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Company: Horizons Regional Council
SLR Consulting New Zealand Limited
cc:
Date: 1 September 2026
Project No. 820.V30005.01757

**RE: APP-2006012018.03 – Karioi Wood Processing
Ngā Waihua o Paerangi Trust Submission Review – Contaminated Land
Matters**

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1.0 Background

SLR Consulting New Zealand Ltd (SLR) has been requested by Horizons Regional Council (HRC) to review the Ngā Waihua o Paerangi Trust submission (Submitter #14) dated 20 August 2026¹ in relation to contaminated land matters associated with APP-2006012018.093.

This Technical Memorandum supplements SLR's previous technical review dated 24 June 2026² (which should be read in conjunction with this Technical Memorandum) and focuses only on matters relating to contaminated land, remediation, wetland construction, and potential contaminant migration pathways. Matters relating to cultural values, Te Mana Tupua, Te Waiū-o-Te-Ika, mauri, kaitiakitanga and broader planning considerations are outside the scope of this contaminated land review.

In our previous technical review, SLR concluded that the Application and subsequent responses to Requests for Further Information (RFI) generally adequately addressed the further information requests for the purposes of assessing the proposed activity, while noting that some deeper soils within the proposed wetland footprint were not comprehensively characterised. The Applicant confirmed, through their sampling, that identified concentrations of arsenic, chromium and zinc in particular were typically isolated. The Applicant also confirmed that these contaminants are not typically mobile in unsaturated soils, groundwater is expected to be at a depth greater than 3 m lower than where contaminants were identified in soil, and that the proposed wetland is over 500m from the nearest surface water receptor (Whangaehu River). The following high-level conclusions were offered by SLR in our previous technical review of the Application:

- Based on the proposed wetland design and depth to groundwater, the shallow soils at the location of the wetland are unlikely to be saturated and therefore mobilisation of contaminants or anaerobic degradation of pulp is unlikely to be of significant concern. This is based on the premise that the wetland HDPE liner is installed correctly, with appropriate Quality Assurance (QA).
- The information regarding likely contaminant loading in condensate, and anticipated volume of likely wastewater condensate suggest that contaminant concentrations in

¹ Ngāti Rangī, 20 August 2026. APP2006012018.03 WPI Condensate Wastewater Discharge (Whangaehu River)

² SLR Consulting, 24 June 2026. APP2006012018.03 – Karioi Wood Processing Contaminated Land Section 92 Response Technical Review.

condensate are unlikely to pose a risk to the environment should there be leakage from the wetland.

- Should the underlying soils containing organic pulp become saturated, there is potential that the anaerobic degradation of pulp may generate gases such as methane, which has not been considered by the application. SLR considers the likelihood of this to be low, however a leak monitoring system as part of the wetland design is recommended by SLR.
- A wetland aftercare plan was also recommended as a condition of consent including outlining methods and frequency of leak detection monitoring and a plan for remedy should leaks be detected.

2.0 Summary of Contaminated Land Issues Raised by Ngā Waihua o Paerangi Trust

Ngā Waihua o Paerangi Trust has raised the following matters relevant to contaminated land management:

- Concerns regarding the construction of the proposed wetland on land identified as contaminated.
- Potential mobilisation of contaminants from soils beneath the proposed wetland, and possible subsequent contaminant migration to groundwater and ultimately the Whangaehu River.
- The adequacy of the proposed remediation approach, including concerns regarding the long-term effectiveness of the proposed containment measures.
- Potential need for additional contaminant monitoring.
- Preference that all soils within the wetland footprint be isolated from the environment through engineered containment measures.

3.0 SLR Technical Assessment

3.1 Use of a Contaminated Site for Wetland Construction

SLR agrees that soil contamination (mainly heavy metals) is present within portions of the proposed wetland footprint and that construction of a treatment wetland over contaminated or potentially contaminated land requires careful management. SLR previously reviewed the Detailed Site Investigation (DSI) and Remedial Action Plan (RAP) prepared by Babbage and acknowledged the presence of arsenic and zinc at concentrations above adopted guideline values requiring remediation or management. SLR also identified that the Babbage DSI did not fully delineate the lateral and vertical extent of anthropogenic material beneath the proposed wetland footprint.

Through the Section 92 Request for Further Information (RFI) process an updated RAP was provided which confirmed that intended approach was to retain all site soils and cap beneath the HDPE liner within the proposed wetland footprint. The proposed remediation strategy therefore relies on isolation of contaminated soil to inhibit the source-pathway-receptor pollutant linkage, rather than removal of affected soils from the site.

It is also acknowledged that as part of the Application, the finalised wetland design was not provided, and that the proposed wetland design and management solution is heavily reliant



on appropriate wetland construction and HDPE liner integrity to prevent wetland leakage and potential subsequent mobilisation of residual contaminants.

SLR considers Ngā Waihua o Paerangi Trust's concern to be valid but notes that the issue has been recognised within the Applicant's remediation strategy, which proposes engineered containment measures intended to manage the identified risks.

3.2 Potential for Contamination Migration

Ngā Waihua o Paerangi Trust expressed concern that contaminants may leach from soils beneath the wetland and adversely affect groundwater or surface water (migration to the Whangaehu River).

SLR identified similar matters during its previous review, particularly in relation to the reliance placed upon the HDPE liner and the limited characterisation of deeper soils proposed for reuse within the wetland footprint.

SLR's previous review concluded that the risk of contaminant migration is likely to be low provided the wetland is appropriately designed and constructed in accordance with the intentions of the RAP, and the HDPE liner performs as intended. However, the level of confidence associated with this conclusion is moderated by the limited characterisation of some deeper soils and the fact that the final wetland design had not been completed at the time of SLR's review. Nevertheless, long-term liner performance remains a key assumption underpinning the remediation approach.

3.3 Additional Monitoring

Ngā Waihua o Paerangi Trust seeks ongoing monitoring of nutrients and selected metals upstream and downstream of the discharge location within the Whangaehu River.

From a contaminated land perspective, monitoring of the receiving environment is one method that can be used to provide assurance that the wetland treatment system and containment measures continue to operate as intended. SLR notes that monitoring requirements are primarily a water quality and discharge management matter, however monitoring of contaminants associated with identified site contamination could provide additional confidence regarding long-term environmental performance in the absence of ongoing groundwater monitoring data.

3.4 Ecological Soil Guideline Values

The Ngā Waihua o Paerangi Trust submission references Ecological Soil Guideline Values (Eco-SGVs) and states that the use of the commercial / industrial Eco-SGVs are inappropriate given the special nature of the Whangaehu catchment, and that the Eco-SGVs for Areas of Ecological Significance should have been used in the Babbage DSI. The Ngā Waihua o Paerangi Trust submission concludes that by adopting more stringent Eco-SGVs, a broader range of sampled locations within the wetland area may present environmental concern.

SLR recognises that several soil samples exceed the adopted Eco-SGVs for commercial / industrial use. In our previous review, we considered the use of the commercial / industrial Eco-SGVs to be appropriate given the >45 year history of the Site being used as a pulp mill.

SLR acknowledges Ngā Waihua o Paerangi Trust's position that more conservative ecological criteria could reasonably be considered given the significance of the Whangaehu catchment and the proximity of ecological receptors. However, the significance of the wider Whangaehu catchment and its receiving environment does not, in itself, change the land use



context of the soils being assessed, which are located within an existing and proposed industrial site. Adoption of more conservative Eco-SGVs would identify a greater number of exceedances. However, exceedance of an Eco-SGV is not, by itself, evidence of unacceptable environmental effects. A risk assessment should also consider the completeness of contaminant pathways, receptor sensitivity, and the effectiveness of proposed management measures

SLR also notes that the Eco-SGVs are screening tools designed to assist in the identification and management of contaminated land and can be used to inform remediation standards. Where management of contaminated land is proposed, an exceedance of the Eco-SGVs is not intended to drive remediation unless on-site or off-site effects are occurring. Additionally, copper and zinc are considered essential elements, and in the Manaaki Whenua Landcare Research 2016 Publication User Guide: Background Soil Concentrations and Soil Guideline Values for the Protection of Eco-SGVs it is stated that the Eco-SGV for copper and zinc may not be appropriate as a remediation goal and that consideration should be given to remediation criteria that allow for active management of land to reduce concentrations over time, providing that no off-site effects may occur.

Assessment of risk should also consider source-pathway-receptor relationships. It is agreed that the Babbage DSI could have provided more clarity in this regard. However, SLR considers that the use of the commercial / industrial Eco-SGVs in the Babbage DSI assessment are suitable given the current and ongoing proposed Site use.

3.5 Application of WasteMINZ Criteria

The Ngā Waihua o Paerangi Trust submission also references WasteMINZ Technical Guidelines for Disposal to Land (Revision 3.1), September 2023 ((WasteMINZ Guidelines) Class 4 Controlled Fill Waste Acceptance Criteria (WAC) as an indicator of potential environmental risk.

SLR notes that WasteMINZ Guidelines have been developed to primarily provide technical guidance relating to the siting, design, operation and monitoring of landfills, and to support waste classification and disposal decisions, rather than assessment of contaminant risk associated with in-situ contaminated soils. Consequently, exceedance of WasteMINZ Class 4 Controlled Fill WAC does not necessarily indicate that contaminants are likely to migrate into groundwater or surface water or result in adverse environmental effects.

The rationale for using the WasteMINZ Class 4 Controlled Fill WAC as a proxy is understood, as contaminated soils will be capped within an engineered area, and a wetland constructed. There are indeed similarities between the proposed capping approach and some aspects of a controlled fill. It is noted however, that the WasteMINZ Class 4 Controlled Fill WAC were developed based on fills without containment and several exposure scenarios and pathways were considered, including potential leaching to groundwater or seepage to surface water. The proposed approach in the Application differs from these Class 4 assumptions in that containment is proposed to minimise water ingress and to create separation between the underlying material and future end users, which is far more similar to the requirements of a Class 3 Managed Fill.

While SLR does not fully agree that the use of the WasteMinz Guidelines are suitable for use as a proxy to assess environmental risk, it is considered that if they are to be used, the Class 3 Managed Fill WAC may be a more appropriate comparative or screening tool. A high-level review suggests concentrations of chromium and zinc in WA09 and WA18 respectively would still exceed these criteria. This observation supports Ngā Waihua o Paerangi Trust's broader concern that some elevated contaminant concentrations remain present within the proposed development footprint. However, these screening criteria were developed for



waste classification and disposal purposes and do not, in themselves, demonstrate that unacceptable environmental effects will occur.

4.0 Recommendations

SLR continues to consider that additional confidence in the proposed remediation / management strategy would be provided through:

- Provision of detailed wetland design.
- Incorporation of a wetland leak detection system.
- Preparation of a wetland monitoring, management and aftercare plan, including:
 - Maintenance of planting.
 - Sediment removal activities.
 - Periodic inspection of liner integrity.
 - Contingency procedures should leakage be identified, including consideration of methane generation.

Consistent with our previous technical review of the Application, it is recommended that an environmental monitoring programme which provides verification that the containment strategy is functioning as intended is implemented as a Condition of Consent. This should include groundwater monitoring, leak detection monitoring, surface water monitoring, or a combination thereof.

5.0 Conclusions

SLR considers that Ngā Waihua o Paerangi Trust has raised several contaminated land matters that are technically valid and broadly consistent with issues previously identified during SLR's review, particularly in relation to the presence of contamination within the wetland footprint, dependence on engineered containment measures, and the need to ensure contaminants remain isolated from receptors.

SLR does not consider that the submission introduces new contaminated land information that fundamentally changes the conclusions reached in SLR's previous review. However, the submission reinforces several matters previously identified by SLR, including the importance of engineered containment, verification of liner integrity, and ongoing monitoring to provide confidence that contaminants remain isolated from environmental receptors over the long term.

Subject to implementation of the RAP, appropriate liner installation and QA, and the inclusion of ongoing monitoring and aftercare measures, SLR considers the contaminated land risks associated with the proposal remain low and manageable.

6.0 Closure

We trust this is to your satisfaction. If you have any queries, or require any further information, please do not hesitate to contact the undersigned.

Regards,



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