

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of a resource consent application to
Whangarei District Council for the Pegram
Block Overburden extraction project.

**SUMMARY OF EVIDENCE OF ANDREW CURTIS ON BEHALF OF GBC
WINSTONE**

1. INTRODUCTION

1.1 My full name is Andrew Ferguson Curtis. I am a Technical Director at AECOM New Zealand Limited with over 30 years engineering experience, with over 20 years in air quality. My qualifications and experience are set out in full in my statement.

Background

1.2 I was initially engaged by GBC Winstone's (**Winstone**) in October 2016 to prepare an air quality assessment (**the AQ Assessment**) to accompany an application to the Northland Regional Council (**NRC**). Following this, my report, together with an additional memo dealing with rules in the District Plan, was also submitted with the application to Whangarei District Council (**WDC**) for the land use consent.

2. CODE OF CONDUCT

2.1 I can confirm I have read the Expert Witness Code of Conduct set out in the Environment Court's Practice Note 2014. I have complied with the Code of Conduct in preparing this evidence and I agree to comply with it while giving oral evidence before the hearing committee. Except where I state that I am relying on the 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.

3. NEED FOR CONSENT

3.1 My original brief of work was to prepare a report that demonstrated to the NRC that the proposed Pegram project could be operated in such a way that it met the permitted activity rule (Rule 9.1.4 (a)) in the Regional Air Quality Plan for Northland (**RAQP**) and consequently not require an air discharge consent. NRC accepted that our report was able to demonstrate that the

proposed activity could be undertaken in compliance¹ with the permitted activity rule, and consequently did not require an air discharge consent.

- 3.2 Part of this assessment involved installing and continuously monitoring existing levels of dust (TSP) in the environment. This monitoring demonstrated that there was no evidence that dust from existing activities at the quarry were impacting on the local environment, with virtually all measurements well less than Ministry for the Environment guidance values. (Figure 2, Table 1)
- 3.3 Continuous monitoring of TSP also forms part of the mitigation, and we know from a number of overburden campaigns for the Belmont Quarry in Wellington that they are an effective way of demonstrating compliance.
- 3.4 Subsequently our report, together with an addendum looking at some specific rules in the District Plan, was submitted to WDC in support of the land use consent for the Pegram project. The matters set out in the District Plan that relate to dust from quarrying operations are set out in Rule 38.3.3 and state:
- Activity Matters of Discretion
- (i) Effects of noise, dust and other nuisances, and;
 - (x) Effects of excavation, mineral extraction, transport and processing (including the effects of dust) on any water body or indigenous vegetation.
- 3.5 It is important to note that the air quality matters that are relevant in the District Plan are primarily related to amenity effects, rather than the broader range of air quality effects that are dealt with by the NRC, and as I already mentioned, NRC has indicated that they agree that the activity will meet the permitted Activity rule.
- 3.6 Using the assessment I undertook to demonstrate compliance with the requirements of the NRC, which was based on the FIDOL assessment tool and specific information on the proposed activity and local meteorology, I considered the potential for dust to impact on waterways and indigenous vegetation.
- 3.7 In this regard I reviewed the evidence of Dr Boothroyd and discussed with him, my assessment of the potential for dust emission to be generated.
- 3.8 Given the limited amount of indigenous vegetation within the Pegram Block it is my opinion that the dust mitigation measures (including using real time dust monitoring) which will be implemented will be effective at controlling dust to ensure it doesn't result in nuisance on humans, and it is extremely unlikely that there will be any form of effects on indigenous vegetation.
- 3.9 Dr Boothroyd's evidence also indicated relatively little in the way of waterways that could be affected by dust, and therefore I am confident based on the mitigation proposed that any dust that might be generated by the activity, will not result in any form of effect on the unnamed tributary of the Te Waiiti Stream.
- 3.10 Overall based on the above I consider there is little potential for any dust to be generated by the proposed activities that might result in amenity effects which are contrary to the requirements of the District Plan.

¹ Northland Regional Council, Application APP.039161.01.01 Decision Report, 27 April 2017

- 3.11 I note that my Assessment was peer reviewed by Ms Prue Harwood from Beca and also by Dr Jennifer Salmond for Auckland University, who both agreed with my findings.
- 3.12 Ultimately the Reporting Officer for Whangarei District Council also agreed with my conclusions and stated in paragraph 8.18 that:
- “It is accepted on the basis of evidence provided that adverse effects of dust can be avoided and/or mitigated through active on-site management, and can comply with the NRC air discharge rules.”*
- 3.13 Consequently there is no reason from an air quality point of view, for consent not to be granted.

4. MATTERS RAISED IN SUBMISSIONS

- 4.1 There were six main concerns raised in the submissions with respect to dust. These are:
- (a) Use of local wind data
 - (b) Effects of dust on roof collected drinking water and outdoor amenity
 - (c) How dust will be controlled after hours
 - (d) The potential for the dust to contain toxic substances
 - (e) The potential for silica effects
 - (f) The potential for adverse effects from PM₁₀
- 4.2 The majority of these matters are not ones that fall within the purview of the District Council, being primarily dealt with by the Regional Council. However I was asked to respond to all of the matters by GBC Winstone.

Use of Local Wind data

- 4.3 There was a comment in one of the submissions² suggesting that we should have used meteorological data collected at the quarry. Unfortunately when we first became involved in this project the Otaika Quarry weather station was not suitably located, and I had no confidence that the data collected at it would be either meaningful or useful.
- 4.4 Therefore I used data from GBC Winstone’s Portland site (Figure 6) in my analysis. My subsequent comparison of this data (Figures 13 and 14) with that collected at the repositioned Otaika site showed relatively good correlations between the wind speed and direction for the two sites, with the main difference in the wind speeds, with lower wind speeds consistently measured at Otaika compared to Portland.
- 4.5 It is my opinion that using the Portland data has likely overestimated the number of hours when strong winds might blow towards neighbouring property owners and therefore I am comfortable with the use of Portland data

² Northland District Health Board

in my assessment, and that this has likely resulted in a more conservative assessment.

Effects of TSP on Roof Collected Drinking Water and Amenity

- 4.6 I looked at the potential for dust to affect roof collected drinking water, and concluded that due to the distance involved (approximately 200 m) it was unlikely to be affected by particulate from the works except in extremely strong wind conditions.
- 4.7 Even if some dust did land on the roof, it would need to remain there until it next rained and be present in sufficient quantities to be noticeable above the normal detritus that collects on roofs from vegetation, animals and normal ambient dust.
- 4.8 In addition, many modern rain water systems are fitted with first flush systems, which effectively divert the first tranche of rainwater, and any detritus it may contain, away from tanks, and are also typically fitted with inlet filters which remove bacteria or other solid material that may be in the water. Therefore with these types of measures in place there would be no effects on drinking water.

How will dust be controlled out of Hours

- 4.9 Based on the mitigation measures that are proposed including the use of real time TSP monitoring it is unlikely that there will be dust generated, and if it were generated afterhours, GBC Winstone staff would be automatically alerted by the monitoring system and could return to site and implement any additional mitigation measures that may be required to ensure that there are no adverse off-site effects.

The potential for the dust to contain toxic substances

- 4.10 There was concern raised in some submissions that the overburden may “contain toxic substances”. This is not an amenity issue and therefore would not normally be dealt with as part of a land use consent being rather more appropriately dealt with by NRC. Nevertheless I undertook extensive investigation to determine what the potential for this was.
- 4.11 This work looked for toxic substances and pathogens in the topsoil and did not detect the presence of anything which could give rise to a toxic effect.

The potential for silica effects

- 4.12 A number of submissions raised concerns about the potential for there to be crystalline silica (quartz) dust generated as a result of the proposed activity.
- 4.13 I considered this in two ways. Firstly I reviewed occupational health monitoring undertaken by GBC Winstone, which indicated that there was no potential for on-site staff, who are most at risk, to be exposed to concentrations of quartz which exceed Workplace Exposure Standards, and in fact, the concentrations reported were generally lower than overseas guidance for ambient exposure. Consequently given the distances between the quarry activities and the residents there is essentially no potential for residents to be exposed to quartz from quarry activities at concentrations which might give rise to any form of effect.

- 4.14 I also looked at the potential for any quartz that might be in the overburden to affect residents. This involved taking a sample of the four components that make up the overburden and getting them analysed.
- 4.15 This analysis indicated that there was little potential for there to be a separate quartz phase in most of the material, with the highest potential being in the weathered greywacke (which represents less than 5% of the overburden), which is unlikely to generate significant quantities of dust, or contain the fine highly fractured quartz particles that have been identified as having the greatest potential to result in health effects.
- 4.16 Therefore I do not consider that there is any potential for there to be any off-site effects associated with this.

The potential for adverse effects from PM₁₀

- 4.17 To look at concerns associated with PM₁₀ I have undertaken monitoring of PM₁₀ for since 18 August 2017 adjacent to the Pegram Block. The results of this monitoring are presented in Figure 16, and indicates that typically PM₁₀ values in the area are less than 20 µg/m³, which is comparable with but typically less than measured in Roberts Street in central Whangarei by the Northland Regional Council (see Figure 17).
- 4.18 Consequently, given the low existing background levels, there no evidence that the existing quarry activities are generating significant levels of PM₁₀. There is also no reason to believe that the placement of overburden will result in significant changes in the PM₁₀ concentrations as the types of activities that will occur on site will not generate PM₁₀ in significant quantities.
- 4.19 Therefore it is my opinion that there is little potential for activities on the Pegram Block to result in any adverse health from PM₁₀ emissions.