

Before the Independent Hearing Panel
at Taupo

in the matter of: Proposed Plan Change 36 to the Taupo District Plan –
Request under Schedule 1 of the RMA to rezone Rural
Land to Residential at Whareroa North by The
Proprietors of Hauhungaroa No. 6

to: **Taupo District Council**

Applicant: **The Proprietors of Hauhungaroa No.6**

Rebuttal Evidence by Harshad Phadnis on behalf of The Proprietors of Hauhungaroa No.6

1. INTRODUCTION

Name and qualifications

- 1.1. My full name is Harshad Sham Phadnis. I hold a Master of Science degree specialising in Geotechnical Engineering from the Georgia Institute of Technology in U.S.A. and a Bachelor of Technology degree in Civil Engineering from the University of Mumbai in India. I am a Chartered Professional Engineer in the practice field of geotechnical engineering and a Chartered Member registered with Engineering New Zealand (ID:1159638).
- 1.2. I have worked as a geotechnical engineer for Cheal Consultants Limited for the last one year and one month. Before this, I worked as a geotechnical engineer for CMW Geosciences in Auckland for one year and four months. Before moving to New Zealand, I have worked as a geotechnical engineer in the U.S.A. and Dubai (U.A.E). for a total of seven years and eleven months.
- 1.3. While preparing this rebuttal evidence, I have reviewed the following:
 - 1.3.1 Edbrooke, S.W. (compiler) (2005). Geology of the Waikato Area. Institute of Geological & Nuclear Sciences.
 - 1.3.2 Carryer, S.J. (22 April 1986). Report on the Geotechnical Aspects of the Whareroa Village Subdivision, Lake Taupo. Ref. 156/0764. Carryer & Associated Ltd.
 - 1.3.3 Mitchell, M.T. (19 October 2006). Site Assessment and Supplementary Geotechnical Engineering Appraisal – Proposed Whareroa North Residential Subdivision – Hauhungaroa No. 6, Whareroa Road North, West Lake Taupo. Ref. T – 9036/1. Mark T Mitchell Limited.
 - 1.3.4 Martinez, A. (18 October 2018). Verification of Geotechnical Constraints for Residential Development. Ref. IBA 1070L150. Cheal Consultants Limited.
 - 1.3.5 Kelly, T. (26 September 2019). Preliminary Stormwater Assessment. Ref. IBA 1070 Rev. 4. Cheal Consultants Limited.
 - 1.3.6 Phillips, M. and Gray, I. (31 March 2020). Proposed Plan Change 36 – Whareroa North – Initial Geotechnical Review. Ref. 2-37780.00. WSP.
 - 1.3.7 Phillips, M. (22 April 2020). Statement of Evidence of Maddison Phillips for the Taupo District Council (Geotechnical). WSP.
 - 1.3.8 Phadnis, H. (29 April 2020). Statement of Evidence - Proposed Plan Change to the Taupo District Plan. Cheal Consultants Limited.
 - 1.3.9 Phillips, M. (15 May 2020). Rebuttal Evidence (Geotechnical). WSP.
- 1.4. The purpose of this Rebuttal Evidence is to respond to the evidence of Mr Harshad Phadnis (geotechnical) and Mr Michael Keys (engineering).
- 1.5. I confirm that I have read the “Code of Conduct for Expert Witnesses” contained in the Environment Court’s Consolidated Practice Note 2014 and agree to comply with them in giving

evidence in this proceeding. Except where I state that I am relying on evidence of another person, this written evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this evidence.

2. DISCUSSION

I have reviewed the rebuttal evidence submitted by Maddison Phillips i.e. Ref. 1.3.9. My comments are summarised below.

- 2.1. *“I agree that the investigation proposed in my evidence is not sufficient to support subdivision design for the site, that was never stated as the intent.*

The purpose of the investigation proposed in my evidence was clearly aimed at necessary geotechnical investigation to gather broadly spaced data points, formulate a high-level understanding of the subsoil conditions and provide a factual basis for confirming the site is suitable for residential development. I believe this phased approach is consistent with standard, and indeed orthodox, industry process and is in line with current New Zealand geotechnical practice guidelines. Some deep testing, analysis and reporting is required to determine whether the tabled significant geohazards affect the site or not ...” [7.d of Ref. 1.3.9].

“The purpose of an initial investigation is not to precisely define subsoil conditions nor to collect enough information from which to design a subdivision. The purpose of an initial investigation is to broadly identify subsoil and groundwater conditions and assess at a high level how geo-hazards are likely to affect the site. The initial investigation and assessment will undoubtedly be refined through further work prior to subdivision”. [10.b of Ref. 1.3.9].

The subsoil and groundwater conditions have been inferred based on investigations summarised in Ref. 1.3.3, site walkover findings presented in Ref. 1.3.4 and local knowledge of the geology as some areas, particularly along the proposed access road and near the bridge, are classified as Significant Natural Areas (SNA) and will require a resource consent to be granted before any activity. A high-level discussion of the geo-hazards is presented in Section 9 of Ref. 1.3.8 and possible mitigations are discussed in Section 9 of Ref. 1.3.8 and have been summarised in Section 12 of Ref. 1.3.8. hence, we consider that all possible including the worst-case scenarios have been addressed.

- 2.2. *“I agree that residential development of the land presents an opportunity to remove the issue contributing to the large scour if stormwater disposal is carefully designed. I also agree that additional geotechnical investigation and assessment is required before the most appropriate stormwater management approach is confirmed.*

It is not yet possible to confirm that the site is suitable for stormwater disposal via soakage from a geotechnical point of view. Stormwater disposal to ground through soakage is closely linked to the boundary parameters of a number of the significant geohazards tabled by the Proponent. In almost all cases, disposal to ground (from newly established impermeable surfaces) would be highly likely to exacerbate the effects of those geohazards”. [7.e of Ref. 1.3.9].

If investigations show that pre-developed Catchment B where the bowl is located is not suitable for stormwater disposal via soakage, then there shall be no on-site soakage pre-developed Catchment B as per Section 9.11 of Ref. 1.3.8.

Issues with soakage and related geotechnical aspects are neither observed at the site nor anticipated in other pre-developed catchment areas.

- 2.3. *“I agree that this arrangement is typically appropriate in the Taupō region. Modelling presented in Appendix 11 of Mr Phadnis’ evidence appears to show cut slopes in the order of 15m high. This is a significant undertaking, much larger than the slope pictures presented in Appendix 10 of Mr Phadnis’ evidence and will require carefully considered assessment to ensure the future access road is not plagued with ongoing stability issues. Steep cut slopes in pumiceous soils will experience ongoing erosion and frittering of the slope face. Establishing and maintaining low vegetation growth to reduce the risk of erosion is a typical mitigation method, however this could be problematic on a south-east facing slope of this magnitude”.* [7.f of Ref. 1.3.9].

Please note that the picture presented in Appendix 11 of Ref. 1.3.8 was for reference to show that steep vertical cuts are possible in pumiceous soils.

As per Section 9.15 of Ref. 1.3.8, benching (terraces) with a minimum width of 3m should be utilised when the cut heights are greater than 5m. This will be assessed by performing investigations and engineering assessment. If conditions are onerous, appropriate retaining solutions will be designed and constructed as per the table provided in Section 10.1 of Ref. 1.3.8.

- 2.4. *“If investigation is carried out after the Plan Change is approved, and geotechnical issues that create ‘intolerable risk’ are identified, the residential zone will not be the most appropriate zone to give effect to Waikato Regional Policy Statement Objective 3.24(b) and Policy 13.1(a) and (c), nor achieve Objective 3l.2 and associated policies of the Taupō District Plan”.* [10.c of Ref. 1.3.9].

All geo-hazards that can potentially affect the site have been identified in Section 9.2 of Ref. 1.3.8. These geo-hazards are routinely encountered in and around Taupo. Widely used engineering solutions exist to mitigate all of the geo-hazards and hence, the natural hazard risks are not considered intolerable and the site is not anticipated to be a primary hazard zone.

- 2.5. *“Site specific evidence is required to confirm that the site is not a ‘Primary Hazard Zone’ nor creates ‘intolerable risk’ as per the Waikato Regional Policy Statement policies on natural hazards”.* [10.a of Ref. 1.3.9].

In an ideal scenario, geotechnical investigations would have been performed at the plan change stage. It should be noted that performing investigations will require some vegetation to be cleared and tracks being established using diggers and other construction equipment. Some areas, particularly along the proposed access road and near the bridge, are classified as Significant Natural Areas (SNA) and hence will require a resource consent to be granted before any activity is undertaken in those areas because vegetation will be disturbed. The site is located away from major centres and the investigation campaign is anticipated to last twenty to thirty working days. Hence, we consider it most reasonable to perform all investigations in one campaign instead of performing investigations over multiple campaigns to minimise the disturbance, cost and effort to establish cleared areas, create tracks and mobilise construction equipment, geotechnical rigs and personnel.

As stated in Section 2.2, all geo-hazards identified in Section 9.2 of Ref. 1.3.8 are routinely encountered in and around Taupo. Widely used engineering solutions exist to mitigate all of the geo-hazards and hence, the natural hazard risks are not considered intolerable and site is not anticipated to be a primary hazard zone.

3. CONCLUSION

- 3.1. The subsoil and groundwater conditions have been inferred based on investigations summarised in Ref. 1.3.3, site walkover findings presented in Ref. 1.3.4 and local knowledge of the geology as

some areas, particularly along the proposed access road and near the bridge, are classified as Significant Natural Areas (SNA) and will require a resource consent to be granted before any activity.

- 3.2. A high-level discussion of the geo-hazards is presented in Section 9 of Ref. 1.3.8 and possible mitigations including for the worst-case scenarios are discussed in Section 9 of Ref. 1.3.8 and have been summarised in Section 12 of Ref. 1.3.8. Widely used engineering solutions exist to mitigate all of the geo-hazards and as geo-hazards can be mitigated, they are not considered intolerable and site is not anticipated to be a primary hazard zone.

Date: 5 June 2020