

5 May 2023
Job No: 1017819.0000

Grey District Council
PO Box 382
Greymouth 7840

Attention: Mark Geddes

Dear Mark

Barrytown Mineral Sand Mine Review of acoustic assessment - May 2023

1 Introduction

In 2020, Barrytown JV Limited applied for resource consent for the operation of a mineral sand mining facility on State Highway 6, Barrytown, in the Grey District. Tonkin & Taylor Ltd (T+T) undertook a technical review¹ of the acoustic assessment by Marshall Day Acoustics (MDA) as requested by Grey District Council (GDC). Consent for this application was subsequently declined².

Issues relating to noise that were raised during the course of the hearing included daytime noise levels on Sundays, and night-time truck noise.

TiGa Minerals and Metals Limited (TiGa) has subsequently revised the mineral sand mining proposal and has submitted a new application, supported by an updated acoustic assessment and noise management plan prepared by MDA. Changes to the previous application include limiting truck movements to between 5 am and 10 pm, the layout and methodology of the mining operation, and the location of a bund at the eastern end of the site.

T+T has been engaged by GDC to undertake a technical review of the revised supporting acoustic assessment. The following documents have been reviewed:

- MDA report *Barrytown Mineral Sand Mine Assessment of Noise Effects* ref Rp 002 R03 20191310 dated 17 April 2023 (the “MDA Report”).
- MDA / TiGa *Draft Noise Management Plan* Rp 003 R02 20191310 dated 4 April 2023 (the “CNMP”).

These documents have been read in conjunction with the AEE prepared by Tai Poutini Professional Services Ltd (TPRL) and with full knowledge of T+T’s previous review for this site.

This review addresses the changes to the acoustic assessment and has been undertaken by Lindsay Leitch, Senior Acoustic Consultant, with technical review by Darran Humpheson, Technical Director –

¹ T+T letter *Barrytown JV Sand Mining – Acoustics review* ref 1017819 dated 25 June 2021 and T+T letter *Barrytown JV Ltd – Review of supplementary statements of noise evidence* ref 1017819 dated 16 November 2021.

² Decision *Joint Report and Decision of Hearing Commissioners* dated 10 February 2022.

Acoustics, who undertook the original review. It has been undertaken in accordance with our agreement dated 19 March 2023.

2 Changes to application

The mining activity is summarised in the MDA Report. Notable differences from the previous application include:

- The construction of an eastern bund 4.5 m high.
- Mining to be undertaken in panels, worked west to east (generally towards receivers). Mined ore is placed into a Mining Field Unit, then pumped to the processing plant.
- The final stage of mining involves the removal of the eastern bund and mining of the sand minerals in this location.
- The processing plant is located at the southern end of the eastern bund and contained within buildings.
- Hours of operation:
 - a Mining operation generally 7 am to 10 pm, 6:30 am to 9:30 pm 1 December³ to 31 January (noting this includes 6:30 am to 7 am within the night-time period);
 - b The processing plant will operate 24/7 within a building;
 - c Trucking will take place from 5 am to 10 pm, i.e. only two hours of activity within the night-time period.

The site is zoned Mineral Extraction in the notified Te Tai o Poutini Plan (TTPP), and surrounding receivers are zoned General Rural or Rural lifestyle. The TTPP contains the same daytime noise limit of 55 dB LAeq on all days including Sundays. Night-time limits are consistent with the Grey District Plan (GDP).

The MDA Report references the TTPP regarding noise from mobile sources to be assessed against NZS 6803:1999 *Acoustics – Construction noise*. This is used for pre-mining and post-mining phases only.

3 Relevant assessment criteria

The site and surrounding area are within the Rural zone of the GDP. As identified in the MDA Report, the relevant permitted noise levels (Rule 19.7.16) are:

| | | |
|----------------------------------|------------|-------------|
| Monday to Saturday 7 am to 10 pm | 55 dB LA10 | |
| Sunday 7 am to 10 pm | 45 dB LA10 | |
| All days 10 pm to 7 am | 45 dB LA10 | 75 dB LAmax |

These levels apply at the notional boundary of rural dwellings.

The TTPP has been notified and contains the following permitted levels applicable to receivers surrounding the site, which is zoned Mineral Extraction:

| | | |
|------------------------|--------------------|-------------|
| All days 7 am to 10 pm | 55 dB LAeq(15 min) | |
| All days 10 pm to 7 am | 45 dB LAeq(15 min) | 75 dB LAmax |

³ Date taken from AEE, stated as 1 November in MDA Report.

TTPP Rule NOISE-R1 (1) states that noise must be measured and assessed in accordance with NZS 6801:2008 *Acoustics – Measurement of environmental sound* and NZS 6802:2008 *Acoustics – Environmental noise*.

4 Review

4.1 Acoustic assessment

4.1.1 Construction noise

We agree with the MDA Report that it is reasonable to assess the pre-mining and post-mining construction activities against the noise limits of NZS 6803:1999 *Acoustics – Construction noise* and we agree that these limits are likely to be comfortably complied with.

4.1.2 Operational noise

Noise source data stated in the MDA Report differs from noise levels quoted in the previous MDA assessment. The MDA Report states the new noise levels are based on measurements at other mine sites around New Zealand, including a West Coast mineral sands mine. The differences are summarised as follows:

- Wet processing plant was included in the previous assessment but is not included in the latest MDA report. The text in the MDA Report instead refers to a Mining Field Unit which is not included in the noise source list and does not appear to have been modelled.
- 6 ft trommel / screen has reduced by 8 dB from 116 to 108 dB LWA (LA10 basis).
- 20 tonne bulldozer has reduced by 3 dB from 108 to 105 dB LWA (LA10 basis).
- 16 tonne grader has been added at 113 dB LWA.

The processing plant is understood to be contained within a building. It appears not to have been modelled; given the typical attenuation that a building provides, we consider it is likely to be sufficiently quieter than other equipment associated with processing operations for this approach to be valid.

The predicted noise levels at all receivers from all phases of mining are below 55 dB LAeq. This is consistent with the previous assessment (acknowledging that the equipment, layout, and methodology have been adjusted) and we agree with MDA that the permitted daytime noise level can be achieved during operation of the site. It is likely that this limit may be exceeded at 3261 Coast Road in the worst-case scenario, but we understand from the AEE that the applicant intends to obtain affected party approval (APA) for this property, therefore we have not considered it further. If APA is not obtained, we consider that appropriate noise mitigation for this property would be required.

As the TTPP has the same daytime noise limit on Sundays as well as the rest of the week, we raise no further concerns regarding noise levels on Sundays and merely note that residents will not have respite from operational mining noise on this day.

Some potential exceedances of the night-time noise limits are noted to be possible when mining is undertaken during the night-time period (6:30 to 7 am in December and January to address disturbance during the peak fledgling season for Taiko). Table 8 of the MDA Report shows a maximum predicted level of 52 dB LAeq, i.e. 7 dB above the night-time operational noise limit. The applicant has proposed a condition requiring noise measurements prior to this work to demonstrate that the night-time limits can be complied with. We have provided alternative wording in our recommended conditions to address this requirement.

4.1.3 Truck movements

The issue of night-time truck movements was discussed in the hearing for the previous application and it was agreed that limiting movements to three per hour would be considered reasonable. This proposal additionally restricts night time trucks to between 5 am and 7 am. The applicant has provided a draft consent condition to this effect.

We agree with the MDA Report that daytime truck movements are likely to be masked by existing traffic noise levels and no additional restrictions are required.

4.2 Noise Management Plan

The information provided in the draft NMP is appropriate for the nature of the activities and is consistent with the findings of the MDA Report.

5 Recommended conditions

We have viewed the applicant's proposed conditions of consent and provide the following comment on conditions relevant to noise.

| Condition | Comment |
|-----------|--|
| 15.3 | Ok |
| 17.1 | Ok |
| 17.2 | Ok |
| 17.3 | The NMP needs to be finalised and have methodology for noise monitoring included |
| 17.4 | Wording around noise monitoring adjusted |
| 17.45 | Additional condition included |
| 17.5 | Ok |
| 17.6 | Ok |

Our preferred wording for conditions 17.3, 17.4 and 17.45 is as follows (**bold** or ~~struck through~~ where changed):

- 17.3 ~~The Consent Holder must operate the site in general accordance with the Noise Management Plan (NMP) prepared by Marshall Day Acoustics dated April 2023.~~
The consent holder shall prepare a Noise Management Plan (NMP) to control day-to-day noise emissions from the site. This NMP must be submitted to Council for approval 10 working days prior to commencement of noisy activities at the site.

As a minimum the NMP shall include:

- a The person responsible for implementing the NMP.
- b Applicable noise conditions relating to noise.
- c Training of staff relating to how to minimise noise and vibration.
- d Maintenance schedule for site access road surfaces to avoid excessive noise and vibration.
- e Activity risk analysis for noise generation.
- f Method for handling complaints.
- g Noise monitoring methodology.**

- 17.4 The consent holder shall undertake compliance noise monitoring within 30 days of mining and processing operations occurring and thereafter at 6 monthly intervals unless agreed otherwise by the Environmental Planning Team Leader, Grey District Council.

~~Noise monitoring shall also be undertaken prior to the period 01 December to 31 January to confirm that the Mining Field Unit is able to comply with the night time noise limits if mining operations are proposed to occur between 0630 and 0700.~~

All noise monitoring shall be ~~made available~~ **submitted** to Grey District Council within two weeks of completion of each monitoring visit.

If compliance is not achieved, the Consent Holder must investigate and implement additional mitigation required to achieve the noise limits as soon as practicable. The consent holder must submit a report to Council within 60 working days of the relevant monitoring report detailing the mitigation measures that will be implemented and must undertake a further compliance monitoring report within 10 working days of any mitigation measure being implemented to demonstrate the effectiveness of that mitigation.

If compliance with the night-time noise limits is not achieved, mining operation shall not commence before 0700 until suitable mitigation measures are implemented to achieve the night-time noise limit.

17.45 Prior to mining activity occurring during the night-time period each year, the consent holder shall provide an assessment that the schedule of mining equipment, its operating locations and any mitigation required to comply with the applicable noise limits. The results of each assessment must be provided to Council at least 10 working days prior to 1 December each year and must be appended to the NMP.

6 Applicability

This report has been prepared for the exclusive use of our client Grey District Council, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

We understand and agree that this report will be used by Grey District Council in undertaking its regulatory functions in connection with the Barrytown mineral sand mine.

Tonkin & Taylor Ltd

Report prepared by:

Authorised for Tonkin & Taylor Ltd by:


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Lindsay Leitch
Acoustics/Noise Specialist


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Richard Chilton
Project Director

Report reviewed by:


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Darran Humpheson
Technical Director of Acoustics

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