

Before the Hearing Commissioners  
Appointed by the Grey District Council  
and West Coast Regional Council

Under the Resource Management Act 1991

In the matter of Resource consent applications by TiGa Minerals and Metals  
Ltd to establish and operate a mineral sands mine on State  
Highway 6, Barrytown (RC-2023-0046; LUN3154/23)

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**Summary Statement of Mike Fitzpatrick**

2 February 2024

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**Applicant's solicitor:**

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**anderson  
lloyd.**

## Summary of evidence

- 1 My name is Mike Fitzpatrick. I prepared a statement of Water Quality evidence dated 19 January 2024. My qualifications and experience are set out in that statement of evidence. I repeat the confirmation given in that statement that I have read and agree to comply with the Code of Conduct for Expert Witnesses in the Environment Court. My role in relation to TiGa Minerals and Metals Limited's (TiGa) application (the Application) has been to provide water quality advice since February 2023.
- 2 I have reviewed the existing water quality of surface waters that, under the Applicant's proposal, will receive treated groundwater. The surface waters generally exhibit near neutral pH, low conductivity, low to moderate hardness, and low turbidity. Concentrations of nutrients and metals/metalloids generally meet relevant surface water guideline value concentrations, although there are exceptions, such as elevated phosphorus concentrations in the Northern Drain and the Collins Creek upstream site.
- 3 I have also reviewed existing groundwater quality, which generally exhibit near neutral pH, low conductivity, and low to moderate hardness. Metal/metalloid concentrations show variation across the bore sites sampled. Iron and manganese concentrations are elevated, and concentrations of aluminium, arsenic, chromium, copper, nickel and zinc are low to moderate. Some bores exhibit moderate ammoniacal nitrogen concentrations and all bores exhibit moderate phosphorus concentrations.
- 4 I consider the proposed treatment of groundwater via a combination of lime addition, pH adjustment, aeration, settlement, flocculation and clarification, as required, will result in the settling of solids and a reduction in metals/metalloids, and nutrient concentrations.
- 5 I have assessed the effects of discharging treated groundwater to the Northern Drain, Collins Creek, Canoe Creek, and Canoe Creek lagoon. My modelling indicates that the proposed treated groundwater discharge will not result in exceedances of relevant metals/metalloids guidelines, which are designed to protect aquatic biota.
- 6 I have not modelled visual clarity in the receiving waters but I consider the proposed treatment regime will be able to achieve low turbidity values under day-to-day operating conditions. Hence, I consider such discharges should not result in elevation of receiving water turbidity values beyond baseline ranges.
- 7 I conclude that the proposed discharge of treated groundwater to the surface waters will not result in adverse effects on aquatic biota. I consider that the

proposed water quality limits (Condition 25.2) will protect the ecological values of the surface water receiving environment.

- 8 I consider the proposed discharges to surface water will fulfil the requirements of the RMA section 107(1)(d), most notably that they will not result in any conspicuous change in colour or visual clarity, and not result in any significant adverse effects on aquatic life.
- 9 Key to my conclusions are the treatment measures proposed by the applicant, such as appropriately using detention ponds, settlement, flocculation and clarification, as required, which will serve to settle solids, and reduce turbidity levels and metal/metalloid and nutrient concentrations, and the ability to discharge turbid water to an infiltration basin, if required.

**Mike Fitzpatrick PhD**

Dated this 2<sup>nd</sup> day of February 2024