

SUMMARY OF EVIDENCE OF ERIC BIRD – GEOTECHNICAL

PROPOSED PLAN CHANGE G – AOKAUTERE URBAN GROWTH

A. INTRODUCTION

[1] My full name is Eric Bird and I prepared a s 42A report on 15 September 2023 (**s 42A Report**) and Statement of Reply Evidence dated 28 November 2023 (**Reply Evidence**) on geotechnical matters for the Palmerston North City Council (**Council**) for proposed Plan Change G: Aokautere Urban Growth to the Palmerston North District Plan (**PCG**).

B. KEY ISSUES

Slope instability

[2] In the northern part of the plan change area, elevated flat-topped terraces form much of the area proposed for development. These terraces are bisected by incised streambeds in steep sided gullies where slope instability and erosion is evident. The southern part of the site is hilly and does not feature any flat, terraced features, and also exhibits slope instability.

[3] In general, terraces such as those in the plan change area would be naturally stable at slopes of around 20° or less while slopes steeper than 30° are very susceptible to instability.

[4] Slope angle analysis has been carried out, based on projecting 20° and 30° lines upward from the base of each gully and provides a high-level assessment to identify areas where slope instability is more (or less) likely.

[5] Active stream erosion has been identified in the gullies. Stream erosion increases the likelihood of slope instability, as it lowers the streambed relative to the upper terrace slopes and therefore steepens the overall slope angle. This has been accounted for in the slope angle analysis by lowering the base of the gully based on GHD's streambed erosion projections.

[6] Land that is away from the 20° line (i.e. away from the terrace edge) is classified as Developable Land, and land closer to the terrace edge than the 20° line as Limited Developable Land. Limited Developable Land is further subdivided based on the projected 30° line; Class D land is between 20° and 30°, whilst Class E is greater than 30°. These land zones are identified in Map 10.1A.

- [7] The Structure Plan and implementing provisions contemplate that residential or commercial subdivision and development will only take place on Developable Land, and within Limited Developable Land, only on Class D land. Specific requirements for geotechnical assessment are proposed for each land zone, reflecting the slope instability hazard.
- [8] The Structure Plan reflects the expectation that residential development will not take place in Class E land. Infrastructure development may take place in Class E land, provided it is supported by appropriate geotechnical assessment.
- [9] In rural-residential areas to the South, much of the land is classified as Class E, however the different geomorphology and larger lot sizes are likely to enable the development of these lots.

Uncontrolled fill

- [10] There is evidence of filling of land within the plan change area. It is not known what material was used for filling, nor whether engineering controls were carried out during filling. Where uncontrolled fill is present within the plan change area, it should be characterised prior to any development.

Liquefaction

- [11] The lower, southwestern portion of the site along Valley Views and Turitea Road is relatively flat and lower lying than the remainder of the site and does not exhibit slope instability of any significance. The liquefaction hazard in this area is undetermined due to the absence of geotechnical data. Future subdivision or development should assess the potential for liquefaction.

4 December 2023

Eric Bird