

BEFORE THE CENTRAL HAWKE'S BAY DISTRICT COUNCIL  
INDEPENDENT HEARINGS COMMISSIONER

**UNDER** The Resource Management Act 1991

**AND**

**IN THE MATTER OF** A NOTIFIED RESOURCE CONSENT APPLICATION FOR  
SUBDIVISION TO CREATE 11 LOTS & RURAL LIFESYLE  
LOTS, 2 BALANCE LOTS, AND A LOT TO BE  
AMALGAMATED AS A BOUNDARY ADJUSTMENT) AT  
MANGAKURI ROAD (RM230016)

**BETWEEN** **SR & BJ WILLIAMS CHARITABLE TRUST BOARD**  
Applicant

**AND** 24 Submitters

**Central Hawke's Bay District Council**  
Consent Authority

**AND**

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## SUMMARY OF EVIDENCE BY THOMAS HENRY BUNNY

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### INTRODUCTION AND QUALIFICATIONS

- 1 My name is Thomas Henry Bunny and my qualifications, experience and agreement to abide by the Code of Conduct for Expert Witnesses is as set out in paragraphs 2 – 8 of my Statement of Evidence (“SOE”).
- 2 My following summary statement covers the following matters :
  - a) A summary of the key points of my geotechnical findings
  - b) Summary of findings from CHBDC Geotechnical Engineer & Planning manager
  - c) Response to key submission points
  - d) Summary and Conclusion

### SUMMARY OF GEOTECHNICAL FINDINGS

- 3 The site was identified at an early stage to have complex engineering risks following a site walkover by RDCL and subsequent review of historical aerial imagery from 1952, 1964, 1972, 1976 and more recent review of Google Earth and NIWA Satellite Imagery .
- 4 We observed historical evidence of land instability including debris lobes and landslide runout areas, but also prominent resistant ridges that have not appeared to have changed significantly over ~72 years. These ridges are where we have strategically selected building platforms. 

- 5 At least two building platforms were adjusted and / or eliminated where evidence of land stability existed (relevant to Submission No 3).
- 6 **Site** specific testing to assess proposed building platforms and site access suitability comprised borehole investigation, **Cone** Penetration Testing (CPT) testing, Test pit investigation, with handheld augers, shear vane testing and **Dynamic** Cone Penetration (DCP). Laboratory testing consisted of classification testing (Atterberg Testing, standard compaction testing, and Linear Shrinkage).
- 7 **Test** results indicate subsoils are susceptible to expansive behavior and fall outside the typical requirements for NZS3604:2011 “Good Ground” Criteria. To address the risk of expansive clays, there is provisions in the Consent Conditions that all building platforms will need to be tested for expansive properties at or during the completion of the building platform. Foundations exposed to expansive soils are subject to specific engineering design.
- 8 Slope stability analysis was undertaken to address land stability risks at building platforms. In most cases, building platforms achieved acceptable levels of safety for static, and seismic conditions. Lot 7 did not initially achieve acceptable factor of safety under ULS seismic conditions and therefore we recommended lowering the building platform by ~3m and reduce the risk.
- 9 Section 11.1 of the CHBDC Technical memorandum by Mr Lee Paterson (Geotechnical Engineer on behalf of CHBDC) stated that “*The information submitted is sufficiently comprehensive to enable the consideration of the above matters on an informed basis*”.
- 10 Section 11.4 & 11.5 of the CHBDC Technical memo also states that “*The applicants proposed Consent Conditions (Section 9 of the RDCL Geotechnical Assessment Report, R 19385B -04, dated 7 August 2023) are generally adequate, however some of them are not specific enough to achieve mitigation intended*”. These should include:

- *“Plans should show “No Build” Zones to inform setbacks in survey set-out terms, rather than potentially ambiguous relationships to breakover slope angles ”; and*
- *“Excavation levels for lowered building platforms should be specifically defined in the conditions ”.*

11 We have included these recommendations into our consent conditions.

12 Mr O’Leary S42a Report agrees that for Section 106 (RMA) *“I am satisfied that the potential risks of Natural Hazards can be mitigated through appropriate consent conditions”. And “I see no reason to decline the consent application under s 106 RMA, however, appropriate consent conditions are considered necessary should subdivision consent be granted”.*

13 Submission No 3 Karen Stothart for Anitella Trust has submitted concerns about significant land movement in a high-risk area referring to Images A to F of her submission.

14 For Geotechnical Effects, the submitter attached Photos (Attachment 2) showing Image C House Cracked 50 Okura Road, Mangakuri Beach and Image E Photos of Major slips on the north End of Williams Road, Mangakuri Beach. In response:

- This site at 50 Okura Road is located on a historical debris lobe and identified as potentially active during RDCL initial site walkover assessments. We removed this building platform from this location for that reason. No building is planned within this existing landslide area.
- The Large landslip in Image D is located 1.2km north of this subdivision and is therefore not applicable to this site.

15 Under Natural hazards effects (Attachment 2, Images B) under a previous application Stantec advised against the subdivision due to

evidence of land movement. This comment was made in 2018 by CHBDC Geotechnical reviewer for a separate geotechnical report and consent which is not part of this consent submission. This report has been superseded by the RDCL Geotechnical Assessment Report (R19385B-05) and by the recent CHBDC Technical memo.

- 16 Mr. Smith suggests best practice may be limited in scope as the implication is an acceptable level of risk tolerance for one site (a Flat site for example) may be transferred to another site with higher consequence, and the risk level could remain the same. Geotechnical engineers are very familiar with risk likelihood and consequences. We have addressed risk likelihood and consequence in Section 9 of the geotechnical report. Part of that assessment has considered a variety of information to assess risk including historical imagery, geomorphic mapping, site investigation, lab testing, slope stability assessment including elevated groundwater and seismic risk to land, property and people. This assessment has included controls which have been transferred to Consent Conditions to adequately manage the risk.
- 17 In one case (Hikurangi Subduction Zone event), the risk has not been able to be transferred to “Low” due to the level of likelihood and consequence of this event. In this event, we design for ULS conditions and protect against Loss of Life and Critical infrastructure. The definition in MBIE Module 1 (November 2021) is: *“Building damage should be limited and controlled when subjected to the ULS earthquake shaking so that the risk of building collapse is very low and so that evacuation of the building occupants may be safely carried out”*.
- 18 Mr. Smith refers in his personal submission (#9 & 10) to a 1 in 100-year event is “worst case”. For geotechnical design, considering a Building importance level 2, we adopted 1 in 25-year return periods for SLS conditions and 1 in 500 year for ULS for land stability in the geotechnical report.

- 19 Mr. Smith has assessed the Cyclone Gabrielle rainfall event as an equivalent ARI event of 10-20 years and therefore not a significant event (1 in 100yr event). Mr Smith has also assessed there may have been five significant rainfall events of which four have exceeded a 1 in 250-year event in the last 107 years.
- 20 RDCL have reviewed historical aerial imagery going back to 1952 (72 years) of which the current resistant ridges and building platform features are clearly distinguishable and when compared we can confirm these have not changed significantly. This is a real-world example that supports our findings that these building platforms are sufficiently stable and durable over a reasonable period of time and against significant real-world examples of rainfall events.
- 21 Mr. Smith suggests that project risks still need to be resolved in consent conditions and may have significant consequences given the high hazard area. The purpose of these conditions is to manage environmental effects by setting outcomes, requirements, or limits to that activity and how they are to be achieved. Our understanding is these risks are to be resolved by the Trust and will not become someone else's problem as suggested.
- 22 We have adopted specific Consent Conditions in Section 9 of the Geotechnical Assessment Report plus the two additional recommendations made by CHBDC Geotechnical memorandum.
- 23 The purpose of these conditions is to manage environmental effects by setting outcomes, requirements, or limits to that activity and how they are to be achieved. Lots 3 to 11 building platforms should be lowered (excavated) to form a level building platform and to reduce the risk of further land instability.
- 24 Based on this work we can be satisfied that from a geotechnical perspective, the natural hazards on this site have been identified. We have undertaken a rigorous site investigation and assessed the risk level. Through strategic location of building platforms and access and

engineering control we have avoided, remedied or mitigated these effects to a suitable level acceptable for Resource Consent.



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T. H Bunny

24 June 2024