SANTANA MINERALS LIMITED

From: Cheryl Low, Environment Manager, Santana Minerals / Matakanui Gold

To: Shay McDonald,

Subject: ORC Request for Further Information

Date: 30 January 2026

Background

Otago Regional Council (ORC) has requested from Matakanui Gold, via an RFI, responses to a series of questions generated from a technical review of the water quality and aquatic ecology components of its substantive application.

This memo responds to Question 3 of the RFI, which states:

Please explain the purpose, potential benefits, and natural character impacts of the proposed woody debris installations in the Shepherds Creek.

Response

Question 3

Purpose

The proposed woody debris (embedded logs/tree trunks) installations within the Shepherds Creek diversion are intended to recreate natural stream structure and processes within the new channel alignment. Woody elements are a planned rehabilitation feature used to:

- Generate hydraulic complexity and diversify flow conditions (e.g. pool–riffle sequencing and variable velocities).
- Provide instream structure and cover supporting aquatic habitat, particularly for macroinvertebrates.
- Work in combination with natural substrates (gravels, cobbles, and boulders) to mimic the form and function of the existing small gravel-bed stream.

Potential benefits

Ecological/Habitat

Embedded woody material increases habitat heterogeneity by providing additional colonisation surfaces and micro-habitats for aquatic invertebrates, and refuge features appropriate to the Dunstan ED small-stream environment. In conjunction with mixed bed

substrates and drop/weir features, woody debris assists in the development and persistence of pools, riffles, and undercut areas that support diverse instream communities.

Hydromorphology and stability

Woody debris increases bed and hydraulic roughness, moderating local flow velocities and dissipating energy during higher flows. This supports sediment sorting and deposition, stabilises bedforms, and promotes the development of a self-maintaining channel morphology. The installations are an integral method for achieving the diversion's design principles related to meander mimicry, flow variability, and natural substrate function.

Integration with wider rehabilitation

The proposed woody debris installations complement riparian planting (providing shade and organic inputs) and the overall channel geometry to accelerate naturalisation and ecological uplift within the diversion.

Natural Character Impacts

Positive effects

The use of natural materials (logs, gravels, cobbles, and boulders) and natural planform cues (meanders and pool–riffle sequences) reinforces a natural-looking and functioning stream channel. The woody debris features are consistent with the objective of naturalising the diversion over time and are expected to result in a net positive effect on natural character.

Visual integration

While woody debris may be visually apparent immediately following construction, the materials will weather and integrate with bed substrates and riparian vegetation over time, reducing visual contrast and enhancing overall naturalness of the stream corridor.

Design integration and risk management

Woody debris is a core component of the submitted diversion design, not an add-on. Logs will be embedded and/or keyed into the bed and banks, with sizing and placement designed to remain stable under expected flood flows and to avoid obstruction or downstream mobilisation. All material will be clean, locally sourced, and free of pest species. The performance of the features will be reviewed during post-construction inspections, and adaptive management will be applied if any instability or unintended effects are observed.