Technical Review

To:	Danielle Ter Huurne	**Date:**	21/2/2024
Authority:	Otago Regional Council	**Ref:**	24026_1
Consent:	RM23.474_Hawkeswood_Mining_Ltd		

From	**Role in Audit**	**Internal Reviewer**
Mark Hamer	Ecology Report Technical Review	Bryony Miller

1 Project Summary

1.1 Ecology

Hawkeswood Mining Ltd propose to mine near the Clutha/Mata-au River and a small tributary known as the Tima Burn. Previous assessments have determined that there is potential to adversely impact the stream flow of the Tima Burn. With this in mind the applicants have commissioned a freshwater Ecology report and also proposed additional Tima Burn flow augmentation consent conditions. Below is my review of the freshwater ecology report and newly proposed consent conditions.

The Tima Burn has fish records for 10 fish species present with in the catchment. There appears to have been a decline in fish species known to be present in the catchment.

Electric fishing surveys and eDNA results both show the presence of 4 fish species currently at the sites (the “At-Risk Declining” longfin eel, “At-Risk Declining” inanga, “sportfish” brown trout and “Not-Threatened” upland bully), and the assessed reach is suggested to be a relatively poor quality section of stream, however the presence of 2 Threatened native fish indicate the stream values are high.

As there are no records of non-migratory galaxiids in the upper Tima Burn or this assessed section, it appears appropriate to augment the flow of the lower Tima Burn to mitigate the potential effects of the activity. This will enhance the habitat for the fish currently present and may allow fish that have disappeared from the reach to return. While not adversely impacting non-migratory galaxiids as there is no evidence that they are present upstream.

2 Audit Questions

2.1 Ecology

Q:	Is the technical information provided in support of the application robust, including being clear about uncertainties and any assumptions? Yes, or no. If not, what are the flaws?
R:	Yes, the information is robust.
Q:	Are there any other matters that appear relevant to you that have not been included? Or is additional information needed? Please specify what additional info you require and why [please explain]
R:	The potential for sediment inputs to the Tima Burn from the mine works are not included in the report. However, if appropriate bunding, stormwater settling infrastructure and dust suppression methods are employed any adverse effects on the Tima Burn should be limited.
Q:	If granted, are there any specific conditions that you recommend should be included in the consent?
R:	A water meter shall be used to record the amount of groundwater taken and supplied to the Tima Burn. I note the proposed condition XX1 and XX3 utilise the Millers Flat Road Bridge. The Teviot Road Bridge over the Tima Burn is considered a more appropriate bridge. Dissolved oxygen should be monitored downstream (after reasonable mixing) of the flow augmentation input on the Tima Burn. To support ecological values the 7-day mean minimum Dissolved Oxygen level at this sampling location shall be ≥8 mg/L.
Q:	Does the application appropriately identify sensitive areas including values within the watercourse, upstream and downstream of the proposed take, wetlands and any other affected water bodies (surface, ground and coastal water)? Yes/no
R:	The Aquatic Ecology report appropriately identifies the values currently present in the Tima Burn. The habitat quality is accurately identified as poor quality; however, the presence of 2 Threatened native fish (Longfin eel and inanga) indicate the stream values are high. The report identifies that there is potentially some uncertainty about the stream connectivity to shallow groundwater at the mine site. Based on this, the report offers 3 scenarios that may occur (Section 5.2.2). The precautionary approach proposed to augment the stream flow in the newly proposed conditions is considered most appropriate from an ecological aspect given the high ecological values present.
Q:	Is the description of the sensitive areas attributes potentially affected by the activity accurate?
R:	Yes.
Q:	Has the instream ecology been appropriately assessed including both native and sport fish values? Please include details on the appropriateness of the method of assessment

R:	Yes, these have been appropriately assessed. Both electric fishing surveys and eDNA techniques have been employed including targeting habitats particular to fish species previously found to be present (but not found in this survey).
Q:	Has the natural character of the watercourse been appropriately assessed? Please include details on the appropriateness of the method of assessment
R:	Yes, the assessment of the natural character of this section of stream as "poor quality" is appropriate.
Q:	Have the cumulative effects of the activity been appropriately assessed? Yes/no
R:	No. The decline in the fish community present (from 10 species to 4) and the cumulative effects of landuse, climate change, and the proposed activity have not been fully assessed. However, if the Tima Burn flow is augmented that has the potential to positively affect the flow and therefore the ecology of the stream.