CENTRAL HAWKE'S BAY DISTRICT COUNCIL

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Technical memorandum for an application for subdivision consent under the Resource Management Act 1991 in respect of 25 Punawaitai Road, Pourerere Beach

To: Ryan O'Leary, Planning Manager, The Property Group

From: Lee Paterson, Senior Geotechnical Engineer, Stantec

1. Application details

Applicant's name:	Paonui Point Limited (**Applicant**)
Application number:	RM220003
Activity type:	55 lot subdivision (described in more detail below)
Site address:	25 Punawaitai Road, Pourerere Beach, legally described as Lot 1 DP 571994 & Lot 7 DP 571994; Lot 22 DP 571994 & Lot 2 DP 564721 (**Property**)

2. Introduction

Qualifications and relevant *e*xperience

2.1. My name is Lee Paterson, and I am a Senior Geotechnical Engineer at Stantec.

2.2. I have a Bachelor of Science (Civil Engineering) with Geology from the University of Geology.

2.3. My speciality is assessing land use and subdivision consent applications in relation to potential natural hazards. In this role I advise planning and consent departments and Building Consent departments in a number of local authorities around the country.

3. Overview and scope of technical memorandum

3.1. The Applicant has applied for a resource consent to subdivide the Property into:

a. 48 allotments suitable for residential development plus balance lot;

b. 3 lots for shared open space;

c. 1 lot for stormwater detention and treatment; and

d. 2 lots for shared access.

3.2. My technical memorandum assesses the geotechnical effects of the Application to assist the preparation of the Central Hawkes Bay District Council's (**Council**) reporting planner's report under s 42A of the RMA and will cover the following matters:

a. Natural hazard under Building Act sections 71 to 73 means any of the following:

b. erosion (including coastal erosion, bank erosion and sheet erosion);

c. falling debris (including soil, rock, snow and ice);

d. subsidence;

e. inundation (including flooding, overland flow, storm surge, tidal effects and ponding); and

f. slippage.

3.3. Further, my memorandum makes comment on general geotechnical risks, or other specific natural hazards, including:

a. Potential liquefaction / seismic amplification

b. Coastal inundation / tsunami

3.4. In preparing this technical memorandum, I have reviewed the following documents relevant to the Application:

a. Applicant's resource consent application (**Application**), and in particular:

i. Fraser Thomas Limited Infrastructure report, dated 25 August 2021, Project No. 23828 for James Bridge, 25 Punawaitai Rd, Pourerere, Central Hawke's Bay

Specifically

ii. Land Development & Engineering Ltd Geotechnical Investigation report for Proposed Stage 3 Subdivision at Punawaitai Road , Pourere, dated 11 August 2021, Project Reference: 14668.2 Revision 2 (**Applicant's Geotechnical Report**).

4. Executive summary

4.1. The Applicant's Geotechnical Report has been undertaken in a professional manner, and the scope and extent of geotechnical investigations is sufficient to quantify the nature of ground conditions for the purpose of the Application.

4.2. Liquefaction - Whilst there are thin lenses of soils with a potential susceptibility to cyclical loading induced liquefaction, these are relatively thin. Soils generally contain a sufficiently proportion of plastic fine-grained soils to exclude the potential for liquefaction. The numerical analysis undertaken concludes that settlement under ultimate seismic loads may be in the order of 5 to 15mm, and the extent of lateral spreading from streams is likely to be limited to less than 10m.

4.3. Slope Stability – this risk has been acknowledged by the Applicant, and conservative building setbacks are proposed by the application order to isolate the building from potential slope instability and the development of long term soil creep. The recommended building setback is

as follows: 10m back from the crest of any crest / break of slope greater steeper than 1V:4H (18° from the horizontal). Slope stability is Generally discounted as a risk due to the distance pf proposed developments from steeper slopes.

4.4. Foundation Strengths – the Applicant's Geotechnical Report recognises that soils are present on site that do not generally meet the ultimate bearing capacity of 300kPa, and will therefore not meet Section 3.1.2 of NZS3604:2011 Timber Framed Buildings code for standard design. The Applicant's Geotechnical Report suggests that 70% of this value should be readily achieved and that Specifically Engineered Design (SED) will be generally required. Some examples of such SED are provided.

4.5. Inundation/Flood Risk - A site specific flood risk analysis has been undertaken with the conclusion that the site is safe from flooding. We have not undertaken a parallel check of this methodology, but see no reason to dispute this work, as it appears to follow standard processes to estimate the magnitude of rainfall events, and uses actual ground profile data for stream dimensions and gradient.

5. Overview of Application

5.1. The Application describes the subdivision proposal in detail, however by way of summary, the proposed subdivision is the third of three stages and is itself proposed to be completed over three stages (Stages 3A,3B and 3C). An excerpt of the proposed scheme plan is included in **Figure 1** below.

Figure 1: proposed scheme plan excerpt.

5.2. The Application describes the proposed subdivision as follows:

a. 47 allotments (Lots 1 to 14, 16, 17, 19 to 21 and 23 to 50 having areas between 1790m² and 4700m² suitable for residential development);

b. Lot 22 – 1.74 ha, part of which contains a house site and part of which is intended to be divided into paddocks to be available for lease by owners of the 47 other residential lots for the grazing of horses;

c. Lot 15 – 2711m² (which will contain the stormwater detention and treatment area serving Stage 3);

d. Lot 18 –5354m² (shared open space);

e. Lot 51 - 1.27 ha (shared open space);

f. Lot 52 - 1.6 ha (shared open space);

g. Lots 53 and 54 (shared access); and

h. Lot 60 – approximately 358 ha (balance area).

5.3. It is anticipated that Lots 15 (stormwater detention and treatment); lots 53 and 54 (shared access); and, Lots 18, 51 and 52 (shared open space) will be held in separate titles, to be owned by an Incorporated Society (to be established). Each owner of the new lots will be required to be a member of the incorporated society which will control and manage the communal facilities, including the open space areas and rights of way.

5.4. Communal open space areas are also proposed to be developed by the incorporated society for recreational activities in future, but these do not form part of this Application.

5.5. The Application is for subdivision consent only, and no land use consent has been applied for in relation to development of the proposed lots (e.g. for potential non-compliance of development with the Operative Central Hawke's Bay District Plan's Rural Zone's permitted activity rules, such as minimum setbacks of residential dwellings from internal boundaries).

5.6. I understand that the subdivision proposal requires consent as a discretionary activity pursuant to rule 9.9.4 of the Operative Plan as it is unable to comply with all relevant subdivision performance standards in standards 9.10(1)(a)-(i) of the Operative Plan, particularly in relation to minimum lot size and vehicle access.

6. Summary of proposal (relevant to Geotechnical Engineering and natural hazards)

6.1. I have no issues with the work undertaken by LDE in their Geotechnical Investigation of this site.

7. Technical assessment of effects

7.1. Liquefaction risks have been investigated and numerically modelled.

7.2. There is a minor risk of lateral spread during a significant seismic event, up to 10m away from streams. This risk has been managed by appropriate no-build setbacks from these features.

7.3. Risks of settlement is present if foundations are not specifically designed for weaker soils, but this engineering design is feasible.

7.4. No specific conditions are required as part of the consent, but title should reflect the availability of this geotechnical information and advice should be made that ground conditions are weak

and specific engineering design of foundations is likely to be required by the Building Consent authority.

7.5. We see no reasons to decline the application on the grounds of natural hazards or geotechnical conditions present on site.

8. Statutory considerations

Submissions relevant to Geotechnical risks

8.1. A brief review of the submissions did not indicate that there were any geotechnical concerns raised by submitters.

9. Recommendation and conditions

Adequacy of information

9.1. The above assessment is based on the information submitted as part of the Application. I consider that the information submitted is sufficiently comprehensive to enable the consideration of the above matters on an informed basis. In particular:

a. The level of information does provide a reasonable understanding of the nature and scope of the proposed activity as it relates to the Operative Plan, and the Proposed Plan.

b. The extent and scale of any adverse effects on the environment in terms of geotechnical risks are able to be assessed.

Conditions: Geotechnical

9.2. No Specific written conditions are proposed by the applicant.

9.3. The Geotechnical report includes areas of no-build setback associated with potential ground movement during a significant seismic activity. – these should be captured as part of the consent.

<u>Recommended Amendments to Conditions</u>

9.4. We have no specific conditions for the subdivision to go ahead.

9.5. The following Advice Notes should be included on title:

9.6. This site has been subject to a greater subdivision and Geotechnical Investigation Report by LDE Land Development & Engineering Ltd for Proposed Stage 3 Subdivision at Punawaitai Road , Pourere, dated 11 August 2021, Project Reference: 14668.2 Revision.2, if not lodged on title, this information should be available in the local authority records to inform future Land Information Memoranda requests or Building Control Project Information Memoranda requests.

9.7. Ground Conditions on the site are generally shown to not meet the minimum requirements of NZS3604:2011 Timber Framed Buildings. It is likely that Building Control will require further ground investigations to inform Specific Engineering Design at the time of Building Consent for each title.

9.8. This report includes advice on 10m no-build zones associated with modest potential lateral spread that may occur near waterways during a significant seismic event.

9.9. Ground conditions are weak, and unlikely to meet the minimum requirements defined for "good ground" as per Section 3.1 of NZS3604:2011 Timber Framed Buildings. Building Consents will require site-specific geotechnical testing, and Specific Engineering Design to be undertaken by suitably qualified specialists.