Determination 2006/119

Dangerous building notices for houses in Matata, Bay of Plenty

1 The matter to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004 ("the Act") made under due authorisation by me, John Gardiner, Determinations Manager, Department of Building and Housing ("the Department"), for and on behalf of the Chief Executive of the Department. The applicant is the Whakatane District Council ("the territorial authority"), acting through a firm of solicitors, and the other parties are the owners of eight houses in Matata. Unless otherwise stated, references to sections are to sections of the Act. During the course of the determination one house was withdrawn.

1.2 The application for a determination arises from notices under section 124 of the Act ("the notices") issued by the territorial authority in respect of eight houses ("the houses") in Matata that were affected by landslips and associated flooding in the Awatarariki catchment.

1.3 The territorial authority stated the matter for determination as being:

> The Applicant's exercise of its power to deal with dangerous buildings as follows:
>
> 1. Are the buildings dangerous in terms of section 121 of [the Act]?
>
> 2. If the buildings are dangerous, should the Council exercise its power under section 124 of the Act to require the buildings to remain unoccupied until mitigation works are undertaken to reduce the danger?

1.4 I take the view that, in terms of section 177(e), the matter for determination is the territorial authority's exercise of its powers under section 124.

1.5 I asked the territorial authority to copy its application to the Bay of Plenty Regional Council and the Earthquake Commission on the basis that their rights, obligations, or interests might be affected by the determination in terms of section 27(1) of the New Zealand Bill of Rights Act 1990.

1.6 In making my decision I have not considered any other aspects of the Act.

2 Background

2.1 The following description of the relevant background is taken from the territorial authority's application for a determination and is understood to be based on inspections by territorial authority staff and the following reports obtained by the territorial authority:

- "The 18 May 2005 debris flow disaster at Matata: Causes and mitigation suggestions", Institute of Geological and Nuclear Sciences, July 2005.
- "The Matata Debris Flows Hydraulic Modelling Report", Tonkin & Taylor, consulting engineers, August 2005.
- "The Matata Debris Flows Hazard and Risk Investigations", Tonkin & Taylor, August 2005.
- "The Matata Debris Flows Preliminary Infrastructure and Planning Options Report", Tonkin & Taylor, August 2005.
- "Matata debris flow mitigation – cost benefit analysis of options", NZ Institute of Economic Research, November 2005.

Copies of each of those reports were provided with the application.

2.2 The following terms are used in those reports (definitions abbreviated):

Debris: A loose unconsolidated mix of silt, sand, gravel, cobbles, and boulders, may include a significant proportion of organic material including logs, stumps, and organic mulch.

Debris avalanche: A very rapid to extremely rapid (15 - 60 km/h) flow of partially or fully water-saturated debris on a steep slope without confinement to an established channel.

Debris flood: A very rapid (up to 15 km/h) surging flood of water heavily charged with debris in a steep channel.

Debris flow: A very rapid to extremely rapid (15 - 60 km/h) flow of water-saturated debris in a steep channel.

2.3 On 18 May 2005 a band of intense rain over the catchments behind the coastal settlement of Matata triggered landslips and debris avalanches in stream headwaters ("the 2005 event"). That event resulted in several large debris flows, which with their associated flooding destroyed 27 homes and damaged many other properties. A civil defence emergency was declared under the Civil Defence Act 1980, and the houses were evacuated because of the potential risk to life whether due to damage to the house concerned or to the likely effect of further rainfall.

2.4 During the civil defence emergency, territorial authority staff inspected the buildings affected by the event, with each inspection report being provided to the building's

owner. On 13 June 2005 the territorial authority served the notices on the owners of the houses under section 124. Each notice included the following:

> . . . advice [obtained by the Council] indicated that many of the storm-affected properties remain exposed to a potential life-threatening hazard from further debris flows in the catchment, with some properties at greater risk than others. . . .
>
> . . . [your house] is situated in a debris flow and flood path the Council has identified . . . as being unsafe to be occupied. In terms of the Council's authority to require you not to occupy your dwelling, the Council has relied on section 128 of the Building Act 2004 with this letter constituting formal notice under section 124 of that Act. . . . In this instance, it is not the building per se that is dangerous, rather it is the debris and unstable land in the catchment above the building that constitutes a risk of danger to building users. . . .

2.5 From the reports listed above, the territorial authority concluded that any future moderate rainfall event could have life-threatening impacts upon people occupying the houses, at least until protective works are undertaken. Accordingly, the notices remain in place and the territorial authority has not consented to the re-occupation of any of the houses.

2.6 However, the territorial authority says that many of the owners now wish to re-occupy their houses "and appear prepared to do so at their own risk". The territorial authority accordingly drafted (but did not send) letters to the owners saying:

> The level of risk will continue to exist until such time as the mitigation works in the catchment area are completed. Our best estimate . . . is July 2008.
>
> The Council . . . was not able to successfully identify any interim measures that could be put in place to mitigate, reduce or minimise the risk . . . [Your house] is situated in a potential debris flow and inundation floodpath and . . . is unsafe to be occupied in times of heavy rain. As a consequence, you should vacate the building when heavy rain falls in the catchment or when a heavy rain warning has been released by the MetService for the Whakatane Coastal Area. A heavy rain warning is given when rainfall greater than 50 mm within six hours or 100 mm within 24 hours is forecast and the responsibility is on you to monitor weather conditions and take appropriate action.
>
> Any decision by you to occupy your property is one you take at your own risk. The lower risk approach endorsed by the Council is that reoccupation should not occur until the mitigation works are complete, and an assessment of future risk is made at that stage.

2.7 Concerned that such letters would be taken to indicate that the houses were safe to occupy, the territorial authority decided not to send the letters but to apply for this determination.

3 The Act

3.1 The relevant provisions of the Act are:

> **121 Meaning of dangerous building**
>
> (1) A building is dangerous for the purposes of this Act if,—

(a) in the ordinary course of events (excluding the occurrence of an earthquake), the building is likely to cause—

(i) injury or death (whether by collapse or otherwise) to any persons in it or to persons on other property; or

(ii) damage to other property; or . . .

124 Powers of territorial authorities in respect of dangerous, earthquake-prone, or insanitary buildings

(1) If a territorial authority is satisfied that a building is dangerous, earthquake prone, or insanitary, the territorial authority may—

(a) put up a hoarding or fence to prevent people from approaching the building nearer than is safe:

(b) attach in a prominent place on, or adjacent to, the building a notice that warns people not to approach the building:

(c) give written notice requiring work to be carried out on the building, within a time stated in the notice (which must not be less than 10 days after the notice is given under section 125), to—

(i) reduce or remove the danger; or

(ii) prevent the building from remaining insanitary.

(2) This section does not limit the powers of a territorial authority under this Part.

128 Prohibition on using dangerous, earthquake-prone, or insanitary building

(1) If a territorial authority has put up a hoarding or fence in relation to a building or attached a notice warning people not to approach a building under section 124(1), no person may—

(a) use or occupy the building; or

(b) permit another person to use or occupy the building. . . .

4 The submissions

4.1 The submissions from the territorial authority essentially described the situation with reference to the reports listed in 2.1 above, cited relevant provisions of the Act, and identified the territorial authority's uncertainty as to whether it should allow the owners to re-occupy their houses.

4.2 Separate submissions, one including a structural damage report, were made by three of the owners. Those submissions included criticisms of the territorial authority's actions and queried why some houses had been the subjects of notices under section 124 whilst others had not. On the view I take of the matter I do not need to discuss those submissions in this determination.

4.3 The Bay of Plenty Regional Council submitted that:

> . . . the current level of risk at the subject properties from dangerous discharge events is higher than is normally acceptable for dwellings in New Zealand.
>
> It is understood that [the territorial authority] does not expect to have final structural solutions in place before July 2008. Risk reduction could be achieved in the interim through a robust disaster warning and response system, although due to the rapid rainfall response characteristics of these catchments (it can be less than 1 hour from the onset of rain to peak discharge) and due to difficulties in accurately forecasting intense rain in this coastal location, such a warning system would likely require a regional weather radar installation. Any response system would by necessity be community based and involve recognised strengthened evacuation routes.

4.4 The Earthquake Commission did not wish to make formal submissions, but observed that:

(a) Section 121 referred to a building, not the location of a building. A building should not be declared dangerous simply because it was at risk of damage from natural disaster as distinct from being likely to cause injury or death. If only location were to be considered, a great many existing buildings throughout New Zealand could be declared to be dangerous. Sections 71 to 73 provided a regime for considering such issues in relation to applications for any building consents necessary for the repair of damaged buildings.

(b) The 2005 event was reported as a 1 in 500 year event and could not properly be considered to have occurred in "the ordinary course of events".

4.5 On the basis of the submissions mentioned above, I prepared this draft determination, which is being sent to those concerned under a covering letter to the effect that if they do not accept the draft (subject to non-controversial amendments) then it will be necessary to hold a formal hearing.

4.6 To date, five of the owners have accepted the draft and I do not consider it necessary to wait for responses from the others. The territorial authority accepted the draft subject to certain non-controversial amendments, which have been made. The Earthquake Commission acknowledged the draft but made no comment.

5 Discussion

5.1 General

5.1.1 This determination is essentially about whether the owners should continue to be prevented from occupying their houses. That would amount to a severe restriction of property rights. I take the view that such a restriction is justifiable only if the risk of injury or death for people living in the houses is so high that, in the public interest, the building owner cannot be allowed to take that risk (bearing in mind that not only the owners but also their families, and perhaps other people can also be expected to live in the houses). I take the view that the Act provides that the owners may be prevented from living in their houses only if the risk is as defined in section 121, namely that injury or death is likely in the ordinary cause of events.

5.1.2 Section 121 is concerned with buildings causing injury or death "whether by collapse or otherwise". The territorial authority has not suggested that any of the houses are currently unsafe or insanitary because of un-repaired damage arising from the 2005 event. I therefore take the view that in this case section 121 covers the following situations:

(a) The building lacks structural integrity, whether because of deficiencies in its construction, subsequent damage, or excessive imposed loadings from whatever source.

(b) The structure of the building remains intact but loses support from the ground, floating away in a flood for example.

(c) The building retains its structural integrity but people in it are put at risk because of factors associated with the site that do not affect the building itself, such as toxic fumes, radioactivity, and so on.

The above is not intended as an exhaustive list.

5.1.3 In this case, the situation is that the houses might be subjected to excessive loadings. In other words this determination is concerned with whether the houses are dangerous because there might be another debris flow, not with whether the houses are dangerous because of structural damage caused by the 2005 event.

5.1.4 As I understand the current situation, the 2005 event resulted in debris being deposited close to and upstream of the houses. If that debris, or fresh debris from further upstream, reaches a house it could cause excessive loadings. I understand, however, that the debris is not likely to move simply because there is water in the relevant flow path, there needs to be a significant amount of water, with consequential additional debris, before there is any cause for concern about structural damage to the houses. In other words, this determination is concerned with the situation resulting from:

(a) Further rain in the catchment being sufficiently intense to cause flooding, and

(b) That flooding being sufficiently severe to carry debris to reach the house, and

(c) That debris being heavy enough and moving fast enough to damage to the house, and

(d) That damage is such as to cause injury or death to people in the house who have not already escaped.

5.1.5 I read section 121 as providing that the houses are dangerous only if all of those conditions are likely to occur in the ordinary course of events. I must therefore consider the meanings to be given to the terms "likely" and "in the ordinary course of events".

5.2 "Likely"

5.2.1 The word "likely" in the context of section 64 of the Building Act 1991 ("the former Act"), now section 121, has been interpreted as follows:

> "likely" does not mean "probable", as that puts the test too high. On the other hand, a mere possibility is not enough. What is required is "a reasonable consequence or [something which] could well happen". Auckland CC v Weldon Properties Ltd 7/8/96, Judge Boshier, DC Auckland NP2627/95, [1996] DCR 635.

> I find that the words 'likely to cause injury or death' in [s 64(1)(a) of the former Act, now s 121(a)] mean that the reasonable probabilities are that the building will cause injury or death unless it gets timeous attention. *Rotorua DC v Rua Developments Lt*d 3/3/98, Judge McGuire, DC Rotorua NP966/97.

> 'Likely', as used in [s 64(1)(a) BA91, now s 121(a)], means that there is a reasonable probability (see *Dowling v South Canterbury Electric Power Board* [1966] NZLR 676, 678); or that having regard to the circumstances of the case it could well happen (see *Browne v Partridge* [1992] 1 NZLR 220, 226). *Rotorua DC v Rua Developments Ltd* 17/12/99, Judge McGuire, DC Rotorua NP1327/97

I take the view that those decisions are good law in respect of the word "likely" in section 121.

5.2.2 The Tonkin & Taylor "The Matata Debris Flows Preliminary Infrastructure and Planning Options Report" estimated a 200 to 500 year return period for the 2005 event. The Institute of Geological and Nuclear Sciences report "The 18 May 2005 debris flow disaster at Matata: Causes and mitigation suggestions" said that the rainfall that triggered the debris flows "equates to approximately a 500-year return period" event, but warned that "as there are little data on such extreme events, the actual recurrence interval for this intensity of rainfall could be less than 500 years". The report said:

> Debris flows are invariably structurally damaging to buildings they impact on, and not merely an inconvenience as inundation by floodwater often is. Hence, debris flows should be considered in the same context as structurally damaging hazards such as earthquakes [so that] the appropriate level of protection from debris flows is that of the debris flow of 10% probability in 50 years (which is usually rounded to an event of 500-year return period) . . .

I note that the 10% probability of occurring in 50 years comes from a compliance document for clause B1 of the Building Code. I do not accept that the probability of the design earthquake is necessarily the same as the probability of the design flood or debris flow. Be that as it may, the report also said:

> . . . there is not much likelihood in the immediate future for another debris flood as large of that of 18 May if the same high intensity storm were to recur. . . .

> Debris flows are likely to be significantly more frequent . . . for at least several decades . . . . They are unlikely to be as large as the recent events, because the sediment stored in the cannels has been significantly depleted . . . . Although there is less sediment available now, there is still enough for a major debris flow, should the appropriate meteorological circumstances arise. More extreme rainfall intensities than seen in [the 2005 event] may be required to trigger debris flows as large as [the 2005 event].

5.2.3 The territorial authority asked Tonkin & Taylor about the risk in "a 10-year weather event, and a 1-year weather event", and also asked for comment on "the type and probability of weather event that could [cause] injury or death". Tonkin & Taylor replied with brief comments on each of the houses, concluding:

> **Nature of risk**
>
> For events up to the 10 year return period, the nature of any overland flow will be inundation of the properties, unlikely to exceed 0.5 m depth of water and probably significantly less. Unless people are standing in the overland flow path, there will be no risk to life. Low-lying floor levels in affected properties will be at risk of inundation, but there is unlikely to be any structural risk for these events.
>
> **Catchment stability**
>
> Presently the catchments are relatively unstable with potential for further sediment to be transported downstream. This is already causing and will continue to cause problems for stream channel and culvert capacity due to silt deposition. This is likely to contribute to greater localised flooding in the short to medium term. For more significant storm events, the potential for debris flows is significant with significant areas of the town still vulnerable to risk for an event of similar magnitude to that in [the 2005 event].

5.2.4 I conclude that the houses are not likely to cause injury or death in a 10 year event but are likely to cause injury or death in an event of the order of a 500 year event. I cannot find any clear indication in the submissions as to the highest probability event (i.e. the event with the shortest return period) that is likely to result in injury or death.

5.2.5 The regional council, see 4.3 above, and the Institute of Geological and Nuclear Sciences, see 5.2.2 above, referred to the "acceptable" level of risk" and the "appropriate" level of protection. I take those references to relate to the probabilities of various loadings or eventualities, as specified in the Building Code and the compliance documents, that a building must be designed to resist. However, as I indicated in Determination 2006/77, the fact that a building does not comply with the Building Code does not necessarily mean that the building is dangerous or insanitary in terms of sections 121 and 123.

5.2.6 For example, although the Building Code (or the relevant compliance document) requires a new building to withstand the shaking caused by an approximately 500 year earthquake, section 122 and regulation 7 of the Building (Specified Systems, Change the Use, and Earthquake-prone Buildings) Regulations 2005 provide that an existing building is earthquake prone only if it will not resist shaking of the same duration but only one-third as strong.

5.2.7 A recent publication[1] about buildings that are earthquake-prone in terms of section 122 says:

> . . . some of the assumptions suggested for existing buildings are less stringent or different from those required for new buildings. This reflects the difference between the objective for an existing building of predicting the level at which a particular limit

[1] *Assessment and Improvement of the Structural Performance of Buildings in Earthquakes*, New Zealand Society for Earthquake Engineering, June 2006.

> state [loss of structural integrity] is likely to occur and the design objective for a new building of precluding a particular limit state from occurring. . . .
>
> . . . The threshold of one-third of the earthquake shaking represents about 20 times the risk of a new building.

I take that "20 times" to be an upper limit, and of course the probability of the design earthquake is not necessarily the same as the probability of the design flood or debris flow.

5.2.8 There is nothing in the legislation from which I can deduce the relationship between the risks (excluding earthquakes) that are great enough to make a building dangerous in terms of section 121 and those that are small enough to be acceptable for a new building. I do not consider that the "20 times greater" relationship for earthquake risks necessarily applies to other risks, but it does illustrate that there is a significant difference between the two risk thresholds.

5.2.9 However, I read the letter from Tonkin & Taylor quoted in 5.2.4 above as saying that further debris flow is likely to occur in a storm "of similar magnitude" to the 2005 event, which Tonkin & Taylor estimated as being a 200 to 500 year storm and the Institute of Geological and Nuclear Sciences estimated as being a 500 year storm, see 5.2.2 above. I recognise that there could well be a threshold sensitivity or asymptotic effect such that at some point the difference in intensity between storms with increasingly large return periods becomes insignificant. However, the fact remains that a 200 year storm has a higher probability of occurring than a 500 year storm so that the magnitude of any storm with a return period of less than 200 years can be assumed to be "significantly" less than the magnitude of the 2005 event.

5.2.10 Of course, the probability of occurrence of the storm is not the only relevant factor, see 5.1.5 above. However, setting aside all other relevant factors, I conclude that for the purposes of section 121, injury or death is "likely" in a storm with a return period of 500 years and might be "likely" (to play on the safe side) in a storm with a return period of 200 years. The question is whether some lesser storm, referred to below as "less than 200 year storm" is likely to be experienced in the ordinary course of events.

5.3 Does the ordinary course of events include a less than 200 year storm?

5.3.1 As to whether the "ordinary course of events" includes a less than 200 year storm, the term "ordinary course of events" has been interpreted to mean:

> . . . the usual gamut of climatic occurrences likely to be encountered in this country. The provision specifically excludes earthquakes, but it would include the range of temperature variations and different climatic conditions that are likely to be encountered in the course of a year. Such would include, for example, dry and wet spells, heavy downpours, winter storms, equinoctial gales, but it would exclude incidents not normally occurring such as, for example, 50 year floods and cyclones. *Rotorua DC v Rua Developments Ltd* 3/3/98, Judge McGuire, DC Rotorua NP966/97

In the subsequent *Rotorua DC v Rua Developments Ltd* 17/12/99, Judge McGuire, DC Rotorua NP1327/97, Judge McGuire added "local conditions", such as Rotorua's more than usually corrosive atmosphere, to that non-exclusive list of criteria.

5.3.2 The *Rua Development* cases were concerned with validating a warrant issued under section 70(1) of the former Act, now section 129, in respect of a building that was dangerous in an earthquake but did not come within the former Act's definition of an earthquake-prone building. The decision was to the effect that the cladding of the building (but not its structure) was "dangerous" in a high wind. Accordingly, I take the view that the implication that references to rainfall and flooding were made in passing and are not essential to the decision ("*obiter dictum"*). It follows that the cases do not establish, as a matter of law, that a "50 year flood" is outside "the ordinary course of events". Be that as it may, in the light of those cases I do not consider that a less than 200 year storm can be said to occur "in the ordinary course of events".

5.4 Conclusions

5.4.1 For the reasons set out above, I conclude that the houses are not dangerous in terms of section 121.

5.4.2 That being so, I conclude that the territorial authority should not require the houses to remain unoccupied.

5.5 Warning systems

5.5.1 The territorial authority referred to heavy rain warnings issued by MetService, see 2.6 above, and the regional council referred to the possibility of installing a local disaster warning and response system, see 4.3 above. Because I have set aside the effects of all relevant factors other than the probability of the relevant storm, see 5.2.10 above, I do not need to discuss the effects any such system except to observe that:

(a) Any such system can be expected to contribute to life safety; but

(b) As currently advised, I do not consider that I have jurisdiction to require anyone to introduce and maintain such a system, so that

(c) Any such installations need to be considered as part of civil emergency planning.

6 Decision

6.1 In accordance with section 20 of the Act, I hereby:

(a) Determine that the houses are not dangerous in terms of section 121.

(b) Reverse the territorial authority's decision not to remove the section 124 notices.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 7 December 2006.

John Gardiner
Determinations Manager