

To: Expert Panel considering TIL's Central and Southern Blocks Mining Project under the Fast-track Approvals Act 2025

From: Keren Bennett
SLR Consulting New Zealand Limited

cc:

Date: 22 June 2026

Project No. 880.017038.00001

**RE: Taharoa Central and Southern Block Mining
Freshwater Ecology Response**

Introduction

This memorandum has been prepared to provide responses to the matters raised by invited parties in relation to the freshwater ecology aspects of the Fast-track application for Taharoa Ironsands Ltd Central and Southern Blocks Mining Project (Application) that is currently before the Expert Panel. It addresses specific issues raised in comments concerning the assessment of ecological effects on freshwater values, the water take intake structures and maintenance of stream flows.

My name is Keren Bennett. I am a Technical Director (Freshwater Ecology) at SLR Consulting New Zealand Limited (SLR). I have a Bachelor of Science in Zoology from the University of Auckland and a Post-Graduate Diploma in Wildlife Management from the University of Otago.

I have 29 years' specialist technical expertise in freshwater ecology. My experience has largely focused on assessments of freshwater ecological habitats, features and values and management of ecological effects associated with land and infrastructure development, throughout New Zealand.

I prepared the Freshwater Ecological Impact Assessment (EclA) attached as Appendix L to the Application. I also undertook internal technical reviews of the Wetlands and Vegetation Assessment (Appendix K) and the Draft Natural Inland Wetland and Buffer Management Plan (Appendix DD).

Code of Conduct

I have read the Expert Witness Code of Conduct set out in the Environment Court Practice Note 2023. I have complied with the Code of Conduct in preparing this report. The content of the report is within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in the report.

Purpose

This memorandum responds to comments provided by the following invited parties relating to freshwater ecology:

- Waikato Regional Council (WRC);
- Department of Conservation (DOC);
- The Proprietors of Taharoa C Block Incorporated (Taharoa C);
- Te Ruunanga o Ngaati Mahuta ki te Hauaaauru Charitable Trust (NMKTH);
- Te Nehenehenui; and
- Mirumiru Pa ki Marokopa - Marokopa Marae.

The purpose of this memorandum is to clarify, expand upon, and where necessary, update the freshwater ecology assessment information previously submitted as part of the Application. The responses draw on the findings of the Freshwater Ecology Impact Assessment (Appendix L of the Application) and other relevant technical reports supporting the Application (in particular Appendix I – Hydrology Assessment).

Each section of this memorandum provides a targeted response to the ecological matters raised by invited parties, supported by reference to the freshwater ecology assessments provided as part of the Application, proposed consent conditions and draft management plans.

Waikato Regional Council

In relation to freshwater, WRC provided comments on the water intake structure screen sizing, and maintenance of baseflows in the Mitiwai and Wainui Streams.

Memo from Josh Smith – Water Intake Structure – Appendix D of WRC comments

Comment: Mr Smith identifies fish screening as the main issue of concern to him regarding freshwater ecology and commented on the risk of entrainment of native fish, particularly larval and juvenile stages, into the water intake structure due to the size of the screen mesh apertures. The mesh size on the intake structures is currently 12 mm, where the Waikato Regional Plan (WRP) permitted activity standard is 1.5 mm diameter for intakes in watercourses below 100m elevation (lowland streams).

Response: The risk to small native fish from entrainment into the water intake as a result of the current screen mesh size was also noted and discussed in the Freshwater Ecology Assessment (Appendix L)¹. The fish pass inlet within the reservoir is positioned away from the pump inlets and dam spillway, purposely to limit the potential for upstream migrating fish to be swept downstream, or into the pumps, upon exiting the pass. This placement mitigates the potential adverse effects on upstream migrating fish. It is acknowledged that downstream migrating larval fish that rely on stream flows to progress migration to the coast would be at greatest risk of being entrained into the pumps, when they are operational.

As set out in the Freshwater Ecology Assessment (see Section 3.4), TIL has indicated that, because of aquatic weed densities accumulating in the reservoir, there are practical limitations and operational challenges that limit the feasibility of meeting the WRP permitted activity standard. TIL has also advised that retrofitting the intake structure to accommodate smaller mesh sizes is likely to require significant reconstruction and relocation. Mr Eccles (Tonkin + Taylor) addresses this point further in his planning assessment in response to WRC's comments.

Mr Smith provided examples of water intake structures in use within the Waikato region that are consistent with the WRP intake standards, and notes there are options for self-cleaning screens that can be applied in weedy streams.

In this regard, and consistent with my earlier statements, I agree it would be appropriate to consider alternative intake design options that reduce the intake screen size and therefore reduce the risk of entrainment during pump operational periods.

WRC has proposed changes to Condition 15 of AUTH142035.05.01 to reflect the requirement to improve screening of the water intake structures. The changes require screening with 1.5mm mesh to be installed within 12 months of commencement of the

¹ Appendix L: Freshwater Ecology Assessment, Section 3.4 at pages 17-18.



consent. An additional condition is also proposed, requiring the plans for the upgraded intake structure to be provided to WRC for certification, within 3 months of the commencement of the consent.

Should this recommendation be accepted by the Panel, I consider that these timeframes are unreasonably short and should be extended to allow a thorough investigation of options. An appropriate timeframe would be for the plans for the upgraded intake structure to be provided to WRC for certification within 12 months of the commencement of the consent, and new structures to be installed within 12 - 24 months of certification. These timeframes would allow for options investigations and site-specific design, and any seasonal constraints (such as winter high flow conditions or fish migration periods) that may affect installation.

Memo from Sung Soo Koh – Hydrology – Appendix B of WRC comments

Comment: Overall, Dr Koh is supportive of the flow augmentation approach proposed in the Application but raises a few points in relation to maintaining flows in the Mitiwai and Wainui Streams, recommending the Mitiwai Stream augmentation period be extended and trigger water levels for flow augmentation in Wainui Stream be reviewed.

Response: In the Mitiwai Stream, flow augmentation is intended to maintain base flows within the stream when mining below the water table is occurring close to the stream and flow depletion is identified. Modelling indicates that flow depletion may occur during summer months when surface water inputs reduce. Dr Koh (page 6) has recommended extending the augmentation period proposed by TIL in Condition 2 of AUTH142035.14.01 from 1 December – 1 March to instead end 1 May, to ensure any autumn low flow periods are also captured. I agree that low rainfall / low flow conditions can persist into mid-autumn, so I support extending the potential augmentation period outlined in the condition, to ensure that base flows and ecological values in the Mitiwai Stream will be monitored and maintained through the full low flow periods.

Comment: For the Wainui Stream, Dr Koh has recommended that the water level triggers for augmenting flows from the reservoir into the fish pass and dam overflow weir be raised (pages 2 and 5). The triggers proposed by TIL are RL 9.3m for the fish pass (Condition 7 of AUTH142035.03.01) and RL 9.36m for the dam overflow weir (draft Lake Level and Water Management Plan (LL&WMP, Appendix EE). Dr Koh has recommended these trigger levels be raised, to ensure that augmentation is commencing early enough to maintain the anticipated minimum flow conditions, rather than wait for them to drop below the preferred minimum flow conditions. Dr Koh recommended the trigger level be raised to RL 10m but acknowledged this could be reviewed based on further data.

Response: The wording of Condition 4 of AUTH142035.02.01 already specifies that residual flows of no less than 10 L/s are to be maintained at the base of the dam overflow weir. So, in effect the maintenance of flows past the dam face is already required. However, in their response to Lake Hydrology related comments, WWLA has proposed that the dam trigger level specified in the LL&WMP be amended from RL 9.36m to RL 9.45m, which is the level below which flows past the dam may drop below 10 L/s. I support this amendment to the LL&WMP to ensure minimum flow levels are maintained. No change is proposed to Condition 7 of AUTH142035.03.01. The fish pass augmentation trigger level of RL 9.3m was previously agreed with WRC as appropriate to commence flow augmentation, if required, to ensure fish in the fish pass are not at risk of being stranded.

Comment: Dr Koh discusses the potential for saltwater intrusion into mining pits, resulting in saline influenced or brackish slurry water and the potential for saline water leaching into nearby streams or wetlands (page 4).



Response: In relation to freshwater ecology, the concern raised was that brackish water could be incidentally discharged to the Mitiwai or Wainui Streams. I agree that saline influenced water should not be directly or incidentally discharged to the site watercourses or wetlands to protect ecological values.

Modelling by WWLA² indicates that no streams or wetlands are at direct risk of saline intrusion when mining occurs below the water table. This is further discussed in WWLA's response to comments relating to hydrogeology.

The water within mining pits is not proposed to be used for water supply, including any augmentation of stream flows³.

In terms of water that is used for augmentation of wetlands, a new condition has been drafted to be included in the wetland disturbance consent (AUTH142035.16.01) as follows:

7. *The Consent Holder shall undertake baseline temperature, pH, turbidity and electrical conductivity measurements:*
- (a) *Within 3 months of the commencement of this consent at retained natural inland wetlands on the Central and Southern Blocks; and*
 - (b) *Within 6 months after establishment of the new wetland habitat required by Condition 3 above*

Any augmentation of water levels in the wetlands referred to in 7(a) and 7(b) above shall be with freshwater (electrical conductivity of less than 1,000 $\mu\text{S}/\text{cm}$) and shall not raise the temperature of the water in the wetland by more than 3 degrees Celsius or the turbidity of the water in the wetland by more than 10%. The pH of the water to be discharged to the wetland shall be between 6 and 9.

This condition mirrors the requirements of Conditions 2 and 3 of AUTH142035.14.01, which relate to augmentation of the Mitiwai Stream. This includes the new requirement proposed to be added to Condition 3 of that consent for the electrical conductivity of water used for augmentation of the Mitiwai Stream to be less than 1,000 $\mu\text{S}/\text{cm}$ (i.e. freshwater). These measures will further ensure that the risk to freshwater streams and wetlands from saline intrusion or discharge is low.

Department of Conservation

Nigel Binks – Freshwater ecology comments

Section 4 of the DOC comments includes points raised in relation to freshwater ecology. It notes an assessment undertaken by Mr Nigel Binks. However, Mr Binks' assessment was not provided by DOC. In the absence of detailed analysis, I have responded to the relevant points insofar as possible based on the information provided. Where comments refer to wetlands, they have been addressed in SLR's response to comments relating to wetlands.

Comment: Mr Binks raises concerns (point 4.17) that the water abstraction and flow augmentation of the Mitiwai Stream and other inland waterbodies is an ecological risk with the potential to impact habitat quality by introducing contaminants from unknown water quality and sources, directly or via seepage. He proposed that water should be treated to remove contaminants (point 4.20).

² Appendix N: Hydrogeology Assessment (Groundwater Effects)

³ Appendix N: Hydrogeology Assessment (Groundwater Effects), page iii.



Response: It is unclear what specific contaminants Mr Binks was concerned about; however sediment may have been one.

I agree that maintaining the water quality of the Mitiwai Stream is important, should flow augmentation be triggered. Water used to augment flows in the Mitiwai will come from the Wainui Stream reservoir or will be clean water from mining operations.

Proposed conditions of AUTH142035.14.01 require baseline monitoring of water quality in the Mitiwai Stream at the upper and lower extents of the augmentation reach and provides standards to ensure that background water quality is not notably changed (Condition 3). This includes that any augmentation of base flow in the Mitiwai Stream must not, after reasonable mixing, raise the temperature of the stream by more than 3 degrees Celsius or the turbidity of the stream by more than 10%. The pH of the water to be discharged must also be between 6 and 9. These parameters align with permitted activity standards in the Waikato Regional Plan for discharges of water to water (Rule 3.5.4.4). In addition, a new requirement is proposed to be added to Condition 3 for the electrical conductivity of water used for augmentation of the Mitiwai Stream to be less than 1,000 $\mu\text{S}/\text{cm}$ (i.e. freshwater). In my opinion, the baseline monitoring and water quality standards proposed are sufficient to limit the risk of contamination.

Any flow augmentation to the lower Wainui Stream, via the fish pass or the dam weir overflow, will be with water from the dam reservoir on the same stream⁴. As such, no contamination risk is likely.

Comment: Mr Binks asserts that the fish pass is failing to provide for fish passage due to low flows, structural corrosion, blockages, and inadequate maintenance (point 4.18).

Response: It is not clear on what basis Mr Binks has made these comments.

As outlined in the Freshwater Ecology Assessment (Appendix L of the Application), the monitoring undertaken since the 2010 design upgrade to the fish pass has demonstrated that the fish pass functions well and provides passage for a diverse range of native fish. Any debris buildup, aquatic plant growth and structural issues are likely temporary, seasonally influenced (i.e. excess algal growth during summer), or structurally repairable, so (if they do arise) could all be remedied easily through TIL's regular maintenance.

I agree that the regular and ongoing maintenance of the fish pass is important to ensure its ongoing functionality, including structural maintenance, as well as regular removal of debris and excessive aquatic plant growth. Proposed conditions 2 and 3 of AUTH142035.03.01 require maintenance and monitoring of the fish pass including fortnightly inspection of the entire length of the fish pass to identify the need for any cleaning, maintenance or repairs. The proposed condition requires that the necessary cleaning, maintenance or repair works be undertaken as soon as possible. Conditions 4 – 6 of AUTH142035.03.01 specify the development and implementation of a monitoring programme to demonstrate the ongoing effectiveness of the fish pass for the passage of native fish.

Together, in my opinion, these conditions put in place sufficient measures to ensure the fish pass is maintained and to demonstrate its effectiveness for providing fish passage past the dam.

Comment: Mr Binks has supported the installation of 1.5mm diameter screens on the water intake system (point 4.20(b)).

Response: Comment has been provided above in relation to a similar request by WRC.

⁴ Appendix EE. Draft Lake Level and Water Management Plan (Section 6).



Comment: The requirement for “additional monitoring of water levels” has been attributed to Mr Binks (point 4.20(e)).

Response: It is not clear on what basis Mr Binks has made these comments.

Monitoring of lake level, stream and wetland water levels is currently proposed by conditions, to monitor and aid in water management decisions (including Conditions 3 - 4 of AUTH142035.02.01; Condition 2 of AUTH142035.14.01; Conditions 5 – 6 of AUTH142035.16.01; Condition 17 of Schedule 1: General Conditions; Draft Natural Inland Wetland and Buffer Management Plan (NIWBMP)).

Dr Fleur Maseyk – Effects management, offsetting and compensation assessment – Appendix E of DOC comments

Dr Maseyk has provided comments on the adequacy of the assessment of effects and effects management. In relation to freshwater ecology, Dr Maseyk questioned the scale of effects on freshwater biota.

Comment: At paragraph 25(i) Dr Maseyk asserts that effects on aquatic fauna and aquatic habitat values appear to have been disregarded, due in part to a failure to consider the relationship between hydrological effects and consequential effects on ecological values.

Response: In my opinion, potential effects of hydrological changes from water abstraction on freshwater fish and freshwater habitats have been acknowledged and addressed in the Freshwater Ecology Assessment attached as Appendix L of the Application (Section 3 and 4).

As a result, to address potential risks to aquatic environments, particularly when low flow conditions and water takes coincide, water level monitoring and residual flow management has been proposed and specified as conditions of consent (Condition 4 of AUTH142035.02.01; Condition 7 of AUTH142035.03.01). Water level triggers have been specified that require operational review of water takes and further ecological monitoring (Conditions 4 - 6 of AUTH142035.02.01). Augmentation of baseflows in the Mitiwai Stream is proposed, to account for potential stream flow reductions during summer low flow periods and subsequent potential ecological effects, when mining below the water table is occurring close to the stream and flow depletion is identified (proposed Conditions 2 - 4 of AUTH142035.14.01).

Comment: At paragraph 30(iii) Dr Maseyk asserts that the scale of adverse effects has been downplayed by underplaying potential impacts on aquatic invertebrate and fish species due to a lack of information on these values and consequently lack of assessment of effects on those values.

Comment: Similarly, at paragraph 30(iv) Dr Maseyk states that scale of adverse effects has been downplayed by failing to account for relationship between hydrological effects and consequential impacts on aquatic biodiversity and aquatic habitat.

Response: For the reasons outlined in the above response, I disagree with Dr Maseyk's comments. The features and value of the aquatic communities within the Wainui and Mitiwai Streams and wider catchment values have been surveyed extensively over recent years, are discussed in Appendix L of the Application, and potential risks of mining operations to aquatic biodiversity and aquatic habitat acknowledged. As outlined above and elsewhere in this response, a range of water management and monitoring measures, reflected in a range of conditions proposed as part of TIL's Application, are to be applied, intended to protect, manage and enhance ecological features of the site and avoid and minimise the risks to aquatic biota. These are further outlined below, with reference to specific conditions, in the



response to comments received from Te Ruununga o Ngaati Mahuta ki to Hauaaruru Charitable Trust.

The Proprietors of Taharoa C Block Incorporated

The Proprietors of Taharoa C Block Incorporated (Taharoa C) support the Application, with appropriate protections for the lake, Wainui and Mitiwai Streams and wetland habitats.

Comment: Taharoa C (paragraph 20) notes the protection or restoration of the freshwater systems (wetlands and streams) is important for their long-term legacy and vision for the site.

Response: Measures including wetland and stream buffers, fencing and planting with native species, are proposed (Condition 7 of AUTH142035.01.01; Condition 16(f) of Schedule 1: General Conditions; Draft NIWBMP). Provided these areas are protected and maintained, long-term ecological benefits can be expected for the freshwater systems and the fauna that utilise them.

Comment: Taharoa C (paragraph 22) notes the values of the fish pass to allow native fish to navigate past the dam. They note that the fish pass should be kept and appropriately maintained.

Response: I agree with this assertion, and Conditions 2 to 6 of AUTH142035.03.01 require maintenance and monitoring of the fish pass to ensure fish passage is maintained.

Comment: Taharoa C (paragraph 23) supports the inclusion of mining setbacks from Taharoa Lake and Wainui Stream, as well as natural inland wetlands, to mitigate effects.

Response: Mining setbacks, in the form of 30m wide planted buffers, are proposed, to minimise adverse effects of mining on waterways and wetlands (Condition 7 of AUTH142035.01.01; Condition 16(f) of Schedule 1: General Conditions; Draft NIWBMP).

Te Ruunaunga o Ngāti Mahuta ki to Hauaaruru Charitable Trust

In relation to freshwater ecology, NMKTH commented on protection of freshwater ecology, taonga fish species and stream flows, and riparian buffer widths.

These comments do not appear to have been supported by review from an expert freshwater ecologist.

Comment: NMKTH (at pdf page 30 of their submission) comment on concerns relating to long-term modification of lake levels and stream flows and the risk to wetlands and downstream hydrology. NMKTH note that they do not consider augmentation to be adequate mitigation for altered flows, and that augmentation does not replicate naturally occurring conditions.

Response: The effects of lake water level and stream flow reductions have been considered and addressed in detail as part of the Application, including in the Freshwater Ecology Assessment (Appendix L, sections 3.3 and 4.2) and, for wetlands, in the Terrestrial Ecology – Wetlands and Vegetation Assessment (Appendix K, section 6.2.4).

In relation to wetlands, periodic changes to lake levels resulting from the proposed water take and potential effects on fringing wetlands are proposed to be monitored on a regular basis as a requirement of Condition 8 of AUTH142035.05.01 and repeated (as a requirement of Condition 10) should lake levels remain low for prolonged periods. This wetland monitoring is intended to identify any adverse changes in wetland vegetation, including where low lake levels persist for prolonged periods. The wetland condition monitoring programme (required as a component of Condition 16 of Schedule 1: General Conditions; and outlined in Section 2.5 of the Draft NIWBMP, Appendix DD of the



Application) is also designed to detect any shifts in wetland health. The consent conditions also set out required management responses to monitoring results. In particular, consent condition 10(c) of AUTH142035.05.01 requires the Consent Holder to review and update the Lake Level and Water Management Plan to identify measures that can be implemented to address any identified adverse effects. Baseline and ongoing hydrological monitoring of wetlands across the site is also proposed (Conditions 8 –10 of AUTH142035.05.01), and conditions of consent require hydrological conditions are maintained and methods to minimise drawdown effects on retained wetlands be implemented (Condition 6 of AUTH142035.16.01; Condition 16(d) of Schedule 1: General Conditions).

Augmentation of baseflows in the Mitiwai Stream is intended as a temporary measure, when required, to account for potential stream flow reductions during summer low flow periods, when mining below the water table is occurring close to the stream and flow depletion is identified (proposed Conditions 2 - 4 of AUTH142035.14.01). As noted in the Hydrogeology Assessment (Groundwater Effects) (Appendix N of the Application), once mining below the water table is complete and the dredge pits are refilled, natural flow conditions within the Mitiwai Stream will quickly be reinstated. I note that the augmentation approach is also supported by WRC's hydrologist (see Memo from Sung Soo Koh – Hydrology at paragraph 3.2).

Augmentation of Wainui Stream below the dam and through the fish pass is also proposed, should reservoir water levels drop below specific trigger heights (Condition 4 of AUTH142035.02.01; Condition 7 of AUTH142035.03.01). Implementation of the augmentation flows over the dam weir and into the fish pass, as triggered, will ensure flows are maintained through the lower Wainui Stream and the potential for adverse effects on aquatic biota are minimised.

Together, these measures are proposed to protect and maintain the ecological values of the stream and wetland systems within the site from potential short-term and long-term effects of mining.

Comment: NMKTH (pdf page 29 - 30) request that setbacks of 100m should be retained along the Mitiwai Stream (and wetlands).

Response: I consider the 30 m buffer to be appropriate to address adverse effects on the site streams. Planting of the riparian buffer is proposed, as required by Condition 7 of AUTH142035.01.01. Planted riparian buffers of even 15 – 20m wide can be expected to provide a full suite of beneficial aquatic functions (water temperature control, bank stability, food resources for aquatic and terrestrial fauna, cover for fish, filtering sediment) and once established, are wide enough to be self-sustaining⁵. In my opinion, the proposed 30m planted buffers proposed for the site streams will be beneficial to the streams and are supported.

Comment: NMKTH (pdf page 32) raise concerns regarding discharges from the site and potential adverse effects to waterbodies and wetlands.

Response: Section 5 of the Freshwater Ecology Assessment (Appendix L of the Application) addresses potential stormwater discharges to Wainui Stream.

At the site, stormwater runoff is intercepted and recycled into the mine process water system. A discharge permit has been proposed (AUTH142035.06.01) to account for incidental diffuse stormwater discharges to the Wainui Stream that may occur, for example due to adverse weather events. I note that, other than fuels stored in bunded areas, no

⁵ Parkyn, S.; Shaw, W.; Eades, P. (2000). Review of information on riparian buffer widths necessary to support sustainable vegetation and meet aquatic functions. Prepared by NIWA for Auckland Regional Council. Auckland Regional Council Technical Publication Number 350, 38 pages



hazardous substances are generated or used on site as part of the mining process. The proposed 30m planted buffer to wetlands and streams is also intended to minimise the risk for discharges to wetlands and watercourses.

Comment: NMKTH (pdf page 27-28) make comments on the overall protection of freshwater systems, noting the interconnectedness of the lakes, streams and wetlands, and stating the need for conditions that protect these systems. As part of this NMKTH notes the need to apply the Te Mana o Te Wai hierarchy that prioritises: first, the health and well-being of water bodies and freshwater ecosystems.

NMKTH specifically comment on effects on wetlands (addressed in the wetland response), effects on fish passage and migratory cycles, including the risk of entrainment into the water intakes and the effectiveness of the fish pass.

Response: As discussed in the Application, specifically the attached Freshwater Ecology Assessment (Appendix L) and Terrestrial Ecology – Wetlands and Vegetation Assessment (Appendix K), mining has been occurring on the site for over 50 years. The effects of mining are well understood and include changes to freshwater systems, most notably associated with the installation of the dam, with resulting impacts on the Taharoa Lakes water levels and marginal wetlands, and the Wainui Stream, including the ability for fish to migrate. In more recent years, effort has been made to better address and account for impacts of the mining processes on fish passage, including reconfiguring the fish pass to improve access for migratory native fish through the catchment. As noted above, this has been effective, and maintenance and monitoring of the fish pass is proposed to continue.

A range of conditions are proposed as part of TIL's application to protect, manage and enhance ecological features of the site. In relation to freshwater values, this includes conditions requiring:

- The maintenance and monitoring of the fish pass to ensure it continues to operate as intended, providing passage for the diverse range of native fish recorded from the catchment (Conditions 2 - 6 of AUTH142035.03.01).
- Maintenance of base flows downstream of the Wainui Stream dam, to ensure flows through the fish pass and habitats and water quality downstream of the dam are maintained for the protection of aquatic fauna (Condition 4 of AUTH142035.02.01; Condition 7 of AUTH142035.03.01).
- Water level triggers that require operational review of water takes and further ecological monitoring (Conditions 4 - 6 of AUTH142035.02.01).
- The protection and planting of 30m wide buffers surrounding the site streams and retained wetlands (Condition 7 of AUTH142035.01.01; Conditions 8 – 10 of AUTH142035.03.01; Condition 16(f) of Schedule 1: General Conditions).
- Baseline and ongoing wetland hydrological and vegetation monitoring (Conditions 8 – 10 of AUTH142035.05.01).
- Wetland protections and wetland creation (Conditions 3 - 4 of AUTH142035.16.01) to account for wetland loss. These measures are discussed in the wetland response.

These mitigation measures and management requirements have been proposed to protect and maintain the values of these interconnected waterways, in the context of the surrounding mine. Following the closure of the mine, the protection and enhancement, through planting, of the existing waterways and site wetlands can be expected to result in long-term ecological benefits to the site, provided they are implemented as proposed (Condition 7 of AUTH142035.01.01; Condition 16(f) of Schedule 1: General Conditions; Draft NIWBMP).



In terms of Te Mana o te Wai, under the National Policy Statement for Freshwater Management (NPS-FM) individual resource consent applications do not have to demonstrate how the hierarchy is met (see section 104 of the RMA). Notwithstanding this, an assessment of how freshwater is to be managed in a manner that gives effect to Te Mana o te Wai is set out in section 8.3.2 of the Substantive Application Report.

Te Nehenehenui

In relation to freshwater ecology, Te Nehenehenui commented on hydrological changes in relation to the Mitiwai Stream, the intake screen mesh size and riparian buffer widths along Mitiwai Stream.

These comments do not appear to have been supported by review from an expert freshwater ecologist.

Comment: Te Nehenehenui (point 11 of Attachment A) raised concerns over the effects of mining below the water table on the Mitiwai Stream, including potential disruption to migratory fish movement and risks to water quality as a result of flow augmentation.

Response: Proposed conditions of consent have been included to ensure instream water quality and access for migratory fish are maintained in the Mitiwai Stream. Condition 4 of AUTH142035.14.01 requires that any augmentation of base flows maintains upstream fish passage and Condition 3 specifies water quality standards, specifying maximum acceptable changes to water quality.

Comment: Te Nehenehenui support a reduction in the water intake screen mesh size to comply with the 1.5mm Waikato Regional Plan standards (point 10 of Attachment A).

Response: Comment has been provided above in relation to a similar request by WRC.

Comment: Te Nehenehenui support an increase in buffer width along Mitiwai Stream from the proposed minimum 30m to 100m (point 12 of Attachment A).

Response: As noted in the above response to a similar comment by NMKTH, planted riparian zones are important to help stabilise stream banks and surrounding slopes, provide habitat for fauna, food resources for aquatic and terrestrial fauna, water temperature regulation and water quality management. The 30 m riparian buffer width was assessed as an appropriate width to address adverse effects on waterways, provided it is fully planted as proposed.

Mirumiru Pa ki Marokopa - Marokopa Marae

Comment: Mirumiru Pa ki Marokopa - Marokopa Marae raises a concern relating to potential impacts on Īnanga spawning habits within the Marokopa River should the Marokopa River mouth be altered as a result of mining. In relation to tuna (longfin and shortfin eel), they raise concern that sand bar thinning, salinity intrusion, and changes to the tidal prism could interfere with tuna migration, both upstream and downstream.

Response: The mine and the Marokopa River are more than 13km apart. As a result, it is unclear on what basis concern is raised about the impact of the proposed works on Īnanga spawning habitats within the Marokopa River or tuna migration. The mining is onshore, so will not impact offshore sand movements that could alter features of the Marokopa River mouth and therefore impact Īnanga spawning habitats. Modelling (see: Hydrogeology Assessment (Groundwater Effects), attached as Appendix N of the Application) indicates that any saltwater movement associated with the mine will be localised to a mine pit area in the Southern Block during a limited time period and will not affect any freshwater bodies.



In my opinion, there is no reason for concern for communities of Inanga, tuna or other migratory freshwater fish species in the Marokopa River as a result of the mine operations.

Conclusion

Overall, having reviewed the comments received from the various invited parties, my view is that the majority of the matters raised do not alter the findings of the Freshwater Ecology Assessment (Appendix L of the Application). In some instances, I disagree with the conclusions drawn by submitters, particularly where they suggest that effects on freshwater ecology have been underestimated or insufficiently addressed. The assessment undertaken was comprehensive, draws on extensive field data and established methodologies, and appropriately identifies and evaluates the potential freshwater ecological effects associated with the Project.

Where I do agree with elements of the feedback provided, these largely relate to refinements or clarifications. In most cases, the matters raised are already appropriately addressed through the proposed consent conditions and management frameworks, including measures relating to flow management, fish passage, water quality controls, riparian buffers and monitoring requirements.

As such, a number of targeted refinements to conditions and management plans have been recommended in response to comments. These include:

- extending the potential period for flow augmentation in the Mitiwai Stream to better capture seasonal low flow conditions (Condition 2 of AUTH142035.14.01);
- minor adjustments to trigger levels and associated provisions within the Lake Level and Water Management Plan to ensure consistency and clarity (LL&WMP, Appendix EE); and
- incorporation of additional or clarified water quality parameters (e.g. electrical conductivity thresholds) to explicitly confirm the use of freshwater for augmentation (Conditions 2 and 3 of AUTH142035.14.01 and new Condition 7 of AUTH142035.16.01).

Importantly, these refinements are not considered the result of deficiencies in the underlying ecological assessment. Rather, they are proposed to improve clarity, ensure consistency across the suite of Application documents, respond to evolving condition drafting, or provide additional specificity to already identified mitigation and management measures.

In conclusion, it remains my opinion that the Freshwater Ecology Assessment is sound, fit-for-purpose, and based on a robust evidential foundation. The identified potential effects remain appropriately characterised, and the proposed mitigation, management and monitoring measures are suitable to avoid, remedy or mitigate those effects to an acceptable level. The proposed conditions of consent and associated management plans collectively provide a comprehensive and appropriate framework to manage potential adverse effects on freshwater ecosystems.

Regards,

SLR Consulting New Zealand Limited

Keren Bennett

Technical Director (Freshwater Ecology)

