



Determination 2016/041

The proposed refusal to issue a code compliance certificate for a house due to variations in level and surface tolerances at 14 Te Whangai Head Road, Pataua North, Whangarei



Summary

This determination considers the level and tolerances in surface finish to the concrete floor slab and consequential variations in the timber framing to a two-story house. The determination considers the compliance of the slab in relation to loss of amenity under Clause B1 Structure, and the application of the appropriate standards cited in the building consent.

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 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 to the determination are:

- the owners of the house L and R Aubrey, and J Dawson who are applicants for this determination (“the owners”)
- the licensed building practitioner and builder of the house, R Hilton-Jones (“the builder”), acting via a lawyer
- Whangarei District Council (“the authority”), carrying out its duties as a territorial authority or building consent authority

1.3 This determination arises from the proposed decision of the authority to refuse to issue a code compliance certificate for the house because it was not satisfied that the

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

building work complies with the building consent documents and with certain clauses² of the Building Code (Schedule 1, Building Regulations 1992).

- 1.4 The builder made an application for determination on 27 July 2015 about whether the weatherboard cladding complies with the building consent and the Building Code; this matter is dealt with in a separate determination (“the first determination”). In a submission to the first determination, the owners raised additional matters of concern regarding the concrete floor slab. The builder was opposed to expanding the scope of the first determination to include consideration of the concrete floor slab, and so this matter is dealt with in this determination.
- 1.5 The matter to be determined³ is therefore the authority’s proposed exercise of its powers of decision to refuse to issue the code compliance certificate in relation to the concrete floor slab. In deciding this matter, I must consider whether the concrete slab complies with the building consent documentation approved for the house. This matter includes any consequential variations elsewhere in the timber framing and potential implications for compliance with Clause B1 Structure of the Building Code.
- 1.6 I note here that the authority’s exercise of its power of decision in regards to issuing the code compliance certificate is suspended under section under section 183 until both determinations have been made. This determination considers the issue of a code compliance certificate only in respect of compliance with Clause B1 for those building elements noted above.
- 1.7 This determination is limited to the matter outlined in paragraph 1.5; it does not consider issues associated with the contractual relationship between the parties, which are beyond the scope of Section 177 of the Act.
- 1.8 In making my decision I have considered:
- the submissions of the parties
 - relevant parts of various reports commissioned by the parties (refer Table 1 below)
 - the report of the expert commissioned by the Ministry to advise on this dispute (“the expert”)
 - the other evidence in this matter.

Table 1: The relevant reports

Date	Report provided by:	Report for:	Title given in both determinations
21 Oct.14	Inspection company	owner	“the inspection company’s first report” (which I have not seen)
30 Oct.14	Inspection company	owner	“the inspection company’s plan levels”
11 Nov.14	First surveyor	builder	“the first surveyor’s report”
18 Nov.14	Second surveyor	owner	“the second surveyor’s report”
5 Jan 15	Inspection company	owner	“the inspection company’s second report”
28 Jan.15	Inspection company	owner	“the inspection company’s third report”
23 Dec.15	Expert	Ministry	“the expert’s report”

² In this determination, references to sections are to sections of the Act and references to clauses are to clauses of the Building Code.

³ Under sections 177(1)(b) and 177(2)(d) of the Act

2. The building work

- 2.1 The building work consists of a detached house situated on a flat site in a very high wind zone for the purposes of NZS 3604⁴. The two-storey house includes an upper level within the roof space. The house and garage are simple in plan and form and are assessed as having a low weathertightness risk.
- 2.2 Construction is generally conventional light timber frame, with concrete foundations and floor slab, timber framed attic floor, weatherboard and plywood wall claddings and aluminium joinery. The profiled metal gabled roofs have eaves and verge overhangs of 600mm or more. The weatherboard cladding and their fixing is described in the first determination.

3. Background

3.1 General

- 3.1.1 The authority issued building consent No. BC1300830 to the owners on 5 September 2013. The following history is primarily based on the builder's affidavit dated 23 July 2015 together with other submissions and evidence provided by the parties.
- 3.1.2 The owners engaged the builder to undertake building work only up to the closing in stage of the house. The 'ground works' were completed by another contractor in August 2013. The builder commenced work on the house in September 2013. A contractual dispute presently exists between the owner and the builder.
- 3.1.3 A second builder was engaged to undertake the internal fit-out.

3.2 The inspection company's first report and plan levels

- 3.2.1 I note that the authority's pre-line inspection record refers to an initial report by the inspection company dated 21 October 2014 that I have not seen. However, I have seen drawings dated 30 October 2014 prepared by the inspection company, which measure floor and ceiling levels.
- 3.2.2 Taking account of the sequence of reports that followed, I have assumed that some matters were identified in the inspection company's first report that lead to the first surveyor's report.

3.3 The first surveyor's report

- 3.3.1 The builder engaged the first surveyor to comment on floor and ceiling levels and a survey was undertaken on 4 November 2014, with a report dated 11 November 2014.
- 3.3.2 The first surveyor provided heights at each of the locations identified on the inspection company's plan; the heights were measured above a datum⁵ or reduced level ("RL"). The first surveyor compared the surveyed levels to the relevant standards as follows:
- NZS 3109⁶ Table 5.2 for the slab, with tolerances equating to 2mm/metre
 - NZS 3604 Table 2.1 for timber framing, with relevant tolerances of 5mm up to 10m length, and 10mm for lengths over 10m.

⁴ NZS 3604: 2011 Timber-framed buildings

⁵ The surveyor noted that the inspection company's levels appeared to be measured below a datum as they showed heights in reverse.

⁶ New Zealand Standard NZS 3109:1997 Concrete construction

3.3.3 The survey identified:

- northeast corner to centre of the north gable wall, slab levels outside NZS 3109 tolerances
- first floor framing levels all within 3mm, so within NZS 3604 tolerances
- first floor ceiling level within southern end outside NZS 3604 tolerances.

3.4 The second surveyor's report

3.4.1 The owners also commissioned a report, and the second surveyor surveyed the site on 13 November 2014 and provided a report to the owners on 18 November 2014.

3.4.2 The second survey did not include the concrete slab, but covered timber-framed floor and ceiling levels, together with the north and south gable end walls using a digital 'precise level' measuring heights at each location. The lowest point of each area was given an arbitrary reference level.

3.4.3 For the ground floor family room⁷ ceiling, the second surveyor reported:

- a maximum deviation of 12mm across the width of the area
- up to 3mm variation over 900mm from joist to joist
- most levels were higher on the east wall.

3.4.4 For first floor levels:

- levels generally mirrored levels below, with a general north/south 'twist'
- maximum deviation of 7mm across east half of north wall window
- 12mm variation over almost half of total floor length
- first floor window sills are level.

3.4.5 For first floor ceiling levels:

- maximum deviation of 7mm from north to south
- above north window, largest deviation of 3mm across width
- above south window, largest deviation of 2mm across width.

3.5 The pre-line inspection

3.5.1 The authority carried out a pre-line inspection on 20 November 2014 and the inspection record makes no reference to weatherboards, although the record notes the need for 'amended plans for all changes from B.C.'

3.5.2 The record refers to three reports on slab levels; the inspection company's first report, the first surveyor's report and the second surveyor's report. The authority noted that it awaited copies of all reports before commenting on results.

3.5.3 The record stated:

All three reports note some tolerances outside the standards specified in the consent documents and all three reports note different areas of non-compliance. I can concur there is an uneven surface to the slab outside the consent document tolerances. Therefore not compliant with consent. This is also reflected in the wall framing top plate line and truss bottom chord line.

⁷ Referred to in the second surveyor's report as the 'main garage area' as per the consent floor plan

These differentials in tolerances do not make this building non Building Code compliant in my opinion. However are outside the standards specified. Therefore non compliant with consent documents.

Owner could amend consent to allow existing tolerances as one solution.

- 3.6 Amended drawings were submitted to the authority for an amendment to the building consent on 12 February 2015, which was approved on 23 April 2015. The description within the amendment application was:

Proposed wc & vanity added to Attic space, feature cladding changed to JSC verticlad (1 wall), windows altered to suit (no lintels changed). Removed garage door, replaced with multislider.

- 3.7 In a letter to the owners dated 20 July 2015, the builder, via his lawyer, offered to fix the weatherboards below the kitchen window, and an upstairs attic window. The owners acknowledged these matters needed addressing.

3.8 The final inspection

- 3.8.1 The Ministry received the application for the first determination (refer paragraph 1.4) on 27 July 2015 and sought submissions from the parties. At that time no final inspection had been carried out.

- 3.8.2 The authority carried out a final inspection on 25 August 2015 prior to the 2-year anniversary of the issue of the building consent as required by Section 93 of the Act. The inspection record included the following as Note 13:

Exterior wall cladding not as per Building Consent and requires solution.

Note: Currently there is a determination in progress. [The authority] is a party to this determination and we are awaiting outcome before progressing on this matter.

- 3.8.3 The Ministry received an application for a determination on 16 October 2015.

4. The submissions, the hearing, and the draft determinations

4.1 The initial submissions

The owners' submission

- 4.1.1 The owners made a submission to the first determination in an email on 16 October 2015 in which the owners raised issues concerning the slab and floor levels. In regard to slab levels, the owners included the following points (in summary):
- The first surveyor's report found deviations in slab level at or beyond acceptable tolerances called for in NZS 3604.
 - The varying slab levels are translated elsewhere in the house, which is not level and plumb, as shown in the second surveyor's report.
 - The builder has accepted that the attic south window does not conform and, although making numerous attempts to rectify the attic ceiling and floor, the fundamental problem remains.
 - Defects were not corrected during construction and were only discovered when the second builder discovered 'extensive packing' to the attic ceiling.

4.1.2 The authority had undertaken a final inspection on 25 August 2015 but the owners had not applied for a code compliance certificate because the authority had:

...advised that they cannot issue a CCC because:

- (a) The dwelling and cladding do not conform with the building consent documents; and also
- (b) The installation of the weatherboards will not comply with the Building Code.

4.1.3 The owners provided copies of:

- copies of relevant reports (refer Table 1)
- the authority's pre-line and final inspection records.

The builder's submission

4.1.4 The builder made a submission in the form of a sworn affidavit dated 23 July 2015 in respect of the first determination. The builder outlined the history and context of his involvement in the construction of the house.

4.1.5 The builder provided copies of:

- the consent drawings and specifications
- correspondence with the owner
- copies of various reports
- copies of determinations on similar matters
- various technical specifications, invoices and other information.

The authority's submission

4.1.6 In an email to the Ministry dated 16 September 2015, the authority explained that its final inspection on 25 August 2015 had found several matters to be completed and some items not compliant with the consent documents. The authority stated that it was unable to issue a code compliance certificate for the house because of outstanding items and the builder's application for a determination.

4.2 The first draft determination

4.2.1 The first draft determination was issued to the parties for comment on 11 April 2016.

4.2.2 The builder's lawyer responded on 27 April, accepting the draft with non-contentious comments. It was noted that the owners' contract with the builder was for 'close in stage' only, and that the internal fitout was to have been completed under a separate contract. A typographical error was noted in the site address.

4.2.3 The authority accepted the draft without further comment on 3 May 2016.

4.2.4 The owners responded to the draft determination and the builder's lawyer's submission on 30 May 2016. The submission said (in summary) that:

- the builder's video had no probative value, whereas the measurements taken by the registered surveyors are 'sufficient to determine compliance with the acceptable tolerance'. The expert's findings (in paragraph 5.3.3) should be deleted.
- the findings in the draft determination about loss of amenity were not accepted and should be deleted.

4.2.5 The owners requested a hearing be held on the matter.

4.3 The hearing

4.3.1 A hearing was held in Whangarei on 6 July 2016. The hearing was attended by the three owners and a representative of the inspection company; two representatives of the builder and the builder's lawyer; and two officers of the authority. I was accompanied by a referee engaged by the Chief Executive under section 187(2) of the Act, the independent expert, and an officer of the Ministry.

4.3.2 All the attendees spoke at the hearing to clarify various matters of law and fact and were of assistance to me preparing this determination. A visit to the site was undertaken following the hearing; this was attended by representatives of the Ministry and the authority only. The hearing considered matters in relation to both this determination and the first determination (refer paragraph 1.4).

4.3.3 The views put forward at the hearing and evidential submissions provided at the hearing are summarised below (the summary only covers submissions in relation to this determination):

The owners

- The owner had no issue with NZS 3604 but disputed how NZS 3114⁸ had been applied in relation to the surface finish of the concrete in terms of acceptable tolerance and deviation over 3m. The expert had preferred the builder's video over the survey results which showed a 13mm deviation across the slab.
- NZS 3114 cannot have contemplated a cumulative effect allowing a gradual rise across a floor slab where the total difference in level was in excess of the tolerances stated in the standard. The application of NZS 3114 by the expert is not correct, and some paragraphs that recorded the expert's finding should be deleted (5.3.1 to 5.3.3).
- The garage has 'dumps and hollows' that did not drain water away. The original concrete floor had a ground aggregate finish apart from the garage.
- The levels taken by the first surveyor were accepted as correct.
- The finding with respect to amenity should be confined to what the Building Code provides for. The levels did not comply with the building consent or NZS 3114.
- Timber flooring had not been installed over the concrete because of the waviness of the concrete. Items in the house were not level, symmetric, or even.
- The slab and frame did not comply with the consent as stated in the draft determination, therefore the authority was unable to issue the code compliance certificate.

The Builder

- The only area at issue is near where the garage door was originally positioned as the concrete floor was deliberately sloped to the outside at this point. The concrete floor only needs to be raised 'by a few millimetres'.
- The tolerances observed in the building did not make it not compliant.

⁸ NZS 3114:1987 Specification for concrete surface finishes

The authority

- NZS 3109⁹ and NZS 3114 were cited in the consent documents. NZS 3109 was more applicable than NZS 3114. The tolerances in NZS 3114 were not cumulative.
- No structural issues had arisen from the observed variations in level.

4.3.4 The hearing discussed in general:

- the items that were detailed in the building consent but had no Building Code obligation (these items were not matters for the regulatory system to deal with)
- the extent of the authority's obligations in respect of as-built work that did not meet the consent, but also had no impact on compliance,
- matters of workmanship,
- what changes from the building consent were simply recorded as a matter of record, and
- the contractual obligations that may exist between the parties.

4.3.5 The determination was amended to take account of the submissions made in response to the first draft of the determination and at the hearing.

4.4 The second draft determination

4.4.1 A second draft of this determination was issued to the parties for comment on 26 July 2016.

4.4.2 The builder's lawyer provided a response on 4 August 2016, noting two errors requiring amendment.

4.4.3 The authority and the owners accepted the draft without further comment in responses received on 19 and 23 August 2016 respectively.

5. The expert's report**5.1 General**

5.1.1 As mentioned in paragraph 1.8, I engaged an independent expert to assist me. The expert is a member of the New Zealand Institute of Architects. The expert inspected the house on 18 November and 1 December 2015 and provided a report on 23 December 2015, which was forwarded to the parties on the same day.

5.1.2 The expert's report focussed primarily on compliance with the building consent documents in order to assess the authority's proposed refusal to issue a code compliance certificate and to form a view on whether the levels of floors and associated elements comply with the building consent and the relevant parts of Clause B1 of the Building Code.

5.2 The building levels

5.2.1 The expert noted that the family room floor was carpeted and the remaining floor slab had been ground smooth and polished. The expert was therefore unable to see or survey the finish and levels of the slab as cast, on which the timber frame is fixed.

⁹ NZS 3109:1997 Concrete construction

- 5.2.2 The expert's investigation of levels was therefore carried out by reviewing a video dated 28 November 2014 of the builder laying a straight edge over the east side of the family room slab; together with the surveys and findings shown in the following:
- the inspection company's plan levels dated 30 October 2014
 - the first surveyor's report dated 11 November 2014
 - the second surveyor's report dated 18 November 2014.
- 5.2.3 The inspection company confirmed that the values shown on its plans were survey staff readings¹⁰, which needed to be subtracted from the datum to provide RLs that may be compared to any level shown in the first surveyor's report. The expert plotted RLs from both to identify variations between survey points and inconsistencies between the two surveys; noting that levels at most points were consistent.
- 5.2.4 The second surveyor's report covered the timber framing and measured levels on the underside of first floor joists, the first floor levels and the first floor ceiling levels. The expert noted that the first floor and ceiling are recorded to have been packed off the frame in some locations, which meant that these results could not 'be used to determine whether the frame itself was out of tolerance'.
- 5.2.5 The expert outlined the various standards referred to in the specification and noted the following tolerances relevant to the survey results for the house:
- NZS 3604 Table 2.1, which applies to the frame, shows tolerances as:
Deviation from horizontal:

(a) In any length up to 10m	5mm
(b) In any length over 10m	10mm total
 - NZS 3114 Table 3, which applies to the surface of the concrete slab, but not to its structural tolerance as foundation for timber framing, states:
 - 304.1.1 Tolerances for surface plane variations relate only to the surface condition of the concrete. Structural tolerances are specified in NZS 3109.
 - 304.1.3 Gradual variations shall be in accordance with the limits specified in table 3 relating to the particular class of finish to the proposed use being defined as shown in fig.4.
 - Gradual variations are illustrated in Figure 4 as the difference between the highest and lowest points over a 3m length.
 - The class of finish for this house as shown in Table 2 is Class U3 with a trowelled finish.
 - Table 3 then calls for a maximum gradual deviation of 5mm for Class U3 with exposed concrete and carpet finishes.
 - NZS 3109 Table 5.2 shows tolerances for foundations supporting concrete or masonry construction but does not show tolerances for foundations supporting timber framing, so it is therefore not applicable to this house.
Table 5.2 also shows 'Straightness' as $L(\text{mm})/500$, with Figure 5.3(b) showing that straightness is a measurement of an edge on plan, not of level or flatness.

¹⁰ The effect being that apparent high points shown on floors are actually low points and vice versa.

5.3 The concrete slab levels

- 5.3.1 The expert noted that the use of tolerances from in Table 5.2 for straightness was incorrect as ‘straightness’ applied only to the edge and not to the slab surface. As outlined above, the only standard relevant for the slab surface to this house is therefore NZS 3114 Table 3, which calls for a maximum gradual deviation of 5mm.
- 5.3.2 The expert noted that the inspection company’s survey points are generally about 3m apart, but intermediate levels would be required to determine the highest and lowest points and therefore the maximum gradual deviation. Accordingly, the levels shown in both cannot be used to determine whether or not the concrete slab complies with the standard called for in the consent specification.
- 5.3.3 The expert observed that the builder’s video recorded measurement under a 3m straightedge. While insufficient to assess consent compliance, this demonstrated that the north end of the east elevation is within the 5mm tolerance called for in NZS 3114 Table 3. The carpet would need to be removed to allow further measurements with a 3m long straightedge to establish maximum slab deviations.

5.4 The timber frame

- 5.4.1 The second surveyor’s report was the only useful survey of the frame; and indicates that the northern half of the east wall is higher than the west side, with the framing exceeding the 5mm tolerance stated in NZS 3604 Table 2.1.
- 5.4.2 The owners raised a number of issues that they considered were a result of the uneven concrete slab, and the expert considered these as summarised in Table 2.

Table 2: Knock-on effects in timber frame

Owner’s issues	Expert’s comments
<p><u>Upper south window:</u></p> <ul style="list-style-type: none"> Jamb/head to board variations. Taper to sloping head architrave inside and variation in boards above window head outside. Non-alignment of architrave mitres with ceiling slope change. 	<ul style="list-style-type: none"> Consent drawings infer roof pitch of 30°, but other dimensions not shown and no window schedule or shop drawings available. West roof/ceiling pitch measured at 29.8°. Window is symmetrical about roof apex, about east and west corners, with sill horizontal¹¹. West roof pitch 29.8°, with east pitch. West head architrave tapered by 20mm, east by 11mm, indicating window head slope of 30.9°. Tapers above sloping heads therefore likely to be due to window head not sloping at 30° in line with roof.
<p><u>Family room variations</u></p>	<ul style="list-style-type: none"> No visual unevenness of floor visible due to carpet. 12mm slope to first floor joists¹², with packers to underside added to prevent ceiling deviations. No visible effect, no loss of amenity.
<p><u>Living/dining area floor:</u></p> <ul style="list-style-type: none"> Uneven junction with skirting. 	<ul style="list-style-type: none"> Polished concrete floor slab appeared generally even and smooth. Skirting junction unevenness due to painter’s masking tape being turned up at junction. No loss of amenity from any slab deviations.

¹¹ According to the second surveyor’s report, Sheet T13442

¹² According to the second surveyor’s report

Owner's issues	Expert's comments
<u>First floor ceiling:</u> <ul style="list-style-type: none"> • Uneven wall/ceiling junction. 	<ul style="list-style-type: none"> • Ceiling and stopping appeared satisfactory. • Wall/ceiling junction unevenness due to uneven cutting in of paintwork at junction. • No loss of amenity from any ceiling deviations.
<u>Bathroom door:</u> <ul style="list-style-type: none"> • Sliding door did not stay open. 	<ul style="list-style-type: none"> • Track for sliding door installed out of plumb by 0.4°. • Issue due to door fitting rather than framing deviations.
<u>First floor cupboards:</u> <ul style="list-style-type: none"> • Doors closed with uneven gap to the door frame. 	<ul style="list-style-type: none"> • Roller on door base fitted on adjustable bracket. • Adjusting bracket closed the gap. • Issue due to door fitting rather than framing deviations.

5.4.3 The expert considered that:

...any variations in the line and level of the frame were not evident in normal use, for example variations in the level of the floors were not evident when walking across it, or visually from normal view points.

5.5 Conclusions

5.5.1 The expert reviewed compliance of the subject building work with the building consent documentation, noting that for the timber frame deviations of first floor joists from horizontal exceeded the 5mm tolerance stated in NZS 3604.

5.5.2 For the concrete slab, the expert noted that surveys did not 'indicate whether or not it is out of tolerance.' A survey of 'gradual variations' as defined in NZS 3114 would be necessary to identify compliance with the standard.

5.5.3 Notwithstanding the above variations and possible gradual variations in the concrete slab, the expert concluded:

These deviations from the contract documents are unlikely to result in failure to comply with the requirements of the NZBC at B1, B2 or E2.

5.6 The responses to the expert's report

5.6.1 The builder responded on 20 January 2016, including (in summary) that the findings in the first surveyor's report are accepted, but where measurements conflict with the first survey accuracy of the second survey is not accepted.

5.6.2 The owners responded on 9 February 2016 including (in summary):

- Conclusions on non-compliance with consent documents are agreed.
- The expert's logic regarding NZS 3114 Table 3 implies that permitted slab deviations could accumulate over a longer length; resulting in 'some significant and unintended outcomes in acceptable tolerance and practice' such as more than 25mm deviation permitted for the concrete slab of this house.
- The expert's comments on whether defects cause a loss of amenity are beyond the scope of the determination and should therefore be excluded.

- 5.6.3 The expert responded to the owner's comments in an email to the Ministry on 15 February 2016 as follows (in summary):
- NZS 3109 Table 5.2 is an edge measurement for foundations supporting concrete or masonry construction but does not show tolerances for timber framing, and NZS 3604 refers only to framing tolerances and not to the slab.
 - The only standard relevant for the slab surface to this house is therefore NZS 3114, Table 3. Because no standard includes any control on accumulated slab tolerances, a consent specification would therefore need to state such a control.
 - As well as compliance with the building consent, the scope of the investigation was also required to assess compliance with the Building Code performance requirement Clause B1.3.2, which includes judging any loss of amenity to occupants as defined in Clause A2 (see paragraph 6.1.3).
- 5.6.4 The expert concluded that the deviations were unlikely to result in failure to comply with the requirements of Clause B1 of the Building Code.

6. Discussion

6.1 Compliance of concrete slab and timber frame with respect to level

- 6.1.1 The expert was unable to confirm whether the concrete slab complied with the building consent documents because the surveys undertaken did not indicate whether tolerances exceed those called for in the only relevant specified standard. However, the expert was able to confirm that deviations of first floor joists exceeded the tolerance called for in the specified standard applicable for the timber frame.
- 6.1.2 Having established departure from the consent documents, the expert has also assessed the effect of the departure. This entailed considering whether the concrete slab and the timber frame comply with Clause B1, notwithstanding those departures.
- 6.1.3 The performance requirement Clause B1.3.2 states that:
- Buildings, building elements and sitework shall have a low probability of causing loss of amenity [my emphasis] through undue deformation, vibratory response, degradation, or other physical characteristics throughout their lives, or during construction or alteration when the building is in use.
- A 'loss of amenity' is defined in Clause A2 of the Building Code as:
- ... an attribute of a building which contributes to the health, physical independence, and well being of the building's users but which is not associated with disease or a specific illness.
- 6.1.4 During his inspection, the expert found no loss of amenity from any potential or confirmed deviations in the concrete slab or the timber frame with respect to Clause B1.3.2.
- 6.1.5 The expert's report and the other evidence has provided me with reasonable grounds to conclude that the concrete slab and the timber frame to this house comply with Clause B1 of the Building Code, notwithstanding departure(s) from the building consent.
- 6.1.6 The application of NZS 3114 and NZS 3109 was considered at the hearing: both documents were cited in the approved consent. NZS 3114 classifies finishes for concrete surfaces including floors and gives tolerances for abrupt and gradual variations in concrete surfaces depending on use and intended finish. The scope to Part 3 of the standard that deals with floors says that floors are 'generally in a

horizontal plane'. The cumulative effect of tolerances within those stated in NZS 3114 does not mean the standard is breached: indeed, the application of NZS 3114 is equally relevant to situations where a floor is intended to slope.

- 6.1.7 The tolerance requirements of NZS 3109 are very limited in relation to their applicability to the subject floor slab. The tolerance for twist, which might otherwise be applied to the floor slab, only applies to precast concrete components. The remaining foundation tolerances stated in NZS 3109 are in relation to concrete floors receiving concrete (in situ or precast) and masonry construction. NZS 3109 refers to the requirements of NZS 3114 when assessing flatness of concrete profiles, such as the in situ concrete floor. The Ministry has published guidance information on tolerances¹³ which also references the application of these standards.

6.2 The issue of the code compliance certificate

- 6.2.1 The building consent was issued under the Act, and Section 94(1)(a) of the Act requires an authority to 'issue a code compliance certificate if it is satisfied, on reasonable grounds' that the building work complies with the building consent.
- 6.2.2 Changes to this building work during construction have been noted by the builder, the authority and the expert. There is a lack of clarity in some consent documents and a number of variations from the approved plans and specifications.
- 6.2.3 When considering the issue of a code compliance certificate for a building consent where the as-built construction differs from that consented, it is important to consider whether the completed work complies with the Building Code. In this case, as a determination has been sought, I am also able to consider evidence that may become known during the determination process (such as the various reports), if that evidence helps to establish the compliance of the building work.
- 6.2.4 There will often be minor variations from the consent documents and the authority should always be informed on these so that a proper process for dealing with these can be established. The authority's pre-line inspection record refers to the need for amended plans for all changes from the building consent; indicating its awareness of most if not all of the changes. Amended drawings were submitted after the house was completed and an amendment to the building consent was issued on 23 April 2015 (see paragraph 3.6).
- 6.2.5 When the changes are minor and the work complies with the Building Code, the changes may be recorded by way of adequately detailed as-built drawings. The procedure for addressing such changes is addressed in the *Building (Minor Variations) Regulations 2009*, which defines minor variations. In this case, I consider that the changes to the consent are not of such a significant level that they would warrant a formal amendment of the building consent.
- 6.2.6 As noted in paragraph 4.3.4, the hearing considered items that were detailed in the building consent but had no corresponding Building Code obligation: meaning the standard of workmanship in this case did not adversely impact on compliance with the Building Code. Section 18 of the Act says building work cannot be required to achieve performance criteria that is additional to or more restrictive than the performance criteria prescribed in the Building Code. Standards of workmanship that exceed the Building Code's performance criteria will be determined by the contractual arrangement between the parties.

¹³ 'Guide to tolerances, materials and workmanship in new residential construction 2015, Ministry of Business Innovation and Employment, May 2015, issued as guidance under section 175 of the Act.

6.2.7 Taking account of the expert's report and the other evidence, I am able to conclude that although the slab and frame levels did not comply with the original building consent documentation in some respects, these particular parts of the building comply with Clause B1 of the Building Code. The authority will require amended details that reflect the as-built construction before a code compliance certificate can be issued.

7. The decision

7.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the concrete slab and timber frame as constructed comply with Building Code Clause B1 Structure.

7.2 I also determine that the authority's proposed exercise of its powers in refusing to issue the code compliance certificate was correct based on the information it had before it at that time the decision was made.

7.3 Notwithstanding that various as-built details of the subject building work do not comply with the building consent in some respects, I find that the authority may issue a code compliance certificate subject to the provision of adequate as-built details.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 13 September 2016.



John Gardiner
Manager Determinations and Assurance