

**IN THE MATTER** of the Resource Management Act 1991

**AND**

**IN THE MATTER** of the proposed expansion of  
McPherson Quarry, 47 McPherson  
Road, Pokeno.

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**STATEMENT OF EVIDENCE OF MARC CHOROMANSKI FOR THE APPLICANT**

**(Ecology)**

**[13/11/2020]**

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## **1. QUALIFICATIONS AND EXPERIENCE**

- 1.1** My full name is Marc Shane Choromanski.
- 1.2** I am a senior ecologist employed by Ecology New Zealand Ltd (ENZL), a specialist provider of ecological services across New Zealand.
- 1.3** I have been awarded a Bachelor of Science (Biology and Environmental Science), and a Postgraduate Diploma in Science (Conservation and Biosecurity), from the University of Auckland.
- 1.4** I am a current member of the Environment Institute of Australia and New Zealand (EIANZ), where I have agreed to abide by the Code of Ethics and Professional Conduct in my professional practice.
- 1.5** I am a member of the Society for Reptile and Amphibian Research, Herpetological Society, New Zealand Bat Network and Auckland Bat Alliance committee member. I am a Department of Conservation (DOC) permitted herpetologist and recognised native bat specialist.
- 1.6** I have been a consultant ecologist for five years, providing specialist ecological impact assessment and management consultation for a range of projects across New Zealand. I have worked with clients across a wide variety of projects including quarries, clean fills, forestry, urban development, transportation, and conservation research.
- 1.7** Select experience relating to this project includes:
- a) Staarvon Sand Mine and Mercer Sand Mine, Waikato (2020) –These projects include the creation of a new sand quarry operation and expansion of existing operations respectively. I have provided specialist field work, Ecological Impact Assessment (EclA) reporting and consultation with Waikato Council.
  - b) Waiheke Cleanfill, Waiheke Island (2020) – Lead ecologist providing ecological feasibility assessments for a proposed cleanfill operation. I have led terrestrial (vegetation and fauna) and freshwater field investigations and reporting to determine ecological constraints and opportunities for the site and its potential use for cleanfill operations.

- c) Whangara Sand Mine, Gisborne (2018) – Lead ecologist heading the assessment of terrestrial and freshwater impacts associated with the expansion of a quarry operation. This required critical assessment of terrestrial (threatened and protected vegetation, lizards, birds, and spiders) and freshwater (Threatened coastal wetland systems and watercourse) features as well as provision of comprehensive management plans. Consent granted in 2019.
- d) Ridge Road Clean Fill, Waikato (2019) – Co-lead ecologist, providing specialist impact assessment on terrestrial ecological matters specifically relating to vegetation and fauna impacts and management. Consent Granted in 2019.

## 2. CODE OF CONDUCT

- 2.1 I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2014 and to the extent that I am giving expert evidence, have complied with it in preparing this evidence. I confirm that the issues addressed in this evidence are within my area of expertise except where I state that I am relying on the evidence of other experts. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in my evidence.

## 3. SCOPE OF EVIDENCE

- 3.1 My evidence will cover the following matters:
  - a) **Overview of Project Involvement of Ecology New Zealand Ltd** - This section describes my involvement in the project which commenced in 2018.
  - b) **Summary of Technical Report** - Assessment of the sites ecological values and proposed impacts was undertaken through industry standard stepwise guidelines. This resulted in unmitigated ecological impacts assessed as Low or Negligible for terrestrial matters except for specimen exotic trees which were assessed as High due to the potential use of these trees by long-tailed bats. Aquatic matters were assessed as Low except for Stream 1 which was Very High, primarily due to sedimentation risks onto the Mangatowhiri river. Based on this assessment, appropriate management measures have been recommended which aim to create and enhance ecological values that exceed those currently on-site.

- c) **Response to submissions** - I have provided commentary on Councils s42 which aims to provide clarification on key matters that have arisen in these reports, specifically in regard to matters brought forward during public notification. These matters brought forward key themes such as timings of planting, levels of compensation and kauri dieback which I have provided further clarification on and additional recommendations where necessary.
- d) **Commentary on s42 Reports** – I have provided comment on slight inaccuracies within the WRC s42 report and sought to correct a conclusion which states mitigation as not adequate.
- e) **Caucusing With WDC/WRC Ecologist Michiel Jonker (AECOM New Zealand Ltd)** – Caucusing with Mr Michiel Jonker on behalf of WDC and WRC was undertaken to ensure agreement on key matters relating to proposed consent conditions. Overarching agreement was reached on all matters discussed.

#### **4. OVERVIEW OF PROJECT INVOLVEMENT**

- 4.1** ENZL was contracted in December 2018 to undertake specialist native fauna and freshwater ecological assessments to assess the potential impacts of McPherson Resources Limited's resource consent application to expand the McPherson quarry. These assessments were undertaken to supplement the findings of the WSP vegetation assessment undertaken in September 2018.
- 4.2** I have co-led ecology investigations and advised on terrestrial ecology matters since 2018, with freshwater matters being led by Connor Whiteley (formerly of ENZL).
- 4.3** I provided a technical review of the project Ecological Impact Assessment (EclA) and Ecological Management Plan (EMP) prepared by my project team.
- 4.4** I have provided consultation into project redesign which has led to reductions in ecological effects.
- 4.5** Since lodgement, I have addressed Waikato Regional Council's section 92 request for further information, 2019.

## 5. SUMMARY OF TECHNICAL REPORT

### Site Location, Description and Ecological Context

- 5.1 McPherson Quarry is located on the eastern border of the Manukau Ecological District of the Auckland Ecological Region.
- 5.2 The quarry is located at the south-western most extent of a near contiguous, native forest linkage between the quarry and the Hunua Ranges of the Auckland Region.
- 5.3 At present, the majority of the existing vegetation on-site is comprised of pasture grass and gorse-dominated scrub. However, the quarry does bisect two large tracts of native forest located to the east and west of the site.

### Investigations and Findings

- 5.4 Ecological investigation of the site's vegetation was undertaken by WSP, with ENZL providing specialist assessment of native fauna and freshwater values.
- 5.5 Preliminary investigations were undertaken through reviews of relevant flora and fauna databases, Council planning maps and schedules. These reviews were supported by tailored infield investigations of the site's vegetation, fauna, and freshwater values. High resolution drone imagery was taken of the site to more accurately quantify and characterise the sites ecological values at the time of assessment.

#### *Vegetation*

- 5.6 Vegetation assessments were undertaken by WSP, being further validated through subsequent site investigations undertaken by myself and other ENZL staff.
- 5.7 A substantial proportion of the Project site, including areas within the expansion footprint (Stages 1 to 3 and the overburden disposal area), consist of either low quality grazed pasture with patches of rushes (*Juncus edgariae*), and gorse (*Ulex europaeus*) or have been impacted by previous quarrying activity (Figure 3). Indigenous vegetation is localised into fragments across the 3 stages of the extraction site.
- 5.8 The Stage 1 expansion footprint includes the largest block of native vegetation (2.18 ha) (**Error! Reference source not found.**). It consists largely of mature kanuka with

occasional successional trees species emerging from a thinning canopy. It is an area that is separated from the lower gully by the access track to the top of the quarry, and track through the west and south of the block resulting in three fragmented sections. Fragmentation has led to edge effects characterised by weed presence around the peripheries. Species of conservation concern were limited to Myrtaceae species (i.e. kanuka and two rata species) which have been conservatively reclassified due to the recent discovery of Myrtle rust in New Zealand.

- 5.9** The vegetation within Stage 2 was dominated by pasture with clumps of rushes (Figure 1). Woody vegetation primarily consisted of gorse, small patches of kanuka. Seven mature totara, a rimu and kahikatea were observed on top of the hill with a diameter from 45 to 95 cm. To the east of these large trees a grove of 32 totara, and 7 manuka were found adjacent to the forest outside the construction footprint. Large old pine trees were observed between the boundaries of the Stage 2 and 3 footprints.
- 5.10** Stage 3 is grazed throughout and consists of primarily pasture with a large area of gorse (Figure 1). Two fragments of native vegetation were located on the west of this Stage, primarily comprising of a canopy dominated by manuka with silver ferns. These areas were subject to stock grazing but where present, groundcover transitioned from kikuyu to native grasses and ferns.
- 5.11** Overburden areas to the south of the site are present in a modified landscape dominated by mixed pasture grasses and pasture weeds (Figure 1). A barberry hedge occupies one paddock boundary and a scrambling holly bush is in the middle of the site.



Legend

Pasture	Manuka Shrubland	Gorse	Proposed Stage 2
Occasional Trees	Mature - Podocarps/Hardwood	Overburden Storage Site	Proposed Stage 3
Open Water/Pond	Regen - Mixed podocarps/Hardwood/Manuka	Proposed Stage 1	Proposed Stage 4



Figure 1: Map showing the vegetation distribution at McPherson Quarry. Bridge, D.(2018) McPherson Quarry Vegetation Assessment. Expansion Stages 1 - 3. WSP OPUS (Note: Stage 3 boundaries have changed since this map was created and Stage 4 has been removed)

## *Watercourses*

- 5.12** Located at the southern extent of the site, a section of the Waipunga Stream ('Stream 1' within the ENZL EclA Report, 2019), a tributary of the Mangatawhiri River, is a permanent, hard-bottomed stream (Figure 2). It meandered for approximately 1km in a generally west to east direction. Stock had direct access to the stream in most places including two fords for vehicle crossings where sheep were seen crossing the stream. Common bully and inanga were captured within this stream during targeted fish surveys, with additional fish diversity expected. A Macroinvertebrate Community Index (MCI) sample taken within the stream presented a score of 103.48, indicating "good" stream health. Considering factors such as shading, instream habitat, stock access, MCI scores, riparian vegetation and lack of significant instream anthropogenic modification, the ecological function of the stream was overall considered high.
- 5.13** A second permanent stream ('Tributary 1' within the ENZL EclA Report, 2019) flowed out of the native bush block located at the south-west of the site (Figure 2). The stream appeared as small channels before flowing through a wetland area then forming one single channel. This channel then flowed for approximately 380m in a south-easterly direction before its confluence with Stream 1 via a culvert. The stream displayed soft-bottomed characteristics where flow was slowed and reverting to hard-bottomed characteristics in areas of more rapid flow. Macrophytes were abundant, comprising mainly of water pepper, watercress, and rushes. Riparian vegetation consisted predominantly of rank pasture grass with a narrow margin of rushes and thistles. No fish were captured in this reach during targeted fish surveys. An MCI sample taken within the stream presented a score of 86, indicating "fair" stream health. Considering the degree of shading, the variation within instream habitat, direct stock access and the poor-quality riparian vegetation, this reach of Tributary 1 was considered to have low ecological value.
- 5.14** An artificial channel is included within WRC's online mapping system as a watercourse; however, the channel present at the time of assessment was artificially managed, with steep sides, no meandering and piles of clay on top of the banks from excavation. This drain was soft-bottomed (clay) with virtually no variation in channel morphology but some variation in streambed morphology, with runs and riffles present due to collapsed clay clumps. Watercress, rushes. and curly pondweed were present within the channel. Shading was relatively poor, as it was mostly provided by the steep banks. Direct stock

access was possible along the length of the channel with pugging of the banks evident, and it flowed for approximately 80m before exiting the site into the neighbouring property. The confluence with Stream 1 was not visible from the site. Targeted fish surveys and MCI sampling was not undertaken in this reach.

### *Ponds*

- 5.15** Three artificial ponds were located within the quarry footprint; one being in each respective stage. In general, these ponds presented similar characteristics, being large areas of open water with limited riparian vegetation, and limited connectivity. 'Pond 2' (ENZL EclA Report, 2019), demonstrated a degree of connectivity with a culvert noted at the southern end discharging into the native bush below. Targeted fish surveys were undertaken in 'Pond 1' and 'Pond 2', resulting in the capture of both long-fin and short-fin eels, with the pest fish gambusia further observed during these surveys. MCI sampling in these ponds resulted in respective scores of 81.67 and 85.71, showing 'fair' water quality. Given the artificial nature of the ponds and their relative isolation, the ecological function of the ponds was expected to be low. Overall, the ecological value of the ponds was considered low.
- 5.16** A single pond located north of the quarry footprint was not independently assessed. A high-level assessment of this pond would see it aligning with characteristics of the three ponds described above (6.16).
- 5.17** Two sediment treatment ponds were located east of the overburden area, connected via a concrete culvert. Riparian vegetation on these ponds was dominated by rank grass with a few juncus plants. There was very little macrophyte growth within the ponds, leaving it mainly open water. Both ponds had gambusia present. Given the artificial nature of both these waterbodies, the lack of shading, highly turbid water, continual sediment treatments and lack of any diverse habitat features, it is expected the ponds are in a state of poor ecological function. As such, ecological value for both ponds were considered to be low.
- 5.18** Two degraded wetlands were identified along 'Tributary 1'. The upper wetland ('Wetland 1', ENZL EclA Report, 2019), occurred around the confluence of several intermittent and permanent streams before they merged into Tributary 1. The lower wetland ('Wetland 2', ENZL EclA Report, 2019) occurred just up from a culvert that drained Tributary 1 into

'Stream 1'. The wetlands were degraded primarily due to stock access. Scattered clumps of rushes were the only wetland adapted vegetation within the area. The classification of these areas as wetlands occurred due to the high-water content within the surface soil and the presence of surface water when pressure was applied to the soils indicating the likelihood of hydric soils beneath the vegetation. At the time of assessment these wetland areas were providing lower ecological function in terms of filtration, water retention and habitat diversity which could be recovered with stock exclusion and restoration works. Overall, the ecological value of these wetlands was considered to be low.

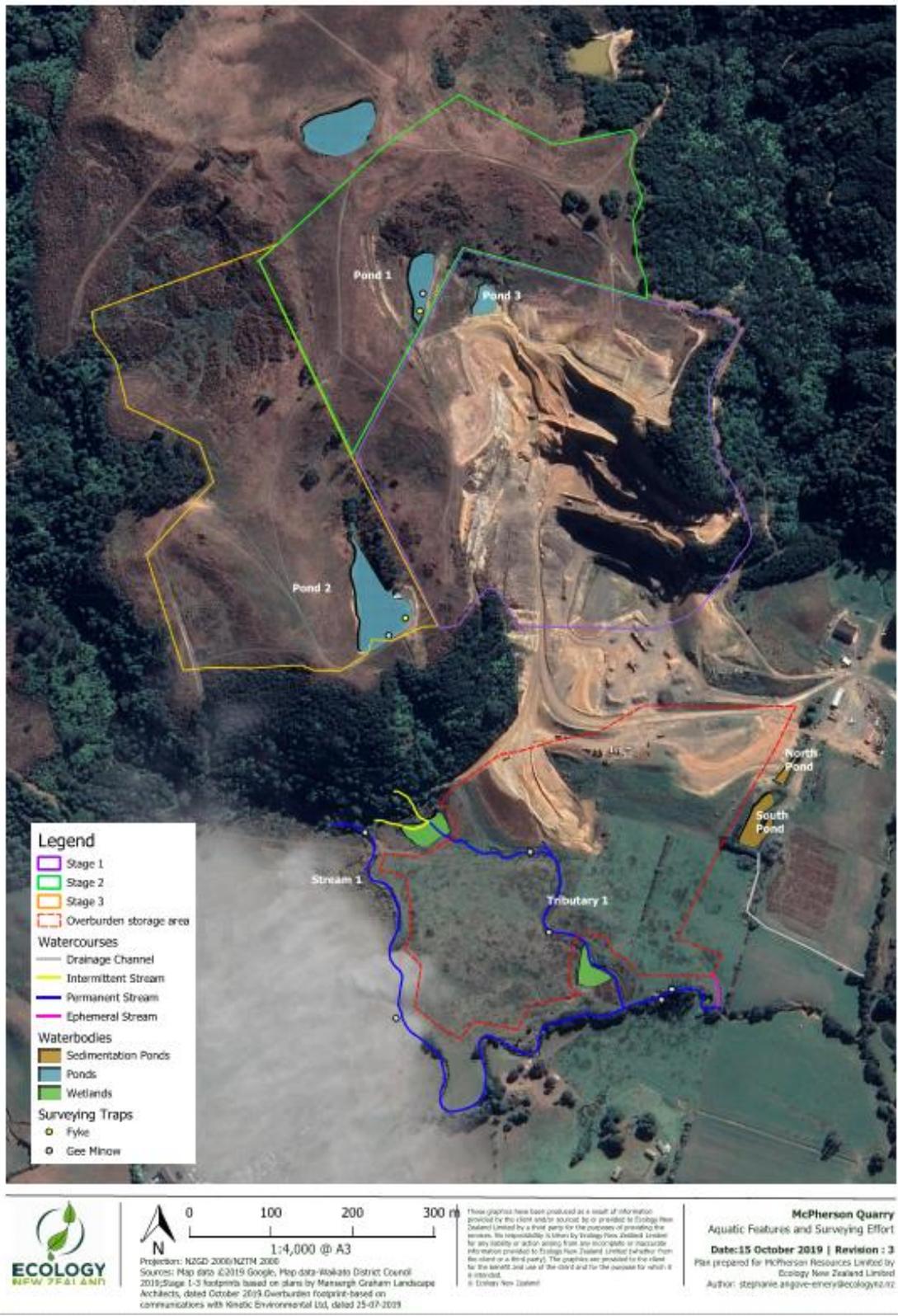


Figure 2: Map showing the aquatic features and surveying effort undertaken on-site. Angove-Emery, S., Dungey, J., Whiteley, C. (2019) Ecological Impact Assessment, McPherson Quarry. Report Number 1708203-001 V5. Ecology New Zealand Ltd.

### *Bats*

- 5.19** My project team and I undertook habitat assessments and targeted bioacoustics surveys for long-tailed bats (Threatened, Nationally Critical<sup>1</sup>) over a three week period between January 16 to February 8 to 2019. The survey was conducted during optimal seasonal conditions, targeting the peak of the breeding season, where pups are becoming volant and critical maternity roosts being occupied. Recording devices targeted potential bat roost trees and linear commuting and foraging areas across the site.
- 5.20** Possible bat roosting habitat on-site included scattered specimen trees, with foraging sites observed along linear bush edges and across pond and wetland areas. I detected only a single long-tailed bat pass on one recording device during the three-week monitoring period. This indicating very low utilisation of the site during a key time of the year for bats.

### *Birds*

- 5.21** A record of all bird species encountered (heard and/or seen) across the site, and within the immediate vicinity of the site, was documented during site investigations by myself and the project team. I further undertook call playbacks targeting wetland bird species potentially in rushes within 'Pond 2' located in Stage 3.
- 5.22** A total of 13 bird species were observed on-site, comprising of only six native species. Notable species of conservation concern recorded included black shag on Pond 1, and a pair of New Zealand dabchick on the northern most pond outside of the quarry footprint. Both species have a threat status of At Risk.
- 5.23** Common exotic birds identified on site and which are declared game under Schedule 1 of the Wildlife Act 1953, included common pheasant and Californian quail.

### *Herpetofauna*

- 5.24** My project team and I undertook herpetofauna surveys by means of manual habitat searches, deployment of Artificial Cover Objects (ACOs, including terrestrial ground

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<sup>1</sup> O'Donnell, C.F.J.; Borkin, K.M.; Christie, J.E.; Lloyd, B.; Parsons, S.; Hitchmough, R.A. 2018: Conservation status of New Zealand bats, 2017. New Zealand Threat Classification Series 21. Department of Conservation, Wellington. 4 p.

covers and tree wraps), and nocturnal surveys. These surveys were performed under my DOC lizard survey permit (52042-FAU).

- 5.25** Arboreal lizard habitat on-site appeared to be suitable within the kanuka-dominant bush block, however, the majority of the site presented low-quality habitat through pasture grasses. Ground-dwelling skink habitat was assessed as moderate quality due to the sparse leaf litter layer within the bush fragments, and lack of logs and other preferred habitat features within the ground layer. Grazed pasture grasses across the site provided a homogenous novel habitat for ground-dwelling skinks; however, a lack of logs or debris features was noted. Suitable frog habitat was located within stream areas within contiguous bush areas outside of the project footprint.
- 5.26** Six hours of nocturnal spotlighting, 90 ACO checks and manual habitat searches did not indicate the presence of any native herpetofauna species. A single plague skink (Introduced and Naturalised<sup>2</sup>) was observed under an ACO. Native herpetofauna were not detected at the level of survey effort undertaken.

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<sup>2</sup> Hitchmough, R.; Barr, B.; Lettink, M.; Monks, J.; Reardon, J.; Tocher, M.; van Winkel, D.; Rolfe, J. 2016: Conservation status of New Zealand reptiles, 2015. New Zealand Threat Classification Series 17. Department of Conservation, Wellington. 14 p

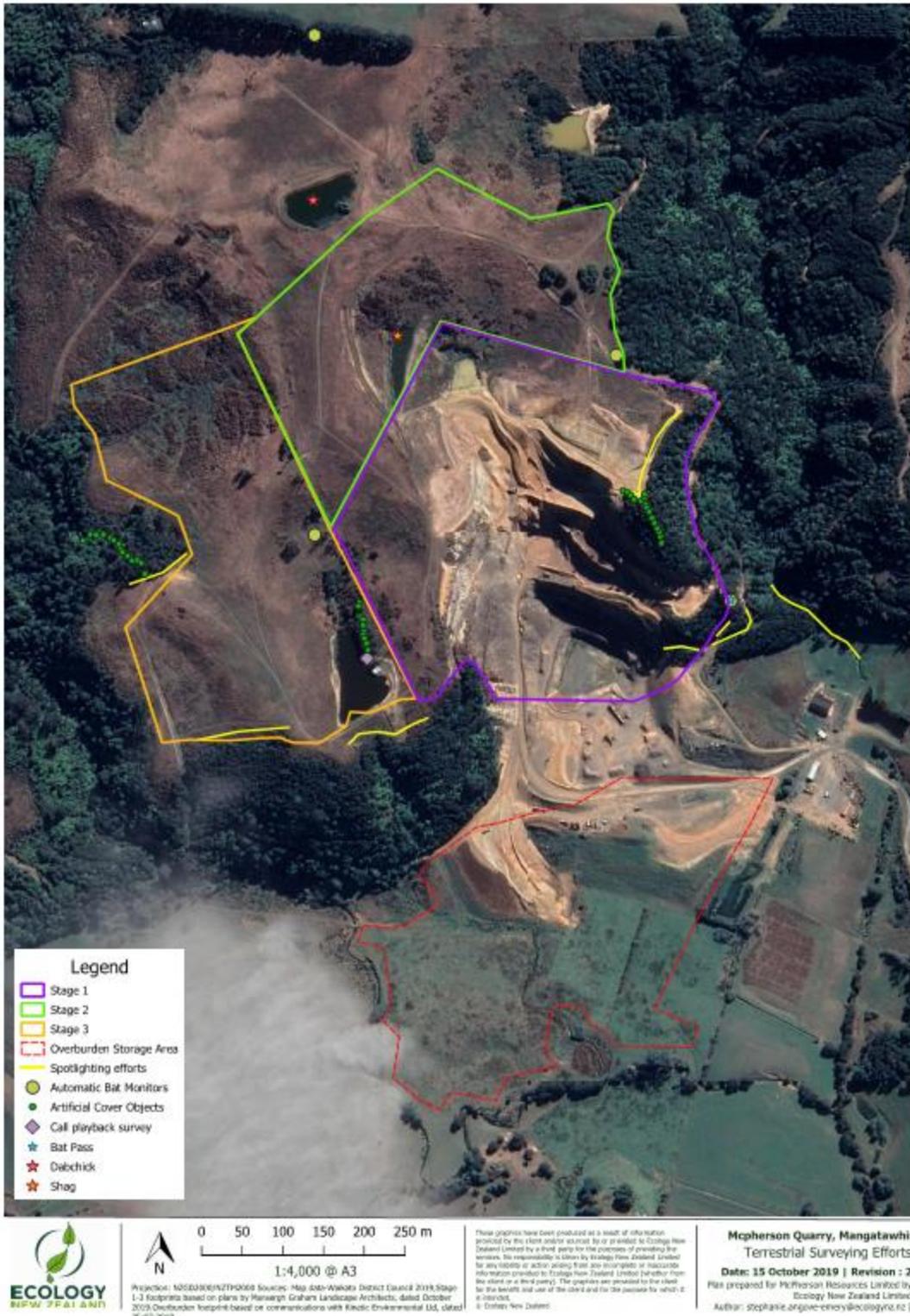


Figure 3: Map showing the key terrestrial fauna surveying effort undertaken on-site (excluding arboreal tree covers in Stage 1, and Manual habitat searches on-site). Angove-Emery, S., Dungey, J., Whiteley, C. (2019) Ecological Impact Assessment, McPherson Quarry. Report Number 1708203-001 V5. Ecology New Zealand Ltd

## ASSESSMENT OF EFFECTS AND MANAGEMENT OF EFFECTS

- 5.27** Both the WSP Vegetation assessment and my project team's assessment of effects relating to fauna and aquatic ecology have been undertaken in accordance with the EIANZ guidelines for Ecological Impact Assessment<sup>3</sup>. The stepwise matrices approach provides a standardised method of transparent assessment which aims to effectively communicate assessments.
- 5.28** The EIANZ guidelines have been used to determine the level of effects that the project will result in and to determine if residual effects remain after measures to avoid, remedy, or mitigate have been recommended. These residual effects can then be addressed through offsetting and/or compensatory actions which can be volunteered by the applicant.
- 5.29** The key ecological impacts associated with the project are attributed to the loss of 2.45 ha of indigenous vegetation (2.08 ha identified as a Significant Natural Feature), and the reclamation of both 311m of stream and three artificial ponds.
- 5.30** I consider that the mitigation hierarchy has been demonstrated throughout this project, leading to the appropriate management of terrestrial and aquatic ecological impacts.

### *Avoidance*

- 5.31** Through iterative design, I believe that the project demonstrates that avoidance of ecological impacts has been considered. This proving adherence to the first step of the mitigation hierarchy.
- 5.32** Since the preparation of the WSP vegetation assessment and between updated versions of my project team's reporting:
- a) The area of Significant Natural Area (SNA) in the southwest corner of Stage 1 and the area of SNA on the western boundary of Stage 3 have now been prioritised for avoidance. This has subsequently seen a reduction of 8,485m<sup>2</sup>

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<sup>3</sup> EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems, 2nd edition (2018) Roper-Lindsay, J., Fuller S.A., Hooson, S., Sanders, M.D., Ussher, G.T. Ecological impact assessment. EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems.

area of indigenous vegetation clearance associated with this project. Of this additional area to be avoided, 4,725m<sup>2</sup> is mapped as protected SNA.

- b) An area of approximately 1,040m<sup>2</sup> of indigenous vegetation located north of Wetland 1 was previously assessed as an area proposed to be impacted. This was confirmed to be outside of the overburden storage area, allowing is retention.

#### Terrestrial Ecology

- 5.33** Noting avoidance of SNA areas to the west of the site, the overall level of effect associated with the removal of vegetation on-site was considered by WSP as Moderate for the area of SNF located in Stage 1; with the remainder of the site being Low to Very Low. Supporting assessments by myself and project team, determined that the overall level of effects in regards to habitat provision was Low, primarily due to a lack of documentation of species of conservation concern present and/or a lack of their utilisation of impacted areas.
- 5.34** WSP have recommended that 'offsetting' was to be undertaken to address residual effects associated with the removal of Stage 1 vegetation; and advocating for the creation of a vegetated corridor located at the northern extent of the site.
- 5.35** I strongly support the creation of an ecological corridor; though, I consider this a 'compensatory' action. The proposed compensation aims to enhance on-site and offsite biodiversity values, demonstrating consideration of landscape level spatial connections, and eco-system functionality. This corridor will adjoin/extend the northern extent of the impacted Stage 1 SNA, therefore it is not disconnected from associated ecological impacts. My project team has subsequently incorporated the creation of an East to West corridor as part of the Ecological Management Plan (EMP) for this project (
- 5.36** Figure 4).
- 5.37** The proposed East – West Corridor will aim to facilitate ecological connectivity for mobile species between forested areas of Mt William and the Pouraureroa Stream Bush, further enhancing the ecological services (e.g. pollination, seed dispersal etc) they provide. To best facilitate this connectivity, and address edge effects, a minimum width of 100m has

been adopted, alongside the integration of weed and pest control for the life-time of the quarry.

**5.38** A quantitative evaluation of this compensation sees 2.45ha of indigenous vegetation loss being addressed with 4.53ha of indigenous corridor planting. In addition to this indigenous planting, visual landscape mitigation will involve the establishment of 20m wide by approximately 200m long (0.4ha) screen planting,(comprising of fast growing exotic species) that will further widen this corridor in its eastern extents (Figure 4)

**5.39** Though mitigation measures are not triggered for fauna management under the EIANZ EclA framework due to having a Low overall effect, I have advocated for their implementation due to species protection under the Wildlife Act 1953. I have recommended additional species management as follows:

- a) Bat Management – Additional acoustic bat monitoring surveys to be undertaken before the commencement of clearance of each respective stage of works. This should include surveys of all mature vegetation to be felled (isolate mature trees/ clusters of trees and SNA Stage 1 vegetation), immediately prior felling.
- b) Bird Management – Vegetation removal should take place outside of the peak bird breeding season (October to January inclusive). If vegetation clearance cannot be achieved outside of these dates, then those areas should be checked by appropriately qualified ecologist for nesting birds immediately prior to vegetation removal.
- c) Lizard Management – Additional lizard surveys should be undertaken prior to clearance of the kānuka-dominant forest within the site. This will involve 2 nights of spotlighting, and 3 checks of artificial cover objects within the Stage 1 bush block. If lizards are found to be present, a lizard management plan should be prepared and implemented to ensure native lizards are relocated by a Department of Conservation-recognised herpetologist into retained vegetation within the Pouraureroa Stream Bus



**Legend**

- Northern property boundary
- Ecological Corridor Planting-4.56ha
- Pond
- Tomo
- Exotic Screen Planting-20m width
- Fencing



0    50    100    150    200 m  
 1:1750 @ A3  
 Projection: NZGD 2000/ Mount Eden 2000  
 Sources: Map data ©2019 Google

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**McPherson Quarry**  
**Ecological Corridor Planting**  
 Date: 21 September 2020 | Revision : 2  
 Plan prepared for McPherson Resources Ltd.  
 by Ecology New Zealand Limited  
 Author: stephanie.angove-emery@ecologynz.nz

Figure 4: Ecological corridor, including 20m wide exotic hedge for landscape mitigation

## Freshwater Ecology

- 5.40** The overall effects attributed to the loss of three ponds has been assessed as Low. Despite this, it is expected that these ponds provide habitat for long-fin eel, a species identified as significant under Waikato Regional Policy Statement Ecological Assessment Section 11A. As such, it is recommended that raupō and rushland wetlands with open water areas be established within the site at a 2:1 ratio. The establishment of these areas would represent habitat of equal or greater habitat than that removed; additionally, located in areas with higher aquatic connectivity. It is proposed that these wetlands will be created by restoring and extending the existing two wetlands in the lowland area of the site.
- 5.41** Though an overall level of assessment of Low has been assigned to the reclamation of Tributary 1 (311m), consideration has been given to requirements of the Vision and Strategy for the Waikato River, and potential habitat provision to long-fin eel. Management of these effects is proposed to be addressed through riparian restoration along Stream 1 to address its main sources of degradation (lack of riparian vegetation and direct stock access). Specific recommendations will see the on-site extent of Stream 1 (approximately 930m in length or 13,950m<sup>2</sup> of stream area) fenced to prevent stock access, enhanced through riparian planting, pest animal control and protected through a legal protection mechanism.
- 5.42** A fish management plan detailed within the 2019 EMP provides details for implementation prior to and during the reclamation of each subject pond and Tributary 1. My team and I have implemented multiple salvages of this nature and have detailed stepwise measures which I am confident will result in the effective relocation of native fish from these impacted habitats.
- 5.43** Indirect effects on the sites' aquatic values were associated with potential increases in sedimentation which are foreseeable with regards to earthworks and vegetation clearance. To best address these impacts, a project specific sediment and erosion control plan will be required to be developed and implemented in full for the project.

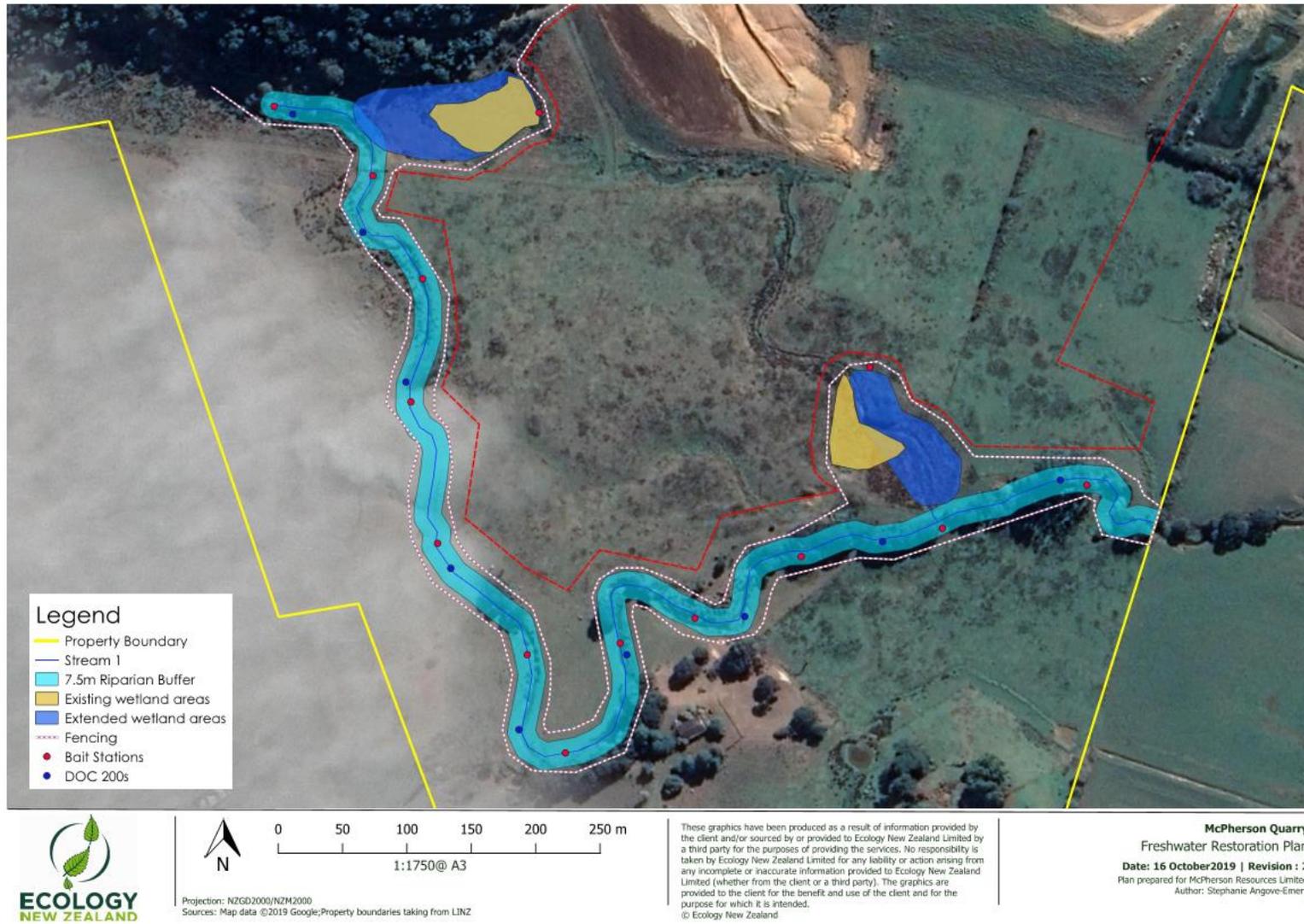


Figure 5: Freshwater restoration map.

## **6. RESPONSE TO SUBMISSIONS**

**6.1** I have provided commentary on relevant ecological matters which have been made by submitters. For consistency, I have provided response in line with themes outlined in section WDC and WRCs Section 42A report.

### Historical Clearance of Vegetation

**6.2** As detailed within WDCs Section 42A Report, submissions have arisen which identify historical clearing of vegetation on-site. WDCs Senior Planner, Ms Victoria Majoor, has investigated these issues by reviewing historical aerials, and it appears that historical vegetation clearance has cumulatively occurred across the site between 2002 and 2017.

**6.3** Ms Majoor has concluded that this vegetation comprised of kanuka dominated forest, with vegetation losses equating to 2.88ha, and split into date ranges as follows:

- a) 0.56 ha of clearance 2002-2007;
- b) 0.32 ha of clearance 2007-2012; and
- c) 2.0 ha of clearance 2012-2017

**6.4** Ms Majoor has assessed this historical clearance under current operative rules in relation to vegetation clearance and provided the following commentary:

*“...vegetation removal carried out post June 2011 ... would require consent, being approximately 1.95ha ...*

*Obviously as this has been removed prior to the notification of the Proposed District Plan the SNA overlay does not affect this area.”*

**6.5** I have not undertaken a retrospective assessment of this clearance to validate Ms Majoor’s findings so I am not in a position to comment on whether the vegetation removed was indigenous or of the size estimated in the s42A. However in the event that the Commissioners are of mind to agree with Ms Majoor and in an effort to respond to her invitation to offer further mitigation, I note that should any unauthorised historical indigenous vegetation clearance be proven and mitigation shown to be required, I would suggest that any such removal could be addressed with an offset planting at a ratio of 2:1. The size of the actual area requiring mitigation should arguably be investigated and

calculated by an experienced ecologist (such as myself) and reviewed/approved by WDC, but if I opt for the 'worst-case' scenario and adopt Ms Majoor's calculation of 1.95 ha, this would equate to an additional 0.975 ha of offset mitigation planting.

- 6.6** I would advocate that any such offset planting should be incorporated into the northern corridor, further strengthening its ecological functionality (that is on the premise that it is proven to be required). An updated planting plan subject to WDCs approval will incorporate the addition of secondary successional plant species into the corridor to accelerate natural forest succession to podocarp hardwood forest, beyond the successional kanuka forest that has been removed.

#### Removal of Indigenous Vegetation and Area of Compensation

- 6.7** I have provided commentary within paragraphs 6.36 to 6.39 of my evidence which provides justification of the measures in which impacts on indigenous vegetation are to be managed. In summary, this includes the creation of a 4.53 ha planted corridor, taxa specific surveys and management, stock proof fencing, and weed and pest control.
- 6.8** It is crucial to understand that the northern corridor aims to create ecological connectivity across this western end of the Hunua Range (linking Mt William and Pouraureroa Stream Bush) which is missing from the site. Holistically, this corridor in conjunction with other management measures proposed (e.g. fauna mitigation, weed and pest control, fencing, riparian planting etc), aim to create and enhance ecological values that exceed those currently on-site.
- 6.9** In addition to the above, caucusing with WDCs ecologist Mr Michiel Jonker's, has led to agreement of two additional areas of Significant Natural Areas (SNA), being subject to weed control (directed by the Waikato RPMS) for five years to facilitate natural regeneration. These areas of SNA on the western boundary of Stage 3 were avoided by McPherson Quarry through project redesign which I understand was done in an effort of the applicant to reduce the required SNA removal.

### Timing of establishment

- 6.10** Due to a lack of specifics within the consent application, a key theme which has arisen within the submissions was clarity on the timing of when planting is to occur.
- 6.11** The planting of the corridor will be subject to an updated planting plan to be approved by Council. Planting of the corridor will commence within the next planting season (late May to August) from when the consent is given. Planting of the corridor will be undertaken across no more than three planting seasons. Follow up/infill planting of secondary successional species is expected to be incorporated into plantings over a successive 3-Year (Year 4 – 6) period once bulk plants have established.

### Effects on Wetlands to the North of Quarry

- 6.12** The subject wetland is located upstream of the quarry therefore making impacts from the quarry unlikely.

### Mitigation for the removal of tributary 1 and effects on stream 1 being inadequate

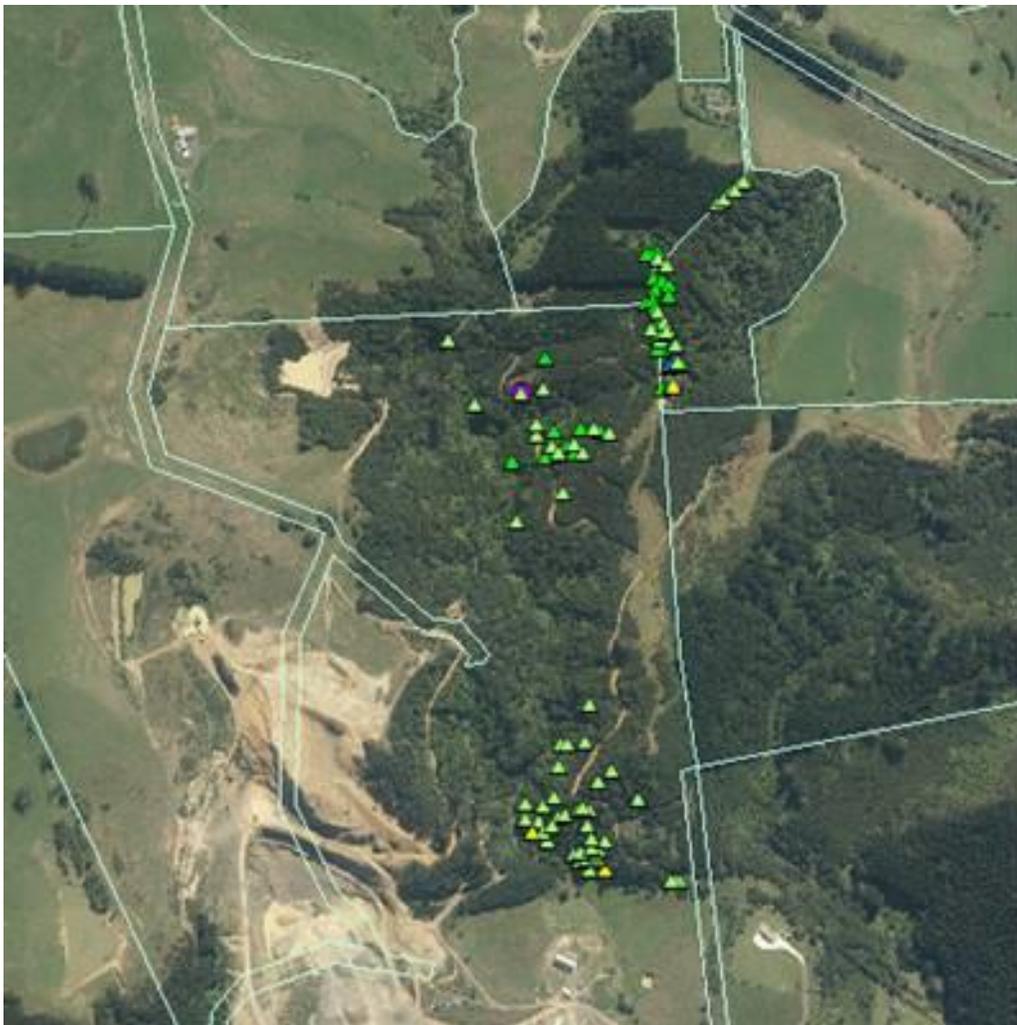
- 6.13** I have provided commentary within paragraphs 6.40 to 6.43 of my evidence which provides commentary of the measures in which aquatic impacts are to be managed.

In addition to the above, caucusing with WDCs ecologist Mr Michiel Jonker's, has led to agreement of:

- a) Prior to riparian planting being undertaken, a joint site visit will be undertaken by the project ecologist and WRC/WDC ecologist to agree on areas where stream reprofiling shall be undertaken. Reprofiling will be undertaken to ensure the long-term success of riparian planting.
- b) Additional wetland buffer planting will be added on the sections of wetland facing the overburden/cleanfill area. This is to be 5m wide above that which is detailed in the project Ecological Management Plan.

### Presence of Kauri Dieback

- 6.14** Hygiene protocol for kauri dieback was not formally addressed within the WSP vegetation assessment but should be addressed by the project. I consider it appropriate for the project to incorporate kauri dieback hygiene protocols into its operations.
- 6.15** Protection of kauri from dieback is best achieved through avoidance measures, therefore equipment storage, foot traffic and vehicle traffic exclusion zones will be established from known areas of kauri no less three times the dripline from any known kauri (Figure 6). No activities or machinery are required to be in the areas identified in Figure 6.



*Figure 6: location of kauri in relation to quarry site<sup>4</sup>*

<sup>4</sup> Map provided in Waikato District Council submission "Waikato Regional Council Submission to Resource Consent Application LUC0123/19 McPherson Resources Limited Quarry Expansion" dated 30 June 2020.

### Robust, science-based conditions

- 6.16** Ecological investigations have been undertaken following industry best practice, methods. These investigations have provided baseline information which was assessed under a transparent, stepwise guidelines (EIANZ EclA, 2018).
- 6.17** Recommended evidence-based management measures have fed into consent conditions which have been drafted by WDC.

## **7. COMMENTARY ON S42 REPORTS**

### **7.1** WRC s42A Report:

- a) *Section 6.1 Ecology* – The ecological corridor is proposed on the properties northern not southern boundary.
- b) *Section 6.1 Ecology* – The reclamation of Tributary 1 will be compensated for by 10m wide riparian planting, not 7.5m wide as stated.
- c) *Section 6.2.4, Objective 3.19 Ecological Integrity and indigenous biodiversity* – Mr Jorge Rodriguez states the proposed loss of 2.08 of manuka (*Correction – Kanuka*) forest within the SNA has not been adequately mitigated or demonstrated to be unavoidable. I would state that multiple fauna mitigation measures have been recommended (e.g. lizards, birds, bats) In addition, any residual impacts are being adequately compensated for through the proposed planting of an ecological corridor.

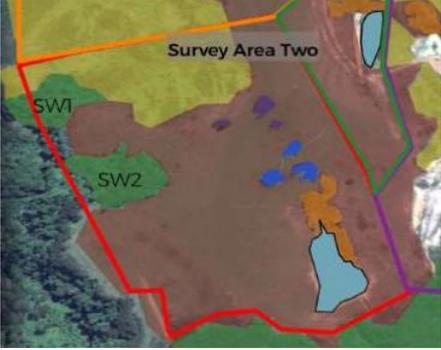
## **8. CAUCUSING WITH WDC/WRC ECOLOGIST, MICHIEL JONKER (AECOM)**

- 8.1** I consulted with WDC/WRCs consultant ecologist Mr Michiel Jonker, of AECOM New Zealand Ltd on 9 November 2020 to ensure agreement with key aspects of the project. A summary of relevant outcomes are highlighted in Appendix A.

**Appendix A: Summary of Caucusing – Marc Choromanski, Ecology New Zealand Ltd and Michiel Jonker, AECOM New Zealand Ltd. 9 November 2020.**

Recommendation (18 Feb 2020)	Comments (18 Feb 2020)	ENZL/AECOM Joint Agreement 9 Nov 2020
<p>It is recommended that the conditions on the resource consent are prescriptive in relation to when the northern corridor is delivered. It is recommended that the conditions stipulate that the applicant starts planting the northern corridor a year prior to vegetation removal taking place. The condition should also stipulate that the planting of the corridor (4.16 ha) cannot take more than three consecutive planting seasons.</p>	<p>The applicant objects to this for the reasons outlined in our email of 14 February 2020. However, the applicant is happy to accept a condition stipulating that:</p> <ul style="list-style-type: none"> <li>- Planting commences in the next planting season from when consent is given; and</li> <li>- The northern corridor is planted in no more than three planting seasons.</li> </ul> <p><i>Note: Your last bullet point is addressed below.</i></p>	<p>Both parties agree on planting not having to be done 12 months prior to vegetation removal.</p> <p>Commencement of planting to be undertaken in first planting season following granting of consent.</p> <p>Planting of the corridor will be undertaken across no more than three planting seasons.</p>
<p>The conditions should stipulate that the applicant would need to make contact with QEII at the start of the planting and that the northern corridor must be placed under a covenant prior to planting being completed. The responsibility for the maintenance of the planting will remain with the applicant until 75% canopy closure and 90% survival rate has been achieved. The responsibility for pest control will remain with the applicant for the lifespan of the quarry as stipulated in the EMP.</p>	<p>The applicant is happy to accept a condition along the lines of that proposed.</p>	<p>Both parties agree.</p>
<p>It is recommended that it is stipulated that the applicant must use plant guards to protect the plantings (northern corridor and riparian restoration) as it is not considered appropriate that indigenous bird species (pukeko) should be killed when there is an</p>	<p>The applicant is happy to accept a condition stipulating that plant guards be required should indigenous bird species be found to be a risk to newly planted seedlings within the northern corridor.</p>	<p>Both parties agree plant guards to be triggered subsequent to Year 1 of planting monitoring. Where required due to plant damage adaptive management will trigger plant guard installation.</p>

<p>alternative management approach.</p>		
<p>It is recommended that the planting mix for the terrestrial habitat is developed further than that presented in the EMP in Table 8. It is understood that the mix is focused on those species that will ensure rapid canopy closure and there is available seed source in the local area. However, the mix should include a greater diversity of tree species. The mix is focused on low growing species that are generally not long living species. The conditions should state that the planting mix will require prior approval from WRC.</p>	<p>The applicant has already proffered that:</p> <p>"It is recommended that experienced professional ecological restoration contractors undertake this planting work and be afforded the opportunity to make appropriate changes to species selection, site preparation and timing based on site specific conditions, when deemed necessary."</p> <p>In other words, the applicant is happy to accept a condition along the lines of that proposed.</p>	<p>Both parties agree. Updated planting plan required by consent condition – subject to council approval prior to implementation.</p> <p>An updated planting plan subject to WDCs approval will incorporate the addition of secondary successional plant species into the corridor to accelerate natural forest succession to podocarp hardwood forest, beyond the successional kanuka forest that has been removed.</p>
<p>The EMP indicated that the northern corridor should be fenced. The conditions should stipulate that the planting must (will) be fenced in accordance with the guidelines stipulated in the EMP prior to any plantings commencing on site.</p>	<p>The applicant is happy to accept a condition along the lines of that proposed.</p>	<p>Both parties agree – update to '<u>will</u>' be fenced. Also additional fencing recommendations to be updated to '<u>will</u>'.</p>
<p>The EMP indicates two areas of SEA which have been avoided by Project. During the walkover completed by AECOM it was observed that these habitats have been degraded as they are unfenced and stock have been grazing through these areas. It is recommended that the conditions require that these areas are fenced and restored. The</p>	<p>The applicant partially accepts this recommendation. As noted in our email of 14 February 2020, the applicant is happy to accept a condition that stipulates fencing and restoration of the two areas no longer included in Stage 3, on the premise that:</p> <ul style="list-style-type: none"> <li>- The size and exact location of the areas are to be defined and agreed by both parties;</li> </ul>	<p>Both parties agree on fencing to be undertaken at SW1 and SW2. Addition of 5 years of pest plant control (directed by the Waikato RPMS) to be undertaken within SW1 and 2 to facilitate natural regeneration.</p>

<p>approach to restoration in these areas</p> <p>should require approval from WRC prior to works commencing. The restoration of these habitats should start one year prior to</p> <p>vegetation removal within the SEA and should take no longer than three years to complete.</p>	<ul style="list-style-type: none"> <li>- The level of restoration be defined by a SQEP and agreed by both parties;</li> <li>- Removal of the requirement of a 12 month 'hold' period between the SEA removal for Stage 1 and the proposed restoration.</li> </ul>	 <p>The map shows an aerial view of a landscape with various colored overlays. A red line outlines a large area labeled 'Survey Area Two'. Within this area, two green patches are labeled 'SW1' and 'SW2'. There are also blue areas representing water bodies and other colored regions in shades of brown, purple, and yellow.</p>
<p>It is recommended that the conditions stipulate that the riparian planting is to be a minimum of 10m either side of the stream (total width 20 m)<sup>1</sup>. This is the minimum width required to ensure that stream function is restored. This is particularly relevant to the eastern bank of the stream, where it is proposed that material / overburden will be stored.</p>	<p>The applicant is happy to accept a condition stipulating that when Tributary 1 has been diverted, riparian margin planting along the lines of that proposed be completed.</p>	<p>Both parties agree on 10m riparian planting on either side of the bank.</p>
<p>It is recommended that the planting mix for the riparian margins is developed further than that presented in the EMP in Table 10. It is understood that the mix is focused on those species that</p> <p>will ensure rapid canopy closure. However, the objective of the planting is to provide instream shade in the long term, therefore, the species mix at the top of the embankment needs to be developed to include more tall tree species. The conditions should state that the planting mix will require prior approval from WRC.</p>	<p>The applicant is happy to accept a condition along the lines of that proposed.</p>	<p>Both parties agree: Updated planting plan required by consent condition – subject to council approval prior to implementation.</p>

<p>The EMP indicates that there is a section of stream where bank collapse means that plants will be set back from the stream. It is recommended that the conditions state that in areas of erosion or bank collapse the bank should be reprofiled to ensure that the streams natural function is restored on completion of the planting.</p>	<p>The applicant is happy to accept a condition along the lines of that proposed on the premise that the eroded areas be identified, defined and agreed by both parties.</p>	<p>Both parties agree: Prior to riparian planting being undertaken, a joint site visit will be undertaken by the project ecologist and WRC/WDC ecologist to agree on areas where stream reprofiling shall be undertaken. Reprofiling will be undertaken to ensure the long-term success of riparian planting.</p>
<p>However, it is recommended that the conditions stipulate that there will be additional buffer planting around these features, compared to that specified in the EMP. The buffer (&gt;5m) should</p> <p>include taller tree species and be placed between the wetland and the working area. The objective of the plantings would be to increase the potential for species such as New Zealand dabchick to visit them. It is considered that without this screening it is unlikely that these species would be visit.</p>	<p>The applicant is happy to accept a condition along the lines of that proposed on the premise that the areas be identified, defined and agreed by both parties.</p>	<p>Both parties agree on additional wetland buffer planting will be added on the sections of wetland facing the landfill. This is to be 5m wide above that which is detailed in the current project Ecological Management Plan.</p>
<p>It is recommended that the conditions also specify the inclusion of the following habitat enhancement measures for bats and lizards:</p> <ul style="list-style-type: none"> <li>- The installation of 25 Kent style bat boxes with predator exclusion bands. To be installed at least 5 m above the ground and on trees located at the forest edge or on a linear feature. If bats are found to be present, then the Bat Management Plan (BMP) will need to be updated to ensure that suitable mitigation is provided.</li> </ul>	<p>The applicant is happy to accept a condition along the lines of that proposed before commencing on either of Stages 2 and 3 (bat mitigation for Stage 1 has already been completed).</p>	<p>Both parties agree that Kent bat boxes are not justified. These will not be recommended.</p> <p>Both parties agree with installation of lizard habitat 5 log piles and woody debris to be recycled from SNA</p>

<ul style="list-style-type: none"> <li>- Installation of lizard log piles within the northern corridor (minimum of 5).</li> </ul>		
<p>The following management plans will be produced by the applicant and approved by WRC;</p> <ul style="list-style-type: none"> <li>- Bat Management Plan</li> </ul>	<p>The applicant is happy to accept a condition along the lines of that already proffered, namely:</p> <p>“Additional acoustic bat monitoring surveys should be undertaken before the commencement of clearance at Stage 2 and 3 respectively. If bat activity is detected, then bat management will be recommended at the discrepancy of a competent bat ecologist. This may require the preparation and implementation of a bat management plan.”</p>	<p>Both parties agree on the following:</p> <ul style="list-style-type: none"> <li>- Re-survey of each stage (1-3) no less than 1 week prior to felling.</li> <li>- Updated EMMP to include details of vegetation removal protocol should this be required.</li> <li>- Requirements for a bat management implementation will be determined by the project bat ecologist.</li> </ul>
<ul style="list-style-type: none"> <li>- Fish Management Plan</li> </ul>	<p>The applicant has already proffered a condition requiring a Fish Management Plan.</p>	<p>Both parties agree on the FMP already provided in the project EMP.</p>
<ul style="list-style-type: none"> <li>- Lizard Management Plan</li> </ul>	<p>The applicant is happy to accept a condition along the lines of that proposed.</p>	<p>Both parties in agreeance of additional survey effort to be undertaken (no less than 2 additional nights spotlighting and three checks of artificial cover objects and manual searches).</p> <p>Lizard management plan (LMP) to be triggered should lizards be detected during these supplementary surveys. LMP should outline methodologies to search for and relocate lizards into retained habitat of equal or greater habitat on-site.</p>
<ul style="list-style-type: none"> <li>- Erosion and Sediment Control Plan</li> </ul>	<p>The applicant has already prepared and lodged an ESCP for Stage 1, which has been accepted by WRC and is being implemented by the applicant. F</p> <p>Further, the applicant has already proffered conditions requiring ESCPs to be prepared for Stages 2 and 3 respectively.</p>	<p>Both parties agree. To be provided to WRC/WDC in advance of earthworks/vegetation clearance activities in each subsequent stage.</p>