MINISTRY OF BUSINESS,
INNOVATION & EMPLOYMENT
HIKINA WHAKATUTUKI

Determination 2019/056

Regarding the authority's decision to refuse to grant a building consent in respect of the geotechnical information and proposed foundation design for a proposed building at 200 to 220 Buckley Avenue, Hobsonville Point, Auckland

Summary

This determination considers whether sufficient information was provided to support an application for building consent for a multi-unit building in relation to the building's foundation design. The building is located on land that is being developed for subdivision and the determination also considers matters related to the identification of natural hazards on the site.

1. The matter to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004[1] ("the Act") made under due authorisation by me, Katie Gordon, Manager Determinations, Ministry of Business, Innovation and Employment ("the Ministry"), for and on behalf of the Chief Executive of the Ministry.

1.2 The parties to the determination are:

- the owner of the property, Marine Precinct General Partner Limited ("the applicant"). The applicant is controlled by Classic Builders Group Limited as its holding company. For the purposes of the determination, I have referred to both companies as the applicant. A representative of Classic Builders Group Limited is acting as an agent for the determination
- Auckland Council ("the authority"), carrying out its duties as a territorial authority or building consent authority.

1.3 The application for this determination arises from the authority's request for further information regarding the geotechnical information and proposed foundation design for a proposed building, and the purported refusal to grant the building consent. The authority is of the view that the geotechnical information submitted does not provide sufficient information to enable it to be satisfied on reasonable grounds that Clause[2] B1 Structure of the Building Code will be met.

[1] The Building Act, Building Code, Acceptable Solutions, past determinations and guidance documents issued by the Ministry are all available at www.building.govt.nz.
[2] In this determination, references to sections are to sections of the Act and references to clauses are to clauses of the Building Code.

1.4 The applicant is of the view that the building consent application should be assessed based on Verification Method for Clause B1, B1/VM4, with the assessment for Building Code compliance considering the geotechnical information that sets out design assumptions and assumed geotechnical soil parameters, with these assumptions and parameters to be verified during construction by the geotechnical engineer.

1.5 The matter to be determined[3] is therefore the authority's purported exercise of its power of decision to refuse to grant the building consent for the proposed design at the time the consent was initially sought.

1.6 In making my decision, I have considered the submissions from the parties, the report of the independent expert commissioned by the Ministry to advise on this dispute ("the expert") and the other evidence in this matter. The relevant sections of the Act and B1/VM4 are provided in Appendix A; a summary of the geotechnical reports is provided in Appendix B.

1.7 Direction under section 183(1)

1.7.1 Following a request from the applicant on 21 May 2019, I issued a direction under section 183(1) of the Act on 30 May 2019.

1.7.2 This direction reversed the suspension of the authority's powers in relation to the issue of a building consent, which, in accordance with the Act, were suspended under section 183(1) until the determination was made. The direction was made on the basis that all outstanding matters of compliance were addressed by the applicant, and the authority confirmed that it would be able to issue the building consent.

2. The building work

2.1 The proposed building is a multi-unit residential building, proposed to consist of seven units. The proposed building has timber-framed walls, suspended timber floors and a timber-trussed roof, with a concrete basement structure, constructed on a proprietary concrete raft foundation. The cladding is proposed to be vertical timber weatherboard and the roof cladding is profiled steel.

2.2 The proposed building comprises seven adjoining three to four-storey residential units. The building comprises a concrete garage basement level with retaining wall, with two or three storeys above the basement level.

2.3 The proposed building is to be located on a subdivision under development, described as Block 8 and 9 of the Sunderland Precinct, at Hobsonville Point. The proposed building is to be located on lots 60 to 66, within a site/set of lots called SB10 ("site SB10"), on a site described as Block 9 ("the block"). The block is bounded by coastal cliff to the north, with the eastern boundary running along the crest of an estuarine inlet gully, and a steep gully to the south. A longitudinal section through the development is shown in Figure 1.

2.4 The block slopes relatively steeply down from the ridge of Hobsonville Point Road to the coastal cliffs and shore inlet. The block appears to have been subject to cut and fill earthworks in the past.

[3] Under sections 177(1)(b) and 177(2)(a) of the Act

3. The background

3.1 The applicant applied for a building consent for the units (application No. BCO10274169) for lots 60 to 66. The applicant also applied to the authority for other building consents for proposed buildings on other lots on the block. It appears the applications were lodged during 2017. I have not seen a full copy of the building consent application.

3.2 Geotechnical advice for the development of the block and site SB10 was carried out by two geotechnical and environmental engineering firms ("first geotechnical engineer" and "second geotechnical engineer").

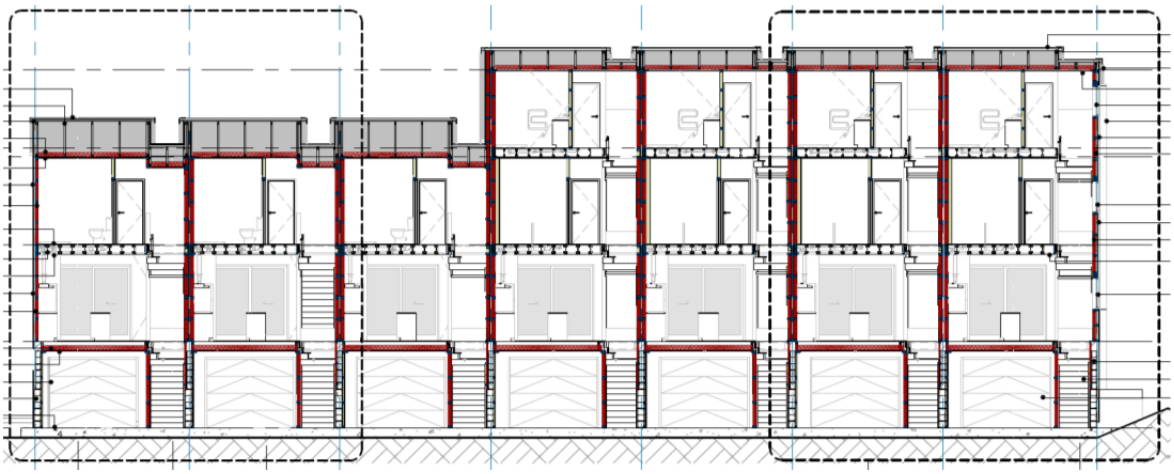

Figure 1: Longitudinal section through the development (not to scale)

3.3 The following table identifies the sources of the applicant's geotechnical information provided as part of the resource consent and building consent processes. Some of the information was provided as part of the authority requesting further information during the building consent process (refer to paragraphs 3.12 and 3.17). The reports are summarised in Appendix B.

Report name, version/reference, date and source	Description	Determination reference
Geotechnical investigation: Geotechnical report for development, version A, 3 August 2015, first geotechnical engineer.	Identification of geotechnical constraints to the proposed subdivision and geotechnical recommendations for land stability, earthworks, pavement design, and preliminary recommendations for foundation/retaining design.	"Geotechnical investigation report"
Geotechnical review, AKL2016_0439AB Rev 0, 3 June 2016, second geotechnical engineer.	Review of existing geotechnical information, including the Geotechnical information report.	"Geotechnical review report"
Anticipated geotechnical parameters for future building construction, AKL2016_0439AE Rev 0, 3 July 2017, second geotechnical engineer.	Identification of assumed geotechnical parameters for the design of buildings within the subdivision.	"Geotechnical design parameters report (v1)"
Anticipated geotechnical parameters for future building construction, AKL2016_0439AE Rev 1, 6 December 2017, second geotechnical engineer.	Identification of assumed geotechnical parameters for the design of buildings within the subdivision.	"Geotechnical design parameters report (v2)"

Report name, version/reference, date and source	Description	Determination reference
Suitability Statement for earthworks, AKL2016_0439AN Rev 0, 4 March 2019, second geotechnical engineer.	Certification of earthworks carried out and confirmation of geotechnical parameters.	"Suitability statement"
Request for further information response, AKL2016-0439AP Rev 0, 9 April 2019, second geotechnical engineer.	Confirmation of assumed geotechnical parameters and responses to the authority's queries.	"Geotechnical information letter"

3.4 The foundation design for the proposed dwelling is based on assumed geotechnical design parameters, supported by the Geotechnical design parameters report (v2), with the parameters proposed to be confirmed during construction.

3.5 On 24 November 2017, the applicant wrote to the authority, noting it had a substantial number of building consents lodged without geotechnical completion reports being available, and that the authority was refusing to process these consent applications. The applicant sought the authority's agreement to options for providing geotechnical information as part of the building consent process.

3.6 On 26 April 2018, the applicant wrote to the authority about the requirement for geotechnical completion reports for the building consent applications, noting there is no reference under the Building Act or Building Code to a geotechnical completion report, and that while it is an appropriate requirement for the issuing of a section 224(c)[4] certificate by the authority before titles are able to be issued, it is inappropriate to extrapolate the requirement to the building consent process.

3.7 The applicant requested its building consents be accepted and processed using B1/VM4 on the following basis:

> The building consent application will be presented with a geotechnical report that will provide design assumptions and specified soil parameters.
>
> These design assumption[s] and parameters will be verified during construction by the geotechnical engineer.
>
> The geotechnical engineer will provide a producer statement PS4[5] that verifies that the design assumptions and soil parameters are correct.
>
> That the conditions for the building consent, in respect to geotechnical requirements, be limited to the suggested geotechnical PS4.

3.8 On 30 April 2018, the authority wrote to the applicant seeking the applicant's agreement to a resolution for the information required. This was in respect of a different proposed building (refer to paragraph 3.1). The authority sought the following (and the applicant agreed):

> Agreement that [the second geotechnical engineer] will provide a PS4 covering footing and pile construction works. This producer statement must be provided to [the authority] prior to commencement of any above ground building works or draining works.
>
> … If any of the geotechnical design parameters/recommendations described … deviate from the finding on site, an amendment to the approved building consent will be required.
>
> At the conclusion of the building works (prior to issue of [code compliance certificate]) a [geotechnical completion report] will be required. A copy of the Geotechnical PS4 must be provided to the design structural engineer.

[4] A certificate issued by the territorial authority under section 224(c) of the Resource Management Act which says that the authority has approved the survey plan and that the conditions of the subdivision consent have been complied with.
[5] Producer Statement – Construction

3.9 On 12 June 2018, the parties met to discuss the provision of geotechnical information, and the authority subsequently wrote to the applicant on 20 June 2018 describing requirements for reports to be provided to the authority identifying geotechnical parameters at building consent stage.

3.10 On 21 June 2018, the applicant wrote to the authority seeking agreement to the geotechnical information requirements for each stage of the building process.

3.11 On 16 July 2018, the authority wrote to the applicant providing a draft guidance note (reference GN002) that set out the authority's requirements for the geotechnical information to be provided by the applicant as part of the building consent process. The authority wrote to the applicant providing a final guidance note on 27 July 2018, following comment from the applicant.

3.12 On 26 September 2018, the authority requested further information from the applicant in respect of the building consent application BCO10274169 for the proposed building. With respect to the geotechnical information and foundation design, the authority requested:

> The Geotech information submitted so far comprises:
>
> A [The geotechnical review report]. We note that paragraph 2.4 of this [report] recommended "If larger apartment style buildings are proposed, then it would be prudent to re-visit foundation design at Building Consent stage in any event. Leading edge piles may prove desirable here.
>
> B [The geotechnical design parameters report (v2)]. This report is very brief (slightly over a page) and provided "assumed" geotechnical recommendations and parameters for building design regarding bearing capacity and expansive soil classification.
>
> The above geotechnical information provided is clearly insufficient to establish Clause B1 … compliance.
>
> …
>
> As the site relies on earthworks to create the building platform, please provide a geotechnical report with validated (by testing) geotechnical design parameters sufficient for the building foundation design on this site. The report must include information on existing ground conditions, soil sensitivity, soil expansivity, seismic soil category, slope stability, hazard analysis, foundation options, soil bearing capacity, minimum embedment depths for shallow foundations and inspection requirements.

3.13 On 26 November 2018, the applicant wrote to the authority describing the geotechnical information to be used for building consent processing requirements, and stating the applicant would, as part of the design using B1/VM4, provide a geotechnical Investigation Report, a geotechnical design parameters report, and an agreement letter setting out the proposed producer statements and engineer's inspections, and an agreement statement about the provision of producer statements during construction.

3.14 The applicant also expressed the view that the requirement imposed by the authority for the geotechnical engineer to certify the site is free from inundation was inappropriate, because a subdivision consent needs to demonstrate that the newly created lots have a stable building platform that is free from inundation, so this requirement does not need to be readdressed in the building consent application.

3.15 The Ministry received an application for determination on 31 January 2019.

3.16 On 27 February 2019, the applicant's structural engineer provided a response to the authority's request for further information. The information provided included the Suitability statement, structural calculations, details, and drawings.

3.17 The authority issued a request for further information on 1 April 2019 in respect of the building consent application. The request covered both the geotechnical information provided, and the structural design. With respect to the geotechnical information, the authority stated:

> The proposed building … is out of scope of NZS3604[6] and AS2870[7] type building.
>
> The geotechnical information submitted to date (4 March 2019) does not provide sufficient information to enable the [authority] to be satisfied on reasonable grounds that Clause B1 … will be met.

3.18 The authority sought further information about the reports provided, as follows:

- confirmation was sought whether piles were required (and details of these), as the Geotechnical review report referenced "leading edge piles" and that it would be prudent to revisit the foundation design if larger apartment-style buildings are proposed, as opposed to buildings within the scope of NZS 3604.
- information to determine whether the proposed foundation would affect existing timber pole retaining walls as the Geotechnical design parameters report (v2) referred to specific foundation design being required where building development is within 1.5m of existing retaining walls
- further analysis of the applicable geotechnical parameters, and confirmation of the settlement limits and loading of the proposed building, as the Suitability statement states long term stability of the steep batter along the western boundary needs to be addressed.

3.19 On 11 April 2019, the applicant responded to the 1 April 2019 request for further information. With respect to the geotechnical information requested, the applicant provided the Geotechnical information letter, which confirms the geotechnical parameters and assumptions made in the design.

3.20 On 15 April 2019, the authority requested further information from the applicant with respect to incorporating the recommendations in the Geotechnical information letter in the foundation design, as well as information about the building's structural design and details.

3.21 On 16 April 2019, the applicant responded to the authority's 15 April 2019 request for further information, providing information about the building's structural design and details.

4. The submissions

4.1 The applicant provided a summary of the background to the determination and a submission describing the issues. The applicant stated, in summary:

- The requests made by the authority during the building consent process for:
  - a geotechnical completion report
  - procedural requirements or conditions that are dealt with in the resource consent process

[6] New Zealand Standard NZS 3604:2011 Timber framed buildings
[7] Australian Standard AS 2870-2011 Residential slabs and footings

- an assessment under section 71 of the Act
- a geotechnical engineering report for inundation and overland flow issues,

will result in unnecessary delays, costs and inefficiencies.

- The authority's draft guidance note for the building consent application changed between versions, from requiring a geotechnical completion report, which was what initially held up the building consent process, to proposing a reporting requirement in respect of inundation and section 71. The building consent application no longer refers to a requirement for a section 71 assessment, but the need for a hazard analysis is a feature of the resource consent application.
- The authority appears to apply different policies to different building companies.

4.2 The application for determination included copies of:

- a request for further information from the authority dated 17 April 2018 for building consent No. BCO10259340
- a document dated 26 April 2018 from the applicant to the authority requesting that the applicant's building consents be processed based on B1/VM4
- an email dated 30 April 2018 from the authority to the applicant, seeking the applicant's agreement to a list of documents that are required at various stages of the building consent process
- correspondence between the applicant and the authority from May and June 2018 about the geotechnical information that was requested by the authority
- a document dated 24 November 2017 from the applicant to the authority seeking the authority's agreement to options for providing geotechnical information as part of the building consent process
- a document dated 21 June 2018 from the applicant to the authority about the geotechnical information requirements
- the authority's draft guidance note setting out its geotechnical requirements of the applicant, reference GN002, version 1.0 July 2018, and cover email from the authority to the applicant dated 16 July 2018
- the authority's final guidance note, GN002, version 1.1 July 2018, and cover email from the authority to the applicant dated 27 July 2018
- a letter to the applicant from the second geotechnical engineer, commenting on the authority's guidance note GN002, and correspondence between the applicant and authority from August 2018 about GN002
- a document from the applicant to the authority dated 26 November 2018 describing the geotechnical information to be used for building consent processing covering Building Code compliance and section 71 of the Act, entitled Practice Note B1-2
- the Geotechnical design parameters report (v1) and Geotechnical design parameters report (v2)
- the Geotechnical investigation report.

4.3 On 1 March 2019, the applicant provided a full set of plans and a copy of the PS1[8] for the structural design dated 1 March 2019, and additional information about the geotechnical information used, and submitted:

- the structural engineer has used the Geotechnical design parameters report (v2), which provides assumed soil parameters based on the geotechnical engineer's knowledge of the site
- the design assumptions and soil parameters will be verified during construction to satisfy paragraph 2.0.8 of B1/VM4
- the section 224(c) certificate has not been issued.

4.4 The authority provided a submission in response to the application for determination on 15 March 2019. The authority provided information about the background to the application for determination and submitted (in summary):

- The authority had been approached by the applicant some time previously to "approve building consent applications prior to the enabling and servicing works required as part of the subdivision being completed". The significance of this arose not from the cross over between subdivision and building consent processes, but from building designs being assessed and approved on anticipated parameters for a number of key building elements, being:
  - details for drainage connections
  - compliance with Clause E1 Surface water and consideration of sections 71 to 74 for overland flow paths and inundation
  - soil parameters for building elements (foundations and retaining walls).
- The applicant has sought a blanket approach to all its building consent applications. The authority does not agree that relying on design parameters for earthworks, drainage, and overland flow, which may have been or will be provided at resource consent stage, is an appropriate approach for all applications.
- The authority does not require geotechnical completion reports, but rather specific, relevant soil parameters necessary to assess the structural design of a building. These would normally be provided as part of a geotechnical completion report along with a statement of suitability, but it is the soil parameters that are required.
- The flooding risk to the building relates to assessing compliance with sections 71 to 74 of the Act and Clause E1.3.2 of the Building Code. By seeking building consent prior to wider ground levels being finalised and drainage connections and road levels being confirmed, it is difficult for the authority to determine whether the proposed structure will comply with the Act.

4.5 The authority also commented on the geotechnical reports for the site as follows:

- The Geotechnical investigation report states that it is only for use with respect to the subdivision consent application. The New Zealand Geotechnical Society wrote to the Ministry on 15 October 2015 noting concerns about the use of geotechnical reports for purposes beyond that for which they were prepared.

[8] Producer Statement - Design

- The Geotechnical investigation report recommends specific testing of building platforms, prior to foundation design. The authority has not seen the results of this testing, although the Geotechnical design parameters report (v2) suggests a number of soil parameters can be assumed for the subdivision.
- The Geotechnical design parameters report (v2) dated 6 December 2017 makes reference to the majority of earthworks being completed. The lodging of the building consent was approximately eight months later, and therefore it should have been possible to confirm specific geotechnical parameters for the foundation design.
- The PS1 by the structural engineer refers to a version of the Geotechnical report, which was "not included in the submission".

4.6 The authority provided:

- A copy of a PS1 by the structural designer dated 1 March 2019
- A copy of a letter dated 15 October 2015 from the New Zealand Geotechnical Society to the Ministry referred to above.

4.7 On 26 March 2019, the applicant provided a copy of the Suitability statement.

4.8 On 1 April 2019, the applicant submitted a revised PS1 that referenced the version (v2).

4.9 On 10 April 2019 the authority provided a response to questions from the Ministry, with a minor amendment to the response provided by the authority on 12 April 2019. The authority provided copies of the Suitability statement and Geotechnical design parameters report (v2), its 1 April 2019 request for further information, and responded to the questions about the natural hazards identified, the assessment of the completed building platform, and the producer statement as follows (in summary):

Natural hazards identified

- It accepted it was the authority's responsibility to determine whether to issue a building consent and under section 71 or to refuse it, but this was done in large part by considering new information submitted with an application together with information held by the authority.
- The applicant is seeking an approach that enables the overlap of land development activities related to subdivisions and engineering approvals, with approvals required for building design and construction.
- The lack of certainty relating to as-yet-incomplete earthworks and infrastructure prevents the authority from assessing Building Act-related natural hazards because factors that may give rise to inundation are unknown.
- "The flooding issues" were assessed by an engineer under the subdivision consent. The flooding/drainage for the site met the resource consent conditions. No natural hazards were identified under section 71.

Assessment of the completed building platform

- The Suitability statement was provided to the authority on 21 March 2019, and further geotechnical information was subsequently requested by the authority.

4.10 On 11 April 2019, the applicant submitted a copy of the 1 April 2019 response to the authority's request for further information (refer to paragraph 3.19)

4.11 On 16 April 2019, the applicant submitted the information provided to the authority as part of the request for further information process on 15 April 2019 (refer to paragraph 3.21).

4.12 On 21 May 2019, the applicant made a submission which set out the applicant's interpretation of the natural hazard provisions of the Act.

4.13 A draft determination was issued to the parties on 2 August 2019.

4.14 The applicant responded on 18 August 2019 advising it did not accept the draft determination. The applicant sought to correct the draft determination's description of the block and submitted (in summary) that:

- this was the tenth project on the block and the first where issues relating to assumed soil parameters had been raised
- the draft does not address the validity of the B1/VM4 compliance pathway. Paragraph 2.0.8 of B1/VM4 clearly states that assumed geotechnical parameters can be used, "subject to verification of those parameters at the required times during or before construction"
- the applicant agreed to the 30 April 2018 letter (refer to paragraph 3.8), but the authority changed its mind, which is why the applicant approached the authority on 21 June 2018 (refer to paragraph 3.10); this should be noted in the determination
- the applicant did not agree to the draft guidance note (refer to paragraph 3.11), as it was factually incorrect and required the geotechnical engineer to verify the overland flow paths. The applicant also noted that when the building consent was issued, there had been no further information sought with respect to flooding and overland flow paths, as was the case for the immediately adjacent site below lots 60 to 66 which was issued without any request for information
- with respect to the applicant's 26 November 2018 letter (refer to paragraph 3.13), the applicant noted it was the subdivision engineer who prepared the road and the floor level of lots 60 to 66. The applicant agreed to provide a registered surveyors certificate to certify that the road preparation and building platforms were designed and constructed to the approved levels to ensure compliance with the overland flow design requirements, for the purpose of removing any doubt for the authority.

4.15 The authority responded to the draft determination on 16 August 2019, accepting the draft determination and submitting that:

- the authority did not refer to Verification Method B1/VM1 as stated in the draft
- while the same information may satisfy resource consent and building consent requirements, it is incumbent on an applicant to provide the information as part of a building consent as specified in section 45 of the Act. There may be situations where a building consent authority is not the territorial authority.

4.16 On 27 August 2019, the Ministry sought information from the authority as to why the authority required the applicant's engineers to identify whether there were any natural hazards for the site, and if the road level and ground contours were prepared in accordance with the authority's specific requirements as stated by the applicant.

4.17 The authority responded to the Ministry's request on 23 September 2019 noting:

- requests for further information on overland flow paths or inundation were not made in respect of the building consent (or the building consent for the adjacent lots). It was assessed that the inundation hazard was not a factor for the subject building consent
- the draft guidance note had been prepared and offered to the applicant "in response its assertion that consent processes [subdivision and building] overlap". The draft guidance note has been withdrawn; if the subdivision and building consent processes were to overlap, sufficiently robust processes would be required to deliver compliant buildings.

5. The expert's report

5.1 General

5.1.1 As stated in paragraph 1.6, I engaged an independent expert who is a Chartered Professional Engineer with expertise in structural engineering to assist me in this matter ("the expert"). I asked the expert to review the building consent application documentation and provide a view on the geotechnical and foundation design information requested by the authority.

5.1.2 The expert provided a report on 10 June 2019 and copies of the report were sent to the parties on 11 June 2019.

5.2 The geotechnical documentation

5.2.1 The expert reviewed the geotechnical documentation for the site of the proposed building that was part of the building consent application and submitted in response to requests by the authority for further information.

5.2.2 The expert considered the Geotechnical investigation report to be "fairly comprehensive" and provides sufficient preliminary foundation design recommendations and soil parameters for foundation design purposes. The expert noted that this report was not provided as part of the building consent application.

5.2.3 With reference to the following extract from the Geotechnical investigation report, the expert noted that the report does not categorically state that further site or lot-specific geotechnical investigation reports are required:

> Preliminary foundation design recommendations are given herein. These recommendations will be confirmed or modified as appropriate as part of the Geotechnical completion report to be prepared at the close of subdivisional earthworks.
>
> We expect further geotechnical assessment at the time of Building Consent for future buildings in close proximity to any slope greater than 1V:4H[9] (in particular structures along sea cliff crest and gully crest). That assessment could be in the form of drawing review or extend to site specific assessment/investigation if deemed necessary.

5.2.4 With respect to the Geotechnical design parameters report (v2), the expert noted the report, intended to accompany a building consent application, is very brief. The expert noted that the report does not:

- comment on recommendations for foundation type

[9] A slope of 1 in 4 (or 14 degrees)

- comment on clause 2.4 of the Geotechnical review report, which stated that the building proposals were set inland of the foundation design line (FDL), and should be appropriate for NZS 3604-type dwellings, but if a larger apartment building is proposed it would be prudent to revisit foundation design at building consent stage
- comment on or confirm site seismicity
- comment on or confirm design parameters for basement retaining wall design
- comment on construction methodology for basement retaining walls
- comment on water table expectations.

5.2.5 The expert was of the view that the issues described in paragraph 5.2.4 should have been addressed in the Geotechnical design parameters report (v2).

5.2.6 With respect to whether assessed/assumed geotechnical design parameters can be used to support a foundation design, the expert was of the view that there is no reason why a foundation design cannot be undertaken using assessed/assumed parameters, provided there is reasonable evidence to support the parameters. This is because geotechnical engineers always verify the parameters during construction and make design-change recommendations should the parameters not be met.

5.2.7 With respect to the Suitability statement, the expert noted that this report confirms the recommendations made in the Geotechnical design parameters report (v2) including the bearing capacity for shallow foundations, soil classification for expansiveness, and site subsoil classification for seismicity. The expert noted that the report refers to buildings constructed in accordance with NZS 3604, even though the proposed building is a seven unit, three storey building plus basement and lies well outside the scope of NZS 3604. The expert noted that the subsequent Geotechnical information letter also does not comment on this issue.

5.3 The authority's submission

5.3.1 The expert commented on the submission from the authority (refer to paragraphs 4.4 and 4.5) in response to the application for determination, stating that he agreed with the authority's response in which it:

- acknowledged that a geotechnical completion report is not necessarily required before the issue of a building consent
- acknowledged that a site-specific geotechnical report is also not necessarily required before the issue of a building consent
- argued that it was required to be satisfied, on reasonable grounds, that Clause B1 Structure was met
- argued that it has obligations at building consent stage under section 71 of the Act with respect to natural hazards despite any consideration of those hazards at resource consent stage
- argued that without as-built drainage connections/finished road levels it is difficult to ensure compliance with the Act and Building Code.

5.3.2 Taking account of the authority's comment that the Geotechnical investigation report was not intended for use outside consideration of the subdivision consent application, the expert was of the view that the limitation, found in virtually every geotechnical report, does not say the report is to be solely used for the subdivision consent

application, but that review and approval by a geotechnical engineer is required if it is to be used for other purposes, such as for a building consent application. The expert questioned why the Geotechnical investigation report would make very specific foundation recommendations for future developments if those recommendations were not to be made use of.

5.3.3 Taking account of the authority's concern that it had not seen the results of testing of building platforms described in the Geotechnical investigation report, the expert noted that the soil classification in the Geotechnical investigation report was "H1 (Highly reactive)", and any future report would only likely reduce that classification, and that foundation design has been based on this classification.

5.3.4 However, the expert also noted that the Geotechnical review report makes no comment on soil classification and the Geotechnical design parameters report (v2) reduces the soil classification for the site from "highly reactive" to "moderate", but gives no justification for that reduction.

5.3.5 The expert agreed with the authority's comment that the Geotechnical design parameters report (v2) makes reference to the fact that the majority of earthworks were completed, and given the lodgement of the building consent application was some eight months later, it should have been possible to confirm the geotechnical parameters for the foundation design.

5.4 Natural hazards

5.4.1 The expert made the following comments about the authority's view that until it sees a geotechnical completion report or as built plans for the subdivision, it is difficult to assess potential hazards and determine if final earthworks levels have altered the risk of the hazard in any way:

- The geotechnical features around the perimeter of the development such as coastal inundation, land stability, and erosion, as well as overland flow paths are usually considered as part of the resource consent and engineering works for the subdivision, which means an authority will be aware of such hazards.
- Final roading levels can affect overland flow paths and access to properties, but for this development, the expert noted he did not expect final levels to vary significantly from design levels, and if there was a significant change, this could be dealt with by way of an amendment to the building consent.

5.5 Response to the expert's report

5.5.1 The applicant made a submission dated 1 July 2019 in response to the expert's report. The applicant and the applicant's second geotechnical engineer:

- Acknowledged that the information provided when the building consent application was lodged was insufficient, but noted that the determination should consider information provided during the consenting process in response to requests for further information from the authority, not just the information provided in the original building consent application.
- Noted the comments that the Geotechnical design parameters report (v2) was lacking, but considered the information "was available elsewhere".

- Noted that only a very small part of the building's footprint consists of four storeys[10]. Apart from the garage block walls, the structure is timber-framed walls and floors. While there was a reference to NZS 3604 in the Geotechnical review report, there was no mention of NZS 3604 in the Suitability statement or any other report.
- The proposed bearing capacity values fall within the "normal NZS 3604 capacity limitations" and are considered appropriate for the site.

6. Discussion

6.1 The relevant legislation

6.1.1 Section 49 states:

> 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.

6.1.2 The matter turns on whether adequate evidence had been provided to the authority to establish the proposed foundation design, based on assumed geotechnical parameters, would comply with the Building Code.

6.2 Did the building consent documentation meet the section 49 test?

6.2.1 In considering the adequacy of the information provided to the authority, I have taken account of the expert's view of the geotechnical information provided with the initial application for building consent, and also the information provided to the authority in response to its requests for further information.

6.2.2 I note that building consent No. BCO10274129 has now been issued by the authority.

6.2.3 The Suitability statement provided certification of the earthworks on the site. The earthworks were monitored, and tested to confirm compliance with the specifications, and the geotechnical parameters for foundation design were confirmed. The authority therefore granted the building consent based on confirmed geotechnical parameters.

6.2.4 However, the dispute between the parties is about the extent to which the building consent application, as initially submitted, could be assessed based on geotechnical information that set out the assumed geotechnical soil parameters, with assumptions and parameters to be verified during construction by the geotechnical engineer.

6.2.5 The applicable reports are the Geotechnical investigation report (dated 3 August 2015), the Geotechnical review report (dated 3 June 2016) and the Geotechnical design parameters report (v2) (dated 6 December 2017). It appears the application for building consent was lodged around August 2018.

6.2.6 Taking account of the expert's view of the information provided in these reports (refer to paragraph 5.2.4), I consider there was insufficient information provided in respect of the geotechnical assumptions and parameters, specifically:

- specific recommendations for foundation type

[10] I consider four of the seven units have four storeys

- the reports' reference buildings within the scope of NZS 3604 (see clause 2.4 of the Geotechnical review report), but the proposed building is outside the scope of NZS 3604
- the lack of information about the design parameters for the basement retaining wall design
- the lack of information about the construction methodology for basement retaining walls
- the lack of information on water table expectations.

6.2.7 I note that the applicant has acknowledged the shortcomings in the building consent application but has stated that the information was provided as additional information and available elsewhere. I have taken into account the other geotechnical information, particularly the Geotechnical investigation report (which was not provided as part of the building consent application). While I accept this report was comprehensive, and I note the expert's comment that it provided sufficient preliminary foundation design recommendations and soil parameters for foundation design purposes, it does not address all the issues identified by the expert.

6.2.8 With respect to whether assumed geotechnical design parameters can be used as the basis for a foundation design, the expert stated that in principle, a foundation design can be undertaken using assumed parameters, provided there is reasonable evidence to support the parameters. The expert noted this was because geotechnical engineers always verify the parameters during construction, and make design change recommendations should the parameters not be met.

6.2.9 I also note that paragraph 2.0.8 of B1/VM4 (the applicant's stated means of compliance) states:

> Design assumptions and soil parameters shall be verified during construction. The designer shall nominate what supervision, including verification of soil parameters, will be undertaken during the construction period.

6.2.10 The amount of site specific geotechnical information required for a building consent application must be considered on a case-by-case basis, depending factors such as the nature of the proposed building work, the amount of earthworks and excavation proposed (including the proximity of excavation to adjacent boundaries), whether there are any previous geotechnical reports, and whether there are any obvious or known geotechnical issues.

6.2.11 However, as stated by the expert, there is no reason why a foundation design cannot be undertaken using assumed parameters, provided there is reasonable evidence to support the parameters. For most residential construction where there is no previous geotechnical report and no significant earthworks being undertaken, good ground in terms of bearing pressures is assumed during design and confirmed during construction by visual inspection, but not testing. If the authority or structural engineer have any concerns following their inspection then either the issue is dealt with by the structural engineer, or geotechnical input is called for.

6.2.12 However, in this case, and given the nature of the site and the proposed building work and given my conclusions in paragraphs 6.2.6 and 6.2.7, I am of the view that insufficient geotechnical information was provided, and the authority did not have reasonable grounds to conclude the proposed building work would comply with the Building Code in respect of the geotechnical parameters and foundation design.

6.3 The application of the natural hazard provisions of the Act

6.3.1 I provide the following comments on the application of the natural hazard provisions under the Act to assist the parties; these provisions are not part of the matter to be determined but was the subject of requests made by the authority of the applicant during the building consent process with respect to inundation and overland flow paths.

6.3.2 The applicant is of the view that given the need to demonstrate that the newly-created lots have a stable building platform that is free from inundation for the purposes of a subdivision resource consent, it is inappropriate that the authority further impose a requirement that the geotechnical engineer must also certify that the lots are free from inundation in a building consent application.

6.3.3 The authority is of the view that until it sees a geotechnical completion report or as-built plans for the subdivision, it is difficult to assess potential hazards and determine if final earthworks levels have altered or created the risk of a hazard.

6.3.4 The primary purpose of the natural hazard provisions of the Act is to ensure consideration is given to how building work affects natural hazards and impacts on the land or other property. The provisions do not prevent building work even where land is subject to natural hazards, unless the building work will accelerate, worsen or result in a natural hazard on the land which the building work is to be carried out or to any other property.

6.3.5 Where building work is undertaken on land that is subject to a natural hazard and the building work will not accelerate or worsen the natural hazard, the purposes of the provisions are to:

- notify of the existence of natural hazards by placing a notice on the title
- ensure the building work is protected from the natural hazard
- confirm that the building consent authority has considered the natural hazard when granting the building consent
- give an authority certain protections from liability, under section 392(3) of the Act, relating to its decision to grant a building consent notwithstanding the natural hazard.

6.3.6 To put it another way, the natural hazard provisions exist so that the risk to land and other property can be recognised, the effect of the building work considered, and steps taken to mitigate those risks and effects. Where the risks and effects cannot be sufficiently mitigated but the land is still subject to a natural hazard, then the provisions recognise that it may nevertheless be acceptable to build on the land and require notification of the risk on the title to the land and provide authorities with immunity (on the basis that the owner is knowingly building on land affected by the natural hazard). Placing a notice on the title ensures that future purchasers and other interested parties are aware that the land is subject to a natural hazard.

6.3.7 Although I do not have jurisdiction over the Resource Management Act ("RMA"), I note that a consent authority may refuse a subdivision consent application, or may grant a consent subject to conditions, if the land is at significant risk from hazards. "The management of significant risks from natural hazards" is a matter of national

importance under section 6(h) of the RMA. I also note the definition of natural hazard under section 2 of the RMA[11]:

> Any atmospheric or earth or water related occurrence (including earthquake, tsunami, erosion, volcanic and geothermal activity, landslip, subsidence, sedimentation, wind, drought, fire or flooding) the action of which adversely affects or may adversely affect human life, property, or other aspects of the environment.

6.3.8 With respect to decisions on subdivisions under section 106 of the RMA, Quality Planning, which is a partnership between the Ministry for the Environment and other agencies states[12]:

> Section 106 requires both the applicant, as part of their application with sufficient technical support, and councils to consider the following matters in deciding subdivision consent applications:
>
> - whether there is a significant risk from natural hazards; or
> - whether sufficient provision has been made for legal and physical access to each lot created by the subdivision.
>
> Following consideration of these matters, a council can either refuse or grant the application subject to conditions. Conditions can only be imposed in order to avoid, remedy or mitigate effects from the above list and must be in accordance with [section] 108.
>
> Section 108 is subject to … [section] 108AA that limits the matters that consent conditions can cover to the following:
>
> - the applicant agrees to the condition;
> - the condition is directly connected to an adverse effect of the activity on the environment;
> - the condition is directly connected to an applicable district rule, regional rule, or national environmental standard; or
> - the condition relates to administrative matters that are essential for the efficient implementation of the relevant resource consent.
>
> In this context, an 'applicable rule' means a rule that is the reason, or one of the reasons that resource consent is required for the activity. These limitations do not prevent:
>
> - consent authorities from refusing subdivision consent to manage risks of natural hazards (section 106) or other subdivision requirements (section 220)
> - regulations to determine the form or content of consent conditions.

6.3.9 For a site to which the natural hazard of inundation applies, it is clear that under the RMA, both a resource consent applicant and the authority are required to consider whether there is a significant risk from natural hazards.

6.3.10 However, this obligation does not mean that consideration is not also required under the Building Act. In considering an application for a building consent, a building consent authority must consider whether sections 71 to 74 apply.

[11] Ministry for the Environment, *Resource Legislation Amendments 2017 – Fact Sheet, New matters to consider for resource consents and designations*, April 2017
[12] www.qualityplanning.org.nz

6.3.11 While it may be the case that an applicant has demonstrated the site is free from natural hazards or the effects are mitigated through the resource consent process, the authority must consider whether either of the tests in section 71 of the Building Act apply to the proposed building work:

(a) the land on which the building work is to be carried out is subject or is likely to be subject to 1 or more natural hazards; or

(b) the building work is likely to accelerate, worsen, or result in a natural hazard on that land or any other property.

6.3.12 In order to do so, the authority can rely on information that was generated through the resource consent process, other relevant information about the site and area, and may require additional information to be provided. However, I am of the view that the requirement for information should be considered on a case by case basis.

6.3.13 In this case, I note that the authority set the specific requirements with respect to levels and ground contours for the subdivision, as part of the resource consent process, and in doing so would have been aware of whether any natural hazards existed for the site, and the extent of these hazards. I also note that the applicant had agreed to provide registered surveyors certificates to certify the road preparation and building platforms were designed and constructed to the approved levels to ensure the overland flow design requirements were satisfied.

7. The decision

7.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the authority correctly exercised its power of decision by refusing to grant the building consent No. BCO10274129 in respect of the geotechnical information provided at the time the building consent was initially sought, and I confirm that decision.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 18 November 2019.

Katie Gordon
Manager Determinations

Appendix: The legislation

A.1 Relevant provisions of the Building Act 2004 discussed in this determination include:

49 Grant of building consent

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.

71 Building on land subject to natural hazards

(1) A building consent authority must refuse to grant a building consent for construction of a building, or major alterations to a building, if—

(a) the land on which the building work is to be carried out is subject or is likely to be subject to 1 or more natural hazards; or

(b) the building work is likely to accelerate, worsen, or result in a natural hazard on that land or any other property.

(2) Subsection (1) does not apply if the building consent authority is satisfied that adequate provision has been or will be made to—

(a) protect the land, building work, or other property referred to in that subsection from the natural hazard or hazards; or

(b) restore any damage to that land or other property as a result of the building work.

(3) In this section and sections 72 to 74, natural hazard means any of the following:

(a) erosion (including coastal erosion, bank erosion, and sheet erosion):

(b) falling debris (including soil, rock, snow, and ice):

(c) subsidence:

(d) inundation (including flooding, overland flow, storm surge, tidal effects, and ponding):

(e) slippage.

72 Building consent for building on land subject to natural hazards must be granted in certain cases

Despite section 71, a building consent authority that is a territorial authority must grant a building consent if the building consent authority considers that—

(a) the building work to which an application for a building consent relates will not accelerate, worsen, or result in a natural hazard on the land on which the building work is to be carried out or any other property; and

(b) the land is subject or is likely to be subject to 1 or more natural hazards; and

(c) it is reasonable to grant a waiver or modification of the building code in respect of the natural hazard concerned.

73 Conditions on building consents granted under section 72

(1) A building consent authority that is a territorial authority that grants a building consent under section 72 must include, as a condition of the consent, that the building consent authority will, on issuing the consent, notify the consent to,—

(a) in the case of an application made by, or on behalf of, the Crown, the appropriate Minister and the Surveyor-General; and

(d) in the case of an application made by, or on behalf of, the owners of Māori land, the Registrar of the Maori Land Court; and

(e) in any other case, the Registrar-General of Land.

(2) The notification under subsection (1)(a) or (b) must be accompanied by a copy of any project information memorandum that has been issued and that relates to the building consent in question.

(3) The notification under subsection (1)(c) must identify the natural hazard concerned.

A.2 The relevant paragraph of the Verification Method B1/VM4 discussed in this determination says:

2.0.8 Supervision and verification of soil parameters

Design assumptions and soil parameters shall be verified during construction. The designer shall nominate what supervision, including verification of soil parameters, will be undertaken during the construction period.

Appendix B: The geotechnical reports

B1 The following table summarises the geotechnical information (refer to paragraph 3.3 for the details of the geotechnical information):

Geotechnical investigation report
Noted the FDL[13] has been established a nominal 20m from coastal margins and 10m from the crest of the gully. Noted the soils present are considered to have a soil classification of highly reactive in terms of BRANZ Addendum Study Report 102A based on AS 2870:2011[14], and this would require foundations design to comply with AS 2870, cited in NZS 3604: 1999, or foundations to be specifically designed. Noted specific testing of building platforms prior to foundation design was recommended, given the subgrade at other locations within Hobsonville Point has been found to be highly variable across short distances. Noted that the site subsoil is Class C – shallow soil sites. Provided a preliminary foundation design recommendations covering shallow foundations and piled foundations: Shallow foundations • above FDL and within ground included at 14° • expansive soil class moderate for site SB10 Piled foundations • dependable end bearing capacity of 270kPa for piled foundations embedded at least 4.0m • dependable skin friction 15kPa • dependable end bearing capacity of 1.5kPa for piled foundations founded 3 x borehole diameter into the rock, with skin friction of 60kPa • soil bulk density 18kN/m^3 • no calculation of lateral support carried out until a horizontal buttress of 6 x borehole diameter is present in front of any pile, or a minimum creep zone of 2m should be considered • soil creep width 3 x borehole diameter • no skin friction calculated within the creep zone • passive resistance in front of piles to be determined using Broms[15] method, assuming undraining shear strength Cu=70kPa.
Geotechnical review report
Noted the FDL has been conservatively applied due to the possible presence of uncertified fills. Noted SB10 is a more sheltered area of the foreshore and a 5m regression and 10m setback from the current sea cliff and 10m from the eastern gully appears appropriate. Noted the current building proposals were set inland of the FDL and accordingly should be appropriate without the need for specific foundation design for NZS 3604-type dwellings, but If larger apartment type buildings were proposed, it would be prudent to revisit foundation design at building consent stage.
Geotechnical parameters report (v1)
Noted the earthworks were being monitored by the second geotechnical engineer. Set out assumed geotechnical parameters for all lots within Block 9 as follows: • geotechnical ultimate bearing capacity of 300kPa • expansive soil class moderate for site SB10 • completed lots expected to be free from natural hazards described in section 106 of the RMA.

[13] Foundation definition line
[14] Australian Standard AS 2870-2011 Residential slabs and footings
[15] A methodology used to analyse the lateral forces on cantilevered piles.

Geotechnical parameters report (v2)
Noted the majority of earthworks were completed, and the second geotechnical engineer was engaged throughout to monitor and observe the works and to test fills placed. Set out assumed geotechnical parameters for all lots within Block 9 as follows: • geotechnical ultimate bearing capacity of 300kPa • expansive soil class of moderate for site SB10 • completed lots expected to be free from natural hazards described in section 106 of the Resource Management Act • specific foundation designs required where building development within 1.5m of any existing retaining walls or within the zone of influence of existing drainage lines.
Suitability statement
Certified the earthworks were monitored, and tested to confirm compliance with the specifications. Noted that subject to the completion of retaining walls, and apart from the temporary batter, the finished landform is satisfactory for all building platform areas and these areas will not be subject to the natural hazards described in section 71(3) of the Act. Confirmed the soil classification on the building platforms in site SB10 as moderate. Confirmed the building development should be designed in accordance with the requirements of NZS 1170.5:2004[16] site subsoil Class C – shallow soil sites. Confirmed lots had a geotechnical ultimate bearing capacity of 300kPa at current subgrade levels, within the influence of conventional shallow residential building foundation loads.
Geotechnical information letter
Noted with respect to the queries about the Geotechnical review report that the FDL does not lie within the area of the proposed building for site SB10, the earthworks generally conform to those proposed in the original resource consent drawings, and therefore there was no requirement for leading edge piles in these lots. Noted with respect to the queries about the Geotechnical parameters report (v2), there were changes to the development scheme for site SB10 since the report, and there are now no existing or proposed retaining walls located within or adjacent to lots 60 to 66. Noted with respect to the Suitability statement that: • A steep batter has been formed along the alignment of the proposed basement retaining walls in lots 60 to 66. Long term stability of the batter will be addressed through the proposed basement retention. • Cuts have been made to the building platform, equating to a reduction in applied load to the soil of 25 to 35 kPa. The structural loads will be 10 to 15kPa, so post construction settlement should be negligible as the applied loads are less than the soil load removed. • The appropriate soil classification is moderate. The foundation design accommodates a soil classification of highly reactive. Provided the structural engineer has taken account of the expansive soil classification and characteristic ground movement, there is no minimum foundation embedment depth required. • The piles are not required to resist lateral loads from soil creep associated with the coastal margin. Design parameters of 100kPa allowable end bearing capacity, 40kPa ULS skin friction, with skin friction ignored within the top 1000mm of pile embedment, 0.5 static load and 0.8 dynamic load reduction factors are considered appropriate. • Based on soil strengths and expected loads on the proposed walls, the Ka and K0 factors for determining active earth pressures for free standing cantilevered walls and at rest pressure for rigid retaining walls are appropriate for the basement walls.

[16] New Zealand Standard NZS 1170:2004 Structural design actions – Part 5: Earthquake actions