

Determination 2024/007

An authority's refusal to grant a building consent for construction of a new dwelling, and compliance of a proposed foundation design with Clause B1 *Structure*

16A Newark Close, Gate Pa, Tauranga

Summary

This determination considers an authority's decision to refuse to grant an application for a building consent for the construction of a new dwelling. The determination considers the authority's reasons for the refusal, and whether the proposed timber piled foundation design complies with Building Code Clause B1 *Structure*.

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, Andrew Eames, Manager Advisory, Determinations, 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. The owner of the property, Doing Good Foundation Limited, which applied for this determination (“the owner”)
 - 1.2.2. J Merriman, the licensed building practitioner designer concerned with the relevant building work (“the designer”)
 - 1.2.3. Tauranga City Council, carrying out its duties as a territorial authority or building consent authority (“the authority”).
- 1.3. The matters to be determined are:
 - 1.3.1. the authority’s decision to refuse to grant a building consent (BC331031) for the construction of a new dwelling (under section 177(1)(b) and (2)(a)); and
 - 1.3.2. whether the proposed timber pile foundation design complies with Clause B1 *Structure* (s177(1)(a)).
- 1.4. In deciding these matters, I will consider the reasons for refusal given by the authority in its written notice of 8 November 2023 (“the written notice”), and whether the foundation design complies with clause B1. The application for building consent nominated a means of compliance with the Building Code using Acceptable Solution B1/AS1² (“**B1/AS1**”). The associated building consent plans and specifications also refer to New Zealand Standard NZS 3604:2011³ (“**NZS 3604**”) for the foundation design.

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

² Acceptable Solution B1/AS1 (first edition, amendment 20, effective 29 November 2021 to 1 December 2023).

³ New Zealand Standard NZS 3604:2011 *Timber-framed buildings*.

- 1.5. In this case, the dispute relates to whether the proposed foundation design, incorporating anchor piles, provides adequate lateral resistance to wind and earthquake actions.

Issues outside this determination

- 1.6. I have not considered the Building Code compliance of any other aspects of the foundation design or the other building work detailed in the building consent application.
- 1.7. I note some of the building consent plans indicate several items of inconsistency regarding the proposed foundation design. For example, the quantity of piles shown on plan sheet 7 of 30 do not match those shown on plan sheet 12 of 30 (cross section CC), and plan sheets 11 and 12 of 30 do not show any anchor piles (as detailed on plan sheet 14 of 30). The authority did not raise this as a reason for refusing to grant the building consent, and I will therefore leave it for the parties to resolve.

2. The building work and background

- 2.1. On 12 July 2023, the owner applied for a building consent (number BC331031) for the construction of a new two-storey detached dwelling on the property (which is one of a small subdivision incorporating three lots).
- 2.2. The building consent plans prepared by the designer indicate the proposed foundation design relies on:
 - 2.2.1. a total of nine anchor piles and 29 ordinary piles set out on three bracing lines along the dwelling⁴; all piles are 125mm x 125mm square, using H5 treated timber⁵.
 - 2.2.2. all the anchor and ordinary piles being installed to a depth of 1.8m below 'cleared ground level'⁶
 - 2.2.3. the lower half of the anchor piles being embedded in concrete (refer to Figure 1), with soil or similar fill material shown above (up to ground level).
- 2.3. The method of construction appears to rely on boring a hole to a depth of approximately 1.8m below cleared ground level, then placing the timber pile and embedment concrete into the hole.

⁴ NZS 3604 defines 'bracing line' as "A line along or across a building for controlling the distribution of wall bracing elements".

⁵ New Zealand Standard NZS 3640:2003 *Chemical Preservation of Round and Sawn Timber*, Table 3.1.

⁶ NZS 3604 defines 'cleared ground level' as "The ground level after completion of site excavation and removal of all harmful material, but before excavation for foundations".

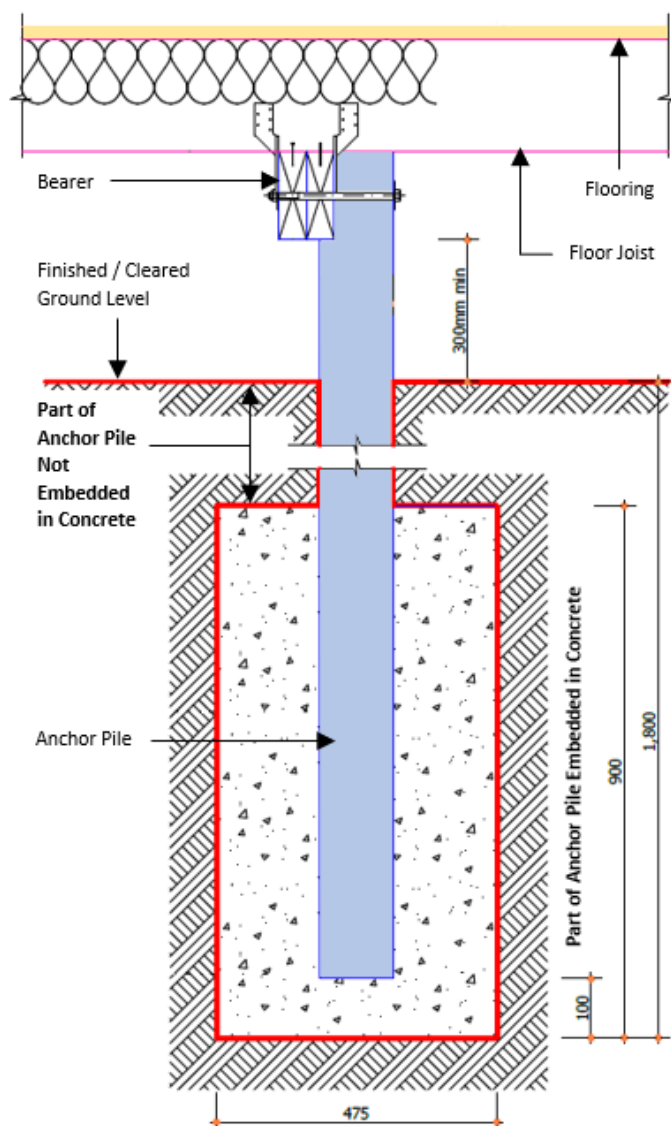


Figure 1: Construction detail of proposed anchor piles (not to scale)
(Note: dimensions are in millimetres)

- 2.4. The building consent application included subfloor bracing calculations, and a separate “Geotechnical completion report” dated 13 April 2021 prepared by a geotechnical engineer. This report, which relates to the three lots in the subdivision, states in relation to lot 8 (ie 16A Newark Close):

The natural soils within Lot 8 have a geotechnical ultimate bearing capacity of 300kPa, however the fill cannot be classified as engineered fill and is not suitable to support standard NZS3604:2011 foundations.⁷

...

Lot 8 does not comply with the definition of ‘good ground’ as per NZS3604:2011 due to the variable strength fill encountered.

⁷ The geotechnical engineer stated, “The fill typically comprised a mixture of silt and gravel to bring the [building] platforms up to design level”.

...

Foundations shall extend through the variable strength fill, encountered within Lot 8 down to 1.4m below current ground level.

Bored piles should be founded at least 0.4m into the natural soils.

...

Once the competent soils have been reached, the piles can be assumed to have a geotechnical ultimate bearing capacity of 300kPa...

The authority's requests for further information

2.5. The authority sent four successive requests for information to the owner. The initial request for information, on 9 August 2023, queried the type of piles proposed (in accordance with the geotechnical report) and construction monitoring required. Subsequent requests for information were dated 6 September 2023, 12 October 2023, and 30 October 2023.

2.6. In its request for information dated 6 September 2023, the authority stated:

The proposed piles founded at 1.8 metres meet the requirements of the Geotech report, but do not reflect NZS3604:2011 due to the extension through poor ground over 600mm requiring bracing or input from a suitably qualified engineer.

2.7. In its request for information dated 12 October 2023, the authority stated:

The bearing of the piles have been accepted as reaching 'good ground' as defined by NZS3604:2011. However, the lateral support of the piles is not in 'good ground' and therefore outside B1/AS1 and requires [specific engineering design] input.

2.8. In its request for information dated 30 October 2023, the authority stated:

Section 3.1.1 of NZ3604 clearly sets out the requirements of the site, confirming if a site does not comply with the definition of good ground, the foundations shall be subject to [specific engineering] design. It has been identified the upper layer of the site is classified as uncertified fill, and good ground is identified at 1.4m [below ground level].

2.9. The owner responded to the authority 16 October 2023 and 3 November 2023. The owner also provided the authority with a copy of a letter dated 5 October 2023 from the geotechnical engineer to the owner. This letter stated:

... the surficial filling was non-organic and stiff to very stiff, and is therefore considered to provide lateral support equivalent to 'good ground'.

2.10. The response dated 16 October 2023 states:

The pile design is in accordance with NZS3604, as per the geotechnical investigation for the site. ...

The bearing strength and lateral strength of the soil are different criteria.

While the bearing strength is a specific consideration of *good ground* under NZS3604, the lateral strength is not.

The ... geotechnical engineer ... has explicitly stated ... the underlying soils have proven strength to provide sufficient lateral capacity for the piles ...

- 2.11. The owner's letter dated 3 November 2023, repeated the information provided on 16 October 2023, and also stated:

As noted the site does comply with the definition of good ground, at a depth of up to 1.4m [below ground level] below the uncertified fill. With the uncertified fill having been specifically confirmed by the Geotech engineer...as being sufficient to provide lateral support equivalent to 'good ground', and as proposed for the design of the piles included in the building consent application.

- 2.12. On 8 November 2023, the authority refused to grant the owner's application for a building consent. The written notice stated:

...the application for the...building consent is refused under section 50 of the New Zealand Building Act 2004 for the following reason(s):

Multiple RFI letters issued and compliance with NZBC Clauses B1, and E1 were not demonstrated by the applicant.

3. Submissions

The owner

- 3.1. The owner submits (in summary):

- 3.1.1. "The refusal of the building consent [does] not state any details of substance for the reason to refuse the building consent, other than some generic references to the building code. This does not meet the requirements of [section] 50(b), to give the [owner] written notice of the reasons for the refusal".
- 3.1.2. The foundation detail on plan sheet 14 of 30 "was provided to and reviewed by [the geotechnical engineer] ..., in order to prepare their [request for further information] reply dated 5 October 2023".
- 3.1.3. Section 3.4 of NZS 3604 (headed "Bearing") does not relate to lateral support. Bearing capacity in relation to good ground is "vertical load"; this is "not the same as Lateral Capacity" (ie horizontal load or bracing). [owner's emphasis]
- 3.1.4. Cleared ground level "is not necessarily, and never has been, required to be to the level of the good ground which typically is below the topsoil depth that can remain".

The authority

3.2. The authority submits (in summary):

- 3.2.1. The building consent was refused “due to a lack of reasonable assurance that the proposed building work complied with the NZ Building Code, in particular clause B1”.
- 3.2.2. If “a site does not comply with the definition of good ground”, as stated in section 3.1.1 of NZS 3604⁸, then “the foundations shall be subject to” a specific engineering design.
- 3.2.3. The “upper layer of the site is classified as uncertified fill, and good ground is identified at 1.4m [below ground level]”. The “proposed foundation design discounts the fill layer”.
- 3.2.4. NZ3604 “cannot be used for bracing as the maximum heights outlined in [the standard] above good ground exceed [the] limits ... for anchor piles”. The authority referred to section 6.4.1 of NZS 3604, which states the height of anchor piles above cleared ground level shall not be more than 600mm to the highest connection (where the cleared ground level is the level that provides the required lateral support as considered in section 3.4.2 of NZS 3604).
- 3.2.5. In response to a query from the Ministry, the authority referred to clauses B1.3.1, B1.3.2, B1.3.3 (b), (d), (f), (h), (m) and (q), and B1.3.4 (a), (d) and (e), as being the performance clauses in issue this case.⁹
- 3.2.6. The proposed foundation design did not comply with clause B1 because:

...the [authority] is disputing the fact that the definition of ‘Good Ground’ has been achieved in accordance with the nominated compliance pathway B1/AS1 using NZS3604:2011, consequently, the lateral stability of the subfloor bracing, as depicted in the submitted building consent documents, is deemed inaccurate. ...

The [subfloor bracing] calculations are in dispute; they are not appropriate for use in this instance as ‘Good Ground’ as defined within NZS3604:2011 is not available on-site. The [subfloor bracing] calculations provided do not demonstrate compliance with the [New Zealand] Building Code.

The designer

3.3. The designer submits (in summary):

⁸ Section 3 “Site requirements”, section 3.1 “Soil bearing capacity”, paragraph 3.1.1 “General”.

⁹ I note the authority did not explain why it considered all these performance clauses were relevant.

- 3.3.1. Regarding the construction methodology, “The reality on site is all of the pile holes will be filled with concrete rather than backfilled with soil. In [the designer’s] experience this is common practice as this saves the builder labour time”.
- 3.3.2. The reference to bored piles in the building consent plans and specifications “simply means the hole the pile is placed in is excavated by “boring””.
- 3.3.3. Cleared ground level and finished ground level (as annotated on plan sheet 14 of 30) “are one and the same for this project”.

4. Discussion

- 4.1. The matters to be determined are:
 - 4.1.1. the authority’s decision to refuse to grant the building consent; and
 - 4.1.2. whether the proposed timber pile foundation design complies with clause B1.

Matter 1: refusal to grant building consent

- 4.2. The test for granting a building consent is set out in section 49(1), which provides:
 - (1) A building consent authority must grant a building consent if it is satisfied on reasonable grounds that the provisions of the building code would be met if the building work were properly completed in accordance with the plans and specifications that accompanied the application.
- 4.3. Section 50 provides that if an authority refuses to grant an application for a building consent, it “must give the applicant written notice of– (a) the refusal; and (b) the reasons for the refusal”.
- 4.4. In this case, the authority gave the owner written notice of the refusal, in its letter of 8 November 2023. The issue is whether the authority has fulfilled its obligation in section 50(b) to give reasons for the refusal.
- 4.5. Previous determinations have considered what is expected of an authority when refusing to grant a building consent,¹⁰ and I hold the same views. The requirement to provide reasons in writing gives an applicant notice of the particular issues that need to be resolved.
- 4.6. Therefore, it is important an applicant is given sufficiently explicit, specific, and valid reasons why the authority considers compliance with the Building Code has not

¹⁰ For example, Determination 2021/027 *Regarding the authority’s refusal to grant building consents for the construction of new residential dwellings* (16 December 2021) at paragraph 5.7; Determination 2023/007 *Regarding the authority’s decision to refuse to grant a building consent for alterations to an existing building* (28 March 2023) at paragraph 5.11.

been met (in accordance with section 49), so the applicant can consider what is required to address the issues and obtain building consent.

- 4.7. A generalised refusal is not sufficient for an authority to meet its obligations under section 50, nor is it sufficient that the reasons are referred to in other correspondence or documents, particularly if it is not clear which of those are relevant, or if it is all or part of the information stated in them that is at issue.
- 4.8. In this case, the written notice gave no reasons or explanation for the authority's decision, beyond a general reference to clauses B1 and E1 (refer to paragraph 2.12). The written notice simply stated, "Multiple RFI letters issued and compliance with NZBC Clauses B1, and E1 were not demonstrated by the applicant".
- 4.9. While the authority's letters requesting further information provide more context regarding its concerns in relation to the proposed timber pile foundations, the specific items in those letters that the authority considered were the reasons for the refusal, were not stated in the written notice. Nor did the authority refer to the particular performance clauses of the Building Code that were the basis for the refusal of the building consent.
- 4.10. In my view, the authority's reasons for the refusal, as stated in the written notice, were not explicit, specific, or clear; consequently, the owner could not have understood or considered what was required to remedy the situation and obtain building consent.
- 4.11. Therefore, the written notice does not satisfy the requirement set out in section 50(b).

Matter 2: compliance of the proposed foundation design with clause B1

- 4.12. The proposed foundation design for the dwelling relies on a combination of anchor and ordinary piles.
- 4.13. NZS 3604 provides the following definitions:

ANCHOR PILE. A pile directly supporting a bearer, and used to resist horizontal as well as vertical loads. The pile is embedded in concrete to a depth of 900mm below cleared ground level.

ORDINARY PILE. A pile required to resist vertical loads only.

PILE. A block or a column-like member used to transmit loads from the building and its contents to the ground.

- 4.14. Paragraph 6.9.2 of NZS 3604 states, "The minimum depth of an anchor pile from cleared ground level to the footing under the surface bearing against the ground shall be 900mm". This aligns with figure 6.10 of NZS 3604. However, NZS 3604 does not specifically identify a maximum depth of an anchor pile below cleared ground

level, but this can be deduced from paragraph 6.4.3.3 of NZS 3604 which requires piles to comply with NZS 3605:2001.¹¹ Paragraph 4.1.2 of NZS 3605 limits round or square timber piles to a 3.6m maximum length. If a timber anchor pile extends to 600mm above cleared ground level¹², the maximum embedment depth permitted by NZS 3604 would therefore be 3m.

4.15. In this case, the designer has relied on demonstrating compliance with clause B1 using B1/AS1 and NZS 3604.

4.16. The authority is of the view the proposed foundation design did not comply with clause B1 because of issues with the lateral stability of the subfloor bracing and associated calculations due to the ground conditions (refer to paragraph 3.2.6).

Good ground

4.17. Neither the Act nor the Building Code define the term 'good ground'. However, NZS 3604, which is cited in B1/AS1, states:

GOOD GROUND. Any soil or rock capable of permanently withstanding an **ultimate bearing capacity**¹³ of 300 kPa (i.e. an allowable bearing pressure of 100 kPa using a factor of safety of 3.0) ... [my emphasis]

4.18. In this case, I note the geotechnical engineer's report (refer to paragraph 2.3), implies the piles are to extend at least 1.8m below cleared ground level and will be supported on 'good ground' at that depth. Consequently, the designer has provided plans¹⁴ with the building consent application that indicate the anchor and ordinary piles are all to be installed to a depth of 1.8m below cleared ground level.

4.19. However, the authority maintains it is "the lateral stability of the subfloor bracing" provided by the anchor piles that is at issue, because the ground above the foundation bearing level that laterally supports the piles does not meet the definition of 'good ground'.

4.20. Anchor piles are required to resist horizontal as well as vertical loads. In this case, the information provided by the geotechnical engineer does indicate the piles will be supported on ground (ie, the naturally occurring soils at a depth of greater than 1.4m below cleared ground level) capable of permanently withstanding an ultimate bearing capacity of 300 kPa. As such, the vertical loads imposed on the piles by the building and building elements above would be transferred appropriately to 'good ground'.

4.21. However, the definition of 'good ground' only refers to "ultimate **bearing capacity**" and "allowable **bearing pressure**" [my emphasis]. This implies 'good ground' is

¹¹ New Zealand Standard NZS 3605:2001 *Timber Piles and Poles for Use in Building*.

¹² The maximum stated in NZS 3604, paragraph 6.4.1.1 (b)(iii).

¹³ I note B1/AS1 uses the term 'ultimate bearing pressure' in defining 'good ground'.

¹⁴ Sheets 7, 10, 11, 12, and 14 of 30.

concerned with the capacity of the ground to carry vertical load or bearing or could otherwise be described as the maximum vertical pressure that can be applied to the soil without inducing shear failure. This is supported by paragraph 3.4.1 of NZS 3604, which states “All foundations shall bear upon solid bottom in undisturbed good ground material ...”.

- 4.22. This view is supported in the owner’s letter to the authority of 3 November 2023, stating “The bearing strength and lateral strength of the soil are different criteria”, and “While the bearing strength is a specific consideration of *good ground* under NZS3604, the lateral strength is not”.
- 4.23. I also note, in its letter to the owner dated 12 October 2023, the authority stated, “The bearing of the piles have been accepted as reaching ‘good ground’ as defined by NZS3604:2011”.
- 4.24. Therefore, I am of the view the proposed piles would bear on ‘good ground.’

The subfloor bracing

- 4.25. In this case, the subfloor bracing for the dwelling is reliant on the installation of nine anchor piles.
- 4.26. The authority is of the view it is the lateral stability of the anchor piles to resist horizontal loads that does not comply with the Building Code. This is on the basis the piles are proposed to be extended through ground which is not ‘good ground’ (ie the variable strength fill material referred to in the report provided by the geotechnical engineer). For this reason, the authority considers the subfloor bracing calculations do not demonstrate compliance with the Building Code because the ground that laterally supports the piles does not meet the definition of ‘good ground’.
- 4.27. The authority also refers to the proposed pile design being non-compliant with the nominated compliance pathway of B1/AS1 and NZS 3604, and therefore requiring a specific engineering design solution.
- 4.28. I have already reached the view the proposed piles would bear on ‘good ground’ as it is only concerned with the capacity of the ground to carry vertical load or bearing. B1/AS1, that includes reference to NZS 3604, does not provide any requirement of the soil strength or characteristics of the ground around the pile except for section 3.5 “Site Preparation” of NZS 3604. As such, I consider the requirements of an anchor pile, as defined in NZS 3604, are not dependent on it being laterally restrained by ‘good ground’.
- 4.29. Regardless, section 17 requires all building work to comply with the Building Code to the extent required by the Act.

4.30. The functional requirement in clause B1.2 states:

Buildings, building elements and sitework shall withstand the combination of loads that they are likely to experience during construction or alteration and throughout their lives.

4.31. The performance requirements for clause B1 include:

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.

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

...

(f) Earthquake,

...

(h) Wind...

B1.3.4 Due allowance shall be made for:

...

(c) Effects of uncertainties resulting from construction activities,...

(d) Variation in the properties of materials and characteristics of the site...

4.32. In this case, I need to consider the ability of the proposed foundation design (using anchor piles) to resist horizontal loads, including earthquake and wind actions, while also taking into account the variable strength fill material encountered 1.4m below current ground level.

4.33. I have also taken into consideration the following:

4.33.1. The opinion of the geotechnical engineer in their letter of 5 October 2023, being "...the surficial filling was non-organic and stiff to very stiff, and is therefore considered to provide lateral support equivalent to 'good ground'".

4.33.2. The current design for the anchor piles where the lower half is to be embedded in concrete (refer to Figure 1), with soil or fill material shown above (up to finished ground level).

4.33.3. The method of construction, as noted on the building consent plans, which appears to rely on boring a hole to a depth of approximately 1.8m below cleared ground level, then placing the timber pile and embedment concrete into the hole.

4.33.4. The designer's opinion on the construction methodology, being "The reality on site is all of the pile holes will be filled with concrete rather than backfilled with soil. In [the designer's] experience this is common practice as this saves the builder labour time". However, the test for granting a building consent under section 49(1) (see paragraph 4.2) refers to an authority being

satisfied the Building Code would be met “if the building work were properly completed in accordance with the plans and specifications that accompanied the application”.

- 4.34. The geotechnical engineer has formed a view that the existing variable strength fill material is considered to provide the necessary lateral support for the anchor piles. However, they have not provided a specification for the soil or fill material that would need to be placed around the upper part of the pile (below cleared ground level, as shown in Figure 1) to fill the void in the bored hole above the concrete embedment.
- 4.35. In this case, it would only be the part of the anchor pile embedded in concrete that would be in direct contact with the existing variable strength fill material.
- 4.36. The designer has relied on demonstrating compliance with clause B1 using B1/AS1 and NZS 3604, however, there appears to be no provision in either document that allows for the concrete embedment to not be continuous below cleared ground level¹⁵.
- 4.37. In this case, the subfloor bracing calculations included in the building consent application plans and specifications (for determining the bracing capacity¹⁶ using the proposed anchor piles) has relied on the bracing units¹⁷ stated in figure 6.10 of NZS 3604 (ie 160 bracing units for wind and 120 bracing units for earthquake).
- 4.38. However, it is not clear that reliance can be placed on using these values for the bracing units, as currently detailed in the building consent plans, when taking into consideration the limiting factors of:
- 4.38.1. The anchor piles do not conform to the concrete embedment requirements of NZS 3604 (specifically figure 6.10), nor does it have the minimum plan dimensions for the footings in accordance with paragraph 6.4.5.5, and table 6.1, of NZS 3604 above the embedded section of the pile (up to cleared ground level).
- 4.38.2. Paragraph 6.4.1.1(b)(iii)¹⁸ and figure 6.10 in NZS 3604 allows for a maximum height of an anchor pile above the embedment concrete (ie cleared ground level) to be 600mm to the highest connection for anchor piles. In this case detail D06 on plan sheet 14 of 30 indicates the proposed unembedded length (below cleared ground level) will be 900mm, and a total length of

¹⁵ For example, refer to figure 6.10 in NZS 3604.

¹⁶ NZS 3604, section 1.3, defines ‘bracing capacity’ to be “Strength of bracing of a whole building or of elements within a building. Bracing capacity is measured in bracing units (BUs)...”.

¹⁷ NZS 3604, section 1.3, defines ‘bracing units’ (BU) to be “A bracing unit is a measure of: (a) The horizontal for (bracing demand) on the building (1 kilo Newton is equal to 20 bracing units); (b) The resistance to horizontal forces (bracing capacity) of building elements”.

¹⁸ Including paragraph 6.9.1 of NZS 3604.

approximately 1270mm from centre of the bolt connection with the bearer to the concrete embedment which exceeds the maximum permitted height.

- 4.38.3. The geotechnical engineer has not provided a minimum specification for the backfill around the anchor pile above the concrete embedment, that takes account of the smaller cross section of the unembedded timber.
- 4.38.4. No calculations have been provided showing the section of the anchor pile not embedded in concrete having the capacity to carry horizontal loads (from wind and earthquake actions) through the floor joists and bearers down to the embedded section of the pile.
- 4.39. An Acceptable Solution is one way of demonstrating compliance with the Building Code (section 23); compliance can also be achieved by way of an alternative solution. However, in this case, I have not received any other supplementary specific engineer design calculations in support of the proposed foundation design for the dwelling. The application for building consent only contains the subfloor bracing calculations based on the bracing units stated in figure 6.10 of NZS 3604.
- 4.40. Further, I have also not received any supplementary testing results for the anchor piles in accordance with paragraph 4.3.1 of NZS 3605:2001 that might otherwise demonstrate the strength requirements of the anchor piles specific to the design proposal in this case.
- 4.41. I have also taken into consideration comment C4.3 in NZS 3605:2001, which states, "The lateral load capacity of timber pile foundation systems are set out in NZS 3604. The most heavily loaded are anchor ... piles which are required to have a capacity of 160 Bracing Units (BUs) ... At the maximum permitted height of these piles and considering the seismic response of timber pile foundation systems, the bending moment demand is 6.0 ... kNm ... for anchor ... piles. 125 mm square sawn timber piles meeting No. 1 Framing quality are sufficient for a bending demand of 4.8kN. Hence the anchor piles need special care in their selection and proof testing is considered to be the only means to guarantee their strength ...". However, I note the comment did not give a corresponding value for bending moment demand for the type of anchor pile specified in the building consent plans.
- 4.42. Therefore, taking all the points above into account, I am of the view the current design for the proposed piled foundation for the dwelling (as detailed in the plans and specifications accompanying the application for building consent) does not demonstrate compliance with clause B1.

5. Decision

5.1. In accordance with section 188 of the Building Act 2004, I determine:

- 5.1.1. The authority did not adequately specify its reasons for refusing to grant a building consent for the proposed building work. I therefore reverse that decision.
- 5.1.2. The proposed timber pile foundation design does not comply with Building Code Clause B1 *Structure*.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 28 February 2024.

Andrew Eames
Manager Advisory, Determinations