008

John Gardiner
Manager Determinations