

WELLINGTON CITY COUNCIL

Proposed Plan Change 83

Kiwi Point Quarry

s42A Report – Appendix 3

Noise effects

Report Date

19 November 2018

Hearing Date

10-11 December 2018

Table of Contents

1.0	Report Introduction & Summary	2
2.0	Submissions.....	4
3.0	Discussion & Recommendations.....	5
	Evaluation approach and outline.....	5
	My Understanding of the Proposal.....	5
	Criteria for Assessing Environmental Noise Effects	6
	Limitations of the NZ Acoustical Standards.....	8
	Discussion of Blasting Noise and Vibration Effects	9
	Submissions	11

Interpretation

This report utilises a number of abbreviations for brevity's sake as set out in the glossary below:

Abbreviation	Means...
"the Council"	Wellington City Council
"the District Plan"	Operative Wellington District Plan 2001
"the plan change"	Proposed Plan Change 83

1.0 REPORT INTRODUCTION & SUMMARY

Report Author

- 1.1 My name is Ryan Cameron. I am a Senior Environmental Noise Officer for Wellington City Council.
- 1.2 I have held the Environmental Noise Officer role with the Council since May 2015. In my role I investigate and resolve environmental noise issues and regularly provide advice to planners on environmental noise effects associated with resource consent applications.
- 1.3 I have a Bachelor of Science in Applied Physics from Victoria University of Wellington. I have completed the block course 'Biophysical Effects of Noise and Vibration' with Massey University.
- 1.4 I have been asked by the Council to prepare this addendum to the s42A report on Proposed Plan Change 83.
- 1.5 Along with contextual information and other matters of fact, this report includes my personal views and recommendations on the proposal. These views and recommendations are my own, except where I indicate otherwise.
- 1.6 Though not a requirement of Council plan change hearings, I have read and agree to abide by the Code of Conduct for Expert Witnesses, and have prepared this report in accordance with it. The report content is within my area of expertise except where stated otherwise. I have not omitted to consider the material facts known to me that might alter or detract from the opinion expressed in this report.

Report Scope and Structure

- 1.7 This report addresses noise issues relevant to the plan change.
- 1.8 More specifically, my report covers the following:
 - a. **Section 2** briefly identifies the submissions that have raised noise effects; and

- b. **Section 3** includes my evaluation of the key noise issues raised by submitters, having regard to relevant strategic direction from the RMA and other higher order planning documents.

Summary of key findings and recommendations

- 1.9 The proposed quarrying activities as a result of this plan change must meet the criteria for Activity Noise and Fixed Plant Noise from the Business Area 2 Standards (34.6.1.1 and 34.6.1.2).
- 1.10 Provided the Business Area 2 Standards are complied with at all times with regards to quarry activity, then the reasonable protection of health and amenity can be achieved for the sites neighbouring the quarry.
- 1.11 Any blasting activities undertaken at the quarry that generate impulsive noise emissions can be specifically managed with the provisions of this plan change. At consenting stage, the application should reference appropriate International Standards and/or Policy to ensure any adverse effects associated with blasting are adequately mitigated.
- 1.12 The quarry management plan requirements under policy 33.2.2.7 retain the requirement to identify measures to manage noise effects.
- 1.13 The matters for control under the proposed Controlled Activity rule should clearly enable Council to ensure robust controls are applied by way of conditions with respect to any impulsive noise in particular associated with future quarry operations.

2.0 SUBMISSIONS

- 2.1. Ten submissions raised noise-related matters, including the following:
 - a. the proposal will result in increased and/or significant adverse noise effects on people's health and amenity¹; and
 - b. that on-going monitoring of noise be carried out to ensure effects remain at an acceptable level.²
- 2.2. Each of these matters is addressed in the evaluation under section 3 below.

¹ Submissions 4, 12, 13, 18, 24, 26, 29, 33 and 36

² Submission 7

3.0 DISCUSSION & RECOMMENDATIONS

Evaluation approach and outline

- 3.1. For this final section of my report, I provide my view in relation to the noise effects of the plan change, including those points raised by submitters.
- 3.2. The discussion below includes recommendations on measures to avoid, remedy or mitigate adverse effects, should the Commissioners be minded to recommend approval for the plan change.
- 3.3. I have organised my discussion to address the following matters:
 - My understanding of the proposal
 - Criteria for Assessing Environmental Noise Effects
 - Limitations of the NZ Acoustical Standards
 - Discussion of Blasting Noise and Vibration Effects
 - Complaints History
 - Submissions Discussion

My Understanding of the Proposal

- 3.4. The quarry is long established in the area, and currently operates as a permitted activity. This has in practice been confined predominantly to areas in the north, albeit there is scope to extend operations to the south as a permitted activity. This plan change seeks to rezone Open Space B land in the south to Business Area 2. This land is adjacent to existing Business Area 2 land and is essentially an extension of that zoning to encompass more land for the purposes of quarrying in the south-west.
- 3.5. Noise and vibration effects are a significant factor for any quarrying activity, with respect to the extent these effects are experienced at other nearby sites. With this in mind, the effects of greatest concern will be those received at the dwellings on Ghurkha Crescent, Shastri Terrace and Imran Terrace. These areas are visible on the 'Proposed Map Amendments to Chapter 34, Appendix 2'. From this map, it is clear the dwellings in these locations are the closest to the proposed quarry extension area in the south-west.

- 3.6. To date, properties in the north on Plumer St, Tarawera Rd and Kitchener Terrace have been situated the closest to operational areas of the quarry, and consequently are likely to have been the most affected by noise and vibration due to quarrying. Because of the long standing history of the quarry operation here, these properties would have predominantly established after quarrying commenced, and there will be a sense that these people 'bought into' the quarry effects. Properties to the south-west receive noise and vibration effects from the quarry to a lesser extent. Although there will always have been a degree of effects extending to these sites to date, the plan change will result in an inevitable increase in what has been anticipated at those sites to date.
- 3.7. An increase in effects does not necessarily translate to the conclusion those effects will be unreasonable. That assessment needs to be made separately. There will be a difference in perception when comparing residents in the south-west to those in the north. This is because the effects received in the south-west would have been less than those in the north, due to attenuation by distance. Because the plan change will result in an increase in effects for properties in the south-west, assessing the quarry complaints and procedural history to date does not in itself provide assurance that all effects are reasonable.
- 3.8. The reasonable protection of health and residential amenity can be strictly governed by this plan change ensuring appropriate standards and operating procedures are adopted at all times.

Criteria for Assessing Environmental Noise Effects

- 3.9. The New Zealand Standards addressing environmental noise effects are particularly relevant to defining reasonable noise levels for the protection of community health and amenity. Standards of most relevance to this plan change are:
- NZS6801:2008 'Acoustics – Measurement of Environmental Sound'
 - Defines the standardised methodology for measuring environmental noise.

- NZS6802:2008 'Acoustics – Environmental Noise'
 - Discusses the assessment of measured environmental noise and how to arrive at a final assessed noise level. Gives guidance to upper acceptable noise limits for the protection of community health and amenity, also guided by the World Health Organisation recommendations.
 - NZS6803:1999 'Acoustics – Construction Noise'
 - Describes the methods for assessing construction noise effects, and acceptable upper limits. This standard is designed for construction noise effects which are accepted as being of limited duration.
- 3.10. NZS6801:2008 and NZS6802:2008 are appropriate tools for adequately mitigating the effects of quarrying activities, in order to protect the health and residential amenity of near-by affected sites. There are some exceptions to this as outlined in the next section (Limitations of the NZ Acoustical Standards).
- 3.11. If quarrying activities are managed in a way so as to fit within the criteria of the NZ Acoustic Standards, and all noise emission levels associated with quarrying activities comply with the Business Area 2 Standards for Noise (Activity Noise 34.6.1.1 and Fixed Plant Noise 64.6.1.2), then in my view the noise associated effects will be reasonable and will not adversely affect health or amenity for near-by sites. In particular, the noise limits defined for the residential area in Standard 34.6.1.1.6 will be adequate to protect the health and residential amenity of the any surrounding residential sites. The applicable limits for the nearest residential sites are:
- Outer Residential Area:***
Mon to Sun 7am to 7pm 50dB LAeq (15min)
- 3.12. Quarrying activities of any nature are not proposed for night-time. Therefore only the daytime limits from the Standard need be considered.
- 3.13. The construction noise standard (NZS6803:1999) is of less relevance to quarry activities. The quarrying noise and vibration effects will be indefinite, for the purposes of this assessment. The construction noise standard makes specific reference to being most applicable to construction

noise effects of limited duration. It would not be appropriate to take the limits from this standard and apply them to a permanent or long-term activity of a similar nature.

Limitations of the NZ Acoustical Standards

- 3.14. From NZS6801:2008, NZS6802:2008 and NZS6803:1999, there are exclusions with regards to using the standards to assess impulsive noise (e.g. blasting).
- 3.15. From NZS6801:2008 it is indicated that reference to other Standards is required to establish appropriate use of peak measuring instruments³.
- 3.16. NZS6802:2008 is the basis for setting noise limits with regards to standards within the District Plan. The standard states that the assessment of impulsive sounds such as blasting is generally outside the scope of the standard⁴. On that basis, neither this standard nor the District Plan activity noise standards can be relied upon to ensure effects due to blasting are reasonable.
- 3.17. NZS6803:1999 is for the assessment of construction noise effects, and crucially, the standard aims to control construction-associated noise of 'a limited duration'⁵. NZS6803:1999 is of limited relevance when aiming to set appropriate noise limits for quarrying in this context.
- 3.18. NZS6803:1999 suggests that other documents should be utilised in order to manage the noise of explosive sources (blasting)⁶.
- 3.19. The General Provisions of the District Plan define the term 'noise emission level', which is frequently used throughout the Plan with regards to setting noise standards and reference to noise effects in general. The definition states:

³ New Zealand Standard NZS6801:2008. *Acoustics – Measurement of Environmental Sound*. Section 8.6, p.22

⁴ New Zealand Standard NZS6802:2008. *Acoustics – Environmental Noise*. Section 1.2.1, p.9

⁵ New Zealand Standard NZS680:1999. *Acoustics – Construction Noise*. Section 1.3, p.5, Foreword, p3

⁶ New Zealand Standard NZS680:1999. *Acoustics – Construction Noise*. Section 8.1.4, p13

High energy impulsive sounds such as gunfire, blasting and warning devices are not adequately controlled using assessment by either NZS 6802: 2008 "Acoustics - Environmental Noise" or NZS6802:1991 "Assessment of Environmental Sound" and noise rules in this Plan, unless the rule states to the contrary.

Noise from high energy impulsive sounds are not adequately controlled using the current New Zealand Standards. Activities that emit noise with such characteristics are generally likely to cause greater annoyance than assessment using Rules within this Plan would indicate. The impact of such activities would be assessed by reference to Section 16(1) of the Resource Management Act.

Discussion of Blasting Noise and Vibration Effects

- 3.20. With regards to the various references quoted above, there should be no doubt that blasting activities at the quarry cannot be managed with the NZ Acoustical Standards. In order for blasting activities and any other impulsive noise sources to be appropriately managed to avoid adverse effects, there should be reference to other appropriate standards or guidelines.
- 3.21. Blasting must be treated carefully with regards to this plan change and the policies, rules and methods that are applied in order to ensure associated effects are reasonable. There are a variety of measures that could be adopted to achieve these outcomes.
- 3.22. For example, the quarry management plan could make specific reference to the need to incorporate robust controls with regards to any blasting. The management plan could address blasting effects by stating such measures as:
- a. The frequency at which blasting events shall occur (e.g. a finite number of such events per calendar year).
 - b. The relevant international standards or literature being adopted to inform setting adequate controls around blasting effects. The management plan should also explain why a particular standard or

set of literature is being relied upon and how it is relevant and appropriate in the quarry context.

- 3.23. Alternatively, by incorporating a new matter of control, Council Officers would have the express ability to scrutinise the effects of any proposed blasting at the time resource consent for the activity is processed. The effectiveness of this approach could be bolstered by including an information requirement in section 3 of the District Plan for an acoustic report to accompany any future application made under the proposed controlled activity rule. This is discussed further in Mr Jones' report.
- 3.24. In either case, my view is that provision should be made such that any blasting activities are assessed and managed in accordance with the recommendations of a suitably qualified acoustic engineer, with reference to applicable International Standards, Guidelines and/or Policy, with the aim of protecting health and amenity for residential users. The controls should also extend to the protection of health and amenity for the adjacent commercial sites to the quarry.
- 3.25. I have read the revised plan change provisions provided to me by Mr Jones and which relate to blasting. I believe these measures are appropriate for ensuring the reasonable control of blasting effects, and address my key measures summary above.

Complaints History

- 3.26. I have sighted the complaints history with regards to complaints received directly to Council and those to the existing quarry operator.
- 3.27. Overall, I consider there is a very low volume of complaint associated with the quarry. This is with regards to the number of affected receivers of noise and vibration effects, the scale of the quarry and the time over which it has been in operation. This could suggest that the quarry management plan and district plan provisions that have been in place to date are largely effective at managing noise and vibration effects to reasonable levels.
- 3.28. Council has records of three noise related complaints for the period 2012 to July 2018. These complaints allege noisy quarry activities in the evenings on each occasion. Attendance by Council Noise Control Officers to

each of these complaints found no quarry noise at the time of attendance. It is likely quarry activity related to these complaints was due to unusual transient noise associated with evening access to the site. I cannot comment on whether such activity was permitted, or not.

- 3.29. The complaints received directly to the quarry are typically associated with blasting events. These appear to have been investigated by the quarry only, and as such I can't comment further on the reasonableness or otherwise of these complaints.
- 3.30. The complaints history, albeit small, suggests impulsive noise effects are what typically provoke complaint. This is consistent with the conclusions I have reached in this report, in that blasting at the quarry must be carefully managed to avoid any unreasonable effects.
- 3.31. In my view, the effects from impulsive noise can be managed through the quarry operation adopting good management and operational measures as recommended by a suitably qualified acoustic engineer. The amendments proposed to the plan change provisions in Mr Jones' report will provide for that outcome at the resource consent stage for any future quarrying activity in the plan change site.

Submissions

- 3.32. I have read submissions 4, 7, 12, 13, 18, 24, 26, 29, 33 and 36 with regards to this proposed plan change. This final section relates my evaluation above to the issues raised by these submissions.
- 3.33. Some submitters raise concerns around whether the quarry can contain the effects of noise and dust to within their boundaries. I take this to also mean whether they can comply with the reasonable limits set out for the Outer Residential Area Activity noise limits. I cannot comment on that ability since I have insufficient knowledge of how quarry activities will be managed. However, it should be stated that with regards to non-impulsive noise, the quarry operator at all times must comply with those limits (and any other conditions of consent), to which compliance action can ensure the same.

- 3.34. With regards to comments around noise and vibration effects inevitably increasing as a result of quarry activity moving to the south – this may be true for some residential properties, but as I've previously commented, the increase should not be to a level that exceeds the Outer Residential Activity Noise limits, which is an acceptable level in order to protect residential health and amenity. It is also the same limit which applies to all Outer Residential Areas within the city, in order that residential health and amenity is protected with respect to noise from any non-residential activity. The quarry could apply for consent to exceed the Outer Residential Noise limits, but such a proposal would be assessed on its merits and may be subject to notification. In my view, it is unlikely the Council would support such an application.
- 3.35. Comments concerning the effects of blasting (and any other impulsive noise) demonstrate the potential for high sensitivity to such activity. As I've explained in this report, controls with respect to any proposed blasting and impulsive noise generating activities must be robust. These activities must be assessed and managed in accordance with the recommendations of a suitably qualified acoustic engineer, with reference to applicable International Standards, Guidelines and/or Policy to ensure there are no adverse health or amenity effects resulting for any surrounding site to the quarry.



Ryan Cameron
19 November 2018