

Determination 2011/119

The issue of building consents and code compliance certificates for three buildings on land that has subsided at 48, 52, and 54 Western Road, Ngongotaha, Rotorua

1. The matter to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004¹ (“the Act”) made under due authorisation by me, John Gardiner, Manager Determinations, Department of Building and Housing (“the Department”), for and on behalf of the Chief Executive of that Department.

1.2 The parties

1.2.1 The parties to this determination are:

- The applicants, who are the owners of three affected properties (“the applicants”), acting through one of the owners as an agent:
 - G Collins, the owner of the property at 52 Western Road (Lot 19)
 - J and E Grundy, the owners of the property at 54 Western Road (Lot 18)
 - R and K Davis, the owners of the property at 48 Western Road (Lot 21)
- Rotorua District Council, (“the authority”) carrying out its duties and functions as a territorial authority and a building consent authority

1.2.2 I consider the following to be persons with an interest in this determination

- J and M Healey, the owners of the property at 4 Oakland Place (Lot 64)
- developer’s firm of consulting engineers (“the developer’s consultants”)

1.3 This determination arises from the decisions of the authority to issue building consents and code compliance certificates in respect of three residential buildings on land that has subsided.

1.4 The matter to be determined² is therefore whether the authority was correct in its decisions to issue the building consents and subsequent code compliance certificates. In making my decision I must consider:

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

² In terms of section 177(1)(b), 177(2)(a) and 177(2)(d)

- whether the building work completed in accordance with the building consent complies with the Building Code (Schedule 1 of the Building Regulations 1992) given the nature of the land on which it has been constructed
- whether the authority correctly exercised its powers when it issued the various code compliance certificates, specifically in respect of Clause B1 Structure and Clause B2 Durability
- whether the deficiencies in the building consent are such that the building work cannot now be brought into compliance with the Building Code; and accordingly whether the building consents should be confirmed or reversed.

1.5 Matters outside this determination

1.5.1 The matters under dispute also involve actions taken by the authority under the Resource Management Act; however, while I have noted the information provided that was available to the authority in respect of the resource consent application, I have no jurisdiction under other enactments and this determination considers only matters relating to the Building Act and its regulations.

1.6 Interpretation

1.6.1 I note that the term “subsidence” is not defined in the Act or the Building Code. Reports and submissions provided to the determination variously refer to “subsidence” and/or “settlement”. For the purposes of this determination I take both of those terms to have the same geological meaning, being the downward movement of the ground surface over time.

1.7 In this determination, I have referred to the following legislation and New Zealand Standards, the relevant parts of which are included in Appendix A:

- The Building Act (“the Act”)
- The Building Code
- The Resource Management Act (“the RMA”)
- New Zealand Standard NZS 3604:1999 Timber Framed Buildings (“NZS 3604”)
- New Zealand Standard NZS 4431:1989 New Zealand Standard: Code of practice for Earth Fill for Residential Development (“NZS 4431”)

1.8 In making my decision, I have considered the submissions of the parties, the report of the independent expert (“the expert”) commissioned by the Department to advise on this dispute, and the other evidence in this matter.

2. The building work

2.1 The building work consists of three residential buildings situated within a large subdivision.

2.2 The subdivision

2.2.1 The subdivision was planned in four stages, with 21 residential lots included in Stage 1 (Lots 1-14, and 17-23). Lot 64 is part of Stage 2 and sits adjacent to Lots 19 and 20 of Stage 1. Stage 1 was previously grazing land with no buildings on the site. Western Road borders the south of the subdivision with the Ngongotaha Stream on

the other side of the road. Lots 18, 19 and 21 front on to Western Road, with Lot 64 immediately to the north of Lots 19 and 20 (see figure 1).

- 2.2.2 Prior to the subdivision earthworks the land generally sloped away from Western Road in a northerly direction to a large low lying area that occupied most of the land and rose again steeply to the north-northwest. A central ridge defined two prominent 'low spots'; one in the central area of stage three (noted as Local purpose reserve in figure 1), and the other being the majority of Stage 1 and the southeast portion of Stage 2. Open drains were present in both low lying areas and were backfilled as part of the development.

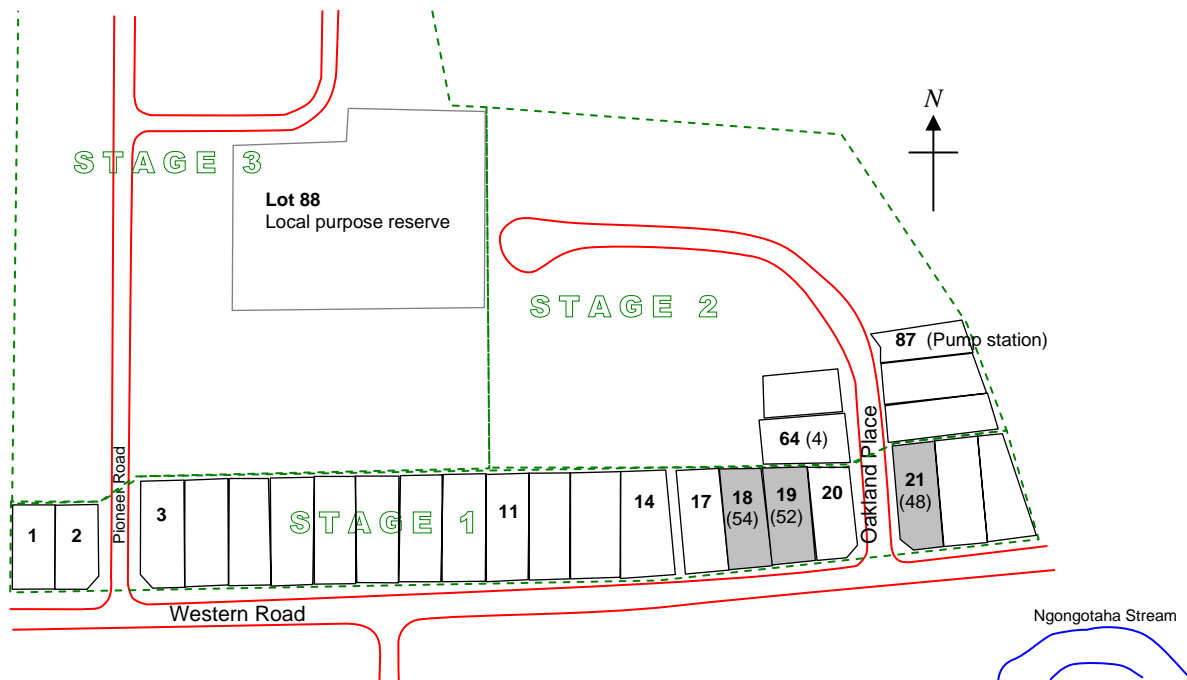


Figure 1: Site plan of the subdivision

- 2.2.3 The majority of Stage 1 was earth-worked with cut-to-fill operations to re-contour the sections; with cut material from Stage 4 as well as additional imported material used as fill in Stage 1. The fill was placed in 0.2m deep layers and compacted with motor-scrapers. At completion, contouring topsoil was spread at a depth ranging from 100mm to 250mm.
- 2.2.4 The initial geotechnical investigation by the developer's consultant (refer paragraph 3.2.8) confirmed that the site is underlain with alternating silt and sand layers with occasional pumice gravel. Various subsequent reports have identified that most of the subdivision, including Stage 1, consists of a significant layer of soft compressible organic silt underlying the cover soils. The depth of underlying compressible soils varies across the subdivision as does the depth of the cover soils and the fill.
- 2.2.5 The thickness of cover soils on the subdivision varies from less than 1m to more than 5m, and the thickness of the compressible underlying materials varies from nothing at the northern parts of the subdivision to up to 10m in the southeast corner.
- 2.2.6 The subdivision has been a mixture of cut in some places and fill in others; however, as a general rule the areas which have received significant depths of fill coincide with those areas where the compressible underlying material is thickest, namely the south-eastern corner of Stage 2 and into some areas of Stage 1. The results of

investigation by the specialist geotechnical engineers (refer paragraph 3.4.3) confirmed that Lot 19 has 1.5 metres of fill over a deep layer of soft compressible organic silt.

2.3 The buildings

- 2.3.1 The buildings on Lots 18, 19 and 21 are single level, timber frame, brick veneer, with concrete foundations and floor slab. There are heavy tile roofs on Lots 18 and 21, with a lightweight roof on Lot 19. The buildings are NZS 3604 type slab-on-ground construction with no specific engineering design input.
- 2.3.2 Following the production of various geotechnical reports for other sites indicating the potential for subsidence of those sites (refer paragraphs 3.4.1 to 3.4.5) Lot 64 was preloaded over an area of approximately 15m x 25m. The depth of the preload was typically around 1.4m and was left in place for approximately 6 months. The maximum settlement recorded was 218mm.

3. Sequence of events

- 3.1 I have noted below the sequence of events relating to the development of the subdivision that preceded the issue of the building consents, as these events provide a helpful context for the authority's decision to issue the building consents. As I have noted above in paragraph 1.5.1, I have no jurisdiction in respect of matters under other enactments such as RMA (with the exception of section 224(f) of that Act, and that provision is not in issue in this determination), and the sequence of events are noted simply by way of background.

3.2 Background and the Resource Consent

- 3.2.1 On 26 February 2004, during the development of the concept plan for the subdivision, a meeting was held between officers of the authority and the then owner. Notes from that meeting record that it was identified that 'really low areas on proposed Lot 1 will probably always be left as pond/wetland', and various options for draining this at points across Western Road were discussed. [I note that the "Lot 1" here does not relate to the numbering used later used in the development – refer figure 1.]
- 3.2.2 On 3 March 2005 a site meeting was held between an officer of Environment Bay of Plenty Regional Council ("EBOP") and the then owner. In a letter the following day EBOP sought further information in regards to concerns about significant stormwater discharge, and identified existing flooding problems in the Ngongotaha Stream and queried the potential for the development to obstruct future overland flood water flows.
- 3.2.3 The developer's consultants' scheme plan for the proposed subdivision, dated 14 March 2005 and which was part of the application for subdivision consent under the RMA, notes '[t]he site slopes steeply south but exhibits no signs of slippage, instability or erosion' and that '[o]verall the site is stable, able to be drained and suitable in parts for building development.' The plan submitted that the authority approve the scheme on grounds that included '[t]hat no land subject to instability, or unable to be protected therefrom, is included in the scheme. Further that stable building sites can be located on each lot by either cutting or controlled compacted filling.'

- 3.2.4 Appendix A to the application noted, under the title Earthworks, that Stage 1 (Lots 1-14 and 17-23) would be filled up to 1.0m to provide suitable building platforms, and in Stage 2 Lots 59-73 would be cut by up to 1.0m. I note here that the final Lot 64 did not have a cut of 1.0m but was filled up to 1.0m.
- 3.2.5 Further meetings were held with the authority and the developer's consultants. Records and correspondence from those meetings continued to traverse matters of existing poor drainage in some areas of the development, particularly around the reserve area, surface water issues, and "floodflow" path. An internal authority report notes that:
- The subdivision requires extensive cut and fill earthworks to ensure that all lots have building sites at levels above the 1% AEP flood level and that lots are suitable for building in terms of foundation strength.
- Sufficient provision has been made to ensure potential inundation of the house sites from the [flooding of the] Ngongotaha Stream can be avoided. Large scale earthwork are proposed and required to ensure all proposed building platforms are above the 1% AEP storm event. Certification of buildings sites will be required to ensure each building site is suitable for building.
- Parts of the property are at present unsuitable for building. A recommended condition of consent requires all fill to be certified.
- 3.2.6 Records indicate that the proposal was reviewed and commented on by EBOP and the authority, and a number of subsequent amendments were made.
- 3.2.7 On 13 February 2006 resource consent was granted. One of the general conditions that applied to all stages was that 'all filling shall be certified by a Chartered Professional Engineer'. It was also noted that:
- ...significant engineering works have been proposed as part of this subdivision to ensure that site limitations in terms of both overland flow and inundation from the Ngongotaha Stream in extreme storm events issues and also in terms of soil suitability for building has been adequately addressed. ... Certification of buildings sites will be required to ensure each building site is suitable for building.
- 3.2.8 Earthworks to Stage 1 were carried out from February 2006 to November 2006. The developer's consultants' "Earthworks Completion Report" dated 27 November 2006 noted the underlying silt, sand and pumice gravel confirmed in the initial geotechnical investigation. The report described the cut and fill operation and recorded that 'We can confirm that the in situ and imported fill material was placed in thin layers and compacted satisfactorily'. The report attached the results of tests comprising 'a series of 4 boreholes to 2.0m [and] 1 borehold to 6.0m ...' undertaken prior to the earthworks along with bearing pressure tests taken after the earthworks and commented that bearing capacity on Lots 4 – 11 was 'less' due to the underlying layer of in situ silt, noting however that:
- The 0.6m of cover over the softer silt is adequate to spread any load from foundations and therefore there are no special foundation requirements needed for this subdivision.
- The report concluded that in their professional opinion:
- ...ground conditions on all lots ... of Stage 1 ... are 'suitable for construction of residential buildings in accordance with the requirements of Clause B1 of the Building Regulations 1992.

and noted that:

The recommendations given in this report are based on limited site data from discrete locations. Variations in ground conditions could exist across the site. The nature and continuity of subsoil conditions away from the test sites are inferred and it must be appreciated that actual conditions could vary from the assumed model.

- 3.2.9 On 12 December 2006 the developer’s consultants applied for approval pursuant to sections 223 and 224(c) of the RMA for Stage 1. An Earthworks Completion Certificate and a 1B - Statement of Professional Opinion as to Suitability of Land for Building Development were attached (“the statement of professional opinion”). The statement of professional opinion does state that it has been issued in terms of NZS 4431³, however, paragraph 3 a) of the statement notes that the earth fills had been placed in compliance with ‘the Code of Practice of the [authority]’. I have not seen a copy of the authority’s code of practice and am not aware of whether that in turn refers to NZS 4431. Paragraph 3 c) of the statement of professional opinion stated ‘The filled ground was suitable for erection thereon of residential buildings not requiring specific design in terms of NZ Building Act 2004 and NZ Building Regulations 2004, and related documents, providing i) that there is a minimum of 0.6m of fill over the original ground of Lots 4-11’. Approval under section 224(c) of the RMA was granted by the authority on 21 February 2007.
- 3.2.10 On 20 March 2007 the developer’s consultants wrote to the authority regarding an amendment to Stage 2 pump station storage capacity (Lot 87 – refer Figure 1). The letter noted that ‘We are concerned that their (sic) may be settlement due to the loading of the 3.0m diameter pump chamber on the fine silt material underlying the area where the chamber is proposed’. By reducing the size of the wet wall and providing additional storage via another manhole we will be able to spread the load over a greater footprint area’.

3.3 Building Consents and Conditions

- 3.3.1 Property Information Memorandums (“PIM”s) were issued for each of the Lots with the following conditions relating to filling:

House No	Lot	PIM	Date issued	Condition
54	18	40164	10 May 2007	‘The proposed building work is to be sited on land, which the [authority] has identified as having been subject to filling, a specific foundation design may be required. Refer to attached copies of property information notices for detail on filling, ...’
48	21	60088	23 May 2007	
52	19	61264	22 Nov 2007	‘No information concerning special features of the land has been identified’ Handwritten notes on the ‘Processing PIM/BC Master Checklist’ refer: ‘Hazard/Caution/Information (as noted on file) – Fill’ ‘368(f) – 2 planning informations are noted on the file relating to fill and stormwater’

³ NZS 4431:1989 New Zealand Standard: Code of practice for Earth Fill for Residential Development

- 3.3.2 I note that the PIM issued for Lot 64 on 27 December 2007 included in the conditions a requirement that:

The proposed building work is to be sited on land, which the [authority] has identified as having been subject to filling, a specific foundation design may be required.

- 3.3.3 It is unclear from the records provided whether the Property Information Notices (which in turn provide detail of the fill and refer to the Earthworks Completion Report) were either requested by the owners or received with the PIMs.
- 3.3.4 The application form for building consent contained the option for the authority to request information under the requirement “Construction Details – geotechnical reports on ground conditions as required”; and for which the box marked “No” was ticked for Lots 18 and 21, and marked “n/a” for Lot 19.
- 3.3.5 The building specifications that accompanied the building consent applications for Lots 18, 19, and 21 noted:

The building shall be founded on firm ground with a minimum allowable bearing capacity of 100kPa unless noted otherwise.

The approved plans for the perimeter foundations show details that are consistent with NZS 3604; the plans make specific reference to the floor slab following the requirements of NZS 3604.

- 3.3.6 Building consents, granted under the Building Act 2004, were issued as follows:

House	Lot	Building Consent Number	Date consent issued
54	18	40165	17 May 2007
52	19	61264	10 December 2007
48	21	60088	28 May 2007

- 3.3.7 The original building consent (No. 61453) issued on 23 January 2008 for Lot 64 included the following condition:

An Engineer approved by [the authority] shall be retained by the owner to certify that the minimum bearing required by the [Building Code] has been achieved for foundations and/or floors.

- 3.3.8 I note that building consents for Lots 18, 19 and 21 did not include any conditions requiring further geotechnical advice in respect of ground bearing capacity or specific engineering design for the foundations.
- 3.3.9 Lot 64 was subject to investigation by a geotechnical engineer (refer paragraph 3.4.1) and subsequent amendments were made to the building consent to take account of the ground conditions encountered at the site.
- 3.3.10 On 4th April 2008 the authority stopped issuing building consents for further construction on Stages 1 and 2 of the subdivision, and the authority’s engineering approval for construction of Stage 3 was suspended on 9 April 2008. No building consents had been issued after 5 February 2008.

3.4 Subsidence

- 3.4.1 On 22 August 2007, a geotechnical engineer provided a report to the builder in respect of Lot 64. The geotechnical engineer had undertaken investigation to

determine the soil foundation bearing capacity characteristics by way of two hand auger boreholes to 2m depth. The report states that

The subsoils encountered within the boreholes comprised 200-300mm topsoil overlying very stiff gravely and sandy silt FILLING to depths of 0.9 to 1 metre overlying weak organic silt / clay containing decaying roots.

While the near surface fill is considered suitable for residential building construction, we have concerns regarding the settlement characteristics of the underlying organic soils, particularly with respect to time frames associated with the recently constructed filling and further minor earthfills required to create a level building platform.

I note that the builder also sought a site condition report to identify specific ground conditions for another lot in Stage 2 (Lot 72). Although I have not seen a copy of the report for Lot 72, dated 13 September 2007, I note reference to it in the specialist geotechnical engineers' report (refer paragraph 3.4.11) that similar organic silts were not encountered on this lot. It is not clear what prompted the builder to call for investigations in respect of these two lots; and I am not aware of whether the authority was in receipt of, or aware of the report for Lot 64 at that time (refer paragraph 3.4.2).

- 3.4.2 On 1 February 2008 the authority received the geotechnical engineer's report dated 22 August 2007 from the owner of Lot 64 who had raised concerns that there may be potential foundation issues with underlying weak subsoils that had not been identified by the developer's consultants. The authority forwarded the report to the developer's consultants requesting their review and advice regarding Lot 64 saying:

Please review and advise your comments urgently please on this particular lot as building is being held up, we may also then need reassurance that it is an isolated issue and the original investigations were sufficiently comprehensive.

- 3.4.3 Further deep soil tests were carried out by the developer's consultants in February and March 2008 (mainly in relation to Stages 2 and 3) which, according to correspondence from the authority (in a letter to the developer dated 12 April 2010), indicated the presence of a widespread layer of soft silt below the upper sand layer. A firm of specialist geotechnical engineers was engaged by the developer's consultants in April 2008 to carry out an independent assessment of the potential significance of soft ground encountered within the Stage 2 and 3 areas. No further investigation of Stage 1 was undertaken at this time.
- 3.4.4 On 26 March 2008 and 1 April 2008 the authority issued the code compliance certificates for Lots 18 and 21 respectively.
- 3.4.5 On 22 May 2008 the specialist geotechnical engineers produced a preliminary report confirming that there were potential foundation issues for buildings due to the presence of deep underlying compressible subsoils. The report highlighted the presence of a variable thickness of very soft to soft, compressible silt deposits, and a high ground water table.
- 3.4.6 On 23 May 2008 the authority issued the code compliance certificate for Lot 19.
- 3.4.7 On 22 July 2008, subsequent to the various geotechnical reports indicating potential settlement issues (refer paragraphs 3.4.1 to 3.4.5 above), Lot 64 was preloaded. On 18 March 2009 the section was unloaded and the owners were informed by the developer that the house would require a rib-raft foundation.

- 3.4.8 On 13 November 2008 the specialist geotechnical engineers provided a report to the developer on the current status of geotechnical assessment for Stages 2 and 3 of the subdivision which considered the potential impact of the soft ground on house foundations and the significance of the high groundwater levels present. The report noted that ‘specific design of house foundations would be required in order to limit the impact of post-construction settlements’.
- 3.4.9 On 13 November 2008, a report was provided by the manufacturer of the plaster board, by way of the builder, to the owner of Lot 21. The report confirmed a number of defects, including the fracturing of a 13mm thick sheet of ceiling lining, that were caused by settlement. The report suggested monitoring to ascertain whether further settlement was taking place prior to remedial work being carried out.
- 3.4.10 On 12 March 2009, at the request of the owner, the authority made a site visit to Lot 21 where the crack in the ceiling was observed. The authority’s site note records ‘From our observations it was reasonable to attribute the cracked ceiling to movement within the structure post construction.’ It was noted that the ceiling crack had not extended further since November 2008. Based on its observation, the authority concluded that ‘the cause is normal construction movement caused by further drying of timber components, settlement of roof trusses etc.’
- 3.4.11 The specialist geotechnical engineers produced a report for the developer dated March 2009 on the implications of the presence of compressible silts for Stages 2 and 3 and the Lots on Stage 1 that were yet to be built on. The report concluded, in respect of the settlement assessment, that specifically designed raft foundations could reduce the impact of settlement but that on some sites preloading would also be required. In concluding the implications for future development the report stated
- As a result of the presence of soft compressible silts across the majority of the subdivision and the extent of seasonal variation in groundwater levels, virtually all lots will require specific engineering design (SED) of the foundations by a suitably qualified geotechnical engineer.
- 3.4.12 The report considered Lots 1, 2, 3, 11, 14, 17 and 20 in Stage 1. Lots 17 and 20 being immediately adjacent to the subject sites of this determination as shown in Figure 1. These lots were included in “Zone A” in respect of which the report said
- The lots . . . include fill depths of up to 1.5m and a compressible silt thickness of up to 10m. The ‘worst’ case, for example, is possibly represented by Lot 14, where up to approximately 1.5m of fill is underlain by around 9m of compressible silts, assuming the ground conditions here to be similar to those encountered on the neighbouring property [Lot 17]. The lots in Stage [1] do benefit however from the fact that the fill was placed over two years ago, such that all primary and a proportion of the anticipated secondary compression resulting from the place fill will already have occurred, but the primary and additional secondary compression resulting from a house could still be high . . .
- [For foundation design] . . . preloading of the house site[s] is likely to be the preferred option . . . This should be combined with the use of a heavy stiffened or cellular raft foundation, specifically designed to enable the structure to withstand the anticipated total and/or differential movements resulting from a combination of settlement and/or heave associated with the seasonal variation in groundwater levels and any long term creep settlements.
- 3.4.13 On 23 March 2009 the authority approved an amendment to the subdivision resource consent for Stage 3 to incorporate conditions ‘to address the now known presence of compressible silt and organic materials, seasonally high groundwater levels and land

stability issues (in the vicinity of steep slopes along the northern boundary between Stages 3 and 4).’

- 3.4.14 On 22 April 2010 the authority issued the code compliance certificate for Lot 64.
- 3.4.15 On 10 June 2010 a builder undertook an inspection of cracking that had reappeared in the mortar line of brickwork at the rear door of the garage at Lot 18, and was unable to provide an explanation for its reoccurrence. The builder recommended the owner get independent engineering advice on the cause.
- 3.4.16 On 5 July 2010 the owners of Lot 18 obtained a Land Information Memorandum (“LIM”) from the authority which noted:
- This property is part of a subdivision, in respect of which issues have arisen regarding the suitability of the subsoil. Geotechnical monitoring of the existing residential dwelling on the property between November 2008 and March 2010 indicates that the existing residential dwelling has settled to some extent. ... Between November 2008 and March 2010 settlement for the dwelling was recorded in regard to 4 settlement markers which had a range of 16mm to 33mm. The difference between the marker with the most settlement and the marker with the least settlement was, therefore, 17mm. The settlement range that could normally be expected before potential adverse impacts occur is approximately 20mm. It is not known if settlement had already occurred between the date of commencement of construction of the residential dwelling in July 2007 up to November 2008. ...
- 3.4.17 On 3 August 2010 and again on 4 October 2010 the owner of Lot 18 wrote to the authority after reviewing information in the LIM report for the property with queries relating to ongoing issues with land settlement.
- 3.4.18 On 5 October the authority responded to the owner of Lot 18 noting that ‘the recording of levels on your house foundations are part of an ongoing monitoring program on this subdivision...initiated by the developer’ and that the authority did not consider it necessary to have specialist geotechnical engineering investigation into the cause of the settlement as the authority considered the settlement to be minor.
- 3.4.19 On 21 December 2010 the specialist geotechnical engineers, engaged by the authority, proposed to expand the monitoring to include three additional dwellings as it would be ‘beneficial to assessing the overall settlement issues facing this part of the subdivision’.
- 3.4.20 On 22 December 2010 the authority undertook a site visit to Lot 19 and observed signs of movement in the building with the floors out of level, water in the guttering running away from downpipes, cracks in the exterior cladding, and sticking doors and windows.
- 3.4.21 On 23 December 2010 the owner of Lot 18 contacted the authority to voice concerns about indications of damage caused to the house through settlement. The owner had also become aware of a neighbouring property that was experiencing similar problems.
- 3.4.22 In an emailed response on 12 January 2011 to the owner of Lot 18, the authority noted that the ‘code of compliance [certificate] issued under the Act ... only relates to the building consent and not to unknown ground conditions’.
- 3.4.23 In a report dated 26 January 2011, provided by a firm of consulting engineers engaged by the owner of Lot 19, it was stated that:

- ‘The existing floor spot levels show an overall tilt or settlement of the house from south to north of approximately 90mm. In addition (and more seriously) there is an overall belly or differential settlement between the centre and perimeter of the house. This differential settlement is measured at approximately 70 to 75mm over a distance of 7500mm. These settlements are well in excess of normally acceptable tolerances and are not in accordance with the NZ Building Code. Such settlements will cause serious structural damage ...’
- ‘[the developer’s consultants original completion report] did not identify the presence of any poor or soft ground beneath your Lot 19 and accordingly house foundations could be approved/constructed in accordance with NZS3604 which assumes “good ground” ’
- ‘[the specialist geotechnical engineers’ report] dated October 2009 on [the neighbours to immediate north, Lot 64] confirms that poor/soft ground conditions under this Lot required Specific Engineering Design (SED) of house foundations to mitigate against adverse effects from likely ground settlements’

The report concluded that; the ‘serious cracking and distortion’ apparent was due to settlement of the underlying soft compressible silts, the settlements were beyond acceptable limits, the existing foundations are not suitable for the site, and the site needed to be preloaded as recommended by the specialist geotechnical engineers. It was the consulting engineer’s opinion that the house had to be demolished and re-built.

- 3.4.24 In a letter dated 14 March 2011, from the Earthquake Commission (“the EQC”) to the owner of Lot 19, the EQC noted that ‘the damage to your property is caused by subsidence due to the settling of compacted soil and fill material’. It appears the loss adjusters report was for a number of properties and EQC letters dated 4 April to the owners of Lots 18 and 21 include same statement regarding those properties.
- 3.4.25 The owners of Lots 18 and 21 also sought reports from the same firm of consulting engineers previously engaged by Lot 19 (see paragraph 3.4.23). The firm of consulting engineers found that Lot 18 had an ‘overall tilt/settlement of approximately 37mm [and] an overall belly or differential settlement . . . of approximately 53mm’. Lot 21 had an “overall tilt/settlement of approximately 57mm” but instead of a belly has a significant crack through the house ‘indicating that differential settlement is causing the house to “break its back” ’. The reports (dated 15 April 2011) for Lots 18 and 21 drew the same conclusions as had been reached in the earlier report for Lot 19, namely that settlements and damage sustained was beyond acceptable limits and the buildings had to be demolished and re-built.
- 3.4.26 Settlement monitoring by the specialist geotechnical engineers over the period late 2008 to April 2011 showed that Lot 18 had settled up to 50mm and Lot 19 by up to 30mm over this period.
- 3.5 On 28 June 2011 the Department received an application for a determination.

4. Submissions and the draft determinations

4.1 The initial submissions

4.1.1 The applicants forwarded copies of:

- various items of relevant correspondence
- the LIM report for Lot 18, including the developer's consultants "Earthworks Completion Report" dated 27 November 2006
- settlement readings recorded as part of the settlement monitoring undertaken by the specialist geotechnical engineers
- reports on Lots 19 (dated 26 January 2011), 18 and 21 (both dated 15 April 2011) by a firm of consulting engineers
- marked plans and elevations for Lots 19 and 18 indicating defects and settlement
- the specialist geotechnical engineers' report dated March 2009
- various site plans and photographs
- initial concept plan and report for the subdivision dated 10 March 1999
- excerpts from the developer's consultants' preliminary site investigation report dated October 2004 (borehole logs and penetrometer results)
- the developer's consultants' "Scheme plan for the proposed subdivision", dated 14 March 2005

4.1.2 In response to the application for determination, initially in respect of Lot 19 only, the authority provided a file note dated 13 July 2011 that summarised the authority's 'input and provides commentary in relation to [Lot 19]'. The authority submitted that the matter of 224(f) of the RMA is not relevant to the application and that the authority was unaware of any issues with the land associated with Stage 1 of the subdivision when it issued the building consent and the code compliance certificate for Lot 19.

4.1.3 The authority's file note stated that:

The earthworks completion report and attached certificates provided Council the assurance that all lots were suitable for building without limitation.

... the ... subdivision had been certified by a reputable engineering consultancy as suitable for the construction of buildings using NZS 3604 1999 as a means of compliance and Council was entitled to rely on this certification.

4.1.4 The authority later provided a submission in respect of Lots 18 and 21 which provided information on the building consents, inspections and code compliance certificates for those Lots and confirmed the authority's views outlined in its previous submission.

4.1.5 On 19 September 2011 the applicants responded to the expert's report (see paragraph 5), providing some further information on the background events and noting further damage and evidence of continuing subsidence that had occurred since the expert's site visit.

4.2 The first draft determination

4.2.1 The first draft determination was issued to the parties for comment on 11 October 2011.

4.2.2 The authority did not accept the draft and in a letter dated 31 October 2011 the authority's legal advisers submitted, in summary, that:

- in granting building consents for Lots 18, 19 and 21 the authority had acted reasonably in relying on the geotechnical report provided by the developer because historically surrounding subdivisions which were also low lying and include wetlands, inundation and drainage concerns, had not required specialist foundation requirements for the construction of properties contained in those subdivisions
- in respect of the qualifications of the signatory to the Earthworks Completion Report and the Statement of Professional Opinion (refer paragraph 5.8) the authority referred to its standards in respect of subdivisions⁴, noting that; the authority had operated in accordance with its standard, the developer's consultant regularly provides advice to the authority on subdivision matters, and in processing building consents it was typical of the authority to rely on the expertise of the external geotechnical engineer to provide a report that would satisfy the requirements of the code and identify the type of foundations needed on individual lots.
- there were no concerns regarding soil conditions during the construction and inspection process
- the authority was required to issue the code compliance certificates as the buildings were constructed in accordance with the consented plans and there was 'no evidence suggesting that the house had been constructed not in accordance with the plans and/or that damage from cracking was occurring.'

In respect of the issuing of the code compliance certificates the authority submitted that (in summary):

- at the time the authority issued the code compliance certificates, the geotechnical report that raised concerns about subsidence was Lot specific
- there was no damage or cracking at the time the code compliance certificate was applied for
- the crack observed in Lot 21 had not extended between November 2008 and March 2009, and was attributed to settlement
- cracking in Lot 18 was not observed until June 2010, and issues with settlement in Lot 19 did not arise until December 2010
- the only other option available to the authority, if it did not issue the code compliance certificates, was to issue a notice to fix. However, at that time it had insufficient evidence to do so.

4.2.3 The developer's consultants provided a submission via their legal advisers in a letter dated 31 October 2011. The submission included references a number of matters of

⁴ The Rotorua Civil Engineering Industry Standard 200 (version 2004)

fact, that I have amended as appropriate, and made detailed comment on the draft determination. I have summarised the submission as follows:

- Matters relating to the RMA and the developer's consultant should not be considered in the determination as it is outside of the jurisdiction of the Department.
- The observations made in the draft in the description of the subdivision and background events is incomplete and inappropriate, in particular references to the land as low-lying and storm water drainage problems does not imply anything with respect to potential subsidence issues and that a deep layer of compressible silt might exist.
- The developer's consultants were not aware of any general ground conditions in the wider Ngongotaha area that indicated any issues or concerns, and the discovery in 2008 of the compressible soils was one of the first times such very soft lacustrine type deposits so far from the lake edge had been identified.
- The 18 soil test bore holes undertaken in October 2004 did not indicate that the silt layer was soft or exceeded 3m thickness.
- The level of testing was of that typically undertaken in the Rotorua area for what was essentially a flat site with little by way of apparent concerns or issues.
- The Earthworks Completion Report warned of limitations of the investigations, expressly contained limitations in respect of subsoil conditions, was not a guarantee of site conditions, and there is specific reference to the necessity for 'normal inspection of foundation conditions at the time of building. 'Ground condition reports' should have been obtained by the owners.
- The Statement of Professional Opinion As to Suitability of Land for Building Development is not a guarantee.

4.2.4 The developer's consultants also submitted that it was usual for, and the responsibility of, owners and/or builders to have 'properly investigated' the site and to identify any site specific conditions, engaging professionals in order to obtain geotechnical ground condition reports (and any other reports) to identify any issues, and that this process was undertaken for Lots 64 and 72.

4.2.5 In respect of the granting of the building consents the developer's consultants submitted that:

- Under section 51 of the Act, a PIM must be attached when the authority issues building consents, and under section 35(1)(a)(ii) the PIM must identify potential natural hazards (including subsidence) that are likely to be relevant to the design and construction of the proposed building. Section 48 provides for the authority to require further information.
- It is the authority's responsibility to require site specific information of the owners, and to notify owners of potential natural hazards.
- The authority was not entitled to rely on the Engineers IB Certificate (refer paragraph 4.1.3) in regard to subsoil conditions in its assessment of the application of a PIM/Building Consent as it related to the fill and was not provided for that purpose.

- The authority also relied on its own assessment and opinion in regard to the subsoil conditions.

4.3 The second draft determination

4.3.1 The submissions in response to the first determination were carefully considered, and a second draft determination was issued to the parties for comment on 2 December 2011.

4.3.2 The applicant accepted the second draft without comment.

4.3.3 The authority did not accept the second draft, and in a letter dated 19 December 2011 the authority's legal advisers submitted, in summary, that the reversal of the building consent was not accepted. The submission noted the consequences of reversing the building consent. The submission noted that the determination did not 'provide compensation to the [owners]', and stated that reversing the building consent and the code compliance certificate 'will substantially limit the repair options may act as an intervening cause in the event compensation proceedings are pursued ...'.

4.3.4 The developer's consultants provided a submission via their legal advisers in a letter dated 20 December 2011.

- The submission stated that the onus was on 'owners and/or builders should properly investigate the building site, engage professionals in order to obtain geotechnical ground condition reports ...' and that this had been done in respect of Lots 64 and 72.
- The submission advised that 'the [authority] cannot have relied on the reports/IB statement of [the developer's consultants] for the issue of the building consents as this was not the intent of the reports/certificate', and that there was 'nothing to establish that the [authority] was entitled to rely on the reports/certificates ...'.
- It was noted that 'in June 1999 [the authority] required a geotechnical report to assess the suitability of the low-lying area adjacent to Western Road for subdivision ... The subdivision consent was granted by [the authority] without any involvement by [the developer's consultants]. The territorial authority had already decided on the suitability of the land and there was no reliance on [the developer's consultants].
- The submission restated its previously stated position in not accepting the sequence of events set out in paragraph 3 and did not accept the expert's findings.

4.3.5 In response to this letter, and in a letter also dated 20 December 2011, the authority's legal advisers disputed the developer's consultants' legal advisers position that '[the authority] was not entitled to rely on the report from [the developer's consultants]...' The authority's legal advisers stated that it 'was a requirement of the resource consent issued in respect of the subdivision that a geotechnical report be provided to ascertain the suitability of the soil conditions for the construction of residential dwellings.' The authority's legal advisers also stated that 'we record that from [the authority's] perspective it did rely on the report from [the developer's consultants]'. The authority's legal advisers also submitted that the reference to 'a separate subdivision' (third bullet point in paragraph 4.3.4) was not relevant to the present case.

- 4.3.6 In a letter to the Department dated 20 December 2011, the owner's agent responded to the submissions received from both legal advisers. The submission stated that 'the only credible solution to the problems we are experiencing is to have the Building Consents and the Code Compliance Certificates revoked' and that 'our houses do not comply with the [building Code] and cannot be repaired. Therefore we feel it is the correct decision to revoke the Building Consents and Code Compliance Certificates for all three properties.' The submission described the 'day to day experiences' of the defects in the buildings.
- 4.3.7 On 21 December 2011, the developer's consultants' legal advisers responded to the authority's legal advisers letter of 20 December 2011 (refer paragraph 4.2.5). The submission disputed the authority's legal advisers position with respect to the requirement of the resource consent saying there was no requirement on the consent for a 'geotechnical report be provided to ascertain the suitability of the soil conditions'.
- 4.3.8 In further email correspondence to the Department dated 22 December 2011, the legal advisers for both the authority and the developer's consultants, presented further detailed argument to support their respective positions.
- 4.3.9 I have carefully considered the above submissions.

5. Expert's report

- 5.1 As mentioned in paragraph 1.8, I engaged an independent expert who is a chartered professional engineer, to undertake a review of the information that had been provided to the authority prior to the granting of building consents and to assess the three subject buildings (Lots 18, 19 and 21).
- 5.2 The expert reviewed the information that was provided as part of the determination application and undertook a site visit on 1 August 2011. The expert's report was completed on 2 September 2011 and a copy of forwarded to the parties and persons with an interest.
- 5.3 The expert provided a brief summary of the background events and noted that settlement/tilt of the slab/foundations and consequent cracking/distortion is well documented in the reports provided by the applicants' firm of consulting engineers (refer paragraphs 3.4.23 and 3.4.25).
- 5.4 The expert noted typical defects to

All 3 buildings

- Out of level floors
- Cracks to garage floor slabs
- Racked doors and windows to the extent that some doors and windows 'barely close'
- Buckled flashings
- Drops in gutters
- Cracks to brickwork and foundation walls (not so evident in Lot 21)

Lot 18

- Loose bricks

- Minimal cracking to ceilings and walls

Lot 19

- Little wall or ceiling cracking, however several internal doors are severely racked

Lot 21

- A significant crack to the floor and ceiling

5.5 Though noting it was outside of the scope of the report, the expert also observed the site adjoining Lot 19 to the east (Lot 20) was preloaded with fill. The expert commented that the boundary fence and pathways adjoining Lot 20 have clearly been affected with the pathways tilted towards Lot 20 and gaps opening up between the house and the path. The expert also raised the concern that the zone of influence of the fill extending beneath the foundations of the existing house should be considered.

5.6 The expert also observed issues with differential settlement in respect of light poles and the wastewater pumping chamber (refer paragraph 3.2.10).

5.7 The expert was of the view that the consent documentation, taken in isolation without knowledge of the underlying soil problem, was adequate.

5.8 The expert sought further comment from a Chartered Professional Engineer with specialist expertise in geotechnical engineering, who commented as follows (in summary):

The thoroughness and depth of the preliminary geotechnical assessment accompanying the subdivisional [resource] consent application was not adequate.

The claim that the developer's consultants engineer who submitted that report, together with the following Stage 1 Earthworks Completion Report, and Statement of Professional Opinion as to the Suitability of Land for Building Development [refer paragraph 3.2.9] is "a Certified Professional Engineer experienced in the fields of soil engineering" is not consistent with the IPENZ and CPEng status given in the documents.

The standard of new fill compaction appears to be acceptable, but the conclusions drawn and assumptions made with respect to some of the testing are not based on sound judgement.

Subsequent investigations [by the developer's consultants and specialist geotechnical engineers] identified that the underlying natural soils were vulnerable to compression (settlement) under load and in particular fill placed during the formation of the subdivision.

The distress in the houses can be wholly attributed to the underlying soil conditions ...

5.9 The expert also commented that

- The authority relied entirely on the developer's consultants' geotechnical advice in issuing the 224(c) documentation and resource consent notices (refer paragraph 3.2.9).
- Authorities do not normally employ in-house Geotechnical Engineers. They rely on a combination of historical information with respect to similar subdivisions, local knowledge, and the experience of their staff that process the applications and the expertise of the consultants submitting applications/reports.

- The engineering conditions imposed are standard for a subdivision of this type although it is noted that ‘all filling has to be certified by a Chartered Professional Engineer’ only, with no reference to geotechnical experience.
- The subject Lots are in an area of the subdivision where there is a combination of both underlying compressible material and fill placement (load).
- Appropriate conditions were imposed for the development of the remaining Lots in Stage 1 and all Lots in Stages 2 and 3.
- It is quite common for the specific design of foundations to be required for any development of a Lot and also for a site specific geotechnical report to be called for.
- No potential foundation issues were identified for Stage 1 either in initial geotechnical investigation or the Stage 1 Earthworks Completion Report. By default NZS 3604 type foundations were therefore deemed suitable for structures built on these lots and no special conditions were imposed at the 224(c) stage.

5.10 In respect of compliance with the Building Code the expert observed that although there are no prescribed criteria for establishing the acceptance or otherwise of serviceability limit state differential settlements in the Building Code, the extent of settlements currently evident in the structures and the loss of amenity experience to the owners is sufficient to argue that the structures do not comply with Clause B1.

5.11 The expert also noted that with the high water table and type of underlying soils there is also potential for liquefaction in an earthquake event, and that buildings constructed prior to the specialist geotechnical engineers recommendations being implemented, including the subject buildings, are not afforded the protection from liquefaction contained in those recommendations.

5.12 The developer’s consultant’s response to the expert’s report

5.12.1 In its submission to the draft determination the developer’s consultant also commented on aspects of the expert’s report. I have summarised those comments below:

- Reference to the timber fences and light poles is not relevant as these are not reliable guides to underground soil conditions
- The lid level of the pump station and the adjacent valve chamber are at the same level and do not show any signs of differential settlement. The differential settlement of the concrete slabs around the pump station is likely to be due to vehicle loading from service trucks attending the pump station.
- ‘...fill deeper than 600mm that is placed during house construction requires certification, pursuant to NZS 3604 055 (sic) by a Chartered Professional Engineer not a geotechnical engineer.’

5.12.2 The developer’s consultants also rejected the comments made in the expert’s report by the geotechnical engineer and were of the view that those matters were not within the jurisdiction of the Department to consider, comment on or determine.

6. Discussion

6.1 The compliance of the buildings

- 6.1.1 Taking into account the various geotechnical reports outlined in paragraph 3.4, and the experts' comments summarised in paragraph 5, I accept that the buildings on Lots 18, 19, and 21 have been constructed on land that is underlain by compressible materials of significant thickness and as a result have been subject to subsidence.
- 6.1.2 I must therefore consider whether the buildings, as built, are structurally sound and will continue to be throughout their lives. In other words, I need to consider whether they comply with the Building Code in respect of Clause B1.
- 6.1.3 The buildings on Lots 18, 19 and 21 have been built with standard NZS 3604 foundations without any measures to enable all or any of the likely settlement to occur before construction commenced or without specifically designed foundations to account for likely settlement after construction. I note that the definition of good ground within section 1.3 (Definition) of the NZS 3604 limits "foreseeable movement" of ground supporting buildings to a maximum of 25mm.
- 6.1.4 I consider that the information submitted in the course of this determination, including the various reports from the specialist geotechnical engineers and the firm of consulting engineers, the advice from the Department's expert, the on-site observations and the on-going settlement monitoring clearly indicates that buildings on Lots 18, 19 and 21 have undergone, and continue to experience, unacceptable deformations. In my view, these deformations are unacceptable because (amongst other things) they exceed the limit state thresholds normally applied for control of damage to interior partitions and to exterior masonry cladding. Consequently, I am satisfied that these buildings do not comply with Clause B1.

6.2 The issuing of the code compliance certificates

- 6.2.1 On 1 February 2008 the authority received the geotechnical engineer's report (refer paragraph 3.4.2) from the owner of Lot 64, which clearly raised concerns regarding settlement of the underlying organic soils. The authority sought reassurance from the developer's consultants in respect of Lots yet to be developed; however no further investigation was undertaken in regards to Lots already built on in Stage 1.
- 6.2.2 Notwithstanding the report provided on 1 February 2008 on Lot 64 and that the authority had inquired of the developer's consultants whether this was an isolated issue, code compliance certificates were issued on the 26 March 2008 (Lot 18) and 1 April 2008 (Lot 21).
- 6.2.3 According to the authority it stopped issuing any further building consents for Stage 1 of the development on 4 April 2008 on receiving advice from the developer's consultants and the specialist geotechnical engineers. The code compliance certificate for Lot 19 was issued on 23 May 2008.
- 6.2.4 The authority stated in an email to the owner of Lot 18 that the 'code compliance [certificate] issued under the Building Act...only relates to the building consent and not to unknown ground conditions'.
- 6.2.5 It is my view that once the authority became aware of the condition of the land on which the buildings had been constructed it should have taken this into account when processing the applications for code compliance certificates. The fact that the land

was subject to subsidence meant that the plans on which the building consent application had been made, which assumed the buildings to be constructed on “good ground”, may no longer have been appropriate and that the buildings might not comply with Clause B1. While the authority has noted in its submissions that the report received from the geotechnical engineer for the owner of Lot 64 was a site specific report, the fact is that Lot 64 adjoins Lot 19 and is adjacent to Lot 18. There would have been a more than reasonable likelihood that the ground conditions for Lots 18 and 19 would be fairly similar to those for Lot 64.

6.2.6 I therefore conclude that the authority was incorrect in its decision to issue code compliance certificates for Lots 18, 19, and 21.

6.3 The building consents

- 6.3.1 An authority may refuse a subdivision consent if it considers the land is likely to be subject to material damage by subsidence or any subsequent use is likely to accelerate, worsen, or result in material damage to the land by subsidence (section 106(a) and (b) of the RMA). The conditions of a subdivision consent may require provision for the protection of the land against subsidence (section 220(1)(d) of the RMA).
- 6.3.2 In granting building consent for construction of a new building an authority must refer to and ensure compliance with the resource consent notice 224(c). Special conditions may arise depending on information provided in the Statement of Professional Opinion as to Suitability of Land for Building Development.
- 6.3.3 No potential subsidence issues were identified for Stage 1 either in the initial land use geotechnical appraisal, the Stage 1 Earthworks Completion Report or in the Statement of Professional Opinion. Therefore, in this instance no special conditions for foundation design were attached to the resource consent notice 224(c) in respect of Lots 18, 19, or 20.
- 6.3.4 I note that in considering the grounds for issuing resource consent and subsequent building consents, a territorial authority is entitled to rely on reports provided by appropriately qualified professionals.
- 6.3.5 PIMs issued for two of the three Lots (18 and 21) included conditions noting the filling and identified that ‘specific foundation design may be required’. I also note however that the condition went on to refer the reader to the Earthworks Completion Report. For Lots 18, 19 and 21, the building consents were subsequently issued with no conditions requiring further geotechnical advice in respect of ground bearing capacity or specific engineering design for the foundations.
- 6.3.6 It is clear that in considering the ground conditions in terms of NZS 3604 and the issuing of the building consents, the authority has relied on the advice provided in the Earthworks Completion Report and the Statement of Professional Opinion provided by the developer’s consultant and, by default deemed NZS 3604 type foundations suitable for structures built on these Lots.
- 6.3.7 As the land has been found to be subject to subsidence, the grant of the building consents without preloading and specific engineering design of the foundations could not comply with the Building Code in respect of Clause B1. I consider therefore that the building consents were incorrectly issued.

6.3.8 The issuing of a building consent is a statutory decision authorising building work to be undertaken. I take the view that while the Chief Executive has the power to reverse the decision to issue a building consent, where the issuing of consent is a decision that has been relied upon, there would need to be compelling reasons to reverse that decision. Those reasons may include, but are not limited to:

- the decision to issue the building consent was incorrectly made on the basis that the authority did not have reasonable grounds to be satisfied the provisions of the Building Code would be met
- the decision of the authority was not relied upon
- the building work can not be made compliant with the Building Code, notwithstanding that it was built in accordance with the building consent
- there are compelling reasons to reverse the decision.

6.3.9 In respect of the building work to Lots 28, 19 and 21, I note:

- it is not known whether further subsidence will occur; however given the information provided to the determination and that settlement has continued during the course of this determination I consider the likelihood of further subsidence occurring to be high
- the extent of the differential settlement affecting the buildings is significantly beyond the tolerances permitted by the Building Code
- the damage that has been observed, by the expert and the firm of consulting engineers engaged by the owners, to the buildings on Lots 18, 19 and 21 is significant and extensive
- there may also be unidentified damage to a number of building elements, such as the bracing and brick ties, that would have consequences with regard to compliance with clause B2, particularly insofar as it relates to Clause B1
- in practical terms the scope of remediation involved is likely to be so far from the original approved works as to not be a practicable or cost effective solution as any successful remediation will most likely require removal of the existing structures

In light of those factors I consider it is most unlikely that the buildings will be able to be brought into compliance with the Building Code.

6.3.10 I note that if the building consents were not to be reversed it would leave the option available to each of the owners to make a decision as to the remediation of the building work to bring it into compliance. This would entail geotechnical investigation into the subsoil conditions for each Lot, detailed assessments of the impact the movement has had on the building elements, preloading of the sites and possible removal of the existing structures, and relocation of the occupants while this work was undertaken.

6.3.11 As I have noted in paragraph 6.3.9 above the remediation of the building work will be impracticable and I consider that there are compelling reasons to reverse the decision of the authority to issue the building consents. It is my view that reversing the decision of the authority to grant the building consents provides the most appropriate way to proceed. However, I must also take into account the implications to the owner.

- 6.3.12 The prejudice to an owner that is likely to occur when a building consent is reversed is a matter that I give careful consideration to when deciding whether to exercise my discretion to reverse a building consent. In this case the applicants, via their agent, have requested that the building consents be reversed. To ensure the applicants are aware of the implications, and to assist other owners in a similar situation to that of the applicants, I have set out in paragraph 7 the consequences associated with reversing or confirming a building consent.
- 6.3.13 In conclusion, considering that building consents 40165, 61264 and 60088 were for building work that did not take into account that the land was subject to subsidence, and that remediation to bring the building work into compliance with the Building Code is not practicable, I am of the view that the decisions of the authority to issue the building consents should be reversed.
- 6.3.14 The authority is required to record this determination and any modifications resulting from it, on the property file and also on any LIM issued concerning this property.

7. The reversal of building consents

7.1 General

- 7.1.1 The means by which modifications can be made to building work described in a building consent, that is subsequently found not to comply with the Building Code, will necessarily be specific to the particular circumstances.

7.2 Where a building consent is reversed

- 7.2.1 Where there is building work that does not comply with the Building Code and a building consent is reversed:
- a notice to fix will need to be issued as there will be building work that does not comply with the Building Code;
 - a notice to fix will broadly require any building work that does not comply with the Building Code to be remedied or removed, and a building consent may be required in order to carry out that remediation or removal work;
 - the owner may be required to apply for a certificate of acceptance in respect of the existing building work that is no longer the subject of a building consent;
 - the owner will never be able to obtain a code compliance certificate for the existing building work that is no longer the subject of a building consent.

7.3 Where a building consent is confirmed

- 7.3.1 Where there is building work that does not comply with the Building Code and a building consent amendment may be confirmed:
- a notice to fix will need to be issued as there will be building work that does not comply with the Building Code (refer section 164(2) of the Act that requires a notice to fix to be issued in such circumstances);
 - a notice to fix will broadly require any building work that does not comply with the Building Code to be remedied or removed, and a building consent may be required in order to carry out that remediation or removal work;

- the owner may be able to obtain a code compliance certificate for the existing building work if the authority is satisfied the building work complies with the building consent.

7.4 For either of the above cases, where a code compliance certificate has previously been issued, then that certification issue will need to be reversed (by application to the Department under Section 177) before any of the abovementioned actions can occur. That will be the situation in this particular case.

8. The Decision

8.1 In accordance with section 188 of the Building Act 2004, I determine that the buildings on Lots 18, 19, and 21 do not comply with Clause B1 of the Building Code and B2 Durability; and accordingly I reverse the authority's decision to issue the code compliance certificates for building consents 40165, 61264 and 60088.

8.2 I also determine that in respect of the building work covered by those building consents:

- the approved plans and specifications for building consents 40165, 61264 and 60088 did not take into account the land being subject to subsidence, and
- remediation to bring the building work into compliance with the Building Code is not practicable,

accordingly I reverse the decision of the authority to issue building consents 40165, 61264 and 60088.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 23 December 2011.

John Gardiner
Manager Determinations

APPENDIX A

A.1 The Building Code

- A.1.1 The relevant provisions of the Building Code current at the time the building consents were issued are:

CLAUSE A2 INTERPRETATION

amenity means 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

CLAUSE B1 STRUCTURE

- B1.3.1** Buildings, building elements and sitework shall have a low probability of rupturing, becoming unstable, losing equilibrium, or collapsing during construction or alteration and throughout their lives.
- 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:
- (a) self-weight,
 - ...
 - (d) earth pressure,
 - ...
 - (f) earthquake,
 - ...
 - (m) differential movement,
 - ...

A.2 New Zealand Standards

NZS 3604:1999 Timber Framed Buildings (“NZS 3604”)

1.3 Definitions

GOOD GROUND. Any soil or rock capable of permanently withstanding an ultimate bearing capacity of 300 kPa (i.e. an allowable bearing pressure of 100 kPa using a factor of safety 3.0), but excludes:

- (a) Potentially compressible ground such as top soil, soft soils such as clay which can be moulded easily in the fingers, and uncompacted loose gravel which contains obvious voids;
- (b) Expansive soils being those that have a liquid limit of more than 50 % when tested in accordance with NZS 4402 Test 2.2, and a linear shrinkage of more than 15 % when tested from the liquid limit in accordance with NZS 4402 Test 2.6, and
- (c) Any ground which could foreseeably experience movement of 25 mm or greater for any reason including one or a combination of:

land instability, ground creep, subsidence, seasonal swelling and shrinking, frost heave, changing ground water level, erosion, dissolution of soil in water, and effects of tree roots.

3.1.3 Determination of good ground

The soil supporting the footings shall be assumed to be good ground when all the following conditions are met:

- a) ...
- b) ...
- c) Reasonable inquiry shows no evidence of earth fill on the building site, and no fill material is revealed by the excavation for footings. This shall not apply where a certificate of suitability of earth fill for residential development has been issued in accordance with NZS 4431 for the building site, and any special limitations noted on that certificate are complied with; and
- d) ...