BEFORE AN EXPERT PANEL **FTAA-2504-1048**

UNDER	the Fast Track Approvals Act 2024
IN THE MATTER	of a substantive application for marine consents that would otherwise be applied for under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012
BY	Trans-Tasman Resources Limited

SUPPLEMENTARY EVIDENCE OF SHAWN THOMPSON ON BEHALF OF TRANS-TASMAN RESOURCES LIMITED REGARDING GENERATION OF FINES

12 DECEMBER 2025

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INTRODUCTION

Qualifications, experience and code of conduct

1. My name is Shawn Thompson.

2. I have provided a statement of evidence in this matter dated 13 October 2025 (**First Statement**), which sets out my qualifications and experience, and my involvement in TTR's project. I have also provided a supplementary statement of evidence dated 21 November 2025.

3. I confirm that in preparing this supplementary statement of evidence I have complied with the Code of Conduct for Expert Witnesses contained in the Environment Court's Practice Note dated 1 January 2023.

Scope

4. I have reviewed the Joint Statement of Expert Witnesses: Fate of Tailings Backfill dated 18 November 2025. At paragraph 14 that statement refers to the mining discharge including "an indeterminant amount of fines added". TTR has asked me to provide additional information about the potential for processing on board the IMV to add fines.

CLARIFICATION OF FINES GENERATION IN THE TTR PROCESS

5. The formal definition of particle size classes as referenced in Hadfield & MacDonald's Sediment Plume Modelling report (TTR, October 2015, p.25) is:

    - Coarse sand: 500–1000 µm
    - Fine to medium sand: 128–500 µm
    - Very fine sand: 63–128 µm
    - Coarse silt: 16–63 µm
    - Fine silt: 4–16 µm

6. For the purpose of this evidence "fines" are all particles smaller than 63 µm. This corresponds to the silt fractions, material that is naturally

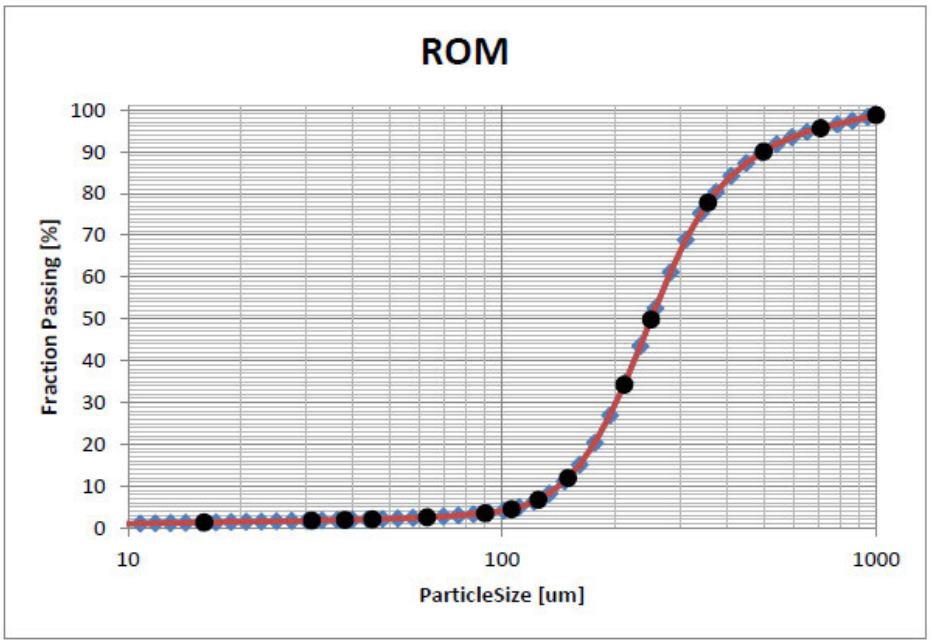
abundant in the unconsolidated sediments of the South Taranaki Bight.

ROM (Run of Mine)

7. The seabed feed (ROM) will arrive with its own natural fines load. This includes:

- Naturally occurring magnetic fines (ultrafine titanomagnetite).
- Naturally occurring non-magnetic fines (silts, clays, light minerals from the unconsolidated sediments).
- This distribution is inherent to the geology and has nothing to do with breakage created by the TTR system
- The following table and Particle Size Distribution was derived from values extracted from sample locations in the mining area (SWth010 & Sth012). The table lays out the proportion of fines contained within each particle-size band, making it straightforward to see how much of the overall material falls into each fraction. The graph, in contrast, presents the complete particle size distribution so you can see the spread of all sizes across the sample, including where the sub-63 micron particles sit within the overall curve.

Size µm	%
63	1.0
45	0.5
38	0.2
31	0.2
16	0.4
8	0.5
4	0.4
2	0.3
Total	3.3



How Non-Magnetic Fines Are Progressively Removed

8. The TTR flowsheet is deliberately structured to remove the fine non-magnetic fraction early and progressively, well before the product stream reaches the final magnetic concentration stages. The system relies on a sequence of classification and magnetic separation steps that continually clean the stream and prevent non-magnetic fines from migrating into the concentrate line.

9. Key unit operations driving this (and the sequence in which they occur) are:

- Hydro-cyclones
  - Separate material based on particle size and density.
  - Reject the bulk of non-magnetic fine slimes to the overflow.
  - Allow only dense, coarse, magnetite-rich particles to continue downstream.
- Derrick High-Frequency Screens
  - Impose a tight cut size, stripping out fine, low-density gangue.

- Prevent short-circuiting of non-magnetic fines into the magnetic streams.
- Maintain a coarse, clean feed for the subsequent magnetic stages.

- Low-Intensity Magnetic Separators (LIMS)
  - Remove liberated, strongly magnetic titanomagnetite at coarse and intermediate sizes.
  - Reject non-magnetic material early, reducing the load on downstream processes.
  - Provide the first major step in cleaning the magnetic fraction.
- Medium-Intensity Magnetic Separators (MIMS)
  - Target composite or lightly locked particles requiring higher field strength.
  - Further strip non-magnetics from the heavy fraction.
  - Deliver a progressively cleaner, denser, and more magnetically responsive stream.

10. Through this sequence, classification, screening, and staged magnetic separation, the non-magnetic fine load is continually reduced, ensuring that by the time the material reaches comminution (Vertimills), only a small amount of non-magnetic/magnetic material (composite particles) remain.

What Actually Goes to the Vertimills

11. Only 13% of the total incoming extracted sediment actually reports to the Vertimill. The purpose is light liberation, not aggressive size reduction. The remainder is rerouted through the overflow of a hydro cyclone and subsequent derrick screens.

12. The Vertimill feed consists of:

- Magnetic particles (titanomagnetite),

- Magnetic composite particles (magnetite locked with gangue),

13. This is not a hard-comminution stage. The Vertimills "polish" and clean the magnetic concentrate, removing any lightly bound non-magnetic gangue. They also do not take the full ROM stream, and do not generate large volumes of new fines.

14. Pilot-plant testing showed that the LIMS 1 concentrate contained approximately 63.5% magnetic material, meaning that the balance was non-magnetic at that stage of separation. However, the full-scale plant configuration includes both LIMS and MIMS prior to the Vertimills, so the non-magnetic proportion entering the mill would in reality be no more than this, and very likely lower. In simple terms, the Vertimill will still be treating a predominantly magnetic stream, with the non-magnetic portion forming only a residual fraction of the original sediment, at most around 36.5% of the 13% of ROM that proceeds to milling.

15. The recirculating flow arrangement allows the Vertimill to focus its energy on the coarser fraction, applying a preferential grind rather than indiscriminately reducing all particles. By controlling the upward velocity inside the mill, the product size distribution will be managed.

Conclusions

16. For all the reasons addressed above, the process would create negligible new fines beyond what already exists naturally in the ROM. The plant is fundamentally a classification and removal system, steadily stripping out the magnetic fines at each stage.

17. Any magnetic fines generated in the Vertimills remain in the VTM concentrate for export. For the non-magnetic fraction that will be directed to the tailings pipe, the amount of new fines (<63 microns) generated will be indistinguishable from the background particle size distribution of the extracted seabed iron sands (ROM).

Shawn Thompson

12 December 2025