

Our Reference: A1805728

File: RM23.474

29/06/2023

Via email to: barry@macdonellconsulting.co.nz

Dear Sir,

Request for further information under section 92(1) of the Resource Management Act 1991 (the Act) – Consent Application Number RM23.474

Thank you for your application to construct a bore (mine pit pond), groundwater take and discharges to land associated with an alluvial gold mine activity at Millers Flat.

An initial assessment of your application has been made by myself and E3 Scientific, who have provided a technical audit of the application. To be able to make a full assessment of the application, I request the following information under section 92(1) of the Resource Management Act (the Act).

E3's tech audit identifies flaws in the application as follows:

There are maps within the report that show drill hole locations and purport to show basement depths, however the provided logs do not provide any stratigraphic information or water level information (only gold content), and the well IDs do not match the numbers on the maps. The maps are also mostly illegible and therefore it is very difficult to verify any of the provided information regarding the saturated thickness of the aquifer, basement depths, depths of unsaturated materials overlying the groundwater.

The piezometric contour map was interpolated from HML logs and estimated land surface. It is not clear how many points were used for this interpolation; it seems unlikely that groundwater flows entirely normal to the flow of the Clutha River parallel to site.

The provided map of saturated thickness indicates that the aquifer is very thin adjacent to Teviot Road, however the mapped aquifer used to assess the likely drawdown [refer to map in tech audit] is shown to extend to the break in slope 1 km to the east of Teviot Road. The limited aquifer boundary will provide a barrier boundary to flow that will result in increased drawdown as a result of the mining activity (note that this may also result in less water needing to be pumped which would offset the additional drawdown). The barrier boundary was not included in the assessment of drawdown.

The groundwater analysis assumes different transmissivities for mining areas adjacent to mining tailings (and therefore different mine pit yields). It states that there are limited areas of mining adjacent to mine tailings, and that none of the mine tailings will be reworked, but also that discharge will be into sediments overlying mining tailings. It is

unclear how this will be achieved as the areas of mining tailings area not mapped at all. GNS 1:250K mapping of geological units across the site indicates that these may be extensive, and therefore much of the mining may be adjacent to or even within mining tailings.

Whilst the analysis assumes the transmissivities are different, these are based on the specific yield (storage values) of the aquifer being uniform, regardless of the difference in transmissivity of the native and previously worked areas, which seems unlikely.

The conditions of the mine pit dewatering trial are not well documented within the AEE (discharge location, monitoring methods, data etc.). The mining pit acts as a very large diameter bore with high well storage. Use of the Thies method to calculate transmissivity based on drawdown measured at the edge of the mining pit and an effective radius does not appear to be valid. Given that the drawdown was measured within the mine pit itself and not within the aquifer material, this method overestimates the drawdown that would occur at that radius away from the pit and therefore would underestimate the transmissivity.

Given the flaws identified above, the following information is required:

1. Accurate logs which provide stratigraphic information and water level information that match IDs on the provided maps to provide evidence of site conditions, including depth to basement, depth to groundwater/depth of overburden. Maps of sufficient resolution to be legible should be provided.
2. Confirmation of data points used to interpolate the piezometric contour map, including the elevation data.
3. Provide an updated drawdown assessment which accounts for the barrier boundary due to the limited aquifer boundary and uncertainty regarding the transmissivity and storage of the aquifer.
4. Review validity of transmissivity and storage interpretation from mine pit dewatering trial and provide more documentation regarding the setup, discharge and monitoring conditions of the trial, including the data collected.

E3 has also requested the following additional information:

5. E3's tech audit notes, *The Tima Burn has been dismissed as an ephemeral watercourse, however no evidence has been provided for this assessment. The Time Burn has a catchment area of 44 km² and the modelled MALF is 0.11 m³/s. The REC modelled allocation for the Tima Burn is 0.021 m³/s Whilst this may be entirely lost to groundwater during dry seasons, there is no evidence that the watercourse is entirely disconnected from groundwater. G43/0193, situated near the Tima Burn had a standing water level of 2.5 m below ground at the time of drilling. Please therefore provide details of actual observed flow conditions of the Tima Burn and provide a more detailed assessment of adverse effects on the stream, including potential impacts on any ecological values.*
6. The assessment of effects on groundwater does not address contamination from the closed landfill. The Preliminary Site Investigation provided by EC Otago did not involve any groundwater monitoring, and very limited discussion of historic sampling is provided. Please provide a more detailed assessment of effects on groundwater, including the possibility of contamination, and impacts on other water users. E3 has

noted that impacts on neighbouring users may be greater than assessed due to the limited extent of the aquifer.

7. The AEE states that discharge will be into areas of mine tailings, but there will be limited dredging adjacent to areas of mine tailings. It also states that there is 10 metres of unsaturated thickness in which to discharge water across the site beneath 2 m deep discharge ponds. To determine whether this is feasible, please provide a map of discharge locations and depth to groundwater with mine tailing extents. It is noted that the AEE assumes the overburden from the initial mine pit of 150 x 100 m will total 80,000m³, which equates to only 5 m depth of overburden.

Your application will be placed on hold under section 88C of the Act until the requested information has been received. Unless I hear otherwise from you, I will continue to do some minor work on your application so that we can progress it once the application comes 'off hold'.

In accordance with section 92A of the Act, please respond within 15 working days from the date of this letter (21/07/23) with one of the following:

1. The information requested above; or
2. Written advice that you agree to provide the information, and the date by which you intend to provide it; or
3. Written advice that you refuse to provide the requested information.

The Act requires Council to publicly notify your application if you do not provide the requested information before the due date (or an agreed alternative date), or if you refuse to provide the information. It is, therefore, important that you contact us promptly to discuss an alternative timeframe if you are unable to provide the information by the due date.

If the information you provide raises more questions, your application will remain on hold until sufficient information has been provided to enable processing to continue.

If you have any further queries, please contact me on (03) 474 0827 or 0800 474 082.

Information on the current processing costs for your application is included in the email relating to this letter.

Yours sincerely,



Danielle Ter Huurne
Senior Consents Planner