

IN THE MATTER

of the Resource Management Act 1991
("RMA" or "the Act")

AND

IN THE MATTER

of a hearing of submissions and further
submissions on the Proposed Central
Hawke's Bay Council District Plan Review
(Stream 6 Mapping and Rezoning Requests)

**STATEMENT OF EVIDENCE OF CAMERON ANDREW WYLIE
ON BEHALF OF LIVINGSTON PROPERTIES LIMITED**

31 October 2022

Introduction

1. My name is Cameron Andrew Wylie. I am a practising consulting geotechnical engineer and Managing Director and founder of Resource Development Consultants Limited (“**RDCL**”).
2. I hold the qualifications of BSc, MSc, CMIOD, CEngNZ, CPEng, IntPE(NZ). I have over 32 years’ experience in geotechnical engineering.
3. I am a Chartered Professional Engineer (NZ) in the field geotechnical engineering and Chartered Member of the Institute of Directors (NZ). Prior to RDCL my most recent appointments include Managing Director of leading international consultancy, Golder Associates (NZ) Ltd (2001-2006) and Country Manager, Coffey Philippines Inc (1997-2001). In both cases I was responsible for delivery of geotechnical engineering of large mining and civil developments.
4. Of particular relevance to the Application is my experience providing geotechnical engineering support for many residential subdivisions and commercial developments in the wider Hawke’s Bay over the last 16 years through our work at RDCL.
5. I have recently provided expert services for the granting of Resource Consent for the proposed 100+ lot Willowbank Subdivision, Napier with liquefaction risk, Otaihanga Road Subdivision, Kapiti Coast including 56 lots in hill country and on “flats” with liquefaction risk.
6. Some of the more recent projects I have been involved with that include liquefaction risk are:
 - (a) Bupa Care Services Retirement Village, Ulyatt Road, Napier – comprising the construction of 118 retirement units and a care home;
 - (b) Awatoto Industrial Development – 14 lot industrial subdivision;
 - (c) Brookvale and Romanes Drive, Havelock North - ~106 residential subdivision;
 - (d) Kainga Ora residential developments; 6 x tranches in Hastings – multiple, multi-residential developments within Hastings;
 - (e) Duck Creek Residential Development, Whitby – ~100 lot residential subdivision.

Code of Conduct for Expert Witnesses

7. I confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court Practice Note 2014. I confirm that I have considered all material facts that I am aware of that might alter or detract from the opinions I express, and that this evidence is within my area of expertise, except where I state that I am relying on evidence of another person.

Scope of Evidence

8. I led the RDCL team in preparing the Preliminary Geotechnical Investigation (“**PGI**”) dated 26 September 2019 (attached to this statement of evidence at **Appendix A**) regarding a proposed 88 lot subdivision at 96¹ Mount Herbert Road, Waipukurau (“**the Site**”) (which has subsequently been consented under RM190126).
9. The Site is now the subject of a submission by Livingston Properties Limited (“**Livingston**”) on the Central Hawke’s Bay District Plan review seeking to rezone that land in accordance with Appendix A to that submission (“**the Concept Plan**”).
10. In this evidence I provide a summary of the conclusions reached by RDCL in undertaking the geotechnical assessment as set out in the PGI and implications for the proposed rezoning of the Site in accordance with the Concept Plan. Other than where stated below, I adopt sections 2.1.1 – 7 of the PGI for the purpose of this evidence.
11. I set out below my conclusions reached at sections 8 and 9 of the PGI and my comments on how those conclusions relate to Livingston’s submission to rezone the land as per the Concept Plan. In particular my evidence will cover:
 - (a) A brief geotechnical assessment of the Site;
 - (b) Suitability of the Site for the type of development contemplated by the Concept Plan;
 - (c) Foundation recommendations;
 - (d) Cut and fill recommendations;
 - (e) Slope setback recommendations; and

¹ Described in the PGI as 102 Mt Herbert Road

- (f) Further geotechnical input required.

The Proposal

- 12. The proposed rezoning would enable development as generally set out in the Concept Plan. To give some general guidance, that plan provides for approximately 280 lots comprising:
 - (a) 110 high density (22/ha) retirement lots;
 - (b) 120 medium density (12/ha) residential lots;
 - (c) 50 lifestyle (2.5/ha) lots;

or varying combinations of the same. The numbers above are a rough guide and I understand that the rezoning requested by Livingston in its submission would provide flexibility for a different yield depending on a range of factors.

Summary of Conclusions on the Proposed Rezoning

- 13. From a geotechnical perspective for the proposed Concept Plan:
 - (a) Only the General Residential Zone area as shown on the Concept Plan is within the “Lower Region” area referred to in the PGI, needing to be addressed through further geotechnical assessment at subdivision/development stage.
 - (b) There are no geotechnical issues that need to be addressed within the proposed Rural Lifestyle Zone area.
- 14. The “Lower Region” containing the General Residential Zone has been identified as including potentially liquefiable ground conditions.
 - (a) The magnitude and incidence of liquefaction is like many urban sites within Hawkes Bay, with no risk of lateral spread.
 - (b) There is no doubt of the suitability for more intense development, with “TC2” (MBIE, 2012) foundations already identified.
 - (c) The only significant geotechnical effect of the proposed densification is that more intense investigation is required to conform with updated MBIE guidelines.
 - (d) No other material change is anticipated.

Geotechnical Site description

15. The Golden Hills development comprises “Hill Country” and “Alluvial Flats”.
16. “Hill Country” includes the Upper and Middle Regions as identified in the PGI encompassing the Rural Lifestyle Zone shown on the Concept Plan.
 - (a) The Upper and Middle regions are underlain by rock (Highly weathered Mudstone described in the PGI) with ~0.7m mantle of soil.
 - (b) Ground conditions in these regions are very straightforward with NZS3604:2015 compliant foundations expected (i.e. standard foundations not subject to Specific Engineering Design).
 - (c) Shallow soil creep in slopes < 20° necessitate minor setbacks within individual lots and cut and fills need to be undertaken in accordance with PGI recommendations.
 - (d) None of this will be affected by densification.
17. “Alluvial Flats” includes the Lower Region and encompasses the General Residential Zone area shown on the Concept Plan.
 - (a) The Lower Region is underlain by loose sand and clay to ~2m which are derived from the local streams (alluvial sediments), and which in turn overly rock.
 - (b) Because of the shallow groundwater around the streams, alluvial sediments appear susceptible to liquefaction from testing and therefore require mitigation.
 - (c) Liquefaction is at very shallow levels (< 2m below existing surface) without the risk of lateral spread and so are easily mitigated.
 - (d) “TC2” (MBIE 2012) compliant foundations are proposed which in Hawke’s Bay conditions are “standard” practice in similar ground and widely accepted.
 - (e) There are no other significant geotechnical hazards in the Lower Region.

Suitability

18. The whole of the Concept Plan area is considered suitable for residential development from a geotechnical perspective including for high and medium density housing.

Foundation

19. Within the General Residential Zone area within the Lower Region allowance should be made for TC2 style foundations as is widely practiced throughout urban areas of Hawkes Bay.

Cuts and fills

20. There are no significant cuts anticipated.
21. Minor fills may be expected to “engineer the site” with no geotechnical impediments.

Slope setbacks

22. Slope setbacks are not affected by the density of housing proposed.

Further geotechnical input required

23. The densification of housing within the General Residential Zone triggers additional geotechnical testing to conform with MBIE (2021) guidelines. This means more closely spaced Cone Penetrometer Tests.
24. This is in line with more testing recommended in the PGI, which in that case is to better delineate the incidence of liquefiable materials.

Conclusion

25. High and Medium density housing as proposed is considered suitable for the geotechnical conditions of the Site.
26. Within the General Residential Area, potential liquefaction has already been identified with proposed suitable foundations commonly used throughout urban Hawkes Bay.
27. Additional geotechnical investigation is only triggered to conform to MBIE (2021) guidelines in this area which suggests closer spaced Cone Penetrometer Tests will be required.

Cameron Andrew Wylie

31 October 2022