



## **Determination 2014/044**

# **Dispute about the compliance of overlay flooring in an 8-year-old apartment at 134 Waterfront Road, Mangonui**

### **1. The matters to be determined**

1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004<sup>1</sup> (“the current Act”) made under due authorisation by me, John Gardiner, Manager Determinations and Assurance, Ministry of Business, Innovation and Employment (“the Ministry”), for and on behalf of the Chief Executive of the Ministry.

### **1.2 The parties**

1.2.1 The parties to the determination are

- G Woodroffe (“the applicant”), owner of one of the units (“Unit C”).
- Far North District Council (“the authority”), carrying out its duties as a territorial authority or building consent authority.

1.2.2 I consider that the developer for the building (“the developer”), who was also the structural engineer, is a person with an interest in this determination.

### **1.3 The background to this determination**

1.3.1 The initial application was made in respect of the authority’s decision to issue a code compliance certificate for the building and considered the compliance of certain building elements with the relevant clauses of the Building Code that was in effect at the time the code compliance certificate was issued.

1.3.2 The owners of the remaining units in the building (“the other owners”) were initially included as parties to the determination as some of the original matters being considered concerned some aspects of the compliance of the common areas and their units.

1.3.3 After the first and second drafts of the determination were issued to the parties for comment, the other owners requested a hearing be held (refer paragraph 6.2).

1.3.4 After the hearing I was advised by the authority that the other owners and the authority had reached agreement to work toward the building being brought into compliance with the Building Code.

1.3.5 On 27 July 2014 a legal adviser for the applicant advised that the applicant wished to proceed with the determination in respect of the tongue-and-groove flooring (“the T&G flooring”) to Unit C only, and that all the remaining issues be ‘put on hold’. The other owners were not included as parties in the determination after this time.

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<sup>1</sup> The Building Act, Building Code, compliance documents, past determinations and guidance documents issued by the Ministry are all available at [www.dbh.govt.nz](http://www.dbh.govt.nz) or by contacting the Ministry on 0800 242 243.

## 1.4 The matter for determination

1.4.1 The matter to be determined<sup>2</sup> is whether the T&G flooring in Unit C complies with the Building Code that was in force at the time the building consent was issued.

## 1.5 Matters outside this determination

1.5.1 The developer of the building maintains that the two consultants engaged by the applicant to report on the building ‘have conflicts’ with the authority (refer paragraph 4.3). I note that although this determination takes into account the consultants’ reports, I do not rely on their findings in reaching my conclusions.

1.6 In making my decision, I have considered:

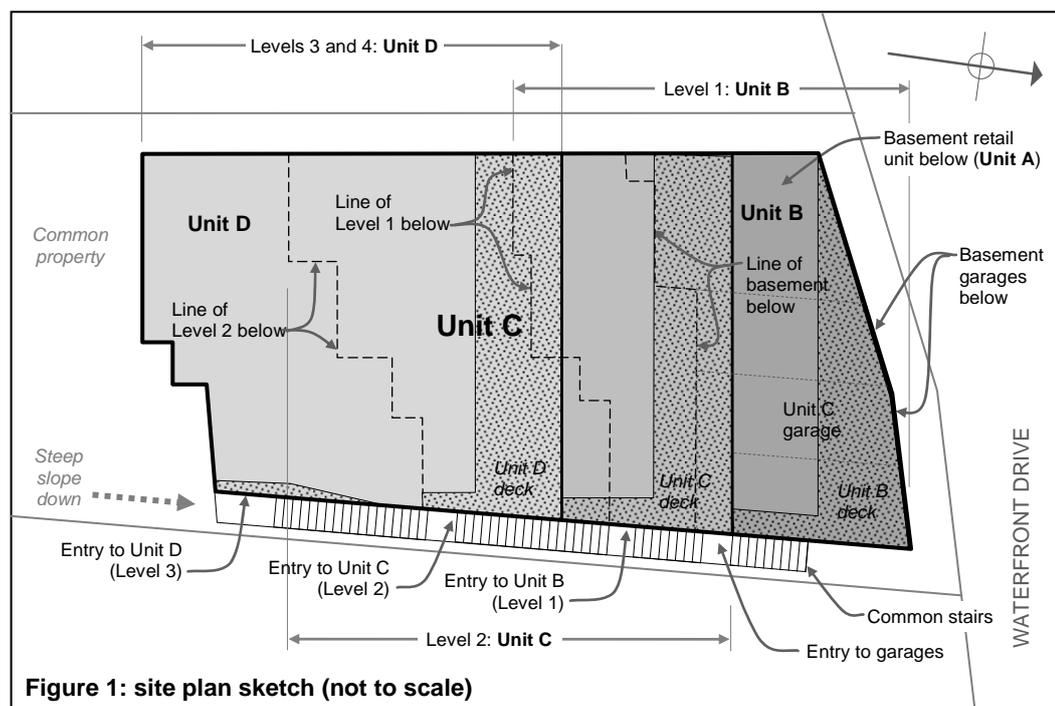
- the applicant’s submission, including the reports by two building consultants engaged by the applicant
- the report of the expert commissioned by the Ministry to advise on this dispute (“the expert”), and
- the other evidence in this matter.

1.7 Relevant clauses of the Building Code discussed in this determination are set out in Appendix A.

## 2. The building work

2.1 Unit C occupies Level 2 of a unit-titled building (“the building”), which is situated on a north-facing site in a very high wind zone. The building has a total of five different levels set into the steep site; and external common stairs to the east provide access to each level from the street and also from the basement level garages.

2.2 The building accommodates three dwelling units, one retail unit and three garages as shown in Figure 1 below.



<sup>2</sup> Under sections 177(1)(a) of the Act

- 2.3 As shown in Figure 1, the building comprises four units located over five different levels (see Table 1 below):

**Table 1: Units in the building**

Basement level	Level 1	Level 2	Level 3	Level 4
Unit A (retail unit)	Unit B (dwelling unit)	Unit C (dwelling unit)	Unit D (dwelling unit)	
Garage B	Single level	Single level	Lower level	Small upper floor
<b>Garage C</b>	Three bedroom	Two bedroom	Two bedroom	Master bedroom
Garage D				

- 2.4 The T&G flooring to the living areas to Unit C is nominally 10mm thick<sup>3</sup> x 90mm wide recycled Kauri approximately with a tongue-and-groove profile. The T&G flooring is secret-nailed to 90mm wide battens fixed to the concrete floor beneath, with polystyrene strips at mid-span intended to limit the deflection of the T&G flooring.

### 3. Background

- 3.1 On 17 May 2004, the authority issued a building consent (No. ABA 20041874) to the developer for construction of the multi-unit building under the Building Act 1991 (“the former Act”).
- 3.2 The authority’s inspection record indicates that foundations, floor slabs, retaining walls and structural steel work were substantially completed during 2004. The authority carried out inspections of framing in March, pre-line in June and sheet bracing in July 2005.
- 3.3 Various layout changes were made and amended drawings were provided to the authority in November 2005.
- 3.4 The authority carried out a final inspection on 21 December 2005, which identified some items to be attended to. The re-inspection record dated 5 January 2006 noted that all items had been completed and stated ‘all OK to issue CCC.’
- 3.5 On 5 January 2006, the authority issued a code compliance certificate for the building work carried out under the consent.
- 3.6 According to the developer, Units A, B and D were purchased ‘off the plans’ by the current owners, and Unit C was sold ‘as a closed in unlined apartment’ to the original owner. The applicant purchased Unit C from the original owner in October 2007; Unit C had not been occupied up to that time.

#### 3.7 The consultants’ reports

- 3.7.1 The applicant subsequently engaged a building consultant (“the first consultant”), who inspected Unit C, the garage and the building exterior; providing a report dated 19 December 2012.
- 3.7.2 The first consultant confirmed deterioration of the timber T&G flooring with damage in 30 locations across the floor. The consultant noted that fractures were along the grooved edge between the supporting battens and that these were due to the weight of furniture and pedestrian traffic deflecting the narrow profile.

<sup>3</sup> The floor boards are described in various reports as between 8 and 11mm thick.

- 3.7.3 The first consultant considered that the minimum thickness for flooring of this nature is 16mm over 400mm centres and 19mm over 450 centres. The consultant considered thicknesses of less than 20mm would be rare, and noted various timber types generally used and able to withstand point loads of furniture or heeled shoes.
- 3.7.4 The applicant filed claims against the authority and the developer in 2013 and settlement was reached following a conference on 6 June 2013. Some limited repairs were subsequently carried out to Unit C and a fire door to the garages was installed.
- 3.7.5 The applicant engaged the second building consultant (“the second consultant”) to inspect the building, to identify any ‘construction or compliance issues’ and to assess the ‘overall construction and the possible need for further investigation, remediation, maintenance or monitoring’. The second consultant assessed the building on 26 June 2013 and noted :
- In practice the T&G flooring is suspended strip floor and not a direct fixed durable overlay.
  - There is a requirement for an impervious/easy clean flooring surface in spaces that contain sanitary fixtures/appliances (Clause E3.3.3); the failure of the thin T&G flooring in the kitchen area ‘is likely to need to be durable and cleanable’.
  - Unit C is occupied on a regular basis and there appears to be more visible damage than to the other apartments that are not occupied as often.
  - There is discolouration to the flooring near the main lounge deck bi-fold doors. The worst impact damage occurs in the middle of the room or in high use areas.
  - In Table 7.3 of NZS 3604 flooring has a minimum detailed thickness of 16mm when supported on floor joists at 400mm centres. The T&G flooring in this case does not comply as a timber strip floor.
- 3.8 The Ministry received an application for a determination on 18 July 2013.

## 4. The initial submissions

- 4.1 The applicant made no submission with the application but forwarded copies of the authority’s property records and other documents pertinent to this determination including:
- the building consent dated 17 May 2004
  - the consent drawings and specification
  - some of the authority’s inspection records
  - the code compliance certificate dated 5 January 2006
  - the first consultant’s report dated 19 December 2012
  - the record of the settlement conference dated 6 June 2013
  - the second consultant’s report on the inspection of 26 June 2013
  - various certificates, producer statements and other information.
- 4.2 The authority did not make a submission in response to the application.

- 4.3 The developer emailed the Ministry on 29 October 2013 providing some background to the ownership of the units and noting the first and second consultants 'have conflicts with the [authority]' which were outlined.
- 4.4 The developer provided a further email on 30 October 2013 regarding the T&G flooring in Unit C, which stated (in summary):
- The battens are 90mm wide, so the free span is 310mm. Calculations show that the recycled timber is strong enough for this 310 continuous span.
  - Polystyrene strips were placed mid-span to limit any deflections. The polystyrene 'does not compact'.
  - The recycled timber flooring 'has performed fine' in the other units and the retail unit which is subject to higher loadings than the residential loadings.
  - The damage to Unit C has been caused by very heavy furniture with sharp point loads; the high point loading and lack of a cup to spread the point load has meant that this point load did not spread from one board to another, but relied on the tongue and groove to transfer this high point loading in shear.
  - T&G flooring has a 'habit [of] splitting under temperature and moisture driven shrinkage when the polyurethane finish glues planks together', and the developer's experience is that the rate of splitting experienced in the other units of the building is common.
  - Floor coverings 'have only a 5 year performance requirement under the code'.

## 5. The expert's report

- 5.1 As mentioned in paragraph 1.6, I engaged an independent expert to assist me. The expert is a member of the New Zealand Institute of Architects and inspected Unit C on 14 October 2013. The expert provided a report dated 13 November 2013 which was forwarded to the parties and the developer on 3 December 2013.
- 5.2 The expert's report originally considered all the matters raised by the applicant, but the following only records the expert's findings in relation to the T&G flooring to Unit C. The expert acknowledged the reports of the first and second consultants commissioned by the applicant but noted that his findings did not rely on the two reports.
- 5.3 The expert observed that the T&G flooring to Unit C is noted in the consent documents and therefore forms part of the building work covered by the building consent and the code compliance certificate. The T&G flooring was therefore required to meet the requirements of Clause D1 'to provide a suitable surface for access'.
- 5.4 The expert was of the view that as the floor is fixed to battens it is subject to very similar conditions to normal timber floor boards, and that relevant guidance for T&G flooring can therefore be taken from NZS 3604<sup>4</sup> which indicates a minimum thickness of 16mm for other pine species, or from EN 13990<sup>5</sup> which indicates a minimum thickness of 18mm overall and 6mm upper 'lip' (above the tongue).
- 5.5 The expert considered that the T&G flooring to Unit C fails to provide a safe access route because:

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<sup>4</sup> New Zealand Standard NZS 3604:2011 Timber-framed buildings

<sup>5</sup> British Standard EN 13990:2004 Wood flooring. Solid softwood floor boards

- the thickness of the boards used was only 9mm with an upper lip thickness of only 3mm
- there are splits in several locations, particularly close to the tongue in groove joints, and a plank had broken adjacent to a bedroom door on the line of an old nail
- the current damage and likely future damage in normal use will lead to the risk of splinters to bare feet.

5.6 The expert concluded that the T&G flooring did not meet the requirements of Clause D1 of the Building Code.

## **5.7 The developer's submission in response**

5.7.1 A submission from the developer, dated 24 December 2013, was received on 13 January 2014 in response to the expert's report. I have summarised the developer's submission in table 1 (refer paragraph 6.3.5).

## **5.8 Addendum to the expert's report**

5.8.1 The expert reviewed the comments made by the developer and provided an addendum to the report, dated 29 January 2014. This was forwarded to the parties on 4 February 2014. I have summarised the expert's views stated in the addendum in table 1 (refer paragraph 6.3.5).

5.9 The developer responded by email on 4 February 2014 and continued to dispute aspects of the expert's findings.

## **6. The draft determinations, the hearing, and submissions received**

### **6.1 The first draft determination**

6.1.1 A draft determination was issued to the parties, the other owners and the developer for comment on 23 December 2013. The determination considered the T&G flooring did not meet the requirements of the Building Code.

#### **The authority**

6.1.2 The authority responded to the draft determination in a letter dated 8 January 2014. The authority referred to separate District Court proceedings and noted that the applicant had chosen to continue proceedings against the developer.

#### **The other owners**

6.1.3 The other owners did not accept the draft and made a submission received on 10 February 2014. They also sought a hearing on the matter.

6.1.4 The other owners had not been consulted about the application for determination being made, and as the body corporate operates on a consensus basis there was no approval from the body corporate for the application.

#### **The applicant**

6.1.5 The applicant made a submission received on 12 February 2014 including a diagram indicating where splits have occurred in the T&G flooring and photographs taken,

and engineering calculations by the developer with a covering letter dated 1 May 2013 (the calculation are for flooring 11mm thick).

### **The developer**

- 6.1.6 A submission from the developer, dated 24 December 2013, was received on 13 January 2014 in response to the expert's report (refer paragraph 5.7). The developer provided a submission in response to the draft determination received on 21 January 2014.
- 6.1.7 The developer did not agree with the findings of the draft noting his concern about the weight given in the determination to the reports from the applicant's consultants. Some errors in fact were noted, which have subsequently been amended, and the developer reiterated some points made previously.

## **6.2 The hearing**

- 6.2.1 I held a hearing in Mangonui on 17 March 2014 at the request of the other owners (refer paragraph 1.3.2). I was accompanied by a Referee engaged by the Chief Executive under section 187(2) of the Act, together with an officer of the Ministry. Present at the hearing were:
- the applicant and a legal adviser
  - both the other owners
  - an officer and a legal adviser for the authority
  - the developer.
- 6.2.2 All of those present at the hearing had the opportunity to speak, and a site visit was also carried out. The information presented enabled me to amplify or clarify various matters of fact and was of assistance to me in preparing this determination. Although I have considered the parties submissions in full, I have only summarised the issues raised by those present at the hearing in Table 1 (refer paragraph 6.3.5) along with views expressed in previous submissions received.
- 6.2.3 The developer made a further submission on 8 July 2014, reiterating points raised earlier and noting also (in summary):
- Deflections can be up to 'span over 300 which in this case is 1mm under design loads.
  - There is no evidence that the deflection exceeds 1mm; human experience is not a relevant criterion.
  - The applicant has not provided evidence to explain the cause of splitting tongues; the other units are fine and the self weight and imposed gravity loads would be the same.
  - It is accepted that part of Unit C's T&G flooring exhibits a higher proportion of splitting than elsewhere in the building. The splitting has been caused by the furniture and is not occurring evenly across other areas.

## **6.3 The second draft determination**

- 6.3.1 A second draft was issued to the parties on 4 August 2014. The second draft determination came to the same position as the first.

- 6.3.2 The authority and the applicant accepted the draft without further comment in responses received on 8 and 26 August 2014 respectively.
- 6.3.3 The developer made a submission on 15 August 2014, submitting (in summary):
- The plans did not show how the T&G flooring was to be laid. The use of battens was in response to the original owner's desire to have the floor covering laid and in use immediately as opposed to the 12 month drying time required by adhesive manufacturers if laying directly on the concrete.
  - The allowable deflection is 1.2mm, no evidence was produced that this limit is exceeded or that it caused the splitting.
  - The other units are performing adequately 'yet all exhibiting some level of splitting'.
  - There is no requirement in Clauses B1.3.2 or B1.3.3 for building elements 'to exceed code loadings or being required to be indestructible'.
  - With regard to Clause E3.3.3, 'floor coverings' have a 5 year 'workable life', it 'is now still workable after 9 years'.
  - The Unit C floor has '1155m of T&G joins between boards, and there were 50 splits averaging 300mm long. This is a splitting rate of 1.3%'.
- 6.3.4 The developer made a further submission in an email dated 9 September 2014. The developer said that:
- The flooring in Unit C 'is exactly the same structure as used on the units above and below and on the ground floor [retail] unit' and that the flooring had performed on the other floors in the building including the retail unit. The other floor covering has performed 'as expected' on all the other floors.
  - The problems with the T&G flooring arose from the use of a large lounge suite 'which have mainly occurred in the area in which the lounge suite was placed and moved around from'.
  - The submission detailed the likely loads the lounge suite was imposing on the floor.
- 6.3.5 I have summarised the views set out in the various submissions received from the parties, including at the hearing, on compliance of the T&G flooring in the table below:

**Table 1: Summary of submissions**

	<b>The T&amp;G flooring</b>
Applicant	<ul style="list-style-type: none"> <li>• There are more than 50 splits in the floor in various areas of the unit, not only where there was water damage.</li> <li>• The calculations for the T&amp;G flooring provided by the developer are based on the floor being 20mm thick, whereas the floor is only 8mm thick and insufficient to support a residential design floor load.</li> <li>• There is a gap between the T&amp;G flooring and polystyrene, so the polystyrene does nothing to stop the spring in the floor which causes the splintering.</li> </ul>
Developer	<ul style="list-style-type: none"> <li>• Structural calculations show the T&amp;G flooring meets the loading and stress requirements of the 'NZ loading Code'<sup>6</sup>, and a non-shrink polystyrene support strip had</li> </ul>

<sup>6</sup> At the time the consent was issued, the loadings standard cited in the Compliance Documents was NZS 4203: 1992 Code of practice for general structural design loadings for buildings

	<p>been laid mid-span to eliminate any deflections.</p> <ul style="list-style-type: none"> <li>• The T&amp;G flooring is only a covering; there is a 180mm thick concrete slab underneath. There is no relevant Building Code requirement to the T&amp;G flooring other than 5 years durability.</li> <li>• Damage to T&amp;G flooring was caused by direct rainfall due to the bi-fold doors not being closed and heavy furniture on sharp steel points without any foot.</li> <li>• The code compliance certificate could have been issued with no floor coverings installed at all; the T&amp;G flooring could be removed and the remaining concrete slab would comply.</li> <li>• The T&amp;G flooring was not performing as expected in the rest of the building. The problem with the floor to Unit C was caused by the owner's lounge suite.</li> </ul>
Authority	<ul style="list-style-type: none"> <li>• In regards to the thickness of the T&amp;G flooring, this was unlikely to have been observed before the certificate was issued.</li> <li>• The authority does not consider the T&amp;G flooring breaches Clause D1.</li> </ul>
Expert's addendum	<ul style="list-style-type: none"> <li>• The battens supporting the T&amp;G flooring are 90mm wide, not 50mm as stated in the report, however this did not alter the expert's conclusions that the boards are too thin and damaged.</li> <li>• Where thinner proprietary laminate or laminated wooden floors are used they are commonly supported continuously rather than spanning battens.</li> </ul>

## 7. Discussion

7.1 In regards to the T&G flooring in Unit C, the effect of the decision made to lay the flooring over battens has caused a level of deflection and resultant splits that would not have occurred had it been laid on the concrete surface. I note here that the plans referred to a 'timber overlay' with no further detail.

7.2 The expert has stated that 'the current damage and likely future damage in normal use will lead to the risk of splinters to bare feet'. I am of the view that the potential level and significance of pain or injury caused is likely to be minor in nature, and I do not consider it to match the severity of injury contemplated in the Act and the Building Code. In that respect I am of the view that the T&G flooring complies with Clause D1.

7.3 However, the thinness of the T&G flooring, and nature of installation on the battens has caused a level of deflection that has and continues to result in splitting. Clauses B1.3.2 and B1.3.3 require:

B1.3.2 Buildings, building elements and sitework shall have a low probability of causing loss of amenity through undue deformation, vibratory response, degradation, or other physical characteristics throughout their lives, or during construction or alteration when the building is in use.

B1.3.3 Account shall be taken of all physical conditions likely to affect the stability of *buildings, building elements* and *sitework*, including:

...

(b) Imposed gravity loads arising from use

...

7.4 In this case in respect of the T&G flooring to Unit C, and taking into account the various submissions and having visited the site, I am of the view that level of deflection is such that the T&G flooring does not satisfy the requirements of Clauses B1.3.2 and B1.3.3(b). Although the deflection may have been observable to the authority at the time it made its decision to issue the code compliance certificate, it

- may not have been clear whether the level of deflection meant that the T&G flooring was not compliant.
- 7.5 The developer acknowledges that the T&G flooring in all the units exhibit some degree of splitting (refer paragraph 6.3.3). Splitting and deflection, (deflection most noticeably at the T&G joints) was observed to all flooring in the building during the site visit conducted in conjunction with the hearing. The developer considers that the applicant's lounge suite is the cause of the damage to the T&G flooring to Unit C. The lounge suite is not unusually large and its use must be considered a normal and expected load that any timber floor should normally withstand. The T&G flooring has a total thickness of between 8 to 11mm, with the upper lip of the tongue and groove being 3 to 4mm thick. Unless it is fully supported, it cannot be seen unusual that timber of this thickness might split away from the rest of the board as a result of normal use.
- 7.6 The developer considers the T&G flooring a 'floor covering' with a required durability period of 5 years (refer paragraph 4.4). Clause B2.3.1(c) describes building elements having a 5-year durability period including 'linings [and] renewable protective coatings'. Table 1 in the Acceptable Solution for Clause B2, B2/AS1, says 'protective or acoustic' floor coverings have a 5-year durability period. It is open to debate whether the T&G flooring can simply be considered a floor covering. However, even if 5 years is used as the required durability period for the flooring, I consider the splitting would have occurred within this period.
- 7.7 I acknowledge that the previous draft did not address compliance of the T&G flooring with Clause E3.3.3. At the time of installation the level and extent of damage to the flooring under normal use may not have been clear, and accordingly the flooring a decision at that time that the flooring complied with Clause E3.3. would not be incorrect.
- 7.8 However, I agree with the view set out by the first consultant; the extent of the damage to T&G flooring caused over time adversely affects its performance in respect of Clause E3.3.3 in the kitchen area.
- 7.9 Clause E3.3.3 requires that floor surfaces of any space containing sanitary fixtures or sanitary appliances must be impervious and easily cleaned. The T&G flooring in this case, with splitting caused by deflection, cannot be said to be impervious or easily cleaned. Given the fact that the T&G flooring is over concrete, I consider that although the T&G flooring is not impervious there is unlikely to be a detrimental effect on the concrete underneath. However, the T&G flooring and the battens underneath will be susceptible to premature deterioration caused by moisture. In addition, the requirement that the flooring be "easily cleaned" is not meet with the T&G flooring splitting.
- 7.10 I conclude therefore that the T&G flooring does not comply with the durability requirement set out in Clause B2.3.1 in respect of Clause E3.3.3.

## **8. The decision**

- 8.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the T&G flooring to Unit C does not comply with Clauses B1.3.2, B1.3.3(b) and Clause B2.3.1 in respect of Clause E3.3.3 of the Building Code that was in force at the time the building consent was issued.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 22 September 2014.



John Gardiner  
**Manager Determinations and Assurance**

## Appendix A: The relevant legislation

A.1 The relevant clauses of the Building Code that was current at the time the building consent was issued include:

### Clause B1 – Structure

**B1.3.2** Buildings, building elements and sitework shall have a low probability of causing loss of amenity through undue deformation, vibratory response, degradation, or other physical characteristics throughout their lives, or during construction or alteration when the building is in use.

**B1.3.3** Account shall be taken of all physical conditions likely to affect the stability of *buildings, building elements* and *sitework*, including:

...

(b) Imposed gravity loads arising from use

...

### Clause B2 - Durability

**B2.3.1** *Building elements* must, with only normal maintenance, continue to satisfy the performance requirements of this code for the lesser of the *specified intended life* of the *building*, if stated, or:

(a) the life of the building, being not less than 50 years

(i) ...

(b) 15 years if:

(i) those building elements (including the building envelope, exposed plumbing in the subfloor space, and in-built chimneys and flues) are moderately difficult to access or replace, or

(ii) failure of those building elements to comply with the building code would go undetected during normal use of the building, but would be easily detected during normal maintenance.

(c) 5 years if:

(i) the building elements (including services, linings, renewable protective coatings, and fixtures) are easy to access and replace, and

(ii) failure of those building elements to comply with the building code would be easily detected during normal use of the building.

### Clause D1 – Access Routes

**D1.3.1** Access routes shall enable people to:

(a) Safely and easily approach the main entrance of buildings from the apron or construction edge of a building,

(b) Enter buildings,

(c) Move into spaces within buildings by such means as corridors, doors, stairs, ramps and lifts,

### Clause E3 – Internal Moisture

**E3.3.3** Floor surfaces of any space containing sanitary fixtures or sanitary appliances must be impervious and easily cleaned.