MORPHUM environmental

Memorandum

Date:	4/04/2025
To:	Alexander Semenoff
From:	Mark Lowe
CC:	Pamala Santos (B&A), Laura Drummond (Bioresearches)
Project Number:	P4965
Reviewed by:	Jason Smith
Released by:	Mark Lowe

Subject: Kings Quarry Fast Track Application – Freshwater Ecology Peer Review

Introduction and Scope

In December 2023 Kings Quarry Limited (**The Applicant**) applied for resource consent under the Covid-19 Recovery (Fast-track Consenting) Act 2020 to expand the operations of the existing quarry at 186 Pebble Brook Road, Wainui. The consenting panel (**The Panel**) considered there were several key gaps in the ecological information provided as part of the application, which meant the scale of ecological effects and the appropriateness of the measures proposed to address those effects were not able to be determined. A lack of time available in the process to address these gaps in information, in part, led the panel to refuse consent.

It is understood that the Applicant is currently in the process of reapplying for consent and seeks further professional input into matters of freshwater ecology to inform the process.

To inform the process, a review of the material prepared and produced as part of the Fast-track Consenting process relevant to freshwater ecology was undertaken. Various feedback was provided to inform the Applicants approach to preparing the re-application. This memorandum provides a summary of the material reviewed, feedback provided, and assessment of the relevant material prepared for the re-application.

While commented on as they relate to freshwater ecological effects, this memo does not provide a review of earthworks, erosion and sediment controls, surface water diversions or groundwater abstraction.

Site visits have not been undertaken as part of this review.

Key Freshwater Ecology Matters

Ecology matters, including freshwater ecology, were covered extensively through the Fast-track Consenting process and these were a key influence on the panel's decision. Freshwater ecology matters were raised by several parties invited to comment and were covered in the review by Wildland Consultants Limited (**Wildlands**) commissioned by the panel. This resulted in several responses on the

topic by the Applicant, including several updates to various relevant application documents and proposed conditions of consent.

Having reviewed the material prepared and produced as part of the Fast-track Consenting process relevant to freshwater ecology, I consider the key freshwater ecological matters in contention to be:

1. The ecological value of the intermittent steams in the southern and northern systems and the ecological value applied to the freshwater fauna within these streams.
2. Adherence to the net loss of stream extent aspect of the aquatic offset definition in the National Policy Statement for Freshwater Management (**NPSFM**).

To a lesser extent, because the Panel appeared satisfied the effects could be managed, the following also appear to be matters of contention:

3. The level of effect of sediment discharge to the receiving environment.
4. The level of effect on downstream hydrology, and resulting impacts on water quality and freshwater habitat, as a result of surface water diversion and groundwater abstraction.

Each of these matters are addressed in the sections below.

There was also disagreement and / or differences of opinion between the Applicant and Wildlands (and/or the parties invited to comment) on other freshwater ecology matters. These matters are not perceived as being key concerns and are not discussed further in this memo, including various differences of opinion between the Applicants ecology consultant (**Bioresearches**) and Wildlands regarding the Stream Ecological Value (**SEV**) input values. It is understood that the SEV input values proposed by Wildlands have been adopted by the Applicant to expedite the application process.

Matter 1: Value of Intermittent Streams

In the previous application there were differences of opinion between the Bioresearches and Wildlands regarding the ecological value of the intermittent steams in the southern and northern systems and the ecological value applied to the freshwater fauna within these streams.

The application material concluded that the intermittent streams in the southern and northern systems are of Moderate ecological value (following the EIANZ guidelines) due to the streams being intermittent, very shallow with low hydrological diversity and providing limited habitat for freshwater fauna. The review by Wildlands noted that headwater streams with intermittent flow have their own ecological values which should not be undervalued because they support fewer freshwater species than larger streams and rivers.

On this point, I agreed with the review by Wildlands. Intermittent streams should not be undervalued or valued solely on the freshwater habitat availability. There is a large body on literature highlighting the broader ecological values of intermittent streams. The revised application material has accounted for this context, including representativeness and ecological context, and assessed the streams within the northern and central systems as having High ecological value. I agree with this revised assessment.

Separate to the value of the streams themselves, is the consideration of the value of the freshwater fauna present within the streams. The Applicant assigned an ecological value to freshwater fish fauna of Moderate. Wildlands considered that this value should be High because of the presence of At-Risk (Declining) species. On the surface, I agree with Wildlands interpretation of the application of the EIANZ guidelines. However, an important consideration in this application is whether or not the intermittent streams actually provided habitat for the At-Risk species in question. The revised application material has assessed ecological value for freshwater fauna as High for the permanent streams, and Moderate for the intermittent streams, due to the intermittent presence of 'At Risk' juvenile fauna. Given the descriptions provided of the intermittent streams and the flow characteristics, I support this assessment. Furthermore, it is noted that despite the ecological value

assigned to the freshwater fauna, the risk of injury or mortality is proposed to be appropriately addressed though a Fish Management Plan.

Wildlands noted that no evidence was provided to support the flow classification (intermittent vs. permanent) of the streams on the site. To address this matter, I understand the Applicant has undertaken further survey to assess the permanence of flow during summer conditions. Thus, giving more confidence to the extent of intermittent streams, and subsequently has updated the mapping and reporting.

Matter 2: No Net Loss of Extent

It is my understanding that despite there being differences in opinion between the Bioresearches and Wildlands in the SEV input values of the original application, the SEV input values proposed by Wildlands have been adopted by the Applicant to expedite the application process. Therefore, it is my understanding that there is agreement that (using the SEV method) a no net loss (**NNL**) of ecological function has been demonstrated, and likely a net gain.

The NPSFM definition of aquatic offset seeks to achieve NNL, and preferably a net gain, in *extent and* values [emphasis added]. This, in my experience, has generally been applied to mean that to meet the definition of an offset the proposed activity cannot result in the overall loss of extent of freshwater habitat (even if a NNL of value has been demonstrated).

The Wildlands review did not consider the loss of stream *extent* had been adequately addressed. Wildlands recommended considering further means of offsetting the loss of extent, such as daylighting culverted stream up to a similar length to the length of stream being lost.

There appeared to be differences of opinion around the ability and use of the SEV tool to account for the loss of stream extent. I provided feedback to the applicant that included that the loss of headwater and intermittent stream extent has potential effects on downstream and that reaches that are not accounted for in the SEV method, and that, in my opinion, following the SEV method does not necessarily, or automatically, achieve a NNL of extent outcome.

Bioresearches considered that that daylighting over 2 km of stream length is not practicable. I agree that there are practical limitations to achieving this, and that the focus should be on achieving the greatest ecological outcome in the context of the application.

Where loss of stream extent is unavoidable, there may be practical limitations within a site (or even catchment scale) to achieve no net loss of extent. This may arise as a result if the creation of additional stream on site is prevented through physical constraints, or it may be that the function of that created stream is sufficiently impaired that ecological values would not be maintained – such as potentially the case in quarrying activities.

Daylighting over 2 km of stream is most likely to be achieved in an urban environment, in which case, such an enhancement activity may not be consistent with the offsetting principles of 'proximity' or 'like-for-like'.

There are often limitations to the ecological benefit that can be gained when creating a new stream. Therefore, while it is possible to create a 'new' stream to replace the extent lost, this doesn't necessarily equate to an ecologically viable stream (with high ecological value). The creation of stream extent driven purely by a policy directive and without proper consideration of ecological limitations, risks and values has the risk to lead to perverse outcomes. In my opinion, the focus of an effect management package should be on achieving the greatest ecological outcome possible that achieves alignment with as many offsetting principles as possible.

The revised application has provided commentary on the limitations to achieving a NNL of stream extent as part of this application. The revised application, in addition to the measures to achieve NNL

of stream value, has also proposed measures to compensate for the loss of stream extent. These include:

- Enhancing 6,400 m^2 of degraded wetland through wetland and buffer planting, pest control, and fencing.
- Removal of an instream weir structure on the Waitoki Stream improving fish passage and connectivity to approximately 3.4 km of stream habitat.

The wetland enhancement is connected to other proposed enhancement areas providing for consolidated and cumulative ecological benefits, which is a preferable outcome to smaller disconnected enhancement actions.

In the context of this application, it is my opinion that the measures proposed to achieve a NNL of stream value outcome, along with the additional measures proposed to compensate for the loss of stream length are appropriate to address the adverse effects of stream loss. What is proposed also provides for a consolidated ecological enhancement which has a high level of confidence in being achieved; daylighting streams in multiple urban sites, if sufficient length could be identified and secured, may not achieve similar ecological gains.

Matter 3: Sediment Discharge

As part of the previous application Wildlands raised concerns in relation to the efficacy of the erosion and sediment controls to manage the effects of sediment discharges on downstream reaches. Bioresearches opinion is that appropriate erosion and sediment controls will be implemented throughout the quarry to sufficiently mitigate the effects of sedimentation. Wildlands raised concern that no analysis or evidence to justify this statement was provided.

While well designed and implemented erosion and sediment controls are an appropriate mitigation measure to reduce the magnitude of effect from sediment discharge to the receiving environment, no sediment controls are 100% effective, and sediment will still reach the receiving environment.

Originally chemical treatment was not proposed. Chemical treatment is standard practice in Auckland on Sediment Retention Ponds and Decanting Earth Bunds, and in my opinion a Chemical Treatment Management Plan (**ChTMP**) should form part of the application. It is my understanding that the most current version of the proposed condition set includes conditions requiring a ChTMP be submitted to Council for certification prior to earthworks occurring.

I understand that the most current version of the proposed condition set includes conditions requiring a final Erosion and Sediment Control Plan (**ESCP**) be prepared for certification by Council. The conditions specify that the final ESCP shall include 'monitoring and maintenance requirements'.

Given the Panel had concluded that sediment discharge effect could have been appropriated addressed through the project design and the imposition of appropriate conditions of consent, conditioning a final ESCP and ChTMP would appear appropriate.

However, given the Very High ecological value of the receiving environment, and that no ESCs can entirely remove sediment, I recommend that an Adaptive Management Plan (**AMP**) is also . These plans should specify the monitoring parameters, locations, and frequency, as well as, trigger values for adaptive management and the adaptive measures to be implemented. I understand that the proposed conditions include a condition for an AMP to be prepared and certified by Council prior to commencement of works.

Matter 4: Effects on Downstream Hydrology

As part of the previous application Wildlands, and other parties invited to comment on the application, raised concerns with a lack of assessment of the ecological effects on stream reaches

downstream of the quarry from reduced flows (from loss of headwater streams, surface water diversion, and groundwater abstraction) and the potential for increased concentration of contaminants with less dilution.

As part of the revised application Williamson Water and Land Advisory (WWLA) have assessed that the maximum baseflow depletion predicted for the Waitoki Stream during low flow conditions is 1.3 L/s, amounting to 10.3% of MALF and that this is within the AUP allocation limit.

I note that the Panel concluded that the proposal's adverse effects on groundwater and hydrology could be managed by way of conditions to ensure adverse effects are minor or less and would not be a reason to refuse consent.

The current draft proposed conditions require monitoring of water quality, depth and flow. The Monitoring and Contingency Plan required to be certified prior to dewatering is to include trigger levels and contingency actions in the unlikely event that adverse effects attributable to the quarry activity are detected.

Conclusions and Recommendations

In summary, having reviewed the material prepared and produced as part of the Fast-track Consenting process relevant to freshwater ecology I consider the key freshwater ecological matters that were in contention were:

1. The ecological value of the intermittent steams in the southern and northern systems and the ecological value applied to the freshwater fauna within these streams.
2. Adherence to the net loss of stream extent aspect of the NPSFM aquatic offset definition.
3. The level of effect of sediment discharge to the receiving environment.
4. The level of effect on downstream hydrology, and resulting impacts on water quality and freshwater habitat, as a result of surface water diversion and groundwater abstraction.

Having reviewed the relevant information, I provided various feedback to inform the Applicants approach to preparing the re-application. Having reviewed the revised application material, it is my opinion, that the amendments have been made that mitigated the four key freshwater ecology matters of contention and provides for more certainty and confidence to the decision maker that adverse freshwater ecology effects are appropriately addressed. These amendments include:

- Amending the ecological value assessment of the intermittent streams.
- Providing compensation measures to address the loss of stream extent.
- Including proposed conditions requiring the development and certification of an AMP for erosion and sediment controls, including monitoring, trigger values, and contingency measures.
- Including proposed conditions requiring monitoring of water quality, depth and flow; including the required certification of a Monitoring and Contingency Plan which is to specify trigger values and contingency measures.

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