

Determination 2024/028

Regarding the issue of a dangerous and affected building notice for a dwelling

311 Lakes Boulevard, Pyes Pa, Tauranga

Summary

This determination considers an authority's decision to issue a dangerous and affected building notice for a dwelling. The determination considers whether the identified 'defects' meant the dwelling was a dangerous or affected building at the time the notice was issued. This decision takes into account all the information that is now available.



South-west view of 311 Lakes Boulevard



In this determination, unless otherwise stated, references to "sections" are to sections of the Building Act 2004 ("the Act") and references to "clauses" are to clauses in Schedule 1 ("the Building Code") of the Building Regulations 1992.

The Act and the Building Code are available at www.legislation.govt.nz. Information about the legislation, as well as past determinations, compliance documents (eg, Acceptable Solutions) and guidance issued by the Ministry, is available at www.building.govt.nz.

1. The matter to be determined

- 1.1. This is a determination made under due authorisation by me, Peta Hird, Principal Advisor, Ministry of Business, Innovation and Employment ("the Ministry"), for and on behalf of the Chief Executive of the Ministry.¹
- 1.2. The parties to the determination are:
 - 1.2.1. D Cancian, the Licenced Building Practitioner concerned with the relevant building work, who applied for the determination ("the applicant")²
 - 1.2.2. Tauranga City Council, carrying out its duties as a territorial authority ("the authority").
- 1.3. I consider the following are persons with an interest in this determination:
 - 1.3.1. BCD Group Limited, an engineering consultancy company that provided specialist geotechnical and structural engineering advice to the authority ("Engineer 1").
 - 1.3.2. J and D Coffey, the previous owners of 311 Lakes Boulevard and the recipients of the dangerous and affected building notice issued by the authority ("the previous owners").³
- 1.4. This determination arises from the authority's decision to issue a dangerous and affected building notice on 16 April 2018 under section 124 ("the notice") regarding a dwelling at 311 Lakes Boulevard, Pyes Pa, Tauranga.⁴

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¹ The Building Act 2004, section 185(1)(a) provides the Chief Executive of the Ministry with the power to make determinations.

² The applicant was also the sole director of Bella Vista Homes Limited which established the Bella Vista subdivision where the dwelling was located.

³ I am of the view the previous owners are not a party to the determination because they no longer have an interest in the property and are not affected by the determination. Ordinarily the owners and recipients of the notice would be a party to the determination in accordance with section 176(c). However, in this case, Tauranga City Council agreed a settlement to purchase the property in November 2018 and was the owner when the application for determination was accepted by the Ministry.

⁴ On the same day, the authority also issued similar dangerous and/or affected building notices for 20 other dwellings at the Bella Vista subdivision.

1.5. In late 2018 to early 2019, Tauranga City Council acquired the dwelling at 311 Lakes Boulevard as well as others in the Bella Vista subdivision as part of a settlement arrangement. The Council's status as the owner is distinct from its status as a territorial authority. In this determination, references to "the authority" relate only to its duties and responsibilities as a territorial authority, not as the owner of the dwelling.

The matter to be determined

- 1.6. The matter to be determined, under section 177(1)(b) and 177(3)(f), is the authority's decision to issue the notice for the dwelling at 311 Lakes Boulevard.
- 1.7. In deciding this matter, I have considered whether the dwelling was a dangerous and affected building as defined in sections 121 and 121A for the reasons given in the notice. I have also considered reasons identified in a report prepared by Engineer 1 dated 12 April 2018 before the notice was issued (including the addendum dated 14 April 2018), and subsequent reports dated 10 June 2019 and 24 March 2020.
- 1.8. The notice stated 311 Lakes Boulevard was an "affected building" because the authority considered that there were dangerous buildings adjacent to or nearby. However, the notice did not indicate which dangerous buildings the authority considered were "adjacent to or nearby". For the purpose of this determination, I have considered the buildings at 309 Lakes Boulevard, 309A Lakes Boulevard and 311A Lakes Boulevard, but only regarding the risk of the roofs of these dwellings lifting "in gale force winds" as referred to in part 8 of the notice.⁵

Related matters

- 1.9. On 12 January 2024, the Ministry issued a determination 2024/001 regarding a dangerous and affected building notice issued for a nearby dwelling at 307 Lakes Boulevard. There are related matters and background information that are common to this determination, and I have chosen not to repeat them. These include the following which are intended to be read in conjunction with this determination:
 - 1.9.1. The role of the determination., paragraphs 1.13 to 1.18 inclusive.⁷
 - 1.9.2. Precautionary principle, paragraphs 1.19 to 1.27 inclusive.
 - 1.9.3. The Bella Vista subdivision, paragraphs 2.1 to 2.7 inclusive.

⁵ The inclusion of these three adjacent or nearby dwellings, ie those that were immediately adjacent to 311 Lakes Boulevard, is based on legal advice the authority received on 16 April 2018.

⁶ Determination 2024/001 Regarding the issue of a dangerous and affected building notice for a residential dwelling 307 Lakes Boulevard, Pyes Pa, Tauranga.

⁷ The paragraph numbers listed are to be found in determination 2024/001.

- 1.9.4. The issue of a warrant by the authority on 9 March 2018, paragraphs 3.13 and 3.14.
- 1.9.5. The Heath Report, 8 paragraph 3.41, including Appendix B table 2.

The process for this determination

- 1.10. In this case, I am considering a number of matters raised in the notice and associated structural engineering reports, as well as issues introduced by the authority (including Engineer 1 as the authority's consulting engineer) after the notice was issued.
- 1.11. Due to the volume, I have addressed these in detail in a separate document provided to the parties and persons with an interest. That document summarises each of the issues, the associated building consent application information, any asbuilt construction information, submissions from the parties, advice provided by engineers engaged by the Ministry ("the expert"), and sets out my analysis and conclusion for each. A summary is included in this determination in paragraphs 6.18.1 to 6.18.18 and 6.37 to 6.40.

Issues outside this determination

- 1.12. The matter for determination does not include:
 - 1.12.1. the authority's decisions to grant and issue the building consent for 311 Lakes Boulevard or the building consents for 309, 309A, and 311A Lakes Boulevard.
 - 1.12.2. the authority's decision to issue the code compliance certificate for 311 Lakes Boulevard.
 - 1.12.3. whether the building work to construct 311 Lakes Boulevard, or the other three adjacent dwellings, was in accordance with the relevant building consents, or the Building Code. The test under section 121 for assessing if a building is dangerous is not dependant on whether the building work has been carried out in accordance with a building consent or if it complies with the Building Code.¹⁰
 - 1.12.4. whether the work suggested by the authority in part 6 of the notice, to reduce or remove the danger pursuant to section 124(2)(c)(i), was

⁸ Investigation and review: The Tauranga City Council's involvement with 21 properties in the Bella Vista subdivision, Report of Hon P Heath QC, 1 June 2018, available at www.tauranga.govt.nz.

⁹ The Ministry engaged the services of a firm of chartered professional engineers with structural and geotechnical expertise ("the expert") to carry out a review of the available information, conduct a site inspection, and provide their opinion on whether 311 Lakes Boulevard was dangerous and affected.

¹⁰ I note an objective of the Building Code (as it relates to Clause B1 Structure) does include the provision to "safeguard people from injury caused by structural failure", as well the protection of "other property from physical damage caused by structural failure". Refer clauses B1.1(1) and B1.1(c) respectively.

- appropriate, nor the time frame stated in part 5 of the notice for the work to be completed.
- 1.12.5. Part 7 of the notice, where the previous owners were instructed not to use or occupy the dwelling until the danger had been reduced or removed.
- 1.13. The authority has provided to the Ministry several specialist geotechnical engineering reports that consider issues related to the Bella Vista subdivision and individual Lots. However, the notice did not refer to any geotechnical matters associated with 311 Lakes Boulevard.¹¹

2. The building work

- 2.1. The dwelling, which has now been demolished,¹² was located at 311 Lakes Boulevard ("the property") in the Bella Vista subdivision ("the subdivision"), Pyes Pa, Tauranga. The subdivision included 16 dwellings on Lakes Boulevard (eight with road frontages and eight on rear sections) and five dwellings on higher ground at Aneta Way (refer to figure 1).
- 2.2. The design and construction of the two-storey dwelling at 311 Lakes Boulevard was similar to the other buildings in the subdivision. At ground floor level the dwelling incorporated the main entrance, double garage and laundry space, internal stair access to the first floor, and some storage areas. The first floor included three bedrooms, bathroom, ensuite, and a combined kitchen/lounge/dining space.
- 2.3. The structural design of the dwelling relied primarily on New Zealand Standard NZS 3604:2011 Timber-framed buildings ("NZS 3604") but incorporated some specific engineering designed (SED) building elements prepared by a structural Chartered Professional Engineer. For example, reinforced concrete blockwork walls at ground level to the north and east sides of the dwelling, and some structural steelwork such as beams, columns, and a portal frame.¹³

¹¹ A letter sent to the authority by Engineer 1 dated 19 November 2019 confirms a geotechnical report dated 11 June 2019 (which cross references other reports prepared by different specialist geotechnical engineers) was for the purpose of assessing compliance with the Building Code. None of the subject matters raised in the report by Engineer 1 (eg bearing capacity requirements) were repeated in the notice, and at paragraph 10.1 of the report it states, "In the absence of independent testing at 311 Lakes Boulevard [Engineer 1 had] not formed an opinion on the strength of the soils at the site".

¹² Based on a news article on the authority's website titled "First Bella Vista homes being salvaged and removed" dated 11 March 2019 (available at www.tauranga.govt.nz), it appears the "upper portion" of 16 dwellings at the subdivision (including 311 Lakes Boulevard) were to be "removed by winter" (I have assumed of 2019) and relocated elsewhere for sale.

¹³ The SED building elements specified by the Chartered Professional Engineer were supported by a Producer Statement – Design (PS1), design features report, structural calculations, sketches, and stamped plans (the stamped plans were prepared separately by a Licenced Building Practitioner (design)).



Figure 1: Location of the property within the subdivision (before the dwellings were removed or demolished)

2.4. The design for the roof construction relied on prefabricated timber roof trusses supported by a Producer Statement – Design (PS1), fabricator design statement dated 26 May 2016, and a plan dated 20 April 2016, all prepared by the truss manufacturer. The design was based on a 'very high' wind speed of 50 metres per second.¹⁴

3. Background

Events leading to the issue of the notice

- 3.1. On 19 April 2016, the owner (using the services of an agent) applied to the authority for a building consent for 311 Lakes Boulevard. The application form referred to compliance with the Building Code Clause B1 Structure based on Acceptable Solution B1/AS1,¹⁵ NZS 3604, and "other".¹⁶
- 3.2. On 9 June 2016, the authority granted and issued the building consent for 311 Lakes Boulevard.
- 3.3. Between August 2016 and December 2016, the authority conducted a number of inspections at the property as the dwelling was being constructed.

¹⁴ Refer to NZS 3604:2011, Section 5 "Bracing design", table 5.4 "Determination of wind zone".

¹⁵ Acceptable Solution B1/AS1 (first edition, amendment 12, effective 14 February 2014 to 31 May 2016).

¹⁶ I have assumed "other" included the SED building elements specified by the Chartered Professional Engineer.

- 3.4. On 28 April 2017, the authority issued a code compliance certificate for 311 Lakes Boulevard.
- 3.5. On 10 April 2018, Engineer 1 undertook "destructive testing" at 311 Lakes Boulevard. This involved coring several holes through internal wall linings to observe some of the structural building elements in the wall (eg bottom plate and lintels). The resulting report dated 12 April 2018 provided to the authority, identified seven issues, namely: roof bracing at the vertical step between the two split roof planes, a bottom plate fixing under load bearing wall, fixing of timber packers to steel beam over garage, fixing from top plate to masonry block wall, fixing between floor joists to top plate.¹⁷ The report concluded:

The reason for classifying 311 Lakes Boulevard as a 'dangerous' building is due to the lack of bolts connecting the timber floors and associated packers to the structural steelwork.

- 3.6. Also on 12 April 2018, a building consultant ("the building consultant") engaged by the authority provided a "Building Compliance Report". This report does not refer to the possibility of 311 Lakes Boulevard being dangerous, and it appears it was commissioned for another purpose. Regardless, some information in the report (including photographs) provided useful context to some of the issues raised by Engineer 1, and for that reason I have taken it into consideration.
- 3.7. On 14 April 2018, Engineer 1 provided an addendum report to the authority titled "Bella Vista Subdivision Storm Weather Event". The report does not refer to any particular dwelling(s), such as 311 Lakes Boulevard, rather it refers generally to the "Bella Vista dwellings". Regardless, the report stated (in summary):
 - 3.7.1. A common structural defect was that lintel and wall bottom plate connections had not been installed in accordance with NZS 3604.¹⁸
 - 3.7.2. These dwellings were therefore at risk of damage during high winds if the roof separated from the supporting walls due to a lack of fixings.
 - 3.7.3. AS/NZS 1170 requires an importance level 2 structure with a design life of 50 years to be designed for a 1 in 500-year wind event. 19
 - 3.7.4. The dwellings would be damaged in winds that would be expected to occur on a yearly basis.

¹⁷ Engineer 1 observed lintel uplift fixings and joist hangers supporting the floor joists over the garage in 311 Lakes Boulevard, despite these being a recognised issue in other buildings in the subdivision.

¹⁸ Engineer 1 did not refer to or infer any issues with the structural connections between the roof trusses and the top plate, or the top plate to the supporting first-floor timber wall framing.

¹⁹ I have taken the reference to AS/NZ 1170 to be AS/NZS 1170.0:2002 *Structural design actions Part 0: General principles"*, Table 3.3 "Annual probability of exceedance" based on a 50-year design working life for an importance level 2 building, for wind loading.

- 3.7.5. Based on calculations, the gust wind speed will be approximately 30.9 metres per second.
- 3.7.6. The gale wind event uplift pressure on the roof exceeds the downward weight of the roof.²⁰
- 3.7.7. Under gale force wind events there is a significant risk roofs on the Bella Vista dwellings could lift as lintel and wall bottom plate connections had not been installed in accordance with NZS 3604, therefore making these dwellings dangerous.

The notice

- 3.8. On 16 April 2018, the authority issued the notice to the previous owners under section 124. Under the title "Dangerous building", the notice referred to the reports from Engineer 1 dated 12 April 2018 and 14 April 2018, and stated (in summary):
 - 3.8.1. The dwelling lacked bolts connecting the timber floors and associated packers to the structural steelwork.
 - 3.8.2. There is no reliable load path for the floor gravity loads to transfer from the floor joists to the steel beams and then out to the walls and foundations.
 - 3.8.3. The basement blockwork walls of other dwellings in the subdivision had been constructed to a height greater than the permissible levels outlined in NZS 3604 and were at risk of failure under everyday static soil pressure loads. It was a "reasonable assumption...that the basement blockwork defect [exists] in this building".
- 3.9. Under the title "Reduce or remove the danger" the notice required building work to be carried out within six months. The notice listed some "suggested...work [to] be carried out", and I have included this work when considering whether the building was dangerous without that work being carried out. The work listed by the authority was:
 - 3.9.1. Remove lining from walls and ceilings "to quantify the full extent of the missing timber and steel fixings".
 - 3.9.2. Install "an approved propriety cross brace" in the vertical plane where the split in the two roof planes occurs.
 - 3.9.3. Install missing timber bottom plate fixings at ground and first-floor levels.
 - 3.9.4. Install bolts along the length of all steel beams and columns to connect the timber packing to the structural steel.

²⁰ It is not clear whether Engineer 1 included the roof purlins when calculating "the weight of the dwelling roof structure".

- 3.9.5. Install missing brackets fixing the floor joists to the timber top plate.²¹
- 3.10. Under the title "Affected building", the notice stated that there were dangerous buildings "adjacent to or nearby" 311 Lakes Boulevard, which meant this dwelling was affected. The notice identified "a risk that the roofs of adjacent or nearby buildings will lift in gale force winds...".
- 3.11. Similar dangerous and affected building notices were issued on 16 April 2018 to other buildings in the development, including 309, 309A, and 311A Lakes Boulevard (ie those immediately adjacent to 311 Lakes Boulevard).

Additional information

- 3.12. The authority received additional information regarding 311 Lakes Boulevard after the notice was issued.
- 3.13. On 20 April 2018, Engineer 1 sent an email to the authority titled "Bella Vista Buildings Wind Direction Multiplier Explanation...". Engineer 1 referred to its addendum report dated 14 April 2018 regarding the risk of the buildings in the subdivision being damaged during a gale wind event (that "can be expected to occur from any of the cardinal directions") uplifting the roofs from buildings with inadequate connections between the roof and the first floor.
- 3.14. Other additional information received by the authority is summarized as follows (the list is not intended to be exhaustive):
 - 3.14.1. Report from Engineer 1 dated 10 June 2019 regarding structural defects at 311 Lakes Boulevard.²²
 - 3.14.2. Report from Engineer 1 dated 11 June 2019 regarding "Geotechnical and Civil Defects". I include this report because the appendices contained asbuilt land survey information applicable to 311 Lakes Boulevard that is relevant to the performance of the blockwall.²³
 - 3.14.3. Report from the building consultant dated June 2019, including associated photographs.
 - 3.14.4. Report from Engineer 1 dated 19 November 2019 (prepared in response to the expert's report dated 16 October 2019).

²¹ The notice simply referred to missing "CPC40 brackets" without identifying the location. However, based on Engineer 1's report of 12 April 2018, I understand this reference to be to fixing the floor joists to the timber top plate.

²² The same report also referred 307 Lakes Boulevard, which was the subject of Determination 2024/001.

²³ Appendix H of the report contains relevant survey plans dated 17 and 18 April 2018. I have not been provided with copies of the cross sections 16A to 16F inclusive that are referenced on the survey plan dated 17 April 2018.

4. Submissions

4.1. I have carefully considered the submissions on the technical aspects of each issue raised but due to the volume I have not summarised those here. The parties more general comments about the notice are set out below.

The applicant

- 4.2. In summary, the applicant is of the view that the dwelling at 311 Lakes Boulevard was not dangerous or affected and the basis on which the authority's decision was made needs to be robustly tested. The application also believes the authority's decision to issue the notice is "questionable" since "the upper building structure is now apparently...suitable for relocation".
- 4.3. The applicant generally agreed with the expert's report of 16 October 2019, except for statements about the fixing of the floor sheeting and the blockwork wall.
- 4.4. In response to a draft determination,²⁴ the applicant commented on the alleged building defects, un-retained soil height, and forecasts of an ex-tropical cyclone.

The authority

- 4.5. The authority made several submissions regarding the determination process and the scope of information they consider relevant to this decision (refer also paragraph 1.9).
- 4.6. In regard to the decision to issue the notice, the authority is of the view (in summary):
 - 4.6.1. The dwelling at 311 Lakes Boulevard was a dangerous and affected building, and it was reasonable for the authority to consider the specialist engineering advice it had received to help inform its decision to issue the notice when it did.
 - 4.6.2. It was reasonable to assume "the same structural issues" existed at 311 Lakes Boulevard as other dwellings which had undergone more invasive investigations²⁵ since all the dwellings had "been constructed by the same tradesmen, at the same time with similar designs and materials". In reaching this view, the authority's legal advisor referred to *Three Meade Street Limited and Anor v Rotorua District Council and Ors*.²⁶

²⁴ A draft determination was issued to the parties for comment on 18 February 2020.

²⁵ In this case, the dwellings at 303A, 305 and 309A Lakes Boulevard as stated in a report from Engineer 1 to the authority dated 9 March 2018.

²⁶ HC AK M37/02 [11 June 2004].

- 4.6.3. The focus under section 124 of the Act is whether a territorial authority is satisfied that a building is dangerous, and the determination "should be based only on the information that was available to the [authority] at the time the decision was made" not expert evidence obtained after the fact.
- 4.7. In a response to a draft determination, the authority advised the reasons it did not accept the findings. These included (but were not limited to) the process followed in the determination, the context behind the issue of the notice and its content, and that it was reasonable to make assumptions about the defects in 311 Lakes Boulevard based on defects that existed in other buildings in the development constructed by the same builder/developer using the same materials and methodology etc.

Engineer 1

- 4.8. Engineer 1 provided a number of reports and other correspondence, both to the authority and Ministry, on the matter to be determined. The majority were focused on the technical issues raised, including in response to the expert's report.²⁷
- 4.9. Engineer 1 is of the view (in summary):
 - 4.9.1. The structural reports identified significant issues with 311 Lakes Boulevard which resulted in the dwelling being dangerous. This was further informed by additional inspections Engineer 1 conducted on 11 April 2019 and 3 May 2019 while the demolition of the dwelling was being undertaken by contractors engaged by the authority.
 - 4.9.2. The significant structural defects "typically related to the transfer of lateral wind and seismic forces²⁸ from the upper level of ... [311 Lakes Boulevard] ... to the supporting ground floor walls and foundations".
 - 4.9.3. In response to the expert's report dated 16 October 2019, Engineer 1 submitted several of the structural defects listed in their report dated 4 June 2019²⁹ "should be considered cumulatively as the majority of the structural defects identified ... are part of the critical load path mechanism transferring lateral wind loads from the upper level to the foundations". The defects referred to were (with numbering from the report):
 - 1. Fixing of first floor flooring sheets
 - 2. Cut in top plate adjacent to garage beam support column

²⁷ The reports and correspondence from Engineer 1 included (but were not limited to) those dated 12 April 2018, 14 April 2018, 10 June 2019, 19 November 2019, 24 March 2020, 2 April 2020, and 4 April 2020.

²⁸ Although Engineer 1 referred to "seismic forces" these are excluded under section 121.

²⁹ I have not received a report authored by Engineer 1 dated 4 June 2019. I take this reference to be to the report dated 10 June 2019, noting that the site inspection and photos included in that report were dated 4 June 2019.

- 3. Lack of blocking between joists under first floor bracing wall on Grid B
- 4. Absence of hold down bracket and incorrectly installed bracket for bracing element on Grid Q
- 5. Lack of a continuous length of solid blocking to joists at east block wall
- 6. Braced wall panel O1 top plate not connected to underside of first floor

...

- 8. Roof plane bracing cranked over end purlins then down to top plate.
- 4.9.4. The "dwelling in its pre-demolition state was obviously not safe to be occupied and would have required major and very intrusive structural repairs before the dwelling would have been safe to occupy".
- 4.10. On 24 March 2020, in response to a draft determination, Engineer 1 maintained the dwelling was dangerous because of "multiple critical structural defects". They introduced a new issue (which I have considered) regarding the welded extension to the garage opening parallel flange channel (PFC) steel portal frame and provided associated structural calculations as well as other structural calculations regarding the ground level concrete block walls.³⁰

The previous owners

4.11. On 6 February 2024, the previous owners confirmed they did not wish to make a submission.

5. Expert's report

- 5.1. The Ministry engaged the services of a firm of chartered professional engineers with structural and geotechnical expertise ("the expert") to carry out a review of the available information, visit the site, and provide their opinion on whether 311 Lakes Boulevard was dangerous and affected.
- 5.2. The expert provided a report to the Ministry dated 16 October 2019 and an addendum dated 10 December 2019. The expert was engaged again to consider new issues raised, and provided another report dated 18 May 2020.
- 5.3. In summary, the expert was of the view:
 - 5.3.1. They had "not identified any issue, stated or otherwise, that would lead [the expert] to believe that the building is dangerous and/or affected".
 - 5.3.2. The "combination of defects, particularly with respect to the bracing system and retaining walls, will significantly reduce the capacity and robustness of the building to withstand extreme weather events".

³⁰ Some reports refer to the ground level as the 'basement'.

- 5.3.3. The notice did "not meet the test for dangerous under section 121".
- 5.3.4. They had received no evidence of the absence of connections between the roofs of adjacent buildings "that would lead to the roof lifting off in "gale force winds"". Therefore, the test under section 121A has not been met.
- 5.3.5. They had considered the structural defects identified in the report from Engineer 1 dated 10 June 2019, "both separately and combined" and concluded they did "not consider the combination of items 1 [to] 8 likely to cause collapse under the ordinary course of events". However, the expert concluded the "robustness of the property is significantly reduced".
- 5.3.6. They noted the "inspections and assessments done prior to the issue of the dangerous notice were carried out in good faith with limited invasive investigations".
- 5.3.7. The authority had "interpreted the engineering advice given to them correctly on the Notice".

6. Discussion

- 6.1. The determination arises from the authority's decision to issue the notice for the dwelling at 311 Lakes Boulevard on 16 April 2018. The decision by the authority was informed by structural engineering advice it had received from Engineer 1.
- 6.2. The matter to be determined is the authority's decision to issue the notice. In deciding this matter, I have considered whether the dwelling was a dangerous and / or affected building as defined in sections 121 and 121A for the reasons given in the notice, as well as the other reasons identified in separate reports prepared by Engineer 1.31

The legislation

- 6.3. One purpose of the Act is to provide for the regulation of building work to ensure that people who use buildings can do so safely.³²
- 6.4. One of the principles to be applied in exercising a power of decision under the Act is the need to provide for the protection of other property from physical damage resulting from the construction, use, and demolition of a building.³³

³¹ Engineer 1's report dated 12 April 2018, the addendum dated 14 April, and reports dated 10 June 2019, and 24 March 2020

³² Section 3(a)(i).

³³ Section 4(2)(j).

6.5. The Act defines a dangerous building as:

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^[34]; or
 - (ii) damage to other property

...

- 6.6. There are various modes of structural failure that can result in a building being dangerous under this definition, including if the building lacks structural integrity whether because of deficiencies in its construction, subsequent damage, excessive imposed loadings, or whilst the structure of the building remains intact it loses support from the ground.³⁵
- 6.7. The courts have considered the definition of a dangerous building in section 64 of the Building Act 1991. I am of the view the following apply equally to the definition in section 121 of the current Act.
- 6.8. The term "likely" as it relates to a dangerous building in section 64 of the Building Act 1991 was considered by the District Court in *Wheldon (1996):*³⁶
 - ... context is highly relevant to the particular test applied. It must, in my view, depend on the statutory scheme under consideration and what appears to be the desired consequence. In my view, s 64 does not import a test in "likely" akin to probability. That I think puts the test too high. Nor is a mere possibility enough. What is alleged must be "a reasonable consequence" or "could well happen". The test is no higher than that.
- 6.9. The phrase "in the ordinary course of events", was interpreted by the District Court $("Rua\ (1998)")^{37}$ as meaning:

³⁴ Section 7 defines "other property" to mean any land or buildings, or part of any land or buildings, that are (i) not held under the same allotment; or (ii) not held under the same ownership.

³⁵ The provisions of the Act relating to dangerous buildings that refer to a 'building' can also apply to a *part* of a building. This was considered in Determination 2012/043: "Whether the special provisions for dangerous, earthquake-prone, and insanitary buildings in Subpart 6 of the Building Act that refer to a building can also be applied to a part of a building" (dated 7 June 2012).

³⁶ Auckland City Council v Weldon Properties Ltd, 1996 DCR 635 (DC) (upheld on appeal in Weldon Properties Ltd V Auckland City Council HC Auckland HC26/97, 21 August 1997).

³⁷ Rotorua District Council v Rua Developments Ltd, 3 March 1998, McGuire J, DC Rotorua NP966/97 ["Rua (1998)"]. I note a subsequent judgment added "local conditions", such as Rotorua's more than usually corrosive atmosphere, to that non-exclusive list of criteria (refer to Rotorua District Council v Rua Developments Ltd, 17 December 1999, McGuire J, DC Rotorua NP1327/97 ["Rua (1999)"]).

... 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.

6.10. The phrase "likely to cause injury or death", was considered in Rua (1998) to mean:

...that the reasonable probabilities are that the building will cause injury or death unless it gets timeous attention.

6.11. In Rua (1999), "likely" was subsequently held to mean:

... that there is a reasonable probability;^[38] or that having regard to the circumstances of the case it could well happen

6.12. The Act defines an affected building as:

121A Meaning of affected building

A building is an affected building for the purposes of this Act if it is adjacent to, adjoining, or nearby—

(a) a dangerous building as defined in section 121

...

- 6.13. It is evident that for a building to be affected there must be at least one adjacent, adjoining, or nearby building that is dangerous. Further, it only requires proximity to a dangerous building for a building to be affected.
- 6.14. If a territorial authority is satisfied that a building in its district is dangerous or affected, it has various powers available to it under section 124. These powers include, but are not limited to, issuing a notice restricting entry to that building for particular purposes, and in the case of a dangerous building requiring work to be carried out to reduce or remove the danger.³⁹
- 6.15. For clarity, I note that an authority's assessment of whether a building is dangerous or affected is not the same as a rapid building assessment. Rapid building assessments are carried out when a state of emergency or designation is in place (such as following a major earthquake or flood) and are a brief assessment to ensure the safety of building occupants and the public.

³⁸ With reference to *Dowling v South Canterbury Electric Power Board* [1996] NZLR 676 (NZSC) 678.

³⁹ Section 124(2)(d) and (2)(c)(i).

Whether the building was dangerous

6.16. In deciding whether the building at 311 Lakes Boulevard was a dangerous building, I have considered individually each of the matters raised by the authority and Engineer 1. I have also considered the cumulative or collective effect of some of the matters.

Assessment of the individual matters

- 6.17. In this case, the individual matters raised by the authority and Engineer 1 have been taken from the following documents:
 - 6.17.1. The report from Engineer 1 dated 12 April 2018. The report identified five issues requiring building work to reduce or remove the danger.
 - 6.17.2. The notice issued by the authority dated 16 April 2018. In particular, which concern the lack of bolts connecting the timber floors and associated packers to the structural steelwork (particulars 3a. and b. of the notice), and the ground level blockwork walls (3c. of the notice).
 - 6.17.3. The report from Engineer 1 dated 10 June 2019 regarding eight structural defects.
 - 6.17.4. The report from Engineer 1 dated 24 March 2020 regarding the structural sufficiency of the parallel flange channel (PFC) portal frame across the opening to the ground level garage.
- 6.18. I have considered whether any of the individual matters (listed below) would result in the building (or part of the building) being dangerous. I have provided the parties and persons with an interest with detailed analysis that sets out the reasons for my decision on each. In summary, I have concluded that none of the following issues alone made the building dangerous:

Vertical roof bracing

- 6.18.1. The roof design did not include a requirement for additional bracing at the vertical step. Engineer 1's report observed there was no such bracing but did not comment on the performance of the roof in this regard.
- 6.18.2. Considering the specific engineering roof design and construction details, the girder trusses, the truss fixings, and the diaphragm action of the roof cladding and purlins, would help distribute the loads to the supporting walls and reduce the effects of racking.

Bottom plate fixings

6.18.3. There is evidence some bottom plate fixings had been installed at ground and first floor levels, and it is not clear what quantity may have been

'missing'. There is insufficient evidence to support a conclusion that lack of fixings would have affected the continuity of load paths or prevention of uplift.

Lack of bolt connections

6.18.4. There is evidence some bolts had been installed to secure the timber packers to the webs of the beams, connecting the timber floors to the steelwork. In my opinion, given some bolts were installed it is unlikely the first floor would have detached from the steel beams.

Floor joist fixings – east elevation blockwork wall

6.18.5. The possible effects from lack of floor joist fixings would have been reduced by the combined effect of the boundary joists, floor sheeting, timber blocking and ceiling battens, and the notched top plate. These together would have minimized the lateral movement of the floor joists.

<u>Floor joist fixings – garage PFC</u>

6.18.6. The effects of horizontal loading would have been reduced by the combined effect of the connection of the floor joists to the timber packing bolted to the universal beam, the ceiling battens fixed to the external soffit (lounge dining), the diaphragm action of the floor sheeting fixed to the top of the joists, and the timber blocking between some joists in close proximity to the PFC and east of the PFC. This, combined with loads imposed downward, would have minimized the lateral movement of the joists.

Blockwork walls

6.18.7. Based on the presence of both the subsoil drainage coil and a quantity of drainage metal, I am of the view there was a means in place to reduce the effects of some hydrostatic pressure on the blockwork walls. In addition, the retained height of soil was less than that relied on by Engineer 1 in calculating the vertical flexural (bending) capacity, including as a result of the sloping nature of the finished ground level across both elevations, and the concrete finish in the ground floor storage space.

Fixing of first-floor diaphragm

6.18.8. There was evidence of perimeter fixings installed at approximately 150mm centres (or less) and others at greater than 150mm. The fixings in the orthogonal direction were governed by the floor joists at 450mm centres, and the manufacturer did not require additional nogs in those locations due to the tongue and groove product used. In addition, photographs suggest an adhesive product was used between the top surfaces of the floor joists and the floor sheets.

<u>Ground floor – top plate cut</u>

6.18.9. Though the inward facing boundary joist was cut or notched, the outward facing joist was continuous. In addition, the double top plates were connected to the outward facing joist, the floor sheeting fixed to boundary joists and floor joists is able to act as a collector element, there was a continuous bottom plate at first-floor level direction above the south end of the universal beam ("UB"), and there was cross bracing fixed on the external side of the timber framing adjacent to the west side of the vertical SHS. Together, these items would have assisted in distributing any applied loads along the line of the external wall.

First floor bracing wall on Grid B

- 6.18.10. NZS 3604 does not require blocking or nogs to be installed under internal first-floor braced walls where they are set out at right-angles to the line of the supporting first-floor joists below, nor is this a requirement of B1/AS1.
- 6.18.11. The diaphragm floor action, and the compressive strength in the flooring sheets and the floor joists (individually and collectively) under the braced wall, would contribute to distribution of some load.

Bracing panel on Grid Q - hold down bolt

6.18.12. Even with a reduction in bracing capacity due to a hold down bracket being installed in-board from the end of the bracing element, the bracing capacity achieved for wind loading along bracing line Q (ie across the dwelling) exceeded the bracing demand.

Solid blocking between floor joists

6.18.13. Some timber blocking was installed along the line of the blockwork wall, though at varying centre-to-centre spacing rather than a 1.8m continuous length. However, the cantilevered floor joists were also fixed at the ends to two boundary joists which would provide lateral support. There was also additional restraint offered by the diaphragm first-floor construction as well as the timber ceiling battens below.

Wall brace element O1 – top plate not connected to adjoining floor joists

6.18.14. The top plate of the wall not being directly connected to the first-floor joists affects the bracing element O1, the east-west external wall of the garage, and the even distribution of bracing for the ground floor. Although overall bracing capacity would be reduced, bracing capacity across the dwelling was still greater than demand.

Steel post supporting stone veneer column

6.18.15. The issue is one of durability of the steel post. However, even in the event this was to fail, collapse of the structure at first-floor level and above would not result without similar failure of an adjacent steel post and the UB beam across the garage and main entry.

Roof plane diagonal bracing

- 6.18.16. The roof plane diagonal bracing installed over the top of the roof purlins was in accordance with the manufacturer's details.
- 6.18.17. The design and construction details, such as the roof purlins fixed to the top chords of the trusses and the connections of the trusses to the top plate, as well as the ability of the roof cladding to provide an alternative load path, and the additional timber block to the underside of the end purlin to reduce the loading, together would have assisted in distributing any applied loads to the external walls and reduce the effects of racking.

Welding of garage PFC

- 6.18.18. The extension welding does not accord with the original design intent, and although I have received conflicting information about the demand loads and structural capacity, it is clear the steel portal frame as built has reduced capacity. I note that additional timber studs and bottom plates to support (in part) the ends of the horizontal section of the PFC would have contributed towards distributing some loads in the event the welding was found to be partially defective.
- 6.19. It is apparent that there were widespread issues with the construction of the dwelling, and these would have affected the building's structural performance. However, I have concluded that none of the issues above, individually, resulted in the building or part of the building being likely to cause injury or death (whether by collapse or otherwise) in the ordinary course of events.

Assessment of cumulative or collective effect

- 6.20. I have also considered the cumulative or collective effect of those issues that concern the transfer of lateral wind loads from the upper level to the foundations to determine if 311 Lakes Boulevard was a dangerous building.
- 6.21. On 19 November 2019, Engineer 1 was of the view the structural defects identified in their report dated 10 June 2019⁴⁰ "should be considered cumulatively as the majority of the structural defects identified…are part of the critical load path

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⁴⁰ I note Engineer 1 refers to their report dated 4 June 2019. However, in this case I have relied on the "structural defects summary" attached to their report dated 10 June 2019.

- mechanism transferring lateral wind loads from the upper level to the foundations". Engineer 1 concluded the dwelling was correctly defined as dangerous.
- 6.22. The expert also considered the same eight structural defects combined and did "not consider the combination of items 1 [to] 8 likely to cause collapse under the ordinary course of events" but noted the "robustness of the property is significantly reduced".
- 6.23. In considering the cumulative or collected effect for the purpose of assessing the building as dangerous under section 121, I am of the view there needs to be sufficient connectivity between the structural defects for them to be considered together or in combination with each other. For example, the reported lack of fixings between the floor joists and the top plate and the 'missing' solid blocking are both on the <u>east</u> side of the dwelling and it is appropriate to consider the effects together. However, they are not directedly or indirectly connected to the bracing element O1, towards the <u>west</u> side of the dwelling.
- 6.24. I accept the load transfer system through the dwelling as-built was complex, and I am of the view it is likely the combined system incorporated many redundancies. Although many elements may have been weakened individually, some will have acted in parallel or would have been interconnected sufficiently to provide resistance to a destabilizing load.
- 6.25. Bearing in mind the overall number of reported structural defects at 311 Lakes Boulevard (as identified in paragraph 6.18), the possible number of combinations of matters that could be considered together requires careful analysis and evaluation.
- 6.26. The parties have not provided detailed assessments or structural analysis in support of this 'combined assessment' approach.
- 6.27. However, as an example and in the absence of any similar structural analysis provided by the parties, I have considered further the sufficiency of the PFC portal frame to the garage door opening in combination with a reported lack of bolt connections, a lack of floor joist fixings, and the fixing of the first-floor diaphragm. There was sufficient connectivity between these elements that they could have been considered to be acting in parallel.
- 6.28. I have considered three potential collapse scenarios involving defective welding of the extensions to the PFC:
 - 6.28.1. Beam collapse under gravity load.
 - 6.28.2. Knee joint failure under imposed lateral displacement.
 - 6.28.3. The PFC torsional buckling condition for either of the items above.
- 6.29. In assessing the four structural defects individually, I formed the view there were mitigating factors or alternative paths for the transfer of loads down through the

structure. However, when considering the three potential collapse scenarios for all four structural defects in combination and the way that part of the dwelling was constructed, I am of the view there were mitigating factors acting singularly or in groups that were sufficient to resist destabilizing loads or displacements of a magnitude consistent with a dangerous building condition. These factors included (but may not be limited to):

- 6.29.1. The capacity of the PFC portal frame (although reduced) as a result of the welds used to attach extensions to both ends of the horizontal section of the PFC.
- 6.29.2. The additional vertical timber studs installed under both ends of the horizontal section of PFC and the horizontal timber plate bolted to the bottom flange of the PFC).
- 6.29.3. The double timber top plates bolted to the top flange of the PFC.
- 6.29.4. The restraint offered by the diaphragm action of the floor construction, and the tongue and groove product used.
- 6.29.5. The size, capacity, and centre-to-centre spacing of the floor joists, notwithstanding the limited amount of information provided by the parties regarding the reported lack of fixings connecting the joists to the top plates bolted to the top flange of the PFC.
- 6.29.6. The timber blocking installed between the floor joists (approximately 1m to 1.2m to the east of the PFC).⁴¹
- 6.29.7. Some additional timber blocking between the floor joists (located a short distance west of the centre line of the PFC below).
- 6.29.8. The timber ceiling battens fixed to the bottom surface of the floor joists. The ceiling battens were fixed at right-angles to the line of the floor joists to the external soffit below the Lounge and Dining Room (to the west of the PFC).
- 6.29.9. The minimal diaphragm action provided by the plasterboard ceiling lining, fixed to proprietary metal battens, to the garage.
- 6.29.10. The specific engineering designed 250mm deep x 7.4m long UB, and supporting square hollow sections, located approximately 1.6m west of the PFC. The UB provided structural support to the west side of the floor diaphragm, and parts of the first-floor and roof structures above.
- 6.29.11. The timber packing bolted to the UB, and the ends of the floor joists fixed by proprietary metal joist hangers to the same packing.

⁴¹ The horizontal distance has been approximated from a photograph attached to an authority inspection record dated 23 September 2016.

- 6.29.12. The timber packing bolted to the PFC.
- 6.30. I agree with Engineer 1 and the expert that an element of the PFC portal frame construction would have had a reduced structural capacity due to defective welding of the extensions added to the ends of the PFC.
- 6.31. However, taking all the aforementioned factors into consideration I am of the view the interaction of the PFC portal frame in combination with the reported lack of bolt connections, floor joist fixings, and the fixing of the first-floor diaphragm, will not further reduce the likelihood of collapse of the PFC portal frame or its component parts (ie there would have been sufficient capacity to resist a destabilizing load).
- 6.32. In reaching this view, I have considered the three collapse scenarios and the possible mitigating factors for each. For example, beam collapse under gravity load may only have a small number of supplementary systems in mitigation (eg as described in paragraphs 6.29.1 to 6.29.3), whereas for any knee joint failure under imposed lateral displacement there was likely to be a larger number mitigating factors (eg as described in paragraphs 6.29.2, 6.29.3, 6.29.4, 6.29.10 etc).
- 6.33. On that basis, the PFC portal frame was not likely to collapse from loss of strength or stability under loadings expected in the ordinary course of events.
- 6.34. Although I have considered one possible combination of structural defects it is not clear the same consideration could be applied to other possible combinations of structural defects without a more in-depth structural analysis being made available to me, which I do not have.
- 6.35. This was also not available to the authority when the decision was made to issue the notice. At that time, the authority was faced with a challenging set of circumstances across the subdivision, and it needed to consider the specialist engineering advice it had received, the limited amount of time prior to the impending storm event, and the need to ensure people who were using the buildings could do so safely.
- 6.36. In conclusion, I have received insufficient information to determine if the cumulative or collective effect of the structural defects combined (where such defects would have acted in parallel or combination with each other) meant 311 Lakes Boulevard met the test of being a dangerous building.

Whether the building was affected

6.37. Regarding the risk that the roofs of adjacent or nearby buildings will lift in "gale force winds" and could cause harm to people occupying 311 Lakes Boulevard, I have only considered the roofs constructed at 309, 309A and 311A Lakes Boulevard (refer to paragraph 1.8).

- 6.38. In deciding that 311 Lakes Boulevard was an affected building, the authority relied in part on the addendum report from Engineer 1 dated 14 April 2018 (refer to paragraph 3.7).
- 6.39. If a roof(s) was likely to lift in the ordinary course of events from an adjacent or nearby dwelling, it follows it is likely to meet the definition of a dangerous building depending on the circumstances of the case. There are a number of factors that are relevant to considering this likelihood and, as a result, whether 311 Lakes Boulevard would have been affected. This includes but is not limited to the likelihood of failure of any structural connections associated with the roof(s) or supporting structure, the direction and intensity of the wind that could cause the roof(s) to be lifted, and the proximity of the other dwelling(s).
- 6.40. In this case, I have assessed each roof individually, including the approved designs, information about the as-built construction, and the submissions and reports. I have provided the parties and persons with an interest detailed analysis that sets out the reasons why, in all three cases, I am of the view the roofs of the adjacent or nearby dwellings were not likely to lift in winds that would be experienced in the ordinary course of events, and therefore 311 Lakes Boulevard was not affected.

7. Conclusion

- 7.1. The dwelling 311 Lakes Boulevard was not dangerous in respect of the structural defects identified in the notice, or the associated reports prepared by Engineer 1 (both before and after the notice was issued), when those defects are assessed individually.
- 7.2. I have received insufficient information to determine if the dwelling at 311 Lakes Boulevard, or a part thereof, was dangerous in respect of all the possible cumulative or collective effects of the structural defects combined.
- 7.3. The dwelling at 311 Lakes Boulevard was not an affected building in relation to other buildings at 309, 309A, and 311A Lakes Boulevard because the roofs of those buildings were not likely to lift in winds that would be experienced in the ordinary course of events.
- 7.4. A determination under section 177(1)(b) is in respect of an authority's exercise of its powers of decision. Section 188(1) provides that a determination must confirm, reverse, or modify that decision, or determine the matter to which it relates.
- 7.5. The District Court, in *Estate Properties Ltd v Hastings District Council* ⁴² stated "The Chief Executive's choice of remedy under s 188(1) is an exercise of discretion" and that it was open to the Chief Executive to not apply one of the positive steps

⁴² [2021] NZDC 17000 at [21].

- required by section 188(1)(a). (43)(44) Further, the court took the view that declining to reverse a decision did not have the effect of confirming the decision. 45
- 7.6. I have elected not to exercise any powers in section 188(1)(a) in this determination for the following reasons:
 - 7.6.1. The conclusions reached on the status of the dwelling as a dangerous or affected building would not lead me to confirm the notice in the form it was issued.
 - 7.6.2. The notice is no longer in effect and so cannot be modified in respect of the matters on which I concluded the dwelling was not dangerous or affected.
 - 7.6.3. There is insufficient information available for me to draw a conclusion on the status of the dwelling as a dangerous building in relation to the cumulative or collective effect of some of the structural defects when considered together, and for this reason, there are inadequate grounds on which to reverse the decision to issue the notice.
 - 7.6.4. The lower part of the dwelling has already been demolished and the upper storey relocated elsewhere, so there would be no benefit in reversing the issue of the notice for the authority to make a new decision with respect to any other dangerous buildings nearby or adjacent that were not identified in the notice.
- 7.7. Finally, while I have reached the conclusions set out above, I also note the following:
 - 7.7.1. The timing of the determination means I have the advantage of being able to access additional information relating to the particulars of the notice that was not available to the authority when it made the decision to issue the notice.
 - 7.7.2. The authority was in a unique and challenging position when it was considering concerns across the whole subdivision in relation to multiple buildings and issued the notice. This is evident from the number of dangerous and affected building notices the authority issued on 16 April 2018 (a total of 21 notices).
 - 7.7.3. Authorities need to consider issues associated with public safety in a timely manner in situations like this. I also recognise the circumstances faced by the engineers advising the authority, and the timeliness of that advice in

⁴³ The court dismissed an appeal against a decision of the Chief Executive that a code compliance certificate had been wrongly issued and that declined to reverse the certificate (Determination 2020/034 Regarding the compliance of fire safety precautions in a motel, dated 16 December 2020).

⁴⁴ [2021] NZDC 17000 at [30].

⁴⁵ [2021] NZDC 17000 at [29].

light of an impending storm event. The timing was such that it did not allow for an in-depth analysis, and this has been acknowledged in the Heath Report,⁴⁶ the Ministry's report,⁴⁷ and views of engineers and experts involved.

8. Decision

8.1. In accordance with section 188 of the Building Act 2004, I determine the dwelling at 311 Lakes Boulevard was not an affected building. I am unable to reach a conclusion on the status of the dwelling at 311 Lakes Boulevard as a dangerous building in relation to the section 124 notice dated 16 April 2018.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 7 June 2024.

Peta Hird

Principal Advisor

⁴⁶ Investigation and review: The Tauranga City Council's involvement with 21 properties in the Bella Vista subdivision, Report of Hon P Heath QC, 1 June 2018. Available at www.tauranga.govt.nz.

⁴⁷ Review of Tauranga City Council: Performance of statutory functions under the Building Act 2004 with respect to the Bella Vista development, Ministry of Business, Innovation and Employment, March 2019. Available at www.building.govt.nz.