

09 January 2020

2015-1122AD Rev.1

SH16 Limited
PO Box 540
Silverdale

Attention: Paul Boocock

**RE: GEOTECHNICAL REVIEW FOR PROPOSED PLAN CHANGE AT MADDIES ROAD,
KAUKAPAKAPA**

1 INTRODUCTION

CMW Geosciences (CMW) has been engaged by SH16 to undertake a geotechnical assessment and prepare a summary report for a proposed plan change at Maddies Road in Kaukapakapa.

This report includes details of our geotechnical assessment of the land in relation to the proposed plan change. Information for this report was obtained from a geotechnical investigation undertaken for the site by CMW in 2015 for a different application

2 SITE DESCRIPTION

The site comprises an irregular shaped block of land located at the western end of Maddies Road extending west to Alpine Road, legally described as Lot 2 DP 487393. Topographically the site is defined by a number of narrow ridgelines with moderately steep flanks.

The majority of the western half of the block is covered in forest with steep ridge gully formations trending south east a central ridgeline on the western boundary which forms Alpine Road.

The south eastern portion of the site is generally in pasture. This portion of the site is dominated by a south-east trending ridge spur which breaks part way down the slope onto a wide near level bench before falling at similar gradients onto neighbouring lots forming low lying gully formations.

Northern portions of the site contain an east-west orientated ridgeline with moderate gradients falling towards a gully feature on the northern boundary. Northern portions of the site are topographically irregular with signs of active instability.

We understand it is intended to change the zoning of this land to countryside living.

3 GEOLOGICAL SETTING

Published Geological Maps¹ suggest the subject land is near an inferred geological boundary between Cornwallis Formation and East Coast Bays Formation which are both deposits of the Waitemata Group.

Cornwallis deposits are expected to contain thick bedded, graded, volcanoclastic sandstone and thin-bedded fine-grained sandstone and siltstone. They usually weather to a soft to stiff, moderately plastic

¹ Edbrooke, S. W. (compiler) 2001: Geology of the Auckland area. Institute of Geological & Nuclear Sciences 1:250 000 geological map 3. 1 sheet +74 p. Lower Hutt, New Zealand. Institute of Geological & Nuclear Sciences.

range of orange/brown to greyish/cream silty clays and clayey silts forming depths of weathered overburden up to 20 metres thick.

East Coast Bays Formation was formed during the Early Miocene in submarine fan and basin floor depositional environments and typically consists thick bedded sandstone with interbedded laminated mudstones/siltstones. Typically, a transitional layer consisting of both soils and weak rock is found within this strata and often translational landslide movement can occur in the transitional layer where land gradients, bedding and/or overburden thickness are unfavourable.

4 LOCAL GEOMORPHOLOGICAL ASSESSMENT

During our site walkovers in February 2015 we have observed local geomorphological features which affect the area proposed for development of future buildings and access.

Stable ridgelines run throughout the central portions of the development however notable terracing of the ridge spur is likely to be controlled by defects and bedding within the bedrock of the ridge spur.

The presence of slope instability is evident on the flanks of the ridge spur with headscarps and steeper slopes within these flanks. Soil creep is also noticeable on all steeper slopes.

5 SITE INVESTIGATIONS

Our fieldwork was undertaken between February and June 2015 and involved the drilling of 16 hand augered boreholes (numbered HA01-15 to HA16-15) to depths of up to 5 metres. In addition we undertook observation, sampling and logging of 5 trial pit excavations (numbered TP01-15 to TP05-15) carried out using a 23 tonne excavator to depths of up to 6.1 metres.

The underlying natural soils observed in the boreholes and trial pits generally comprised clays and silty clays with some sand which were generally stiff to hard and moist. Most boreholes encountered bands of sandy material. Vane shear strengths did not consistently increase with depth. A number of boreholes, especially those in northern portions of the site encountered a zone where measured vane shear strengths markedly reduced which generally corresponded with measured groundwater levels. Gravel sized siltstone clasts were observed in a number of the boreholes and test pits.

Groundwater was encountered in a number of boreholes generally between 3 and 4 metres depth.

6 ASSESSMENT OF DEVELOPMENT POTENTIAL

Based on our review of the site, we consider that the stable ridgeline areas are suitable for future residential building platforms. It is estimated that 11 building platforms of varying size and all with stable access can be provided. Specific investigation and design will need to be undertaken to demonstrate appropriate stability conditions, provide foundation design parameters and give other geotechnical recommendations for development of the site.

7 FURTHER WORK

A suitably qualified Chartered Professional Engineer familiar with the content of this report must review all future development proposals for the site to specify appropriate geotechnical investigations, analyses and design.

8 LIMITATION

This report has been prepared for the use by our client, SH16 Limited and their profession advisors. No other warranty, expressed or implied, is made as to the professional advice included in this report. This report has not been prepared for the use of parties other than our client, their consultants and Auckland Council and it may not contain sufficient information for the purposes of other parties or for other uses.

**For and on behalf of
CMW Geosciences (NZ) Ltd**

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Distribution: 1 copy to Client (electronic)

Original held by CMW Geosciences