

BEFORE THE HEARING PANEL

IN THE MATTER of the Resource
Management Act 1991

AND

IN THE MATTER of the applications by Hirock Limited to the Palmerston North City Council (LU 6962) and the Manawatū -Whanganui Regional Council (APP-2022203991.00) for resource consents associated with the expansion and operation of an existing quarry at 167-257 Kendalls Line, Palmerston North

EXPERT CONFERENCING

JOINT WITNESS STATEMENT – GEOTECHNICAL

15 May 2023

A. INTRODUCTION

General

1. This joint witness statement relates to expert conferencing on the topic of geotechnical design.
2. This joint witness statement relates to resource consent applications lodged by the Hicrock Limited (Applicant) to Palmerston North City Council (PNCC) and Manawatu-Wanganui Regional Council (Horizons), to be processed jointly, for the expansion of an existing quarry at 167 - 257 Kendall's Line, Palmerston North.
3. Specific expert conferencing was not held for this consent application. Rather, an agreed position has been developed between experts over the course of the review of the application and subsequent requests and additional information provided under S92 of the RMA. This is set out in the background section below.
4. The geotechnical experts involved with the development of this joint witness statement are:
 - a. Cameron John Lines for Horizons/PNCC.
 - b. Barry John McDowell for the Applicant.

Submissions

5. We have reviewed the summary of submissions and note that there are no submissions relating to our area of expertise.

Conflict of interest disclosure

6. While both experts have a previous working relationship, we do not consider that this presents a conflict of interest.

B. EXPERTISE

Cameron Lines

7. My full name is Cameron John Lines. I hold a Bachelor of Science (Geology) from the University of Auckland and Master of Science (Engineering Geology) from the University of Canterbury. I am a Chartered Member of Engineering New Zealand (Professional Engineering Geologist), a Member of the New Zealand Geotechnical Society (NZGS), the International Association for Engineering

Geology and the Environment (IAEG) and the Australian Institute of Mining and Metallurgy (AUSIMM).

8. I am a Principal and Director of Baseline Geotechnical Ltd a company I founded in July 2018 which provides mine/quarry development and geotechnical advice to the extractives sector. I spent the previous 15 years working at Tonkin & Taylor Ltd.
9. I have 24 years of post-graduate experience in mining/quarrying, land development, and large-scale infrastructure development. I specialise in cut slope design, overburden disposal design, geotechnical risk assessment, slope stability and natural hazard assessment. Roles I have undertaken include provision of geotechnical support for mining/quarry operations, slope designer and external peer reviewer.
10. While this consent is not before the Environment Court, I have read the Code of Conduct for Expert Witness, Section 9 of Practice Note 2023. Accordingly, I have complied with the Code in the preparation of this joint witness statement. This evidence is within my area of expertise, except where I state that I am relying upon the specified evidence of another person. I have not omitted to consider material facts known to me that might alter or detract from the opinion expressed in this joint witness statement.

Barry McDowell

11. My full name is Barry John McDowell. I hold a Bachelor of Science (Geology) from the University of Canterbury and Master of Science (Engineering Geology) from the University of Canterbury. I am a Member of the New Zealand Geotechnical Society (NZGS).
12. I am a Technical Director of Tonkin & Taylor Ltd.
13. I have 35 years of post-graduate experience in engineering geological mapping; open cast and underground mine, and quarry geotechnical investigation and design; landslide investigation, analysis and remediation; corridor project investigation and cut and fill slope design; investigation and mitigation of liquefaction risk; expert witness for RMA applications and in support of High Court litigation; dam foundation investigation, embankment design and construction assessment; environmental investigation and remediation of contaminated sites I have undertaken roles ranging from investigation to design, to internal and external peer review across my field of experience.
14. While this consent is not before the Environment Court, I have read the Code of Conduct for Expert Witness, Section 9 of Practice Note 2023. Accordingly, I have complied with the Code in the preparation of this joint witness statement. This evidence is within my area of expertise, except where I state that I am relying upon the specified evidence of another person. I have not omitted to consider

material facts known to me that might alter or detract from the opinion expressed in this joint witness statement.

C. PURPOSE AND SCOPE OF CONFERENCING

15. The purpose of this joint witness statement is to provide guidance to the hearing commissioners with respect to geotechnical design, anticipated cut and fill slope performance, the potential for associated environmental effects and a summary of agreed slope instability risk mitigation measures.
16. The joint witness statement is based on the work undertaken by Mr McDowell and reviewed by Mr Lines, including requests for additional information and subsequent revisions to technical reports. The geotechnical issues were addressed and agreed in principle during the processing of the consent application and prior to the issue of the joint (PNCC and Horizons) s42A reports.
17. The scope of the issues covered during the technical review process included:
 - a. Instability risk for quarry batters both during excavation (operational case) and long term (quarry closure case).
 - b. Instability risk for proposed overburden disposal areas both during excavation (operational case) and long term (quarry closure case).
 - c. Monitoring and other mitigation measures to reduce or manage instability risks where instability may have an environmental effect or extend beyond the property boundary.
 - d. Recommended conditions of consent (geotechnical).

D. PRIMARY DATA RELIED ON

18. The following documents, data and information have been relied on in this expert conference:
 - a. Tonkin & Taylor Limited, 2022A, Geotechnical Assessment. Linton Quarry, Palmerston North, Draft v1.0 dated 2 March 2022. Ref: 1018486 vdraft1.
 - b. Baseline Geotechnical Limited, 2022A, Geotechnical Review – Proposed Linton Quarry Extension. Dated 7 March 2022. Ref: BGL000104.
 - c. Tonkin & Taylor Limited, 2022B, Geotechnical Assessment. Linton Quarry, Palmerston North, Draft v2.0 dated 14 April 2022. Ref: 1018486 v2 draft.

- d. Baseline Geotechnical Limited, 2022B, Geotechnical Review – Proposed Linton Quarry Extension. Dated 13 May 2022. V2.0 Ref: BGL000104.
- e. Tonkin & Taylor Limited, 2022C, Geotechnical Assessment. Linton Quarry, Palmerston North, v2.0 dated 8 July 2022. Ref: 1018486 v2.
- f. Tonkin & Taylor Limited, 2022D, Linton Quarry Geotechnical Assessment of Proposed Overburden Disposal Areas. Dated 22 December 2022. Ref: 1018486.1000.
- g. Baseline Geotechnical Limited, 2023, Geotechnical Review – Proposed Linton Quarry Extension. Dated 27 January 2023. V3 Ref: BGL000104.

E. BACKGROUND

- 19. Mr Lines was first engaged by PNCC in July 2021 to undertake technical review of an application by HiRock for consent to extend the quarry.
- 20. Mr Lines presented a preliminary geotechnical review by email on 19 July 2021, (Appendix A of BGL, 2023) which indicated that the geotechnical and geological information presented in the AEE and the QMP was not sufficiently detailed to allow him to adequately assess the potential environmental effects related to geotechnical performance as a result of the proposed extension. A S92 request for additional information was recommended.
- 21. Subsequently, changes were made to the extent of the proposed quarry expansion, and Tonkin & Taylor Limited was engaged to provide a geotechnical assessment to support the application and address the information requested under S92 of the RMA.
- 22. Mr McDowell authored that report (T+T 2022A) which was issued in draft on 2 March 2022.
- 23. Mr Lines reviewed the draft and considered that, subject to consent conditions, it adequately addressed the previously requested additional information under S92 of the RMA (BGL 2022A).
- 24. A range of minor changes to the report were made in April 2022 and a second draft was issued (T+T 2022B). The changes were addressed in version 2 of Mr Lines review document (BGL 2022B).
- 25. The second draft of Mr McDowell's reporting was finalised in July 2022 (T+T 2022C) and is incorporated as Appendix J of the AEE accompanying the consent application.

26. As part of re-lodgement of the consent in November 2022, overburden disposal areas were incorporated into the application that had not previously been the subject of geotechnical assessment and review.
27. A further S92 request was made for additional information relating to the performance of the overburden disposal areas (OBDA) and online meeting was held on 9 December 2023 to clarify the information required.
28. Mr McDowell prepared a geotechnical letter report relating to the OBDA's (T+T, 2022D) and Mr Lines incorporated that information into his final review document (BGL 2023).

F. AGREED ISSUES

29. Refer to Annexure A

G. DISAGREEMENT AND REASONS

30. Refer to Annexure A

H. CHANGES FROM ISSUED REPORTING

31. Refer to Annexure A

I. RESERVATIONS

32. No reservations have been raised.

Date: 15 May 2023



Cameron John Lines



Barry John McDowell

ANNEXURE A

IN THE MATTER of applications by of the applications by Hirock Limited to the Palmerston North City Council (LU 6962) and the Manawatū -Whanganui Regional Council (APP-2022203991.00) for resource consents associated with the expansion and operation of an existing quarry at 167-257 Kendalls Line, Palmerston North.

Expert conferencing – Geotechnical

Participants: Cameron Lines, Barry McDowell

No	Topic/Issue	Statements	Agreed position	Disagreements and reasons	Change from reporting
1A	Geotechnical Design – Quarry Slopes	Overall slope management (T+T 2022C) S4.1.1	Current slope management practices are adequate.	NA	NA
1B		Overburden sediment slopes (T+T 2022C) S4.1.2	Stability and maintenance of working batter slopes in the overburden sediments is satisfactory for interim (operational) cut batters, where risk is only operational (internal effects only).	NA	NA
1C		Overburden sediment slopes (T+T 2022C) S4.1.2	Stability of overall slopes in the overburden sediments is unlikely to be satisfactory for a long term (mine closure) case.	NA	NA
1D		Overburden sediment slopes (T+T 2022C) S4.1.2	Proposed long term redesign of overall overburden sediment slopes to 2H:1V is expected to provide acceptable levels of stability for a range of closure scenarios.	NA	NA
1E		Toppling movement in East Wall (T+T 2022C) S4.1.3	Toppling failures exist but widespread unravelling of the slope is low probability, unlikely to extend off site and can be expected to develop slowly. Risk can be managed with typical operation controls.	NA	NA
1F		Southwest wedge failure (T+T 2022C) S4.1.4	Wedge failure unlikely to extend beyond current headscarp in proposed pit extension.	NA	NA

1G		Risks to protected vegetation (T+T 2022C) S4.1.5	In the short-term failures may occur in the crest of the slopes abutting the protected vegetation. However, instability in operational slopes is unlikely to extend back past the long term (closure) pit slope crest. Some loss (5-10 m) of protected vegetation is expected either due to operational instability or eventual cut back of the slopes to 2H:1V in the long term (post quarry closure) case.	Mr Lines disagrees (S4, BGL 2023) with the characterisation of timings for short term (years to decades) and long term (decades to centuries). But notes it is not particularly relevant to the potential for environmental effects.	NA
1H		Proposed southwest pit extension (T+T 2022C) S4.2	Reduced bench heights and batter angles are expected to reduced instability risk both on an operational scale and on a whole slope scale.	NA	NA
1I		Pit slopes for quarry closure (T+T 2022C) S4.3.	Pit slopes are expected to perform acceptably where the overburden sediments are battered back to 2H:1V. All rehabilitation options are expected to improve on the long-term stability base case.	NA	NA
2A	Geotechnical Design – Overburden Slopes	Proposed Bunds 1 and 2 (T+T 2022D) S4.2	Bund 1 and Bund 2 present the only risk of offsite effects due to overburden placement.	NA	NA
2B		Proposed Bunds 1 and 2 (T+T 2022D) S4.2	Low to Moderate risk of instability developing in Bund 1 and Bund 2 front faces that could extend beyond a property boundary. Noting adjacent bunds have been built to greater heights than those proposed and performed acceptably.	NA	NA
2C		Proposed Bunds 1 and 2 (T+T 2022D) S4.2	Most significant trigger in potential instability is surface water and infiltration.	NA	NA
2D		Management controls (T+T 2022D) S5	Instability risk can be managed by adopting controls for site preparation, crowning and compacting upper surface, early rehabilitation and controlling surface water.	NA	NA
3A	Proposed conditions of consent	Monitoring extent of cut against long term profile. This will limit the risk of over excavation of the pit and associated instability which has occurred the past.	Annual comparison of as built topography against the proposed 2(h):1(v) surface proposed for final design for the overburden sediments to be provided to PNCC.	NA	NA
3B		Stability of final rehabilitation design.	Geotechnical rehabilitation design report to be provided to PNCC for certification prior to quarry closure and surrender of consents.	NA	NA