

BEFORE THE HEARINGS PANEL

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of proposed Plan Change G: Aokautere Urban
Growth to the Palmerston North City Council
District Plan

**SUPPLEMENTARY STATEMENT OF ERIC BIRD ON BEHALF OF PALMERSTON NORTH CITY
COUNCIL**

GEOTECHNICAL

Dated: 11 March 2024

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SUPPLEMENTARY STATEMENT OF ERIC BIRD

A. INTRODUCTION

- [1] My name is Eric Bird.
- [2] I prepared a s 42A report dated 15 September 2023 (**s 42A Report**) and reply evidence dated 28 November 2023 (**Reply**) on geotechnical matters for PCG.
- [3] My experience and qualifications are set out in my s 42A Report.
- [4] I repeat the confirmation given in my s 42A Report that I have read and will comply with the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2023, and that my supplementary report has been prepared in compliance with that Code.

B. SCOPE

- [5] My supplementary statement responds to the following matters raised by the Hearing Panel as part of the hearing in the week of 4 December 2023. Specifically:
- (a) Zoning of the small portion of land at the southeastern corner of the Green block (**'Area B'**);
 - (b) An alternative alignment proposed for the Turitea Valley Link Road;
 - (c) Gully 9 crossing;
 - (d) Zoning of a portion of land on Turitea Road (**'Area A'**); and
 - (e) Works in the Conservation and Amenity Zone.

C. SOUTHEASTERN CORNER OF THE GREEN BLOCK (AREA B)

- [6] The Hearing Panel has requested clarification as to the potential extent of geotechnical constraints for the small piece of land at the southeastern corner of the Green block (referred to as **'Area B'**), adjacent to the northeastern corner of the Waters block. It is currently zoned rural, but the submitter PNIRD (S45) has requested that it be zoned rural-residential.

- [7] I have reviewed the three proposed house sites in Area B on the plans provided by Resonant, dated 16 January 2024.
- [8] The majority of this area is Limited Developable Land, based on slope angle analysis.
- [9] There is a small portion of land adjacent to the Green:Waters boundary which is elevated, and has a possible building platform. It is the same geology as the Waters block. The elevated portion of this area is Developable Land.
- [10] There are two small portions of land to the north on the promontory between gully 9 and 10 that are elevated and have possible building platforms. Part of this area is Developable Land.
- [11] I would support the elevated areas of land showing possible building platforms in the Resonant plan being zoned rural-residential. This would be consistent with the approach taken on the adjacent Waters block. The proposed plan provisions include the requirement for a geotechnical report and statement of professional opinion from an accredited Chartered Professional Engineer experienced in soils mechanics or geotechnical engineering. The report is to assess natural hazard risk (including, but not restricted to, slope stability) and certify that the land is suitable for building construction. I am satisfied that these controls are sufficient to manage the geotechnical hazards in this area.

D. TURITEA VALLEY LINK ROAD

- [12] I understand the submitter PNIRD (S45) is seeking an alternative alignment for the road linking the upper terraces with the Turitea Valley floor.
- [13] It will pass through an area of Limited Developable Land as it climbs the steep terrace side.
- [14] The proposed alternative route is more direct, therefore will have steeper gradients. I understand Ms Fraser addresses roading design in her supplementary statement.
- [15] The road will be subject to all of the same controls as any development on Limited Developable land. This ensures that the appropriate level of engineering investigation and analysis is carried out to appropriately manage the slope instability hazard, while

reflecting the specific characteristics of the development. As detailed in my s 42A Report at paragraphs 63-71, part of this process requires an applicant to demonstrate that the proposed development will not accelerate, worsen or result in the land being subject to, or likely to be subject to, erosion or slippage. This needs to be done by way of a suitably qualified and experienced geotechnical specialist carrying out a geotechnical assessment, which is to be detailed, and specific to the work being proposed. Any design and construction work carried out must also ensure that no new hazards are created, nor any existing hazards are exacerbated. I understand the lower part of the road will connect to Turitea Valley Road through Area A. As I describe below in Section F, the lower lying part of Area A is swampy and waterlogged, and likely underlain by peat and soft soils. Any road constructed through this lower area would also be required to address the hazards associated with these ground conditions; that is, settlement, shallow groundwater, and possibly liquefaction.

[16] While I understand that other constraints mean that Ms Copplestone does not support the lower section of the proposed alternative road alignment that connects Turitea Road with Valley Views Road, I am satisfied that the controls in the proposed plan are appropriate to manage the effects that the alternative road alignment may have on geotechnical hazards.

E. GULLY 9 CROSSING

[17] I understand the same submitter (S 45) proposes a road crossing for Gully 9 to enable roading access to be delivered without crossing into another landowner's property. I have reviewed the latest proposed alignment on the plan by Resonant, dated 01 February 2024.

[18] I reiterate my earlier points on the alternative Turitea Valley Link Road proposal, with respect to the Gully 9 crossing:

- (a) Any gully crossing will pass through steep land.
- (b) The steep land along the gully sides is zoned as Limited Developable land.
- (c) Any development on Limited Developable land requires the appropriate level of engineering investigation and analysis to be carried out to appropriately

manage the slope instability hazard, while reflecting the specific characteristics of the development.

[19] I am satisfied that these controls are appropriate to manage the effects that the proposed gully crossing may have on geotechnical hazards. Therefore, I have no opposition to the proposed gully crossing.

F. ZONING OF A PORTION OF LAND ON TURITEA ROAD ('AREA A')

[20] There is a portion of land on Turitea Road (referred to as 'Area A') that is currently zoned rural. I understand that submitter PNIRD (S45) has requested that it be zoned rural-residential.

[21] I have reviewed the plan provided by Resonant dated 15 January 2024. I have also reviewed the geotechnical evidence provided by the submitter's geotechnical consultant, Mr Cameron Wylie, dated 23 January 2024.

[22] In my earlier reports, I noted that the land along Turitea Road is not likely to be subject to slope instability of significance, but that other issues associated with flat, low lying land may be present, such as liquefaction, soft ground and shallow groundwater.¹

[23] The evidence provided by Mr Wylie focusses on slope stability, noting that Area A is not in an area of instability. However, Area A is a relatively flat, low lying piece of land in close proximity to the Turitea Stream, so may be subject to liquefaction, soft ground and shallow groundwater. Mr Wylie's evidence does not address these issues, nor is any other geotechnical information such as site investigations provided.

[24] Area A is an area of approximately 7 hectares. The contours provided by Resonant show the southern portion of this land is a terrace elevated above the lower lying land by about 5m. This comprises an area of approximately 2.3 hectares.

[25] This elevated land will have deeper groundwater, and so may not be subject to the same geotechnical issues as the lower lying portion of the site. As such I would support this portion of Block A being zoned as rural-residential.

¹ Section 42A Technical Report of Eric Bird dated 15 September 2023, at paragraphs 20, 38; Statement of Reply Evidence by Eric Bird dated 28 November 2023 at paragraph 25.

[26] As previously noted in my evidence, the lower area has been mapped by Tonkin and Taylor as being a water-logged, swampy area, and this is documented in mapping and photographs in earlier reports.²

[27] I have viewed the photographs taken of this lower lying area taken on 26 February 2024 by PNCC's ecology expert, Dr Adam Forbes. These photographs clearly show standing water, swampy ground, and what appear to be groundwater springs and peaty soils.

[28] This lower lying area is likely to be subject to geotechnical hazards associated with soft, low-lying ground and shallow groundwater, and as a result I do not support this area being zoned as rural-residential. In my view, the land is likely to be subject to issues such as settlement, shallow groundwater, and possibly liquefaction issues. In the absence of geotechnical evidence to the contrary, my view remains that in its current state it is unlikely to be able to have housing built on it.

G. WORKS IN THE CONSERVATION AND AMENITY ZONE

[29] I have worked with Ms Copplestone on the proposed plan provisions for the Conservation and Amenity Zone.

[30] I am comfortable that the proposed provisions to manage works associated with roading and other essential services will ensure that the potential for adverse effects from geotechnical constraints and any other natural hazards associated with the proposed works will be appropriately managed.

11 March 2024

Eric Bird

² 2020, Tonkin + Taylor Ltd, Preliminary Site Observations for Proposed Aokautere Redevelopment: Figures 4a and 5a, photograph 16. See Attachment C to s 42A Technical Report of Eric Bird dated 15 September 2023.