

In the matter of

an application for approvals under the Fast Track Approvals Act 2024 for the Barrytown Minerals Project – Southern Block [FTAA-2605-1238]

By

Tāiko Critical Minerals Limited

Applicant

Reply Statement of Evidence of Pier Federici in relation to Mine Planning

5 October 2026

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**anderson
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Introduction

- 1 My name is Pier Federici.
- 2 I provided a statement of evidence dated 24 March 2026, which outlines my experience at paragraph 3.
- 3 I reconfirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court of New Zealand Practice Note 2023 and that I have complied with it when preparing this evidence. Other than when I state I am relying on the advice of another person, this 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 that I express.
- 4 This reply evidence responds to the following matters raised by the Expert Panel in Minute 3.

Responses to matters raised by the Panel

- 5 The Panel has requested a long section and plan showing the position of the dredge at the mining face. The Panel has also requested an illustration of the minimum area of open mining void, as well as the tailings that will follow the dredge. This is provided in the image below:

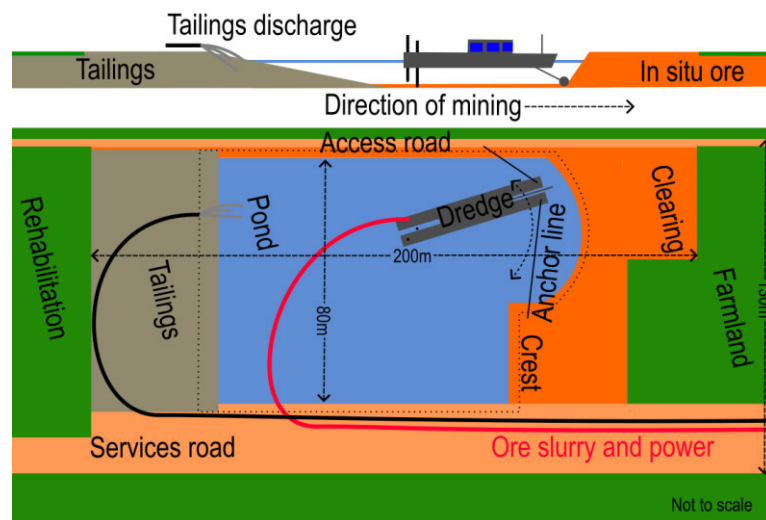


Image: Long section and plan showing the position of the dredge at the mining face and an illustration of the minimum area of open mining void, as well as the tailings that will follow the dredge.

- 6 The dredge path will be divided into a series of cuts parallel to the direction of mining. The width of the cuts depends on the dredge dimensions.
- 7 The angular position of the dredge is controlled by winches operating on the anchor line cables. The anchors will be positioned adjacent to the active

face and crest of the void. The anchors provide lateral movement. The dredge will pivot on the working spud. The position of the working spud is controlled and moves along the dredge to provide thrust required for the dredge and cutting head to advance. When the working spud is moving towards the rear of the dredge, the dredge advances. The fixed spud is used to stop movement while the working spud moves to the forward position.

- 8 Not shown on the image are the bunds to prevent unintended access to the working areas and surrounding the pond.
- 9 Tailings will be returned to the mining void by discharging the tailings onto the beach formed at the rear of the dredge pond. Testing will be required to determine whether open line discharge or a tailings stacker will be used for placing tails. Rehabilitation will commence with the placement of soils harvested from the area cleared in advance of the pond.
- 10 To minimise the open area, the returned tailings can be advanced so that the toe of the tailings approach the rear of the dredge. The angle of repose of the placed tails will impact the pond dimensions. The slope angle of the placed tails will need to be ascertained. The angle will be between 3 and 6 degrees. At 10m pond depth this equates to between 95m to 190m from the tailings beach to the toe of the tailings below the pond.
- 11 This image supplements Figure 10 and Figure 11 of the substantive application.¹
- 12 The Panel has raised additional information requirements regarding the timing of wetland construction, in particular the feasibility and achievability of the early-stage wetland development. Tāiko Critical Minerals have prepared additional information with respect to this process. This is provided in **Attachment A**. I can confirm it is achievable to construct the wetland during the first two years of operations from the proposed mining and rehabilitation methodology, which is based on progressive rehabilitation of the site.²
- 13 The Panel has raised additional information requirements regarding tailings disposal. Tāiko Critical Minerals have prepared additional information with respect to this process. This is provided in **Attachment A**.

¹ Tāiko Critical Minerals Barrytown Minerals Project – Southern Block, Substantive Application (May 2026). Figures 10 and 11, pages 31-32 (**Substantive Application**).

² Substantive Application, section 6.

- 14 There is no relationship between the Central Block and Southern Block with respect to tailings disposal.
- 15 The Panel has sought confirmation that the early stages of mining will fit within the proposed maximum disturbance area of 16ha. The early stages are able to fit within proposed total disturbed land area of 16 ha. Tāiko Critical Minerals have prepared additional information with respect to this process. This is provided in **Attachment A**.
- 16 Bunds will be constructed to restrict access to the mine crest at a distance appropriate should the slopes fail due to unplanned events. The consequence of a slope failure is minimal for equipment and personnel contained within the pond.

Pier Federici
5 October 2026

**Attachment A: Further information on Timing of Wetland Construction,
Tailings Disposal Areas and the Project Footprint.**

ATTACHMENT A: Further information on Timing of Wetland Construction, Tailings Disposal Areas and the Project Footprint.

Timing of Wetland Construction

The first stage of wetland construction is developed within the first two years of operations (at Paragraph 8.33 of the substantive application). The Panel requires additional information to assess the feasibility of this early-stage wetland development.

The wetland development will occur in mined-out areas. If approximately 83-85% of all dredged material is to be returned to the mining voids as tailings, it is unclear how sufficient void space will be provided in the first two years to allow the wetland to be constructed. Additional detail is required to help the Panel assess whether constructing the Stage 1 wetland within the first two years of mining is achievable.

Over the life of the project, approximately 5.6 million tonnes of material is expected to be removed from the mining disturbance area. The measured bulk density from drilling within the deposit is 2.2g/cm³ or 2.2 tonnes/m³. Using this bulk density approximately 2.55 million m³ of HMC will be removed from the mining area. When balanced against the material available for redistribution during rehabilitation, this represents an average net reduction in ground level of approximately 0.63 m across the entire 408ha consent area.

Mining will commence at the western edge of the mining area, adjacent to Granite Creek, with the dredge operating initially within a starter pond of approximately 1ha (shown in the red oval). With a maximum mining depth of approximately 10m, the initial mining pond represents a void of up to approximately 100,000 m³. The initial pond is likely to be extended to provide sufficient room for the progressive placement of tailings at the rear of the pond as the dredge advances. Further stripping will occur in front of the mine pond.



Figure 1 – Indicative mine path showing starter pond (extract from Plan D – Appendix K)

Material excavated to establish the starter pond and associated mining area will be used for construction of the proposed noise bunds along Granite Creek and in other areas where bunding is required (refer 2.0 of the Landscape Mitigation Package – Appendix M9). These will be recovered and processed at the end of mining. As mining moves eastward, the dredge will progressively excavate material from the front of the mining pond, while tailings from the processing circuit are returned to the rear of the mining pond.

The western portion of the mining disturbance area will be progressively rehabilitated, to approximately the pre-mining ground level for around 80-90m. As mining advances eastward, the cumulative difference between the pre-mining and post-mining ground levels will increase as a consequence of the net removal

of material from the mining process. This provides the basis for establishing the lower landform required for the proposed constructed wetland.

The proposed constructed wetland north of Granite Creek is approximately 25ha and is located within the indicative Year 1, Year 2 and Year 6 mining paths. To ensure that the wetland area can be established early in the project, the indicative mining paths will be widened through this area so that the majority of the wetland footprint can be mined and progressively rehabilitated during the first two years of operation.

The existing ground surface within the proposed constructed wetland area ranges from approximately RL 6m at the southern end adjacent to Granite Creek to RL 9m at the northern end. Based on the current landform design, mining and subsequent rehabilitation will result in an average net reduction in ground level of approximately 1.5m across the 25ha constructed wetland footprint. This equates to a net void volume of approximately 375,000m³ (250,000m² x 1.5m).

Material will continue to be excavated from the wetland footprint and tailings will be returned behind the advancing dredge. However, because approximately 20% of the processed material is removed from the system, a net deficit progressively develops within the mined area.

At an estimated rate of approximately 180,000m³/year of HMC being removed from the site, the net volume required to establish the overall wetland depression would accumulate over approximately 2 years (375,000m³ ÷ 180,000m³/year = 1.98 years).

These numbers account for the material taken at the start up of operations for construction of noise control and visual amenity bunds.

Tailings Disposal Area

Some form of out-of-pit tailings disposal area (either temporary or permanent) will almost certainly be required in the early stages of mining to create sufficient space between the leading edge of mining and the trailing edge of mining to operate the closed-loop tailings methodology efficiently. Taking this into account along with the Stage 1 wetland development (which will also reduce capacity for in-pit tailings disposal volumes), please provide information on:

- a) where the early phase out of pit tailings areas will be located;*
- b) how much volume needs to be disposed of out of pit; and*
- c) the footprint of this out of pit disposal area and its design life (will it be temporary or permanent).*

Material excavated from the starter pit will be used for the construction of the bunds as shown on 2.0 in the Landscape Mitigation Package (Appendix M-9). The size of the bunds and the volume of material to be used in the construction are shown in Table 1.

Table 1: Bund locations and dimensions

Bund Location	Dimensions	Volume of material	Approximate construction time	Approximate decommission time
Lot 2 DP2178	500 x 3 x 24	21,600m ³	4 weeks	6 weeks
Warren Road/Granite Creek	920 x 3 x 24	40,000m ³	6 weeks	8 weeks
North of Cargill Road	460 x 3 x 24	20,000m ³	4 weeks	6 weeks
114 Cargill Road	440 x 3 x 24	19,000m ³	4 weeks	6 weeks
Total		100,600m³		

Condition 16.1a requires bunds to be constructed as soon as practicable, and prior to mining commencing in any particular section. However, in order for planting to become well established for screening purposes, earlier bunding and planting is recommended. TCM is committed to constructing the bunds upfront as part of initial operations in order for planting to be established.

Project footprint

The Panel is unclear how the early stages of mining will fit within the proposed maximum open area of 16 ha. This needs to incorporate all open mining areas, any out-of pit tailings areas, borrow areas, and the construction of the proposed Stage 1 wetland (which, in and of itself, will exceed 30 ha). Additional information is needed to demonstrate how the matters set out above will work together operationally to fall within the proposed 16 ha open area.

Table One: Project Earthwork Areas in the Erosion and Sediment Control Plan (Appendix M-8 p.15-16) sets out various components of the mining activity, the earthworks area and the general approach to works. The table demonstrates how all of the components of the proposed activity can be undertaken within the 16ha disturbed area footprint. Note that some of these activities, such as the bund construction, are temporary activities and once formed and planted will remain outside of the disturbed footprint until they are dismantled.

Wetland construction will be undertaken progressively as mining advances across the site. On the northern side of Granite Creek potentially 11 individual cells (of various depths) will be formed (as shown in **Figure 2**). Cells will be gradually linked together to form the larger wetland complex as mining moves across the site. Cells will be planted and then allowed to fill with water as designed, noting that there is a large edge of planting on the side closest to the next mine strip.

This staged approach to the wetland construction ensures that the total disturbed area will not exceed the maximum 16ha limit for the project and allows for rehabilitation to be undertaken adjacent to the cells as mining progresses. Planting of the cells is to occur prior to ‘flooding’ for health and safety reasons.

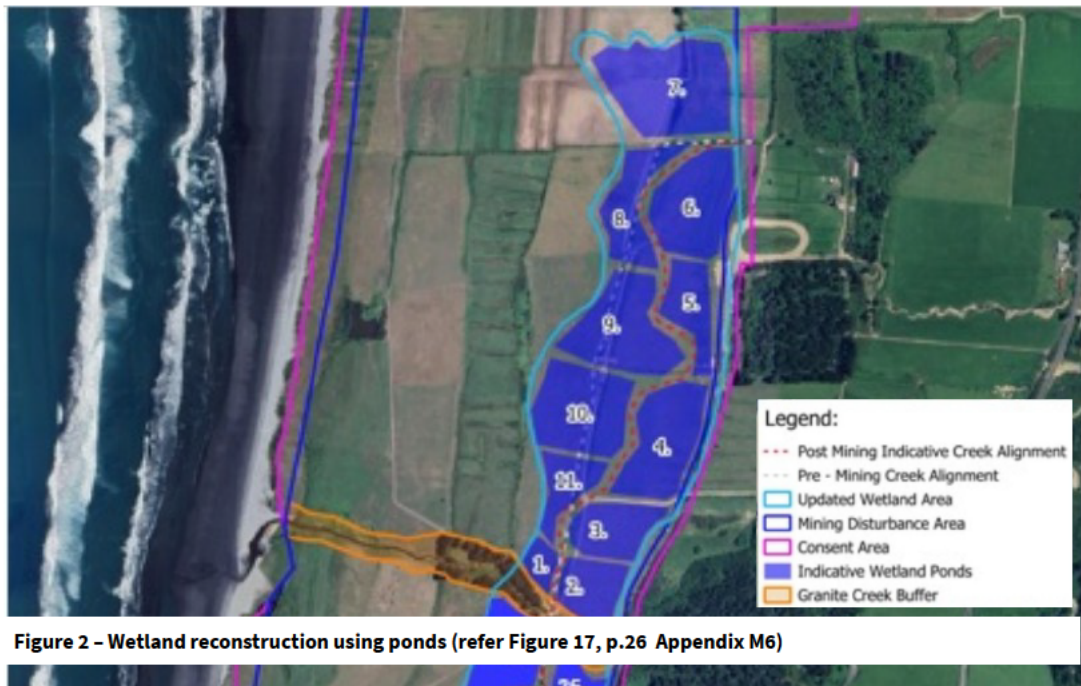


Figure 3 shows the final design of the proposed constructed wetland following the linking of the ponds.

