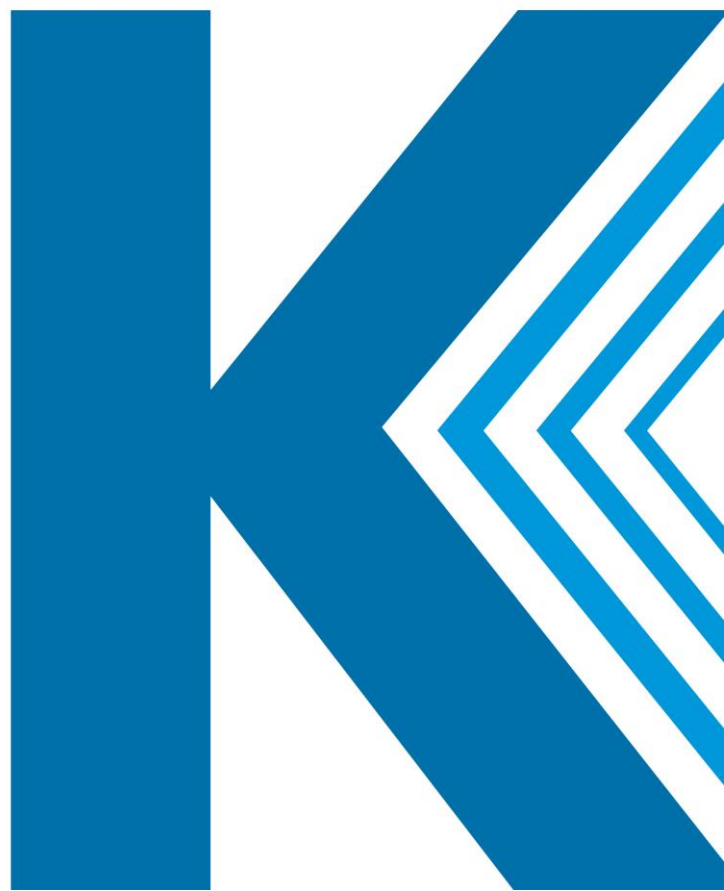




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McPherson Resources Limited

# Resource Consent Application & Assessment of Environmental Effects – Updated Post- Lodgement



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**McPherson Resources Limited**

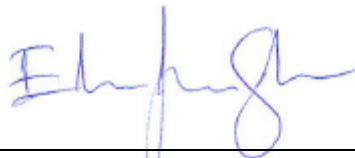
## Resource Consent Application & Assessment of Environmental Effects – Updated Post-Lodgement

**Date** 12 December 2019

**Kinetic Environmental Ref** McPherson Quarry

**Version** Updated Post Lodgement

**Prepared by:**



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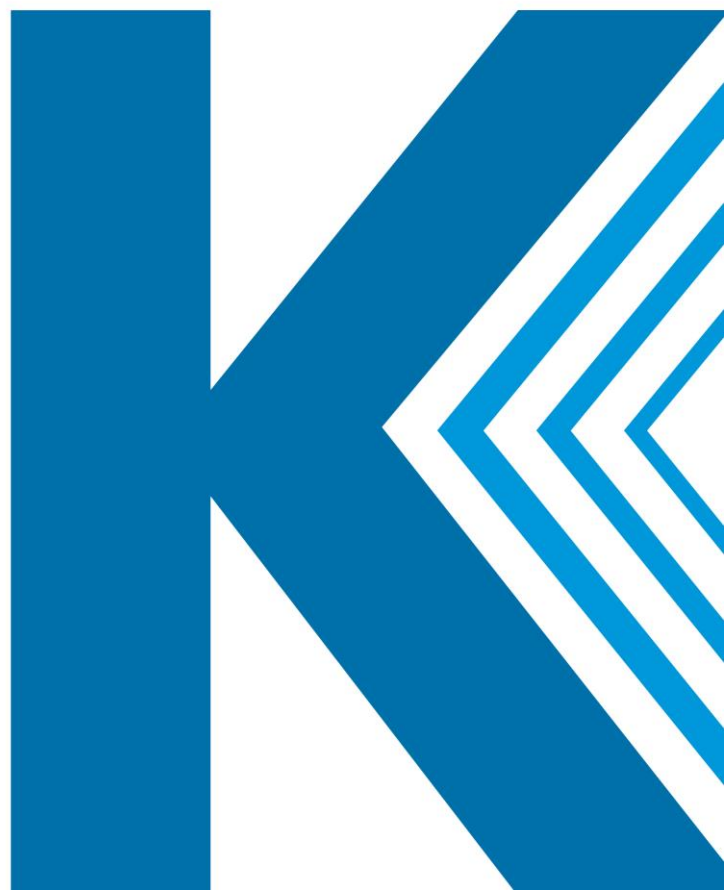
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# 1 Introduction

Kinetic Environmental Consulting Limited (Kinetic Environmental) on behalf of McPherson Resources Limited (McPherson) seeks approval for the operations (existing and future) at the McPherson Quarry, being a weathered greywacke quarry located on McPhersons Road off State Highway 2, in the vicinity of Pokeno (Map reference NZMS: S12 915-411).

McPherson are applying for resource consents to carry on with its existing operations as well as to support a future expansion of the quarry activities. This report describes the nature of the proposal and assesses it against the relevant provisions of the relevant planning instruments and the Resource Management Act 1991 (RMA).

This report and Assessment of Environmental Effects (AEE) has been prepared in accordance with section 88 and Schedule 4 of the RMA.

## 2 Site and Area Description

The subject site is located at the end of McPherson Road, Mangatawhiri, situated northeast of Pokeno. McPherson Road intersects with SH2 approximately 3 km east of the SH1/SH2 interchange. The quarry is owned and operated by McPherson and is made up of the following properties (refer to **Figure 1**):

- CT NA2D/412 (McPherson)
  - Allot 22 PSH of Mangatawhiri
  - Allot 139 and 140 PSH “
  - Allot 161 and 163 PSH “
- CT NA2D/497 (McPherson)
  - Allot 162 PSH “
- CT NA2D/961 (McPherson)
  - Allot 164 PSH “
- CT NA423/102 (McComb – written approval)
  - Allot 159 and 160 PSH of Mangatawhiri
- CT NA577/25 (McComb – written approval)
  - Allot 23, 24, 26, 130, 132, 133 Sbrn Sec 1 PSH of Mangatawhiri



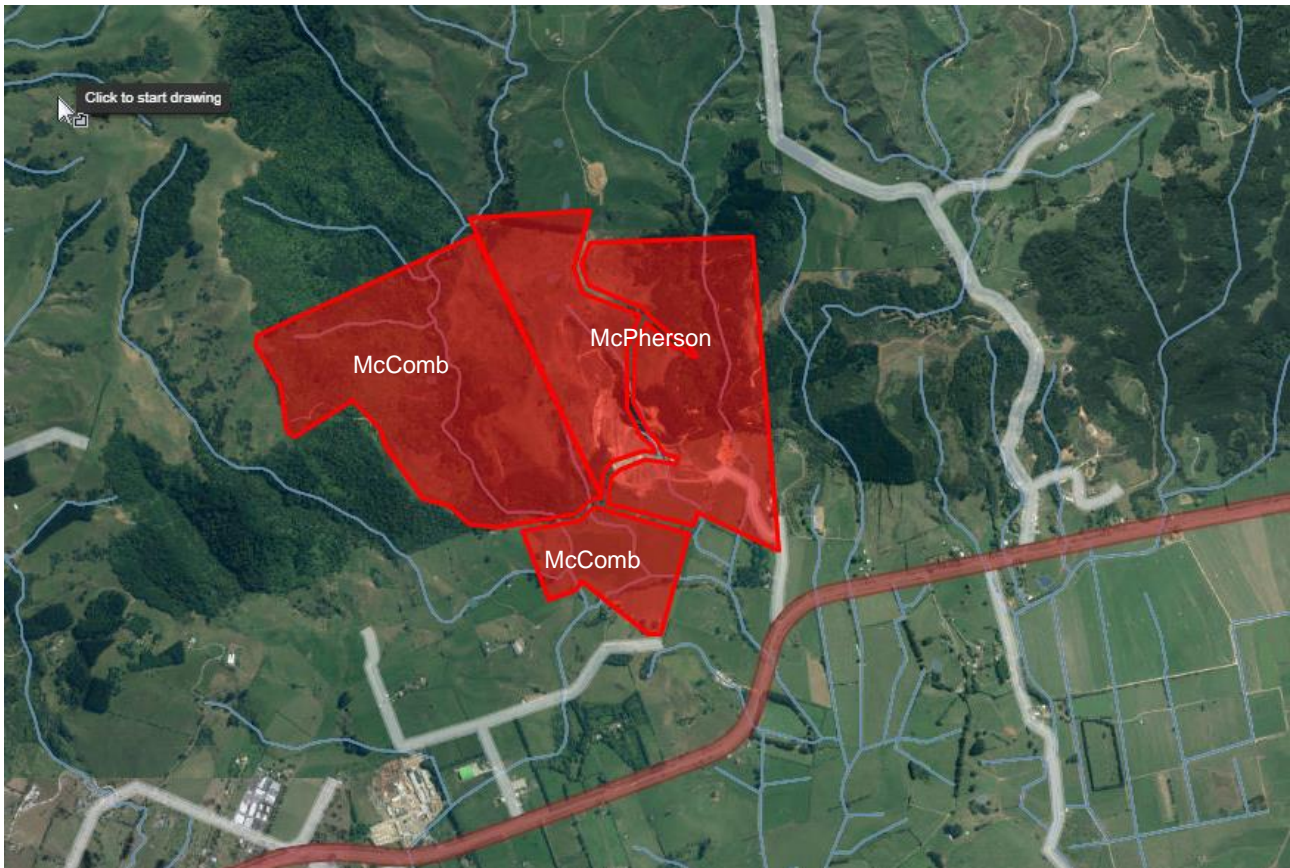


Figure 1: Site Location and Surrounding Area

The site has a total area of 156.8 ha (McPherson land = 58 ha, McComb = 98.8 ha) and contains a mix of vegetation, with forests on the hillsides to the east and west, and pastoral land on the flat land to the south. The quarry is situated in a rural environment in the foothills of the Bombay Hills and in the south-west area of the Hunua Ranges, with Mt William Walkway to the west and Pouraureroa Stream to the east. The quarry itself and the surrounding area contain several swales, natural watercourses, overland flow paths and culverts. A number of existing man-made ponds are also present across the site. These are primarily recreation and/or animal watering ponds. The southern end of the site contains two existing sediment control/treatment ponds.



The area surrounding the quarry is primarily used for farming purposes, with some lifestyle blocks located around the site. **Figure 2** below shows the key features of the quarry.

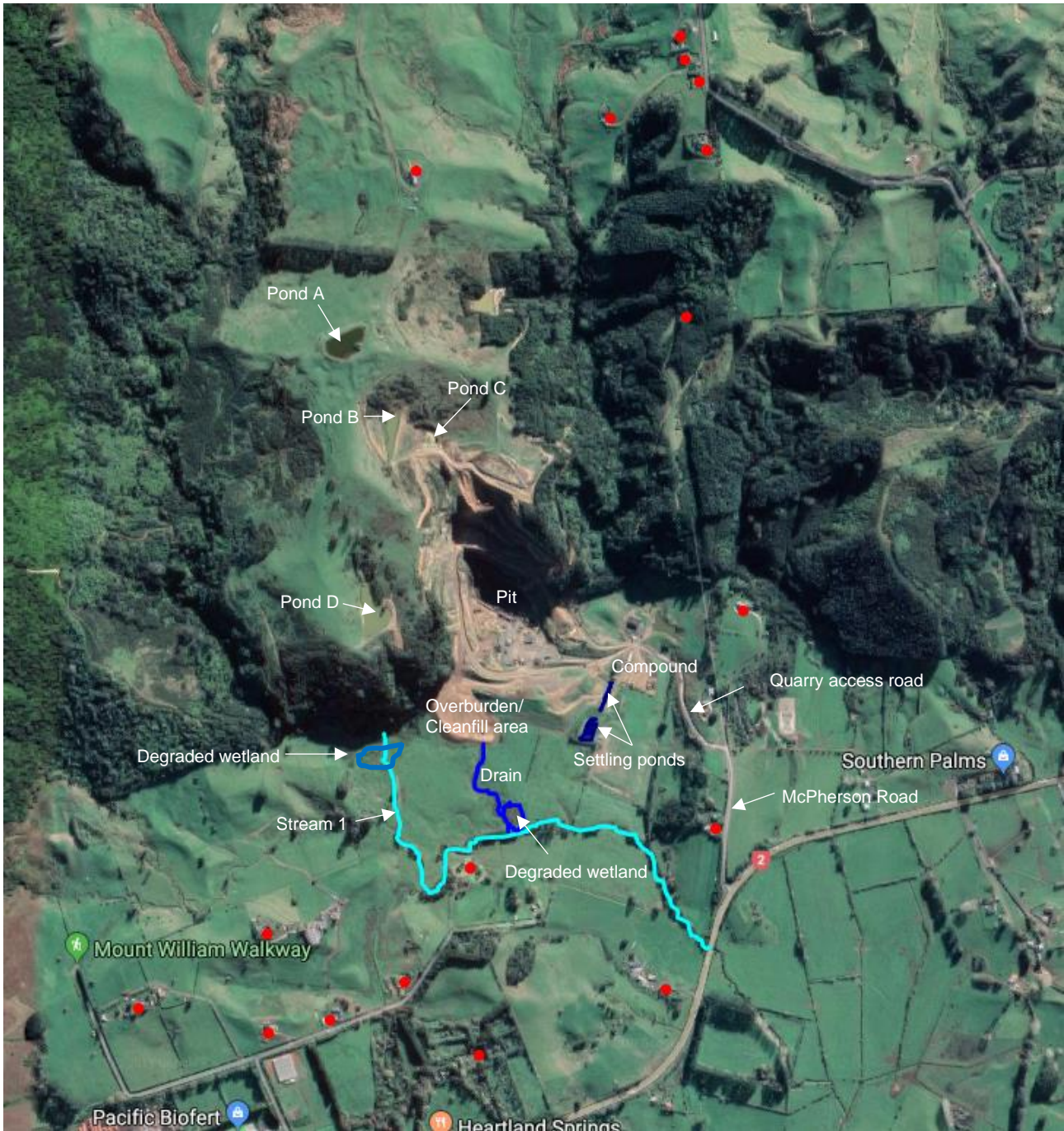


Figure 2. Site and surrounding area (Note: Red dots = Dwellings)

Areas of the site have been identified as Significant Natural Areas (formerly known as Significant Natural Features), largely as a result of the area acting as habitat for the king fern and forming part of the southern limit of taraire puriri forest. The quarry is surrounded by a large amount of indigenous forestry or shrub, particularly to the west/north-west (approx. 2.2 km<sup>2</sup> of contiguous forest) and east/north-east (approx. 15.96 km<sup>2</sup> of contiguous forest) of the site.

In terms of existing internal stormwater management, runoff from the central pit and quarry face is directed through a culvert system with a proportion being collected in two 19,000 litre tanks. This water is then used for dust suppression across the site and the overflow from these tanks is directed into the existing settling pond on the south-east margin of the site, before discharging to Stream 1 (refer to **Figures 2 and 10** for more details on this system). From the drain system, the water flows approx. 540 m to a tributary of the Waipunga Stream, which flows to the wetland area adjoining the Mangatawhiri River approximately 3 km to the south.

The McPherson Road/SH2 intersection, being the access point from the nearest main road, is a priority controlled “T” intersection with traffic movements on SH2 having priority. SH2 at this location is comprised of one-through lane in each direction. No right turn bay is provided into McPherson Road.

## 3 The Proposal

### 3.1 Background

#### 3.1.1 Existing Quarry Operations

The existing quarry is a relatively small-scale operation which has been part of the local landscape for over 60 years. The site is located away from a large viewing audience, with good access to SH2. The quarry includes a series of cut faces and benches with haul roads and man-made watercourse diversions and ponds. The processing and stockpiling activities take place on the quarry floor. A number of buildings are also located near the floor of the quarry and with the exception of the highest quarry faces, the operation is largely unseen from beyond the site.

The quarry extracts weathered greywacke and has been doing so for many decades (largely under existing use rights). As a result, a large amount of the topsoil and overburden has been removed across the site, meaning that reasonably large rock faces are exposed. The rock is stripped using conventional quarrying techniques (such as blasting or with an excavator, the latter being the most common option as much of the sourced material is brown rock) with material being loaded at the rock face and then put through a sizing screen and crushing plant. Following this, the material is stockpiled or removed offsite depending on demand.

Any removed overburden which is not immediately sold is hauled to the dedicated disposal area located to the south of the quarry pit, where it is compacted and contoured. The McPhersons try to on-sell as much of the overburden as possible, which keeps the overburden disposal to a minimum. However, the ability to sell cleanfill/overburden is dictated by market demand, which means that at times of low demand, the overburden disposal area is more intensively used.

Over the last few years, there have been some minor changes to the onsite stormwater system due to a necessary expansion of the stockpile areas. As briefly touched on in section 2, runoff from this area (which includes some naturally occurring spring water from the quarry face) is directed through a buried culvert after which a proportion of the water flows into two 19,000 litre tanks. This water is used for dust suppression with any overflow being directed into a settling pond/treatment system before being discharged to an unnamed tributary of the Waipunga Stream.

In 2017 the quarry transported approximately 330,000 tonnes of quarry material out of the gate and in 2018 approx. 320,000 tonnes extracted and exported from the site.

While the quarry has largely been operating under existing use rights (save for the consents referred to in section 3.1.2 below), the intention of this application is to formally legalise the quarry’s operations under the RMA by applying for all requisite resource consents (both from Waikato District Council and from Waikato Regional Council).

#### 3.1.2 Existing Consents

The existing resource consents for the quarry operations relate to water extraction (AUTH116085.01.01) and water discharge (AUTH116015.01.01) granted in 2007. As explained, the water extracted is derived from a natural spring and collected in two large tanks before being used.

The above consents were applied to be renewed pursuant to section 124 of the RMA in November 2017. These applications are currently on hold pursuant to s 91 of the RMA. As a result, this report covers these consent applications as well and provides additional information to allow the applications to be assessed as part of the whole suite of consents required.





## 3.2 Future Quarrying Operations

### 3.2.1 Staging

In addition to its existing operations, the applicant also seeks consent for the expansion of the quarry operation with the intention of allowing an extraction rate of 490,000 tonne of quarry material annually. The proposed expansion will happen over three stages as described below. In addition to the properties owned by the McPhersons, properties owned by Ian McComb (a relative of the McPhersons) will also be used during the expansion stages of the quarry (refer **Figure 1** above).

Stage	Summary	Details
1	Expansion of the existing quarry to the north and west, with a minor expansion to the east, resulting in the removal of 2.08 ha of indigenous vegetation (which is within the SNA layer).	<p>The Stage 1 expansion footprint is approx. 10 ha (with existing operations taking up approx. 8-8.5 ha) and includes a 2.08 ha block of indigenous forest which sits in the south-west edge of an extant regenerating manuka shrubland and mixed hardwood/podocarp forest. The removal of bush will be against a backdrop of the remaining existing bush.</p> <p>The total cut design volume for Stage 1 is estimated as approx. 10,495,000 m<sup>3</sup>. The overburden is estimated at 2,477,000 m<sup>3</sup>, out of which up to 1,733,900 m<sup>3</sup> will be kept onsite (depending on sales), based on a conservative retention estimate of 70%. As noted, the McPhersons will on-sell as much overburden as possible, meaning that in reality (based on site history) the disposal site is likely to contain much less than 70% of the overall overburden volume.</p> <p>Road vehicle and construction compound parking areas are stabilised with aggregate and include table drains and drainage outlets.</p> <p>As the expansion to the west and east is within areas that already drain away from the quarry, clean water diversion drains are not required. The area to the north does not extend to the top of the catchment and therefore requires a clean water diversion drain to divert clean water away from the main quarry pit. An ESCP prepared by Southern Skies includes a proposed location and design for a clean water drain, running along the northern boundary for Stage 1 and eventually reaching Pond D (situated within the Stage 3 footprint). Further, the stormwater assessment prepared by (then) Opus contains details of the proposed external drainage design, including clean water diversions, bunds and cut off drains.</p> <p><i>Note: The ESCP prepared by Southern Skies replaces the internal drainage solutions proposed by Opus' ESCP, whereas the external design solutions remain as proposed in the hydraulics report prepared by Opus (now WSP).</i></p>
2	Expansion to the north and west of Stage 1 with the inclusion of a water diversion channel, removal of Pond B and implementation of a small bund above the quarry face.	<p>Stage 2 will occur in a heavily modified landscape and has several vehicle access tracks and a constructed pond (Pond B). The vegetation is dominated by pasture with clumps of wiwi.</p> <p>Stage 2 will cover approx. 9 ha and the total cut design volume is estimated at approx. 8,251,000 m<sup>3</sup>. The overburden is estimated at 3,700,000m<sup>3</sup>, out of which an estimated 2,590,000 m<sup>3</sup> will be kept onsite (depending on sales), based on a conservative retention estimate of 70%.</p> <p>Pond B sits within the footprint of Stage 2 so will need to be removed. While no detailed plans for stormwater treatment and/or an ESCP have been made for Stage 2, the hydraulics assessment prepared by (then) Opus contains some preliminary design options for the external drainage elements, which includes clean water diversions, bunds and cut off drains. Before embarking on Stage 2, the applicant proposal to prepare a detailed ESCP, to be reviewed and certified by WRC.</p> <p>Pond A is to remain and will not be touched. A small catchment to the south west of this pond drains towards the pit. Therefore, a small cut off drain is required to divert the clean water away from the pit excavation. As the flows are relatively small, we</p>

		are proposing dissipation via a level spreader. Stage 2 reduces the total catchment and therefore also reduces the flows.
3	Expansion to the west. Vegetation removal is largely pasture and gorse. Small stand of 0.37 ha indigenous (outside of the SNA) to be removed.	<p>Stage 3 is grazed throughout and consists of primarily pasture with a large area of gorse.</p> <p>Stage 3 will cover approx. 12 ha of land and the total cut design volume is estimated at approx. 12,124,000 m<sup>3</sup> (over the course of up to 30 years). The overburden is estimated at 1,873,000 m<sup>3</sup>, with an estimated 1,297,100 m<sup>3</sup> to be kept onsite, based on a conservative estimate of retention of 70%.</p> <p>While no detailed plans for stormwater treatment and/or an ESCP have been made for Stage 3, the hydraulics assessment prepared by (then) Opus contains a diagram which outlines some preliminary design options for the external drainage elements, which includes clean water diversions, bunds and cut off drains. Before embarking on Stage 3, the applicant proposal to prepare a detailed ESCP, to be reviewed and certified by WRC.</p>
Overburden and cleanfill	Disposal of overburden and cleanfill will occur to the south of the open quarry	<p>The combined overburden/cleanfill area is located to the south of the existing quarry and comprises just under 12 ha. The land is generally flat, with some minor undulations towards Stream 1, which ring-fences the entire area.</p> <p>Overburden and cleanfill will fill this area up to a depth of 40m and will comply with the design proposed by HD Geo in the Earthfill Methodology (more on this in section 3.2.3 below).</p>

**Figure 3** below shows the proposed staging, the overburden/cleanfill area and the Significant Natural Areas/SNA (in blue). Please note that some minor changes to the stage boundaries have been made post-lodgement in order to achieve the required faces and benches, as well as to ensure that the SNAs areas on the south-east corner of Stage 1 and eastern side of Stage 3 are avoided.



Figure 3. Staging Plan (NOT TO SCALE)

### 3.2.2 Earthworks and vegetation removal

In a general sense and applying to all stages, the quarry face will be cut and benched as the quarry expands. Vertical faces will be a maximum of 15 m high with a 7.5 m wide bench, in accordance with Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016 (Mining Regulations). The scale of the benching and cutting is smaller than some of those currently existing in the quarry, based on the fact that for a period of time, the Mining Regulations did not include maximum vertical face heights, but these were later reintroduced. The faces which fail to meet the Mining Regulations will be amended as part of the continued quarrying to ensure that the maximum face heights are met.



The time period for the expansion is not definitive and is expected to take a number of years, depending on the volume of resource and market demand. As an indication, Stage 1 and 2 is likely to take 10-15 years (or 5-8 years respectively) and Stage 3 up to 30 years (meaning 45 years all up for the three stages).

The applicant engaged (then) Opus International Consultants to prepare a Vegetation Assessment Report, which is attached as **Appendix J**. Following lodgement of the application, WRC also requested that an ecological assessment be provided, which was subsequently completed by Ecology NZ and is also attached as **Appendix J**. The Ecological Impact Assessment (EIA) was peer reviewed by AECOM, after which Ecology NZ's original report was amended and an Ecological Management Plan (EMP) was prepared, which is attached as **Appendix K**.

### 3.2.3 Overburden and Cleanfill Disposal

As the quarry expands soil and overburden will be stripped, a process which is required to expose the rock for quarrying. This will be carried out using a combination of hydraulic excavators, front-end loaders, dump trucks and bulldozers. All recoverable soil will be stored on-site for future rehabilitation uses. As noted earlier, overburden which is not saleable will be relocated to the overburden area, with material being transported within the site by dump truck. Overburden will be placed on land to the south of the quarry area, identified in **Figure 4** below.

As noted above, the applicant is applying for an extraction and movement rate of 490,000 tonnes annually from the quarry. In addition, the applicant seeks resource consent for importing cleanfill to accommodate a demand for cleanfill disposal in the local area. Cleanfill will enter the site on trucks intended on collecting quarry material. As such, some trucks arriving to the site to collect aggregate, will transport cleanfill into the quarry after which they will load up with extracted quarry material and leave the site. In conclusion, the total number of trucks to and from the site will be the same as if all trucks arrive to the site empty and there will be no additional traffic movements generated by the proposed cleanfill activity.

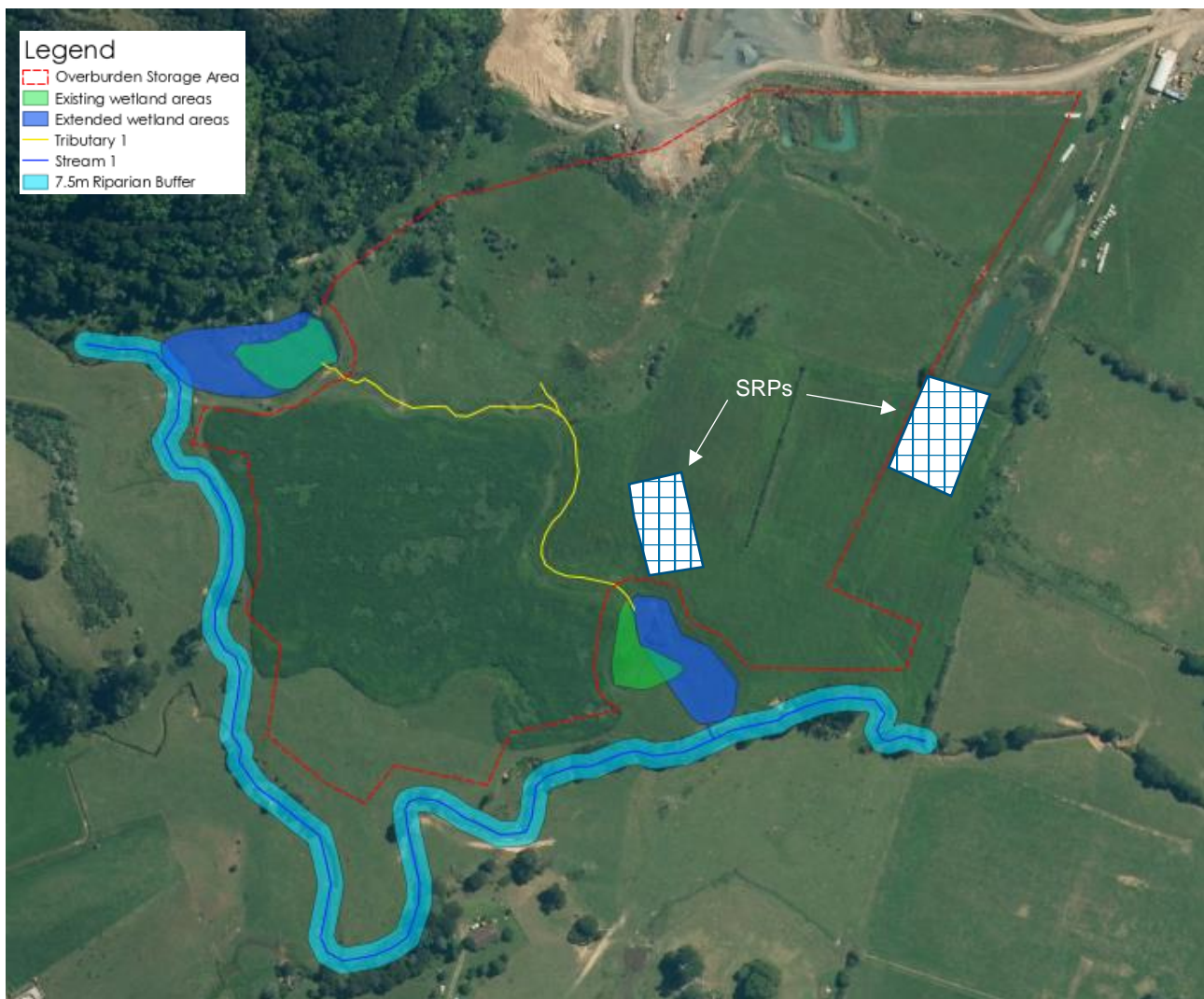


Figure 4. Approximate Overburden and Cleanfill Disposal Area (NOT TO SCALE)



The overburden area will extend to within approx. 20 m of Stream 1 which runs around the site (in blue on Figure 4). The drain running through the area (in green on Figure 4) will be diverted through the proposed wetland to the north, to ensure any adverse environmental effects (such as erosion and sediment) are avoided.

The applicant engaged HD Geo (specialists in geotechnical engineering) to carry out an assessment on the geotechnical characteristics of the overburden/cleanfill area and to prepare an Earthfill Methodology to minimise any risks of slope failure and erosion in the final landform. This report is attached as **Appendix M** and includes the following observations and recommendations;

- The proposed fill disposal area is situated over flat or gently sloping ground at less than 5 degrees. Topsoil across the site is thin with no indications of weak or near surface saturated soils;
- Little to no site preparation is likely to be necessary for most of the fill disposal area (except for if areas of weaker or saturated soils or seeps are encountered, in which case undercutting or subsoil drains may be required)<sup>1</sup>;
- Removal of unsuitable soils and installation of suitable subsoil drainage should be included where the fill area is to pass over the tributary;
- General overburden fill is to be placed as follows:
  - o Spread fill in thin horizontal layers;
  - o Track roll using a D10 bulldozer;
  - o All surface water from the fill disposal area should be collected and directed to suitable sediment control structures (note that this follows the methods dictated by the WRC approved ESCP in Appendix F);
  - o The fill surface shape should be maintained so that it has a slight slope toward a water diversion channel that collects surface flows and directs them to the sediment control ponds;
  - o Temporary batter slopes should be formed clean and straight to assist with monitoring;
- Imported cleanfill (which is highly variable in nature and can be saturated) should be spread in thin layers (approx. 300 mm thick) between layers of overburden fill or thoroughly mixed.

The Earthfill Methodology further determines that fill disposal within 20 m of the final landform shell will require more careful site preparation and placement methodology to ensure long term stability. As such, the following is recommended:

- Stripping of topsoil and/or other unsuitable material.
- Topsoil depths in the order of 0.2 m thickness expected.
- Import and spread into thin (0.3m) horizontal layers and compact with bulldozer by track rolling using minimum D10 dozers;
- 'Overfill' the final landform then cut back to shape. Benches should include a slight slope back to the toe of the batters above to collect water into open channel drains;
- Plant and maintain vegetation (e.g. grass, shrubs) on benches and batter slopes.

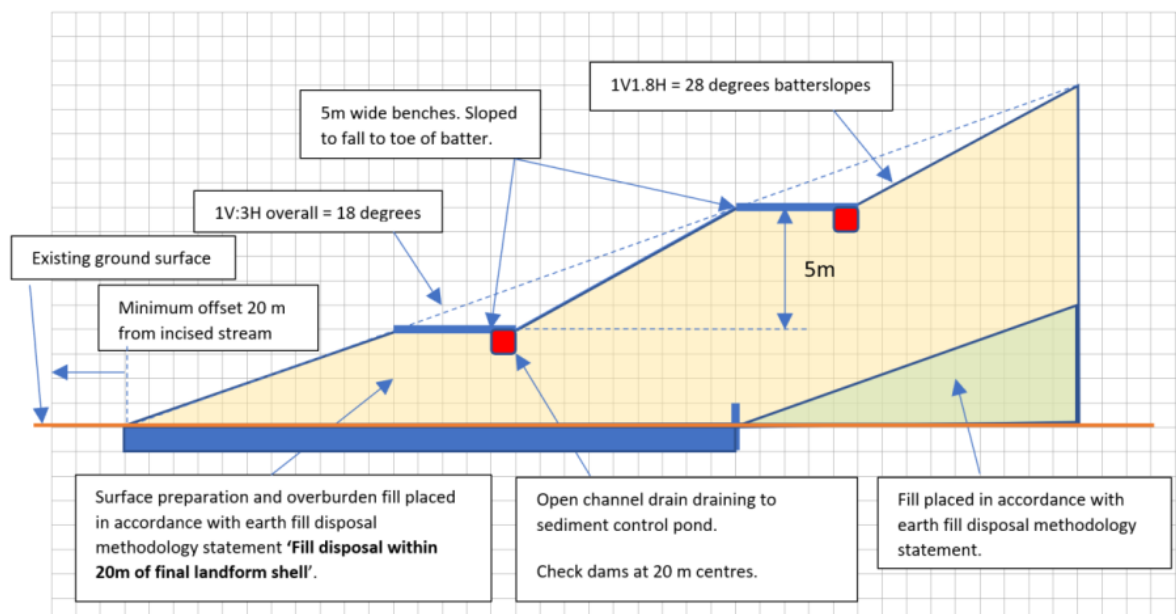
While the final landform has not yet been designed, the following recommendations will be taken into account when doing so:

- A minimum offset of 20m from the incised stream which bounds the disposal area;
- 1V:3H (18 degree) maximum overall slope;
- Minimum 5m wide benches at maximum 5m lift heights;
- Maximum of 5m high batters at maximum 1V:1.8H (28 degrees);
- Benches falling towards a suitably sized open channel drain located at the toe of the fill batter slope above;
- Channel drains should be formed to direct the collected water to the sediment control ponds;
- Check dams included in channel drains at 20m intervals to reduce velocities.

Below is a schematic of the final landform layout copied from the Earthfill Methodology.

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<sup>1</sup> The intention is to divert the Tributary through the improved wetland but based on the characteristics of the area taken up by the Tributary, it is accepted that this method is still required for land stability purposes.



The Earthfill Methodology further includes a Trigger Action Response Plan (TARP), which identifies a range of geotechnical risks as well as responses to address those risks (not repeated herein).

### 3.2.4 Volume of Earthworks

In terms of the volume of work involved in each stage, refer to the tables below (prepared by Mansergh & Graham Landscape Architects). These figures are conservative estimates and may vary over time (particularly with respect to the overburden disposal onsite, which is determined by market demand and will therefore fluctuate as more or less is sold).

**TABLE A - OVERBURDEN CALCULATIONS USING STRIPPING ABOVE RL118**

	Stage 1 (m <sup>3</sup> )	Stage 2 (m <sup>3</sup> )	Stage 3 (m <sup>3</sup> )	Total (m <sup>3</sup> )
<b>Total Volume of Design (m<sup>3</sup>)</b>	10,495,000	8,251,000	12,124,000	<b>30,870,000</b>
<b>Volume above 118RL (Stripping)(m<sup>3</sup>) (Total A)</b>	2,477,000	3,700,000	1,853,000	<b>8,030,000</b>
<b>Overburden disposal onsite (approx. 70% of max overburden)</b>	1,733,900	2,590,000	1,297,100	<b>5,621,000</b>
<b>Volume below 118RL (m<sup>3</sup>)</b>	8,018,000	4,551,000	10,271,000	<b>22,840,000</b>

**TABLE B - OVERBURDEN CALCULATIONS USING AVERAGE STRIPPING DEPTH OF 15M**

	Stage 1 (m <sup>3</sup> )	Stage 2 (m <sup>3</sup> )	Stage 3 (m <sup>3</sup> )	Total (m <sup>3</sup> )
<b>Total Volume of Design (m<sup>3</sup>)</b>	10,495,000	8,251,000	12,124,000	<b>30,870,000</b>
<b>Surface Area*</b>	109,332	142,590	183,010	<b>434,932</b>
<b>Volume if Calculated as average depth</b>	1,639,980	2,138,850	2,745,150	<b>6,523,980</b>
<b>Overburden disposal onsite (approx. 70% of max overburden)</b>	1,147,986	1,497,195	1,921,605	<b>4,566,786</b>

\* Assume 60% of 273330m<sup>2</sup> already stripped for Stage 1

For the purposes of this report, volumes have been determined using Table A (being the most conservative and therefore representing the 'worst case' scenario). In saying that, it is anticipated that stripping depths are closer to 15 m, as outlined in Table B, in which case these figures will be more accurate than those in Table A.

### 3.2.5 Stormwater

Provisions will be made to establish methods to ensure that long term management of stormwater run-off minimises the risk of soil erosion and sediment discharge from the rehabilitated land. The details of the stormwater design have not yet been finalised beyond Stage 1, as it will depend on the proposed erosion and sediment control (which the applicant proposes be determined and designed in advance of each stage commencing). In saying that, preliminary external stormwater/drainage solutions have been prepared for all stages and are included in the assessment prepared by (then) Opus. The key preliminary design elements can be summarised as follows:

Asset	Stage 1	Stage 2	Stage 3
Existing Pond A	Operational	Operational	Operational
Existing Pond B	Operational	Removed	
Existing Pond C	Removed		
Existing Pond D	Operational	Operational	Removed
Clean water diversion drains 1.1 , 1.2, 1.3.1-1.3.3	Constructed	Removed	
Clean water diversion drains 2.1-2.2		Constructed	Removed
Clean water diversion drain 3.1			Constructed

Figures 5-8 below shows the preliminary stormwater solutions proposed by Opus (refer to **Appendix E** for more specifics). Note that these plans were created before the minor alterations to the Stage boundaries and the updated ESCP (prepared by Southern Skies), which explains any discrepancies in boundaries as compared to those in Figure 3.

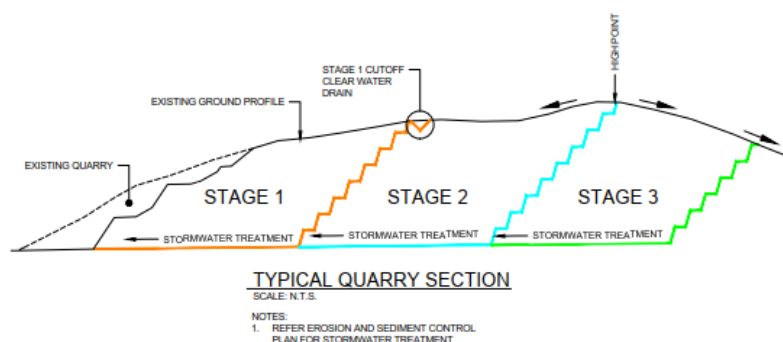


Figure 5. Typical quarry section for stormwater treatment



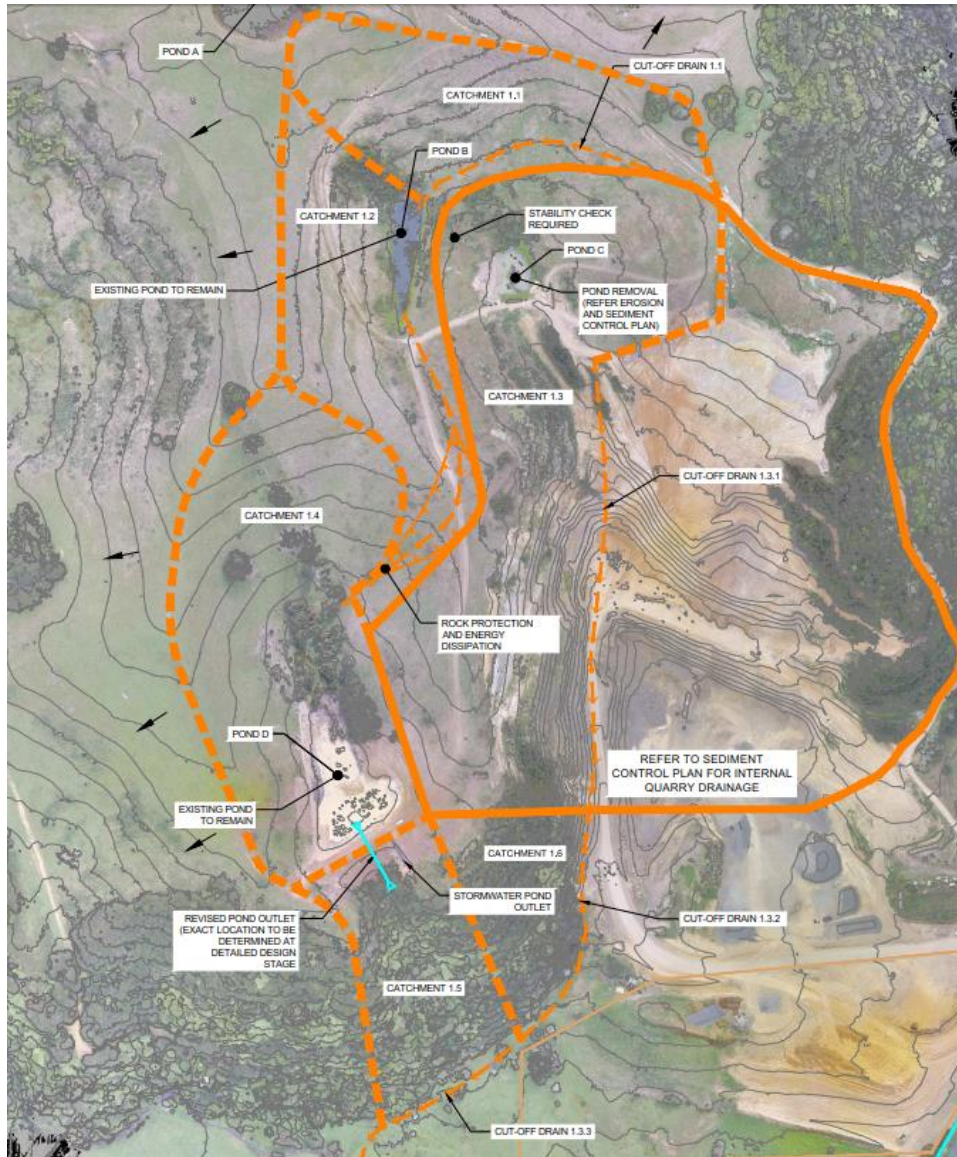


Figure 6. Proposed stormwater solution – Stage 1

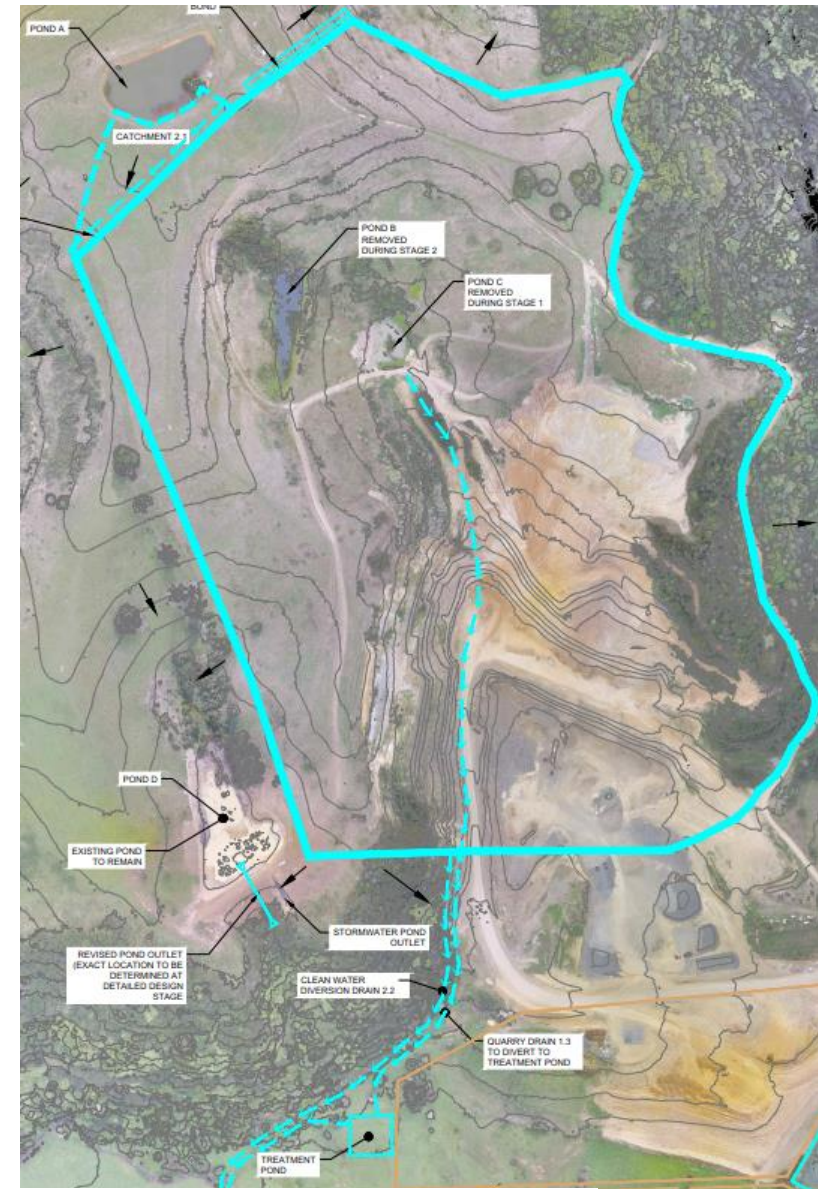


Figure 7. Proposed stormwater solution – Stage 2





**Figure 8. Proposed stormwater solutions – Stage 3**

As can be seen from the above, the clean water diversion will be channelled through the proposed wetland (noted as 'Treatment Pond' on the drawings) which will ensure that all water discharging into Stream 1 is treated appropriately (insofar as treatment is required). Stream 1 is the receiving environment for the watercourses within the Site, being a permanent, hard-bottomed stream forming the southern border of the quarry.

Because of the uncertainty surrounding appropriate stormwater controls for Stages 2 and 3, it is proposed that conditions be imposed which require the applicant to prepare a detailed stormwater design for these stages at an appropriate time, which would then require the review and approval (in a technical certification capacity) of WRC.

### 3.2.6 Erosion and Sediment Control

In response to an audit carried out by WRC, the applicant engaged Southern Skies to prepare an updated Erosion and Sediment Control Plan addressing the current operations as well as Stage 1, refer to **Figure 9** and **Appendix F**. The key methods for Stage 1 include two sediment retention ponds, perimeter bunds, a T-bar decant system, a riser on the quarry floor, shaping and grassing of completed disposal areas (overburden and cleanfill), and standard monitoring and maintenance measures. These proposed controls have been implemented by the applicant and the new erosion and sediment control system will be in operation as soon as the ponds have been excavated (being the only element not yet constructed).

At this stage, the applicant has not prepared a detailed ESCP for Stages 2 and 3, due to the inherent uncertainties of what will be required 10-20 years in the future insofar as erosion and sediment control is concerned. In saying that, the applicant has prepared a Concept ESC Design for Stages 2 & 3 (refer **Appendix G**). As it is, the ESCP design approach for all stages is primarily focused on development activity (topsoil and overburden removal), with an emphasis on sub-catchment staging and use of localised sediment retention ponds (SRP's) for overburden removal and stockpile activity.



Because of the uncertainty surrounding appropriate erosion and sediment control in Stages 2 & 3, the applicant proposes that a consent condition be imposed requiring the preparation of a detailed design for these stages at an appropriate time, which would then require the review and approval (in a technical certification capacity) of WRC.



Figure 9. Erosion and sediment controls for Stage 1

### 3.2.7 Water Take and Use

The quarry requires water for dust suppression, which is currently carried out under the existing water take consent which allows for a water extraction rate of 50 m<sup>3</sup> per every 24 hours.

The water enters the quarry and collates in the quarry floor/pit. The water itself is surface water consisting of rainwater and a small natural spring located at the north of the quarry. From the quarry floor/pit the water moves through a buried culvert, which is capped by a 300mm riser (creating additional decanted storage during rain events) and a t-bar decant, which increases the runoff detention time within the pit during heavy rainfall. This water is eventually collected in two 19,000 litre tanks with any excess water (i.e. when the tanks are full) being diverted to the existing settling ponds (soon to be discontinued when the new SRPs are in operation). This water feeds the 10x sprinklers stationed along the access road to the quarry as well as the water cart and the 20x transportable sprinklers. **Figure 10** below shows a simplistic schematic of the water collection system.



**Figure 10. Water collection system**

It is important to remember that dust suppression (being the only water use) is only required for those areas of the quarry which are exposed/open, dry and operated on with wheeled machinery. What this means is that water suppression is not required every day.

### **Existing water infrastructure**

As alluded to above, the quarry has 3 lots of x10 sprinklers (1 lot being stationary, 2 lots being transportable) but based on the capacity of the water pump, only 10 sprinklers run at any given time. In addition, the applicant has one watercart which is used to water areas which are not easily accessed by the x20 transportable sprinklers. The ten stationary sprinklers are placed along the entrance road to the quarry (refer to **Figure 11** below).

The watercart and the transportable sprinklers are used to water the quarry haul roads, open areas being worked on and overburden/cleanfill area (the latter only as required, given that this area is regularly compacted, which reduces the need for water suppression). For a brief explanation of how often and in what way water is used throughout the quarry, see below.

### **Water use**

The sprinklers run (on average) for approx. 7 mins x 6 times per day (or once every 45 mins). For all sprinklers, that represents a total running time of 2.1 hrs/day. Each sprinkler head uses water at a rate of 0.7 m<sup>3</sup>/h. With one lot of 10 sprinklers running (again, based on pump capacity the applicant can only run one lot at a time), the total water consumption is 7 m<sup>3</sup>/h.

Based on historical use, the sprinklers run on average 210 days/year, which excludes Sundays and 'wet' days (being days with 1 mm or more of rain<sup>2</sup>), when dust suppression is not required.

<sup>2</sup> Historical data covering the 10-year period from 1952 to 1961, being when the Pokeno weather station was still operating, shows on average 129 'wet' days per annum in that period, refer to [www.cliflo.niwa.co.nz](http://www.cliflo.niwa.co.nz). The figure of 210 days per year has been reached using the 129 days of 'wet' days, and adding 50% of all Sundays, taking into account that some 'wet' days would occur on a Sunday and



Haul roads and higher benches are suppressed with the water cart, which has a one-load capacity of 16 m<sup>3</sup>. When in use, the water cart is mostly used for three runs/day.

The watering/dust suppression requirements will remain the same as currently. The reason for that is that the size and number of open areas will remain 'as is' even when the quarry is expanded, due to restrictions regarding:

- the size of the quarry;
- the number of machines; and
- available staff.

In other words, the quarry will continue to operate on no more than three open areas per day and will continue using the same amount of haul roads (as old roads will be discontinued when new ones are created).

### **Water Harvesting**

As noted above, the quarry does not use water every day as the need to suppress dust only arises in certain circumstances (dry and/or windy conditions or if areas are being worked on). In that sense, while the quarry uses 'on average' 50 m<sup>3</sup> per day, that figure is based on the fact that some days no watering is required, whereas some days a great deal of suppression is necessary to control dust emissions.

As a way for the applicant to keep within the existing water take allocation, it is proposed that water is harvested in one of the following areas (refer to **Figure 11** below for locations):

1. Quarry pit;
2. Recreational pond on eastern side of the site; and
3. Current sediment ponds (to be commissioned once new SRPs are operational).

By harvesting water in this way, the applicant can control the water consumption and still keep within the 50m<sup>3</sup> daily allocation (by taking water every day, even when no water is required, and use more water on days when it is required).

Due to the particulars of this site and the fact that there is no requirement to pump water (which is collected by way of gravity), the applicant is currently investigating the type of technology and monitoring equipment available on the market to realise either of the above three harvesting options. What the applicant has in mind is a collection system that apportions the allocated 50 m<sup>3</sup> of water per day to the chosen collection site (1, 2 or 3), after which an automatic valve redirects/diverts the water back to nature. When water is required for dust suppression, it will then be taken from the chosen location (which will only contain the consented volume). Once more information comes to hand on the availability of such a system, we will provide WRC with a detailed proposal covering the location, harvesting capacity, type of collection system/technology and review/monitoring data proposed.

### **Dust Management Plan**

In addition to the above and in order to ensure that appropriate dust suppression measures are in place, the applicant has prepared a Quarry Management Plan which includes specific dust management measures, such as:

- Daily inspection of site entrance to remove debris;
- Weekly inspection of water cart;
- Use of water cart every day the quarry is operating, *unless* it is wet and/or raining;
- Water harvesting (meaning more water can be used as/if required);
- Daily (and repeated) inspections of McPherson Road to detect and, if need be, arrange for the removal of fines;
- Operation of water cart in overburden/cleanfill area during operation of machinery;
- Speed limits for trucks within the site and on McPherson Road;
- Maximum drop heights for material being loaded onto trucks;
- Daily monitoring of stockpiles and exposed areas (and stabilisation of the same, as required);
- Re-vegetation of overburden/cleanfill area at regular intervals.

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some would not. In this case and in the absence of data, the calculation therefore allows for only 26 of the available 52 Sundays in a year, which takes a conservative approach to how many Sundays would be 'wet'. A non-conservative approach would have subtracted all 52 Sundays from the calculation, reaching a total of 180 days per year requiring water suppression.





The QMP also includes a range of monitoring and contingency measures, all aimed at ensuring that there will be no objectionable dust beyond the site boundaries.

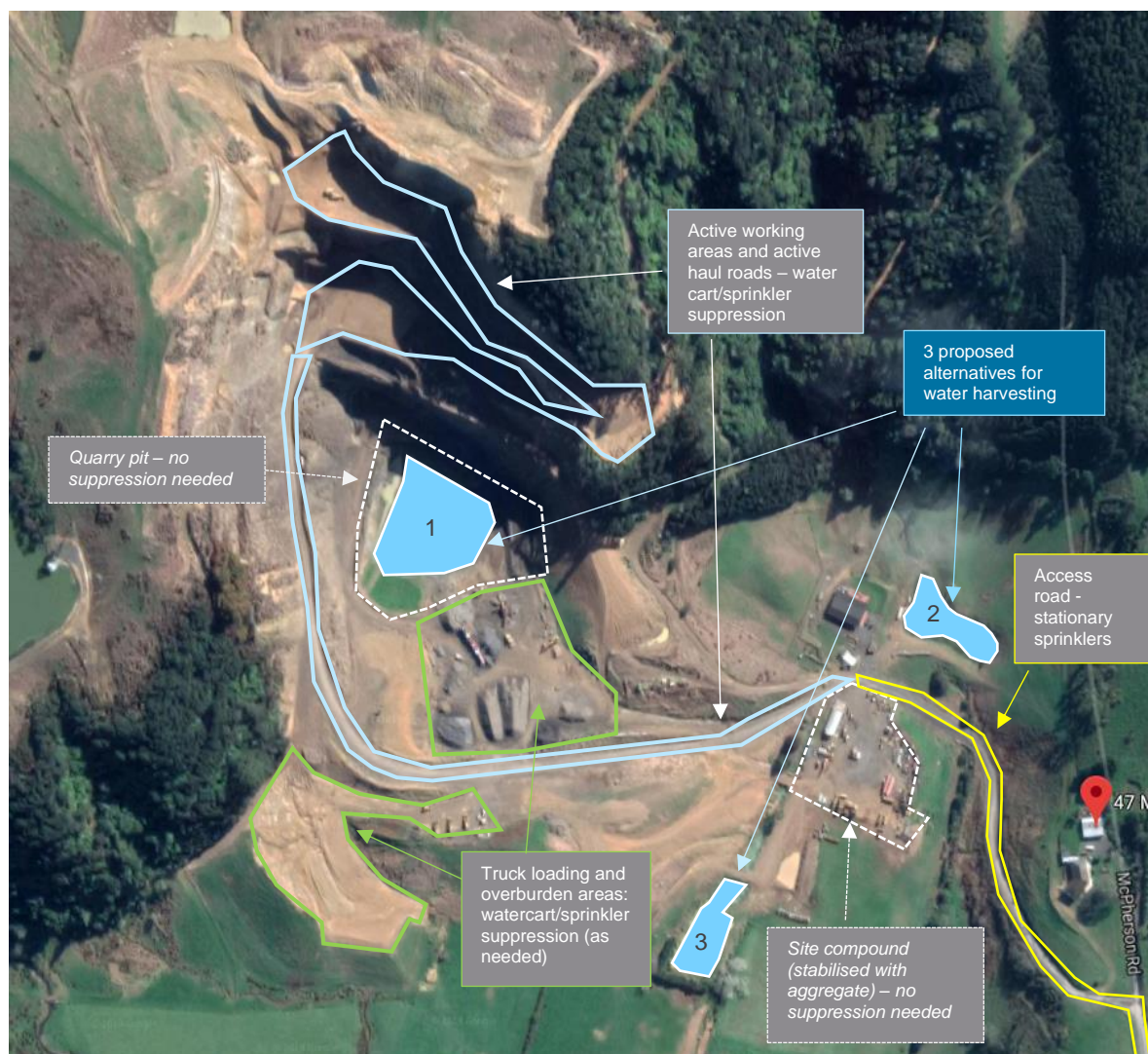


Figure 11. Example schematic of areas suppressed for dust (NOT TO SCALE)

### 3.2.8 Ecology

Upon receiving a further information request from Waikato Regional Council, the applicant engaged Ecology NZ to prepare an Ecological Impact Assessment report (EIA), which is **attached** as **Appendix J**. This report assesses terrestrial and freshwater ecology and the potential impacts of the proposal on the same. The findings of that report are outlined below.

#### Terrestrial Ecological Values

The EIA documented a total of 13 bird species, six of which were identified as native and the remaining seven as exotic. Two of the species are classified as At Risk (Recovering and Naturally Uncommon, respectively), being the dabchick and the black/little black shag.

Most of the site was assessed as low-quality habitat for birds, saved for the surrounding bush blocks.

A single possible long-tailed bat pass was detected on one of the ABMs during a three-week monitoring period. Potential bat roosting habitat was noted in the form of scattered large pine trees, along with some foraging sites along the bush edges and across small ponds within the site.

While some lizard habitat appeared suitable within the kanuka dominant bush block, the majority of the site presents low-quality habitat (being largely pasture grasses). It further noted that lizard records are limited in this area, with the closest being 12 km from the site. The lizard searches (through ACO checks and manual habitat searches) did not indicate the

presence of any native species, with only one plague skink observed. The conclusion being that should there be any lizards onsite, they may not be at a high enough population to allow detectability.

Based on the type of vegetation available onsite, the frog habitat is considered low-quality and no frogs were detected through manual searches and spotlighting.

Pest animals such as hedgehogs and mice were observed onsite, whereas species such as possums, mustelids, feral goats and pigs are likely present onsite.

### Freshwater Ecology

All watercourses and waterbodies within the site were also assessed, whether the impact will be direct or indirect. A summary of those findings is repeated in the table below.

Watercourse	Specifics	Assessment
Stream 1	Section of Waipunga Stream, being a tributary of Mangatawhiri River	<p>Permanent, hard-bottomed stream with well-defined banks (varying from 0.3m to several metres). Channel width varies between 3m and 6m with some evidence of scouring. There is an absence of complex riparian vegetation and stock has direct access in most places.</p> <p>High variation in hydrology and channel morphology, with woody debris present in places.</p> <p>The ecological function is High.</p>
Tributary 1	Permanent stream which flows out of the native bush below Pond 2, Connects to Stream 1 at the southern end of the site	<p>Permanent stream with both hard- and soft-bottomed characteristics. Shading varies from low to high and is largely provided by vegetation within the channel. Stock access is unimpeded throughout the tributary.</p> <p>The ecological value is Low.</p>
Outfall drain	Artificial channel flowing out of the North and South Ponds (likely constructed around the time of the North and South Ponds)	<p>Soft-bottomed drain with virtually no variation in channel morphology. Water depth is fairly uniform at around 0.2m with relatively poor shading (mostly provided by the steep banks). Direct stock access is possible along the length of the stream.</p>
North & South Ponds (sediment)	Sediment treatment ponds located at the south-eastern corner of the quarry	<p>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, the ponds are expected to be in a state of poor ecological function.</p> <p>The ecological value for both ponds is therefore Low.</p>
Pond 1	A narrow, artificial pond between 6 and 25m in width and approx. 1,800 m <sup>2</sup> , located above the current quarry extent with no apparent connectivity	<p>Predominantly open-water pond with very little shading, resulting in poor thermoregulation of the pond.</p> <p>The physical features and lack of connectivity means that it is unlikely that there will be significant migration of fish species into the pond, except possibly for eels (who can migrate overland).</p> <p>The ecological value is Low.</p>

Pond 2	A large artificial pond (6,500 m <sup>2</sup> , 130m long and 3m deep) with connectivity to the wider catchment	<p>This pond is divided into two sections, being north and south: the south being a larger open water area and the north being significantly narrower with shading provided by surrounding vegetation.</p> <p>Filtration activity provided by the riparian vegetation is poor.</p> <p>The ecological value is Low.</p>
Pond 3	The smallest of the three artificial ponds (800 m <sup>2</sup> ) located immediately north of the active quarry	<p>The southern edge of the pond is lined by bare earth with limited vegetation around it.</p> <p>The ecological value is Low.</p>
Wetlands	Two highly degraded wetlands along Tributary 1 (Upper and Lower)	<p>Both wetlands are classed as riverine marshes and are significantly degraded due to continued stock access, high water content within the surface soil and the presence of surface water indicating hydric soils.</p> <p>The ecological value of both wetlands is Low.</p>

### Fish and Aquatic Macroinvertebrates

A total of six fish species and one pest species were documented on site, including short- and longfin eel (in Ponds 1 and 2), common bully, īnanga and kōura (all in Stream 1), as well as banded kōkopu (in a tributary east of the existing quarry). Out of these, īnanga and longfin eel are listed as 'At Risk – Declining'.

Five species of native fish were discovered within the site, but the New Zealand Freshwater Fish Database confirms the presence of 13 native species within the Mangatawhiri River, meaning the potential presence of these fish have not been ruled out (especially from the lower reaches of the site).

The macroinvertebrate samples taken in Ponds 1 and 2, Tributary 1 and Stream 1 revealed varying results. The highest Macroinvertebrate Community Index (MCI) score was recorded in Stream 1, being 103.48 which indicates 'good' habitat quality. This stream also recorded an EPI score of 10 with almost half of the invertebrates found being of the EPT group.

The remaining three sites were sampled using a soft-bottomed methodology and therefore resulted in a corrected MCI score to allow for that (being soft-bottomed systems MCI or SBMCI). The below table confirms the scores for each of the sampled waterbodies.

Parameter	Pond 1	Pond 2	Tributary 1	Stream 1
Number of Taxa	12	7	17	23
EPT Value	0	0	3	10
Number of individuals	12	7	17	23
% EPT Taxa	0.00	0.00	17.65	43.48
Sum of recorded scores	49.00	30.00	71.00	119.00
MCI Value	81.67	85.71	83.53	103.48
Sum of abundance load	49.00	30.00	71.00	119.00



QMIC Value	4.08	4.29	4.18	5.17
SBMCI Value	63.50	47.43	86.00	N/A

### 3.2.9 Rehabilitation

Rehabilitation of the quarry will be implemented on completion. There is no definitive time for the rehabilitation to be implemented at this stage, but the intention is that a Rehabilitation or Closure Plan is prepared within 10 years of completion of stage 3. It is simply impractical to carry out restoration or rehabilitation of the quarry in advance of that, as the quarry will still be in operation (and subject to a wide range of health and safety restrictions, per the Mining Regulations). In saying that, the ecological corridor to the north will be established in advance of the removal of the SNA vegetation (more on this in section 6.9 below).

## 4 Activity Status

An assessment against the Waikato Regional Plan (WRP), the Operative Waikato District Plan – Franklin Section (ODP) and the Proposed Waikato District Plan (PDP) is outlined below.

### 4.1 Waikato Regional Plan

#### 4.1.1 Vegetation Clearance in High Risk Erosion Areas

All stages include the need to remove vegetation to some degree, the details of which are outlined in sections 3.2.1, 3.2.2 and 3.2.8 of this report and further explained in the Vegetation Assessment and Ecological Impact Assessment reports, refer **Appendix J**.

Chapter 5.1.4 of the WRP deals with soil disturbance and based on the characteristics of the land and the total volume of land affected, the vegetation clearance is a **Discretionary Activity**, pursuant to **Rule 5.1.4.15** of the WRP. This is because:

- The soil disturbance will exceed 1,000 m<sup>3</sup> in volume
- The area affected will be larger than 2 ha
- The cut slope batters will exceed 3 m in height over a cumulative distance exceeding 120 m in length (meaning it is a High Risk Erosion area)
- The vegetation clearance will exceed 5 ha

An assessment against Section 8.1.4.1 of the WRP follows below.

8.1.4.1 Soil Disturbance, Roading and Tracking, Vegetation Clearance and Riparian Vegetation Clearance	Comment
Volume, area, length and batter height of the proposed activity.	<p>Volume: Refer to section 3.2.4 of this report. It is noted that specific calculations of volumes of overburden and aggregate in High Risk Erosion areas have not been carried out, but stage specific volumes are provided within this report.</p> <p>Area: Approx. 30-31 ha will be affected by the proposed expansions (across all stages and not including the overburden area)</p> <p>Batter height: Vertical faces will be a maximum of 15 m high with a 7.5 m wide bench, which is in accordance with the Mining Regulations.</p>
The proposed start and completion times of the activity.	Works will start upon granting of resource consent and carry on for up to 45 years (an estimate based on perceived demand, but subject to change), with vegetation clearance and overburden works largely taking place within the earthworks season (between 1 November and 1 May).
Description of the topography, soil type and vegetation.	Refer to sections 2 and 3 of this report





<p>What effects the activity will have on the environment including:</p> <ul style="list-style-type: none"> <li>i. the potential effects on soil erosion, slope stability, adjacent water bodies and water quality,</li> <li>ii. the extent to which the activity will adversely affect areas of significant indigenous vegetation and significant habitats of indigenous fauna<sup>1</sup>,</li> <li>iii. the extent to which the activity will affect sites of significance to tangata whenua as Kaitiaki,</li> <li>iv. the extent to which the activity will affect neighbouring properties,</li> <li>v. the extent to which the activity will affect any lawfully established structure,</li> <li>vi. the effects on the uses and values of adjacent water bodies,</li> <li>vii. the effects on uses and values of adjacent water bodies as identified in the Regional Coastal Plan.</li> </ul>	<p>Refer to section 6 of this report</p>
<p>The design and construction methods to be used.</p>	<p>The design for Stage 1 is outlined in this report and the accompanying technical reports. Given that this is a quarry operation, it is different to a one-off construction project. In that sense, the relevant designs are those relating to erosion &amp; sediment control and geotechnical controls, which are both attached to this report. The specific methods proposed relate to erosion and sediment control. In that respect, the ESCP in <b>Appendix F</b> refers to the key ESC matters proposed to be implemented to ensure that the current quarry operations and those anticipated for Stage 1 appropriately caters for erosion and sediment control.</p> <p>In addition to the above, dust control management (through water suppression) is proposed and form part of normal quarry operations, refer to section 4.1.4 of this report for further details.</p>
<p>The method of vegetation clearance to be used.</p>	<p>The vegetation will be cleared using a combination of hydraulic excavators, front-end loaders, dump trucks and bulldozers to clear vegetation (using haul roads and benches for access to all areas). All recoverable soil will be stored on-site for future rehabilitation uses (refer to section 4.1.2 below).</p>
<p>Methods to control water and sediment run-off from the site.</p>	<p>The general erosion and sediment control construction sequencing is set out in <b>Appendices F and G</b>.</p>

#### 4.1.2 Overburden Disposal

As noted above, the quarry operation produces overburden when removing topsoil and readying the land for aggregate extraction. A proportion of this overburden is then stored onsite, before being on-sold. The majority of the area used for overburden disposal is flat, pastoral land but a proportion is sloping/undulating, particularly at the northern end of the proposed overburden/cleanfill area. One watercourse/drain runs through the proposed area and, as such, it is intended that this stream be diverted so as to ensure that there is no risk of sediment being discharged into the watercourse. This is considered the most appropriate method given the state of the watercourse/drain (being poor and of low value) and because it is imperative that vehicles and excavators can move freely. In addition, for geotechnical stability it is important that the whole area can be used for overburden and cleanfill disposal. As a result, HD Geo have prepared an Earthfill Methodology for this area, refer to **Appendix M** for further details.

This activity fails to meet the conditions of Rule 5.2.5.2 in respect of volumes disposed of (being in excess of 5,000 m<sup>3</sup> over each 3-year period). As a result, the activity requires resource consent as a **Discretionary Activity** per **Rule 5.2.5.3** of the WRP. An assessment of the activity as against Section 8.1.4.3 is set out below.



8.1.4.3 Cleanfill, Landfill Overburden and Sediment/Vegetation Disposal Sites	Comment
Volume, area, length and batter height of the proposed activity.	<p>Volume: Refer to section 3.2.4 of this report, making reference to how much overburden will be kept onsite over the course of all three stages. As noted, these are 'worst case' estimates and it is therefore likely that actual volumes will be less (perhaps significantly so) as the applicant is proposing to on-sell as much as possible.</p> <p>Area: approx. 11.8 ha in total</p> <p>Batter height: Up to 40 m depth and approx. 28° batter slopes (18° overall slope), refer to Earthfill Methodology in <b>Appendix M</b>.</p>
The proposed start and completion times of the activity.	Overburden will be stored on the disposal site throughout the consent period as and when required (based on market factors and the ability to on-sell the same). As such, a conservative estimate would mean that the disposal site will need to be used as from the start of the consenting period (which will commence once consent is granted) for up to 45 years (covering the all three stages of the quarry operations).
Description of the topography, soil type and vegetation.	Refer to sections 2 and 3.2.3 of this report. For further details, refer to Earthfill Methodology report in <b>Appendix M</b> .
<p>What effects the activity will have on the environment including:</p> <ul style="list-style-type: none"> <li>i. the potential effects on soil erosion, slope stability (including the potential to exacerbate pre-existing deep seated land instability), adjacent water bodies and water quality,</li> <li>ii. the extent to which the activity will adversely affect areas of significant indigenous vegetation and significant habitats of indigenous fauna2,</li> <li>iii. the extent to which the activity will affect sites of significance to tangata whenua as Kaitiaki,</li> <li>iv. the extent to which the activity will affect neighbouring properties,</li> <li>v. the extent to which the activity will affect any lawfully established structure.</li> <li>vi. the extent to which the activity will affect any cave system, wetland or geothermal feature,</li> <li>vii. the extent to which the discharge will comply with the requirements of Policy 1 in Chapter 6.1 of this Plan with regard to objectionable effects from particulate matter,</li> <li>viii. the effects on the uses and values of adjacent water bodies,</li> <li>ix. the effects on uses and values of adjacent water bodies as identified in the Regional Coastal Plan.</li> </ul>	Refer to section 6 of this report.
The design and construction methods to be used.	Refer to comments in table 8.1.4.1 above.

Methods to control water and sediment run-off from the site.	Refer to comments in table 8.1.4.1 above.
The characteristics and sources of the material to be received at the site, and the measures to ensure that the material meets the definition of cleanfill or overburden in this Plan.	Quarry overburden is largely made up of clay loam sand, silt and clay fractions. As such, it meets the definition of 'overburden' in the WRP.
An assessment of the acid drainage potential of the material.	This is a quarry and not a mining site, therefore the overburden is untreated soil, sand and rock. As such, it does not contain sulphide minerals that cause acid drainage.
Methods to control airborne particulate matter.	The McPhersons use a range of dust management methods to control and contain any objectionable dust discharges within the property boundaries. This includes permanent sprinklers on the quarry driveway, use of a water cart on exposed roads and quarrying areas during the dryer months (as and when required) and avoiding any screening/crushing in dry, windy conditions.
Any measure necessary to rehabilitate the land following the completion of activity.	<p>A full detailed Landscape Mitigation and Rehabilitation Plan will be prepared for the rehabilitation of Stage 1 and 2 once the expansion moves on to Stage 3, as well as a separate plan for Stage 3 within 5 months of completion of works on site. In saying that, the mitigation planting proposed for the north of the site (linking the two SNA areas together), will rehabilitate some of the site and will be carried out while the quarry is still in operation. Likewise, so will the riparian margin planting of Stream 1, which is further discussed in section 6.9 below.</p> <p>The end-of-life Rehabilitation Plan discussed above will be prepared for the approval of both Councils at the appropriate time and will include:</p> <ul style="list-style-type: none"> <li>• An implementation strategy which identifies the timing of all mitigation and rehabilitation works within the quarry site;</li> <li>• Plant schedule with botanical names, common names, grades, spacings and numbers; and</li> <li>• A maintenance programme to ensure the successful establishment of the planting.</li> </ul>

#### 4.1.3 Cleanfill disposal

McPherson also seeks a resource consent to import cleanfill, which will be brought onto the site on trucks that are leaving the site with quarry material. It is anticipated that up to 100,000 m<sup>3</sup> of cleanfill will be imported onto the site per annum and disposed of in the area designated for overburden and cleanfill. As noted in section 4.1.2 above, this area has a gentle slope and is otherwise flat, meaning it is not a high-risk erosion area. As a result, resource consent for a **Controlled Activity** pursuant to **Rule 5.2.5.5** of the WRP is required. An assessment against Rule 5.2.5.5 is set out below:

Rule 5.2.4.4 – Large Scale Cleanfill Disposal outside High Risk Locations	Comments
a. Any discharge to air arising from the activity shall comply with the conditions and standards and terms in Section 6.1.8 except where the matters addressed in Section 6.1.8 are already addressed by conditions on resource consents for the site.	<p>The only air discharge will be dust, which will be appropriately managed through water suppression (as outlined in this report). These measures will ensure that the standards in Section 6.1.8 are met in the sense that:</p> <ul style="list-style-type: none"> <li>- No discharges beyond the boundary will have any adverse effects on human health or the health of flora or fauna;</li> <li>- Quarry operations do not result in odour discharges, objectionable or not;</li> <li>- The operations will not result in the discharge of particulate matters;</li> </ul>



	<ul style="list-style-type: none"> <li>- Given that dust will be suppressed by using sprinklers and a water cart as and when needed (particularly in dry weather), there will be no effects on visibility in the site or beyond the boundary; and</li> <li>- The operations will not give rise to accelerated corrosion or deterioration of buildings.</li> </ul>
b. Records of the source and composition of all material disposed of at the site shall be maintained and made available to the Waikato Regional Council upon request to demonstrate that only cleanfill as defined in the Glossary to this Plan has been received.	The applicant has prepared a Quarry Management Plan which contains methods regarding maintenance, monitoring and reporting for cleanfill, which will ensure that this standard is met.
c. The cleanfill has no acid producing potential.	No material with acid producing potential will be accepted on site.
d. The placement of the material shall be undertaken and maintained in manner so as to ensure its long-term stability.	As per the Earthfill Methodology in <b>Appendix M</b> , all cleanfill and overburden will be placed and managed in accordance with the measures outlined in said assessment, which will ensure long-term stability.
e. The activity shall not cause any increase in flooding on neighbouring properties.	The proposal includes appropriate stormwater and erosion/sediment management processes (outlined in sections 3.2.4 and 3.2.6 of this report), which will ensure that the quarry operations do not increase flooding on any neighbouring properties.
<b>Matters of control</b>	<b>Comments</b>
<ul style="list-style-type: none"> <li>i. Measures to ensure that the activity does not reduce slope stability, exacerbate preexisting land instabilities or constrict flood flows.</li> <li>ii. Measures to avoid, remedy or mitigate damage to riparian vegetation or soil.</li> <li>iii. Measures to avoid, remedy or mitigate damage to any lawfully established structures.</li> <li>iv. The location, timing of construction, design and density of soil disturbance activities and vegetation removal.</li> <li>v. Any measures necessary to rehabilitate the land following the completion of the activity.</li> <li>vi. The means of controlling effects on air quality from objectionable particulate matter.</li> <li>vii. Measures to avoid, remedy or mitigate the adverse effect of the activity on areas of significant indigenous vegetation, significant habitats of indigenous fauna<sup>15</sup> and significant natural features such as cave and karst systems and outstanding landscapes.</li> <li>viii. Effects on any waahi tapu or other taonga from the activity.</li> <li>ix. Effects on the relationship of tangata whenua and their culture and traditions with the site and any waahi tapu or other taonga affected by the activity.</li> <li>x. Effects on the ability of tangata whenua to exercise their kaitiaki role in respect of any waahi tapu or other taonga affected by the activity.</li> <li>xi. The quality of any discharges to water from the site.</li> <li>xii. Measures to monitor incoming material to ensure that only overburden is received.</li> </ul>	<ul style="list-style-type: none"> <li>i. As above, the measures proposed in the geotechnical assessment will ensure that slope stability in the cleanfill/overburden area is maintained.</li> <li>ii. The design of the disposal area is premised on the avoidance of the surrounding stream (the riparian margin of which will be planted). Tributary 1 will be diverted so as to ensure there is no risk of sediment disposal into the drain, which could otherwise happen. There are also a range of other environmental mitigation measures undertaken (refer to section 6.8 of this report) which will result in an overall net benefit to the environment.</li> <li>iii. As above.</li> <li>iv. These details are outlined, insofar as is possible, in this report and accompanying documents.</li> <li>v. The quarry is seeking consent to operate for a further 45 years, but it is anticipated that there is enough aggregate to continue quarrying in this location for significantly longer than that. In that sense, while it is accepted that rehabilitation upon completion will be required and is reasonable, it is difficult to pinpoint the specifics of what is achievable and beneficial that far into the future. In addition, based on the nature of quarrying/mining, partial or staged restoration is inherently difficult due given that the main quarry pit will remain largely in the same place (meaning restoration of that area cannot occur until it is no longer in use). In that sense, the applicant is happy to accept conditions requiring rehabilitation upon decommissioning the quarry.</li> <li>vi. Refer to section 4.1.4 below.</li> <li>vii. Approx. 2.08 ha of SNA will be removed (as part of Stage 1). This loss will be mitigated against through offset planting along the northern area of the site (refer to section 6.8 below).</li> </ul>

	<ul style="list-style-type: none"> <li>viii. Iwi have recommended a range of mitigation options to address their concerns, all of which have been accepted by the applicant.</li> <li>ix. As above.</li> <li>x. As above.</li> <li>xi. Stormwater is treated onsite, which ensures that any water discharges do not adversely affect the environment (refer to section 6.10 below).</li> <li>xii. As above, appropriate monitoring measures will be in place to ensure that only overburden and/or cleanfill is disposed of in the designated area.</li> </ul>
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#### 4.1.4 Air Discharge

The purpose of the quarry is to extract brown and blue rock aggregate to be used in local and regional infrastructure development. This fits the definition of 'mineral' per the WRP, being defined as:

*A naturally occurring inorganic substance beneath or at the surface of the earth, whether or not under water; and includes all metallic minerals, non-metallic minerals, fuel minerals, precious stones, industrial rocks and building stones and a prescribed substance within the meaning of the Atomic Energy Act 1945.*

Extracting aggregate naturally creates a level of dust insofar as open areas are concerned, but only in certain weather (dry, windy or through sustained drought). In that sense, Figure 12 below shows the dwellings located within 500m from the active quarry area (*Note: only parts of the area will be active at any given point, but in the interest of being conservative, the map includes all areas currently operating or which will be operating at some point in the next 45 years – including the overburden/cleanfill disposal area*).

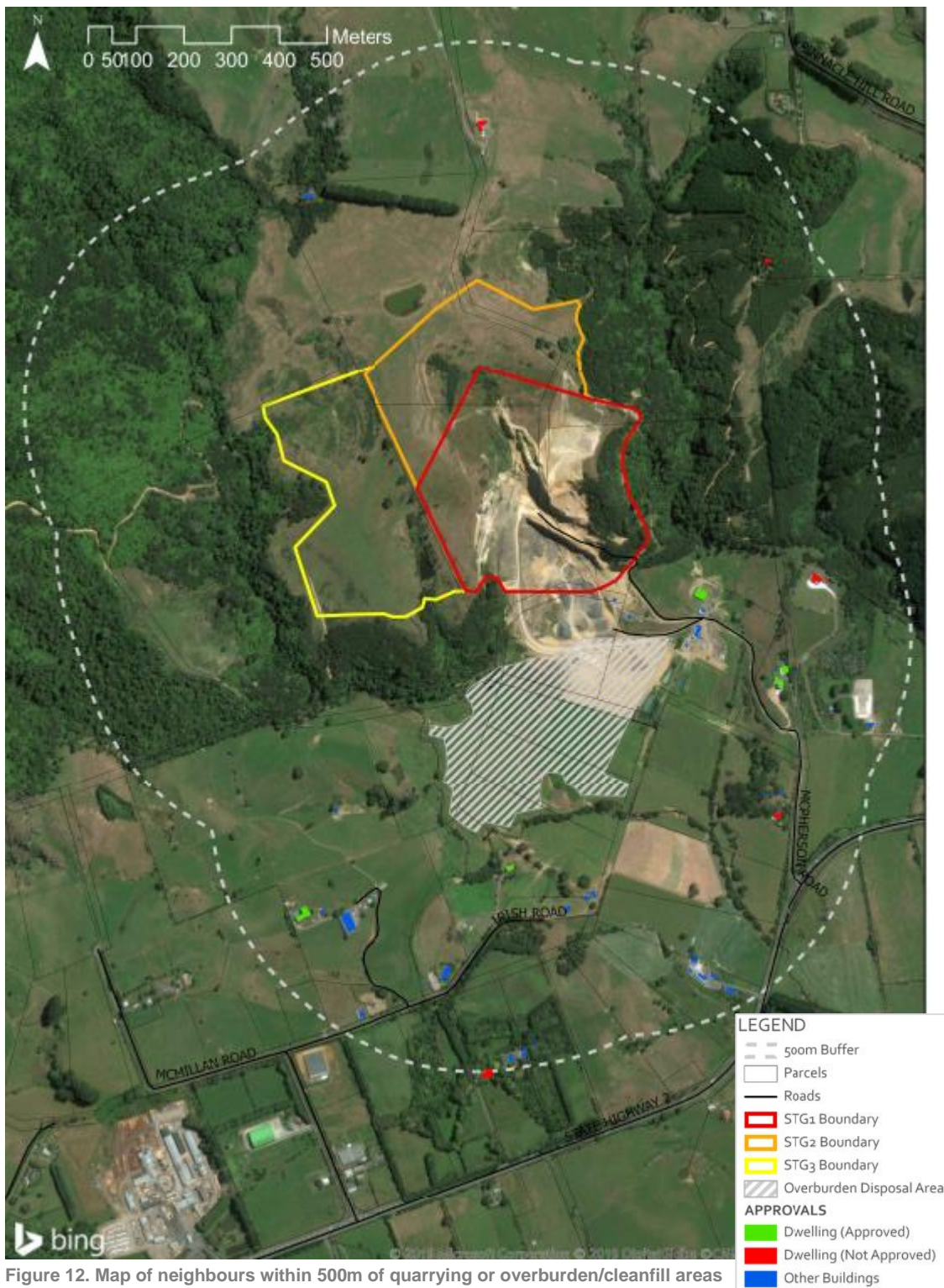


Figure 12. Map of neighbours within 500m of quarrying or overburden/cleanfill areas

Chapter 6 of the WRP applies to air discharges, with Rule 6.16.1 applying to mineral extraction activities. An assessment against that rule follows below.

Rule 6.16.1 Mineral Extraction, Size reduction, Screening and Storage	Comment
Where the operation occurs within 1000 metres of a property boundary and there is a discharge of	Because the operation occurs within 1,000 m of the property boundary, the quarry operations have for many years implemented measures to deal with dust suppression through use of water sprays and appropriate staging. Insofar as the access roads are located within 150 m of a residential dwelling



<p>particulate matter beyond the property boundary the following measures shall be implemented:</p> <ul style="list-style-type: none"> <li>i. the use of water sprays to suppress dust from crushing and screening plants, access ways, haul roads, stockpiles, load out areas and access roads</li> <li>ii. the sealing and maintenance of the access road, when it is within 150 metres of a neighbouring residential dwelling.</li> </ul>	<p>(which only occurs on McPherson Road) the road is sealed. All other residential dwellings are located in excess of 300-500 m away. In any event, the applicant has prepared a Quarry Management Plan which includes dust management methods, such as:</p> <ul style="list-style-type: none"> <li>- Stationary sprinklers along the access road to the quarry which operate throughout the day;</li> <li>- A travelling watercart of 16,000 litres which moves around the open areas of the quarry on an 'where-needed' basis;</li> <li>- Monitoring and follow up procedures in certain identified situations;</li> <li>- Appropriate stockpile management;</li> <li>- Avoidance of dust inducing activities in dry and windy weather.</li> </ul>
<p>As specified in Section 6.1.8 a) to e) of this Plan.</p> <p>Section 6.1.8 Standard Conditions for Controlled Activity Rules:</p> <ul style="list-style-type: none"> <li>a. There shall be no discharge of contaminants beyond the boundary of the subject property* that has adverse effects on human health, or the health of flora and fauna.</li> <li>b. The discharge shall not result in odour that is objectionable to the extent that it causes an adverse effect at or beyond the boundary of the subject property.</li> <li>c. There shall be no discharge of particulate matter that is objectionable to the extent that it causes an adverse effect at or beyond the boundary of the subject property.</li> <li>d. The discharge shall not significantly impair visibility beyond the boundary of the subject property.</li> <li>e. The discharge shall not cause accelerated corrosion or accelerated deterioration to structures beyond the boundary of the subject property.</li> </ul>	<p>The conditions in section 6.1.8 are all met in that the quarry activities do not result in discharge of any contaminants or objectionable odour or particulate matter beyond the property boundary. In addition, visibility is not affected or impaired as any dust creating activities are either appropriately mitigated through watering or work is stopped until such time as weather permits.</p> <p>As with other quarry operations around New Zealand, the McPherson Quarry operations will not lead to accelerated corrosion or deterioration of structures beyond the property boundary, as the stage boundaries are situated well within the legal property boundaries.</p>
<p>Within seven working days of commencing works at a new site, the operator of the new quarrying site shall provide the Waikato Regional Council with written notification of the location of the site.</p>	<p>N/A as the quarry has been operating at this site for over 60 years.</p>
<p>Should an emission of particulate matter occur that causes adverse effects of an objectionable nature beyond the property boundary as determined in accordance with the decision-making guidelines set out in Section 6.4.2.2, the quarry operator shall provide a written report to the Waikato Regional Council within five days of the incident occurring, which specifies:</p> <ul style="list-style-type: none"> <li>i. the cause or likely cause of the event and any factors that influenced its severity</li> <li>ii. the nature and timing of any measures implemented by the quarry operator to avoid, remedy, or mitigate any adverse effects</li> <li>iii. the steps to be taken to prevent recurrence of similar events.</li> </ul>	<p>The specifics of the dust measures outlined in the Quarry Management Plan (QMP), attached as <b>Appendix N</b>, include:</p> <ul style="list-style-type: none"> <li>- Daily inspection of site entrance to remove debris;</li> <li>- Weekly inspection of water cart;</li> <li>- Use of water cart every day the quarry is operating, <i>unless</i> it is wet and/or raining;</li> <li>- Daily (and repeated) inspections of McPherson Road to detect and, if need be, arrange for the removal of fines;</li> <li>- Operation of water cart in overburden/cleanfill area during operation of machinery;</li> <li>- Speed limits for trucks within the Site and on McPherson Road;</li> <li>- Maximum drop heights for material being loaded onto trucks;</li> <li>- Daily monitoring of stockpiles and exposed areas (and stabilisation of the same, as required);</li> <li>- Re-vegetation of overburden/cleanfill area at regular intervals.</li> </ul>

	<p>The QMP also includes a range of monitoring and contingency measures, all aimed at ensuring that there will be no objectionable dust beyond the Site boundaries.</p> <p>In other words, McPhersons employ suitable best, practice methods to deal with air discharges, meaning that emissions causing adverse effects are highly unlikely. However, should such complaints be received (and substantiated), McPherson will keep a record and provide the WRC with the requisite report.</p>
There shall be no discharges of hazardous substances into the air	N/A – these quarry operations do not result in any hazardous substances discharges.

In summary, any air discharges produced by the quarry operations meet the Permitted Activity conditions in Rule 6.16.1, meaning no consent is required for this activity.

#### 4.1.5 Surface Water Take

As noted in section 3.2.7 of this report, the quarry requires water for dust suppression and uses the allocated 50 m<sup>3</sup> per day, but not equally throughout the year (as some days no watering is required, whereas other days substantial watering is required). As a result, and in order to keep within the current water allocation, the applicant proposes to harvest water in one of the existing ponds on the site.

As explained earlier, the water collects in the quarry floor and is directed down culverts. A proportion of this water goes to the stormwater tanks and is used for dust suppression, with the rest of this water being directly diverted to the pond system and subsequently discharged to Stream 1. This site collects large volumes of water from surrounding watercourses and from rainfall, especially in large storm events. All of this water cannot be contained by the storage tanks alone, which can hold just under 40,000 litres at any given time. When water from the tanks is used throughout the day, the tanks are constantly replenished. In addition, water is proposed to be harvested in one of the existing ponds on the site, where water can be collected from on those days when additional water is required for dust suppression.

The applicable rule in the Waikato Regional Plan depends on an applicant's ability to show how the water take impacts on the primary allocable flows for the relevant catchment. The applicant has not completed the exercise to determine such flows, but it is understood that the Lower Waikato catchment is oversubscribed, meaning the availability of water during the dry months (October through April) is subject to a 'first in, first served' basis. As it stands and given that the applicant already has a consent to take 50 m<sup>3</sup> of water per day, the application to continue taking the same amount of water is to be determined pursuant to section 124 of the RMA (as the original application was lodged before the expiry of that consent).

In terms of the applicable rule in the Waikato Regional Plan and in the interest of covering all bases this report has been prepared on the basis of the worst-case scenario and, as such, the water take has been assessed as a **Discretionary Activity** (on the basis of this being a replacement consent for an existing activity) per **Rule 3.3.4.23**.

The use of the water for quarry processing purposes is not restricted by Rules 3.4.5.6, 3.4.5.7 and 3.4.5.8, so is a permitted activity in accordance with Rule 3.4.5.4, subject to compliance with the following condition:

*a. The use of water shall comply with the water management class standards in section 3.2.4 of this Plan.*

The use of water complies with the above condition in that, as detailed below, it does not contradict the Surface Water class standard set out in **section 3.2.4** of the Waikato Regional Plan.

Waikato Surface Water Class Standard	Comments
<p>The following shall not be allowed if they have any significant adverse effects on existing aquatic ecosystems:</p> <ul style="list-style-type: none"> <li>i. changes in dissolved oxygen</li> <li>ii. changes in flow regimes due to instream structures</li> <li>iii. changes in pH</li> <li>iv. increases in deposition of bed sediments</li> <li>v. increases in undesirable biological growths</li> </ul>	Not applicable – the taking of water will not result in any of these changes.



vi. discharge of a contaminant.	
As a result of added heat, the water temperature shall not be changed by more than three degrees Celsius.	Not applicable
All water intake structures shall be screened with a mesh aperture size not exceeding three millimetres in diameter at locations less than 100 metres above mean sea level, or five millimetres in diameter at locations greater than 100 metres above mean sea level.	As noted, the water is not extracted but rather collected (through gravity), as explained above. In saying that, the culverts are screened with a mesh, but this is to ensure that no rocks or other debris clog up the water collection system. In that sense, while the mesh aperture size exceeds the standard of 3mm diameter, given that there is no 'extraction' of water as such, there is no risk of fish entrainment due to mesh size. In fact, arguably it is better for the mesh to have a larger aperture size as it would ensure the safe passage of any fish that would find themselves in the water take system (which is highly unlikely).
The maximum intake velocity for any water intake structures shall not exceed 0.3 metres per second.	As noted, the water is not extracted but rather collected (through gravity). In that sense, the intake velocity matters less than in situations where water is pumped from a water source, which carries the risk of fish entrainment or other ecological impacts. In that sense, while the velocity of the water take has not been calculated, it is considered irrelevant for the purposes of determining environmental effects.
Any discharge into, or utilisation of, the water resource shall not cause a conspicuous change in visual colour or clarity.	Not applicable as the water is only used for dust suppression purposes, with all quarry runoff being collected in the water collection system.
The discharge of suspended solids shall comply with the standards in Section 3.2.4.5.	WRC has approved of the ESCP prepared by Southern Skies, which is intended to appropriately manage any sedimentation caused by quarry operations. As such, this standard will be met.
The water shall not be tainted or contaminated so as to make it unpalatable or unsuitable for consumption by humans after treatment (equivalent to coagulation, filtration and disinfection).	As above
The water shall not be tainted or contaminated so as to make it unsuitable for irrigation.	As above

#### 4.1.6 Discharge of Stormwater into Water

As noted in sections 2 and 3 of this report, runoff from the central pit and quarry face is directed through a culvert system with a proportion being collected in two 20,000 litre tanks. This water is then used for dust suppression and the overflow from these tanks is directed into the existing settling pond on the south-east margin of the site, before being discharged to a local drain system and then flowing 540 m to an outfall on the Waipunga Stream. This stream flows to the wetland area adjoining the Mangatawhiri River approximately 3 km to the south.

As explained in section 4.1.5 above, the discharge is intercepted and allowed to settle before this water enters the Waipunga Stream tributary. The water quality of this system has been monitored by WRC for many years and has consistently had a 'high' compliance rating or above. Therefore, there is no reason to consider that this discharge is no longer appropriate or compliant.

In summary, the proposed discharge of stormwater into water is a **Controlled Activity** under **Rule 3.5.11.7** of the WRP. The matters over which WRC has reserved control are:

- i. Measures used to control erosion or flooding:* This is dealt with in sections 3.2.6 and 6.10 of this report.



ii. *Measures to avoid, remedy or mitigate the effects of the discharge on the receiving water bodies:* This is dealt with in sections 6.9.2 and 6.12 of this report.

iii. *Measures for avoiding, remedying or mitigating the effects of maintaining stormwater treatment systems:* This is dealt with in section 6.11 of this report.

iv. *Information and monitoring requirements:* The existing discharge consent contains information and monitoring requirements which we understand have been complied with by the applicant.

v. *The degree of compliance with discharge or receiving water standards for any hazardous substance in relevant New Zealand Standards, Guidelines or licences issued under the Hazardous Substances and New Organisms Act 1996:* Not applicable.

#### 4.1.7 Diversion of Water

As outlined in the Hydraulic Analysis report (**Appendix E**) and the ESCP for Stage 1 (**Appendix F**), the proposed expansion will involve some clean and dirty water diversions of the existing drains (refer section 3 of **Appendix F**). While the catchment areas are all smaller than two square kilometres and it is not anticipated that any discharge will occur outside of the natural catchment of each drainage system, it is possible that the discharge may not meet the suspended solid standards set out in Section 4.2.21 of the WRP. Based on that, the diversions are not classified as a permitted but rather a **Discretionary Activity** pursuant to **Rule 3.6.4.13**.

This Rule also allows for any associated structure (such as culverts) to be constructed in the watercourse, meaning that no specific consent is required for the associated culverts required for the diversions.

#### 4.1.8 Summary of Waikato Regional Council Consents

The following is a summary of the consents required per the WRP.

- Vegetation clearance in High Risk Erosion areas – **Discretionary Activity**, pursuant to **Rule 5.1.4.15**
- Overburden disposal – **Discretionary Activity**, pursuant to **Rule 5.2.5.3**
- Cleanfill disposal – **Controlled Activity**, pursuant to **Rule 5.2.5.5**
- Surface Water Take - **Discretionary Activity** pursuant to **Rule 3.3.4.23**.
- Discharge stormwater to water – **Controlled Activity**, pursuant to **Rule 3.5.11.7**
- Diversions of water (clean and dirty) – **Discretionary Activity**, pursuant to **Rule 3.6.4.13**

## 4.2 Operative Waikato District Plan (Franklin Section)

#### 4.2.1 Extraction Industry

The Franklin Section of the ODP contains a separate chapter on 'Aggregate Extraction and Processing Zone' (Chapter 35). However, the McPherson Quarry is not identified as being in this zone but is rather located in the Rural Zone. In addition, it is subject to the following overlays:

- Identified Significant Natural Area
- Schedule 5A Site of Special Wildlife Interest
- Environmental Enhancement Overlay Area (Note: This area borders the quarry site but does not directly cross it)
- Ecological Corridor (Note: The corridor does not actually cross the site but is identified directly adjacent to the property on the north and north-west)

The following is an assessment of applicable rules under the ODP.

Rule	Analysis
23A.1.4 Discretionary Activities	<p>Mineral extraction and processing is defined as follows:</p> <p><b>MINERAL EXTRACTION AND PROCESSING</b> <i>means the excavation, blasting, processing (crushing screening, washing and blending), storage, distribution and sale of mineral products and includes ancillary activities such as earthworks, landscaping and rehabilitation works (including clean fill) and treatment of stormwater and wastewater, together with</i></p>



	<p><i>ancillary buildings and structures (including caretaker's accommodation). Franklin Section - Rules: Subdivision and Zones - Parts 22 to 55</i></p> <p>This is classified as a <b>Discretionary Activity</b>, meaning it must meet the applicable rules in Parts 7, 8, 10-12, 15, 22-23, 50-54 of the ODP.</p>
15.1.2.8 Cleanfill Deposition of more than 100 cubic metres	<p><u>Volume</u></p> <p>The applicant proposes to accept up to 100,000 m<sup>3</sup> of cleanfill per annum for the duration of the consent (i.e. up to 45 years). How much is received and deposited each year will be subject to market demand, but in the interest of certainty this application has been prepared on the 'worst case' scenario, being no more than 100,000 m<sup>3</sup> p.a.</p> <p><u>Vehicle generation</u></p> <p>The vehicle generation associated with the quarry operations is determined by the agreement reached with the NZ Transport Agency regarding total maximum movements per year. The volume of aggregate extraction sought as per the application (being 490,000 tonnes p.a.) determines the traffic movements agreed with the NZ Transport Agency. In order to stay within these parameters, cleanfill will only be brought in on trucks which subsequently leave with aggregate. As such, the traffic movements will remain the same, irrespective of how whether the full volume of cleanfill sought is accepted.</p> <p>Historically, the quarry has accepted approx. 5,000 to 10,000 m<sup>3</sup> of cleanfill per annum as a result of requests from local businesses. The main source of cleanfill has been from building sites around Pokeno and the greater Franklin area.</p> <p>The cleanfill is proposed to be disposed of in the same area as that identified for overburden on the attached Site Layout Plans. The reason being that cleanfill can be very wet, meaning it can be difficult to handle. By mixing it with overburden (which is dry), the material becomes easier to manage (including the effects of the same).</p> <p><u>Location, surrounding environment and access</u></p> <p>The overburden site is best suited for cleanfill and overburden material on the basis of its location in relation to the quarry operations (namely close enough to easily dispose of overburden but physically separated from the day-to-day operations) and its topography (i.e. largely flat with light undulation). It is also a site where effects can be managed to ensure that any nearby watercourses are not adversely affected. Importantly, the area can also be easily accessed by trucks entering and leaving site by using existing access roads. Refer to Earthfill Methodology for more details on the location and surrounding environment.</p> <p><u>Monitoring</u></p> <p>It is accepted that cleanfill needs to be monitored to ensure it meets MfE's Guide to Management of Cleanfill. It is proposed that conditions be imposed in relation to monitoring, such as frequency of sampling, analysis and record keeping of the same.</p> <p><u>Management Plan and Landscape Reinstatement</u></p> <p>The applicant has prepared a Quarry Management Plan (<b>Appendix N</b>) which addresses any environmental and geotechnical issues that may arise as a result of depositing material of this volume. That includes an Earthfill Methodology, dust management methods, traffic movements, erosion and sediment control measures and more.</p> <p>Due to the proposed mixing of cleanfill and overburden, the measure proposed in relation to landscaping and reinstatement in relation to the overburden (refer section 3.2.3 of the application) applies equally to the cleanfill.</p> <p>Insofar as rehabilitation is concerned, it is proposed that a detailed Rehabilitation Plan for the quarry be prepared within 10 years of all three</p>

	<p>stages being completed (being a more appropriate time to determine the specifics of any proposed rehabilitation).</p>
<p>15.5.2 Earthworks throughout the District</p> <p>15.5.2.1 All earthworks shall be undertaken with the establishment and maintenance of recognised methods and techniques for the retention of sediment on site and the prevention of discharges of sediment off-site or into waterbodies.</p> <p>15.5.2.2 Vehicle movements to and from the site or the location where earthworks are being undertaken shall not result in any material being deposited on a public road creating a hazard or a nuisance to road users.</p> <p>15.5.2.3 Standards for permitted activities</p>	<p>While the definition of 'Mineral extraction and processing' includes ancillary quarry activities and makes specific reference to earthworks, it is anticipated that Rule 15.5.2 still applies to the proposed activity based on this rule applying across the district.</p> <p>This report (and the technical reports supporting it) outlines the basics of the methods to be used to strip the topsoil and extract the rock from the quarry. In saying that, seeing as the quarry has been operating for more than 60 years, the methods used for earthworks are well established and are aimed at retaining sediment on site and preventing unsuitable discharge off-site or into water bodies. In saying that, in an effort to further ensure that appropriate measures are in place, the applicant will prepare a Quarry Management Plan which will outline the details of the construction methodology, as well as an Environmental Management Plan which will deal with specifics of dust and sediment control (insofar as one is identified as being required).</p> <p>All the overburden and rock are either stored onsite or removed offsite (through sale) and as such, no material is deposited on public roads.</p> <p>The total volume of earthworks for all three stages has been estimated to be 8,030,000 m<sup>3</sup> (per Table A in 3.2.4 above). The total area affected by earthworks is just over 30 ha, made up of:</p> <ul style="list-style-type: none"> <li>- Stage 1: 10 ha</li> <li>- Stage 2: 9 ha</li> <li>- Stage 3: 11.8 ha</li> </ul> <p>In addition, the overburden/cleanfill area (being 11.8 ha) will be subject to filling, which will involve minor levels of soil disturbance to ensure stability.</p> <p>The depth of excavations will be determined by the specific area worked on and the quarry operations will follow the Mining Regulations, meaning vertical faces of up to 15 m high with 7.5 m benches. The overburden/cleanfill area will be subject to the methodology and limitations set out in the Earthfill Methodology in <b>Appendix M</b>.</p> <p>On the whole, the quarry will operate in accordance with the proposed Quarry Management Plan. This follows accepted quarrying methods, including for stripping material/soil and implementing appropriate erosion and sediment control measures.</p> <p>The activity fails to meet the permitted activity standards and as such, is defined as a <b><u>Restricted Discretionary</u></b> activity per Rule 15.5.2(ii)</p>
<p>15.6.3 Vegetation clearance</p> <p>15.6.3.1 Permitted activities</p> <p>(x) Where any area of indigenous bush is over 1 hectare in area, the clearing of a single area or a series of smaller areas of indigenous bush to a maximum of up to 2.5% of the total area of the canopy of any contiguous area of indigenous bush and other indigenous vegetation as existed on a site as at 4 November 2009.</p> <p>(xi) The clearance of scattered stands of Manuka and Kanuka within areas of</p>	<p>As outlined in section 4.1.1 of this report, 2.45 ha of indigenous vegetation will be removed as a result of the expansion (2.08 ha in Stage 1 and the remaining 0.37 ha in Stage 3).</p> <p>The quarry is surrounded by indigenous forests, a large majority of which has been identified as SNA in the ODP. A small area of SNA would be cleared over the course of expanding the quarry (being the next 45 years), with the majority of the clearance happening in Stage 1 and 3.</p> <p>The indigenous areas to be removed form part of the larger area of contiguous indigenous bush around the quarry. As noted in section 2 of this report, the quarry is surrounded by contiguous indigenous forest on either side (2.2 km<sup>2</sup> and 15.96 km<sup>2</sup> respectively, or 1,816 ha in total). Of this larger area, approx. 23.4 ha is situated within the quarry site.</p> <p>As such, the removal of 2.45 ha of indigenous forest (a proportion of which is made of up scattered stands of Manuka trees, identified as 'Manuka shrubland')</p>



pasture which do not constitute indigenous forest.	<p>equals less than 0.00% of the overall area of indigenous forest (2.45 / 1,816 = 0.0013%) and 10% of the indigenous vegetation existing on site (2.45 / 23.4 = 10.4%).</p> <p>In summary, the proposal fails to meet the Permitted Activity standard, meaning that Rule 15.6.3.2 defines it as a <b><u>Restricted Discretionary Activity</u></b>.</p>
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In summary, the following consents are applied for under the ODP:

- Mineral Extraction and Processing – **Discretionary Activity**, pursuant to **Rule 23A.1.4**
- Cleanfill Deposition – **Discretionary Activity**, pursuant to **Rule 15.1.2.8**
- Earthworks – **Restricted Discretionary Activity**, pursuant to **Rule 15.5.2**
- Vegetation Clearance – **Restricted Discretionary Activity**, pursuant to **Rule 15.6.3.2**

### 4.3 Proposed Waikato District Plan

On 18 July 2018 WDC notified the Waikato Proposed District Plan (PDP) (Stage 1). Submissions close on 9 October 2018.

Notification of Stage 2 of the PDP will occur in 2019 and will include the Natural Hazards and Climate Change section.

In accordance with Section 86B(1) of the RMA, a rule in a proposed plan has legal effect only once a decision on submissions relating to a rule is made and publicly notified under clause 10(4) of Schedule 1, unless the rule has immediate legal effect in accordance with Section 86B(3).

The following rule has immediate legal effect, is relevant to the proposal and must therefore be complied with. No other rules have been considered on the basis that they do not have legal effect, are not relevant or have not yet been subjected to decision-making.

Rule	Comment
<p>22.2.3.3 Earthworks – Significant Natural Areas</p> <p>(a) Earthworks that do not comply with Rule 22.2.3.3 P1 or P2.</p> <p>(b) Council's discretion is restricted to the following matters:</p> <p>(i) The location of earthworks, taking into account waterways, significant indigenous vegetation or habitat;</p> <p>(ii) The effects on the Significant Natural Area.</p>	<p>The proposal fails to meet the permitted activity standard in Rule 22.2.3.3 P1 or P2, meaning it is defined as <b><u>Restricted Discretionary Activity</u></b> per Rule 22.2.3.3 RD1.</p> <p>The matters subject to Council's discretion are addressed in sections 3, 4 and 7 of this report and summarised below.</p> <p><b>Total volume of earthworks for SNA:</b> The SNA affected is a historical overburden area which has been allowed to regenerate over the years, meaning it is relatively young and immature indigenous vegetation. While it is hard to estimate the precise volume of earthworks for this area alone, a general estimate based on the volumes calculated by Mansergh &amp; Graham (Tables A and B in section 3.2.4 above), would result in SNA volumes of approx. 655,783 m<sup>3</sup>.</p> <p>Further, the EIA confirms that the affected total SNA area is 2.08 ha in size (which formed the basis for calculating the mitigation required to address the SNA removal).</p> <p><b>Total SNA area affected:</b> As noted above, the applicant has amended its proposal to the extent that the only SNA sought to be removed is that affected by Stage 1. This area is approx. 2 ha.</p> <p><b>Depth of excavation:</b> The vertical faces across the whole quarry will be a maximum of 15m high with 7.5m wide benches.</p>
22.2.7 Indigenous Vegetation Clearance inside SNA	The proposal includes the removal of 2.08 ha of indigenous vegetation in an SNA (refer Rule 22.2.3.3 above). The

<p><i>RD: Indigenous vegetation clearance in a Significant Natural Area identified on the planning maps or in Schedule 5 (Urban Allotment Significant Natural Areas) that does not comply with one or more conditions in Rule 22.2.7 P1, P2, P3, P4, P5 or P6.</i></p>	<p>vegetation consists of manuka trees, manuka shrubland and heavily grazed indigenous vegetation (otherwise undefined). Historically this was an overburden area which has been allowed to regenerate over the years. As a result, the age of the indigenous vegetation (insofar as it exists) in this area is relatively young with no mature or significantly old trees.</p> <p>The proposed vegetation removal fails to meet any of the permitted activity standards, meaning consent is required for a Restricted Discretionary Activity per Rule 22.2.7.</p>
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Based on the above, consent is sought for the proposed earthworks insofar as they affect the SNA as a **Restricted Discretionary Activity**, pursuant to **Rules 22.2.3.3 RD1** and **22.2.7**.

## 4.4 Summary of Activity Status

Based on the bundling principle and the applicable rules, the proposal is to be assessed as a **Discretionary Activity**.

# 5 Consultation

## 5.1 Consultation to date

### 5.1.1 Stakeholders

The applicant has spent approx. 3 years negotiating with NZTA in relation to this proposal, largely due to the fact that the SH2/McPherson Road intersection is not, in its current state, well equipped to deal with heavy traffic movements. As a result of these extensive negotiations, the applicant and NZTA have agreed on a number of mitigation measures aimed at addressing all of NZTA's concerns. These are outlined in section 6.6.6 of this report.

NZTA has now provided written confirmation that they approve of the proposal subject to a number of consent conditions, which the applicant accepts, refer to **Appendix O**. A copy of this confirmation is attached to this letter. We have further confirmed with Waikato District Council's Property Team what is required to meet condition 5 of NZTA's mitigation letter, see email correspondence from Michelle Smart **attached** to this report as **Appendix O**.

Contact was also made with David Klee of Auckland/Waikato Fish & Game Council in November 2018 who expressed a desire to meet and discuss water discharge quality. It was agreed that such a meeting would be postponed until some further water monitoring had been completed (and analysed) and draft consent conditions have been prepared (as this is the aspect of most interest to Fish & Game). Following this agreement, we sent some recent water monitoring results to David, which he reviewed and saved for his records.

Lastly, a meeting was held with Department of Conservation in early December 2018 to discuss the proposal. No main concerns were raised at that point, but DOC noted that they wished to see a copy of the Ecological Impact Assessment once complete. Upon completion of the updated Ecological Impact Assessment and subsequent Environmental Management Plan (following the peer review completed by AECOM), DOC received a copy of both on 20 November 2019.

### 5.1.2 Iwi

Three separate iwi were identified by WRC as potentially affected, being Ngāti Tamaoho (Lucie Rutherford), Ngāti Te Ata (Karl Flavell) and Te Taniwha o Waikato (Patience Te Ao). All accepted an invitation to visit the site, which took place on Tuesday 13 November and Tuesday 20 November 2018. Both meetings were well-received and all three representatives expressed appreciation at being shown around the quarry.

The main topics discussed at the meetings were around water discharge quality and potential use by iwi of vegetation within the overburden area (as firewood).

Following the site visits, all three representatives were provided a brief description of the proposal (outlining the consents sought and the key aspects of the quarry activities) as well as a copy of the neighbour consultation letter and a letter prepared by archaeologist Kirsty Potts (confirming the recommendation that the quarry operate under an ADP, due to the low archaeological risk).



After the site visits, Ngāti Tamaowo and Ngāti Te Ata prepared a combined cultural values/impact report, please see attached. Prior to the completion of the assessment, the applicant made contact with Te Taniwha o Waikato (TToW) to enquire as to whether they also wished to form part of the combined Cultural Values Assessment (CVA). As no response was received from TToW it was agreed with Waikato Regional Council that the applicant would engage Tamaoho and Te Ata to commence their CVA without awaiting a reply from TToW.

The CVA makes a number of recommendations which are addressed below.

Iwi recommendation	Comment
That where the ponds/wetlands are requested the second pond is to be a wetland with raupo to give a final polish (cleanse) and remove any fine sediments found in overburden and clean fill.	The two existing wetlands will be extended and improved upon by planting, thereby increasing filtration, reducing sediment mobilisation and increasing shading over the wetlands. Nutrients will be taken up by the vegetation within the wetlands thereby reducing the nutrient load on Stream 1, which is the receiving environment for both wetlands. These measures will ensure that water discharging from both wetlands will be of higher quality than currently (in the mid- to long term).
That a third pond/wetland is established for a final polish prior to discharge to the tributary of the Waiponga stream, and ultimately the Waikato River.	In addition, Stream 1 will be further protected from sediment-laden run-off through the new and improved ESCP prepared by Southern Skies, which includes fit-for-purpose Sediment Retention Ponds. These two measures will ensure that sedimentation effects are appropriately managed so that there are no adverse effects on Stream 1.
That at a minimum there is a two pond/wetland system for the proposed overburden site regarding Stages 2 and 3, especially above the flat land.	There are two new Sediment Retention Ponds in the overburden/cleanfill area, in addition to the two improved wetlands.
That the mitigation native ecological corridor is to be provided for as discussed at the onsite up the back behind the large farm wetland.	The planting corridor will be planted along the northern corridor and calculations to determine the planting density and type has been carried out (refer to the EMP).
That the native ecological corridor is to be fenced which will exclude stock from gaining access and doing irretrievable damage.	The applicant is happy to fence off the planted corridor and will do the same with the riparian margin planting along Stream 1.
That Iwi (Ngati Tamaoho and Ngati Te Ata) are to receive a copy of the planting proposal and associated management plan once available.	Iwi have received copies of the EIA and EMP and will receive a copy of the detailed Planting Plan once one has been prepared by the ecological restoration contractors.
That Iwi are to be regularly kept informed of any variations to the original consent application put before us.	Iwi have received an update of the changes made since the original application was lodged and the applicant will endeavour to keep them informed of any proposed variations going forward.
That we agree with the findings and recommendation of the archaeological assessment.	Noted.
That Iwi participates on a regular basis with regard to the cultural monitoring of any proposed earthworks from a kaitiaki perspective – and that all earthworks in ‘new’ broken ground are culturally monitored for potential taonga by iwi in conjunction with the project archaeologist.	While the applicant is happy to receive cultural monitors where this can be achieved without risk to health and/or safety, it is noted that quarry operations are different to regular ‘earthwork activities’. As such, health and safety risks are of utmost concern to the applicant and it is vital that people attending the site during vegetation clearing are kept safe and without disrupting usual quarry operations. In that sense, it is suggested that the iwi are kept abreast of when new ground will be broken and a discussion will be had as between the quarry manager and iwi as to whether or not access can be given to

	cultural monitors (depending on the safety of the planned operations).
That Iwi are engaged directly with the applicant, their agents and the site manager regarding any further required consultation requirements, are informed of the results of all monitoring and consent related assessments relating to the proposed quarry development and expansion.	As noted above, iwi have received the updated EIA and EMP, as well as an update on the changes made to the consent application since originally lodged.
Should there be any significant changes to the proposed quarry development and expansion (resource consents) then Iwi are to be notified and consulted with immediately and reserve the right to reconsider any of our earlier decision.	As above.

An update on the process as well as the above table and the additional ecological and landscape reports prepared post-lodgement were sent to iwi on 20 November 2019 (Karl Flavell and Lucie Rutherford). In reply, Lucie shared her appreciation for the additional water treatment proposed. No further comments have been received to date.

### 5.1.3 Neighbours

The applicant paid a number of the neighbouring properties a visit to discuss the proposal and seek written approvals for the same. A copy of the information provided to each neighbour, as well as the written approvals received, can be found in **Appendix P**. While the applicant visited people personally, the McPherson's chose not to approach two neighbours on the basis that it was assumed that written approvals from said parties would not be achievable (largely based on their historical relationship with said parties). The table below identifies the parties approached as well as a brief description of outcomes. It is noted that bar one party (details of which are outlined below) neither of the parties approached raised any direct concerns or objections to the proposal, either at the time or after the personal visit.

Party	Address	Outcome
Mt William Ltd	231 Pinnacle Hill Road	After being visited personally, the applicant and Kinetic Environmental were approached by a potential property purchaser for the property owned by Mt William Ltd (sole director: Flemming Rasmussen). That conversation focused on the quarry operations and future plans. After this discussion, Mr Rasmussen of Mt William Ltd contacted the applicant directly to express concerns around the potential purchaser pulling out of the purchase. Following this, Mr Rasmussen raised concerns around the quarry operations and the consultation directly with Waikato District and Regional Councils.
Bhanabhai and Bray	211 Pinnacle Hill Road	Not consulted with.
McKinstry and Spencer	209 Pinnacle Hill Road	No comments or response received from this party after the personal visit.
Glasgows	91 Pinnacle Hill Road	Written approval received (a copy of which is with Council).
Cowan and Thompson	40 McPherson Road	No comments or response received from this party after the personal visit.
Graham	15 McPherson Road	No comments or response received from this party after the personal visit.





David Phillips	Irish Road (number unknown)	Not consulted with.
Kuchlein and Miller	57A Irish Road	Written approval received (a copy of which is with Council).
Peacocks	57B Irish Road	Written approval received (a copy of which is <b>attached</b> ).
Murrays	67 Irish Road	Written approval received (a copy of which is with Council).
McCombs	105 Irish Road	Written approval received (a copy of which is with Council).

Figure 12 in section 4.1.4 above shows which of the above are within a 500 m radius from any of the quarry activities.

## 5.2 Section 95A – Public Notification Assessment

The notification provisions of the RMA were amended by the Resource Legislation Amendment Act 2017 and came into force on 18 October 2017. Section 95A now sets out a step by step process for determining public notification. This process is summarised below, together with an assessment of the current application against each step.

### Step 1: Mandatory public notification in certain circumstances

The applicant has not requested public, all further information sought has been provided by the applicant and the application does not concern recreation reserve land. => **PROCEED TO STEP 2.**

### Step 2: If not required by step 1, public notification precluded in certain circumstances

Public notification is neither for a controlled activity, nor for any of the other types of activities noted in the section. => **PROCEED TO STEP 3.**

### Step 3: If not precluded by step 2, public notification required in certain circumstances

No rule or NES requires public notification, meaning the assessment of effects will determine whether public notification is required (if the effects are more than minor). Section 6 of this report confirms that the effects will not be more than minor, meaning public notification => **PROCEED TO STEP 4.**

### Step 4: Public notification in special circumstances.

No special circumstances exist that would cause Council to publicly notify this application. In conclusion, public notification is not required.

## 5.3 Section 95B – Limited Notification Assessment

The 2017 amendments to the notification provisions of the RMA also affect the determination of limited notification and potentially affected persons. Although the assessment required is broadly similar to the previous provisions, the amendments outline a step by step process for determining limited notification. This process is summarised below together with an assessment of the current application against each step.

### Step 1: Certain affected groups and affected persons must be notified

The proposal does not involve coastal land, meaning there are no protected customary rights groups or customary marine title groups, nor does the proposal involve land subject to a statutory acknowledgement. => **PROCEED TO STEP 2.**

### Step 2: If not required by step 1, limited notification precluded in certain circumstances



Limited notification is not precluded by a rule or NES, nor is the application for a controlled or otherwise prescribed activity. => **PROCEED TO STEP 3.**

### **Step 3: If not precluded by step 2, certain other affected persons must be notified**

The proposal is neither for a boundary activity nor a prescribed activity, meaning the decision to limited notify falls on the assessment of effects under section 95E (affected persons).

As identified in section 6 of this report, the activity will have less than minor effects on the environment in all respects except for landscape effects on the nearest neighbour to the south, being no. 93 Irish Road (which are identified as 'minor'). Given that written approval has been received from the owner of this property (Ian McComb), Council cannot consider any effects on this person.

With the above in mind, no persons are considered affected by the works in terms of section 95E. => **PROCEED TO STEP 4.**

### **Step 4: Further notification in special circumstances**

There are no special circumstances which are relevant to this application. In conclusion, limited notification is not required.

## **6 Assessment of Environmental Effects**

The below section is an assessment of environmental effects based on the key findings of the technical reports. It is noted that this application relates to an activity which has existed and operated on this site for over 60 years. In that sense, there is a certain level of existing effects which have been in place for an extended period of time and which are not new to the area.

### **6.1 Permitted baseline**

During the assessment of environmental effects, the concept of the "existing environment" and the "permitted baseline" need to be defined. For the purpose of providing some guidance in this regard, I have summarised my assessments of the existing environment and permitted baseline in this case.

The first point to note is that the "permitted baseline" is the "existing environment" overlain with the effects of any non-fanciful activities permitted by the relevant plans. That is, the "existing environment" is part of the "permitted baseline", not separate.

#### **6.1.1 Existing environment**

The existing environment *does not* include past effects from activities previously allowed unless such effects are practically irreversible. In other words, the existing environment *does* include effects associated with the excavated quarry pit and the current modified topography, as these effects are practically irreversible.

#### **6.1.2 Permitted baseline**

The permitted baseline or the starting point from which the effects of this proposal is to be assessed includes:

- the existing environment as described above; overlaid by
- any effect associated with relevant activities (not being a fanciful activity) that can be exercised as of right. That is, effects resulting from any activity that is permitted by a Plan (e.g. soil disturbances in low risk erosion areas) or by existing use rights should not be taken into account.

Any effect over and above the effects of the permitted baseline (as described above) must be appropriately remedied, avoided or mitigated.

In this instance, the quarry has operated under existing use rights for an extended period of time which arguably gives rise to a certain level permitted baseline. In saying that, the McPhersons accept that the lack of available records makes it difficult to show the scale and intensity of such historical activities. As a result, the below assessment of effects largely disregards the permitted baseline and only includes references to the existing environment insofar as that is relevant (such as for the landscape and visual assessment).



## 6.2 Visual and Landscape Effects

The applicant engaged WSP Opus to prepare a Landscape and Visual Assessment report (LVA), which can be found in **Appendix D**.

Upon lodgement of the original consent application, WDC requested that the LVA be peer reviewed by Boffa Miskell. The peer review identified a number of matters which needed clarification. As a result, the applicant engaged Mansergh Graham Landscape Architects to prepare said response, which is also **attached as Appendix D**.

The Mansergh Graham report has led to some refinements in respect of the proposal and the effects of the same, all of which outlined in detail in the LVA peer review response prepared by Mansergh Graham. It is noted that the only mitigation identified as required by Mansergh Graham is a small amount of mitigation screen planting on the southern boundary of the overburden/cleanfill area (further described in section 6.2.6 below).

### 6.2.1 Landscape

The proposal will bring about changes to the landscape through the excavation of the site to remove the rock resource. This excavation will create large cut faces and benching, with a maximum height of 15 m, which is smaller in scale than the existing quarry cut faces and benches.

The expansion includes the removal of some stands of vegetation across each of the stages with the most notable being the eastern edge of Stage 1. The removal of bush will be against a backdrop of the remaining existing bush and less likely to be obvious to the majority of viewers. The removal of bush will not noticeably affect the visual experience of the bush cover and the magnitude of change is considered to be negligible. The sensitivity to change of the area is considered to be low. As defined in Appendix B of the LVA, this equates to effects that are 'less than minor' per the RMA.

The landform will also be altered by the proposed excavation through the removal of spurs in Stages 2 and 3 although this is likely to be located away from the viewing audience and the spur is not a significant feature (being a moderate slope). The change will also happen over a long period of time and will be implemented incrementally. Applying this to this proposal, the magnitude of the change is considered to be low taking into account the extended period of change, the viewing distance, the small viewing audience and the similarity to the existing activity which has been occurring over the past 60 years.

As much of the expansion is away from the majority of viewers and in areas which are not highly visible, the potential effects are low or less than minor. Very little of the proposed excavation work will have any effect on what is currently experienced in the landscape. No new works are planned which would interrupt existing views of anything outside the site, and no significant new views will be opened up. Expansion is contained within existing landscape features which are not being removed, including vegetation cover, and as such, it is not likely to be clearly visible.

### 6.2.2 Visual

The LVA identifies a series of Viewpoints that are representative of views available of the site and assesses the same in terms of the magnitude of change and visual effect. This assessment concludes that the proposed expansion is on relatively flat contoured land which is currently not visible from within the visual catchment. Viewers above the site on Pinnacle Hill Road look down toward the site but their view is screened by an existing shelter belt between the sites. In addition, the expansion will be below the top level of the existing quarry.

The expansion will remove some existing vegetation, although this is largely unseen and there are no new elements being introduced which would alter the visual perception of the activity, as the ongoing operation is the same as currently exists. The increased number of benches may have a short-term noticeable effect as there will be a variation in colour of the quarry face, but this distinction will diminish as the face weathers. The expansion of the face will be in a northerly direction, away from most viewers, and the effects of shading on the quarry face will assist in diminishing the colour distinction.

There will be an increase in the overburden area toward the south-west of the site, although this will largely only be noticeable to fixed permanent views from residences in the immediate vicinity, notably Irish Road.

The visual effect level for viewers from SH2 and public places is considered to be low, based on the location of the quarry as compared to the viewpoints (generally peripheral or screened views) and the limited number of stationary viewers.

The visual effect from residences will vary with proximity to the site and the degree of openness each property has toward the site. The majority of properties have some form of planted enclosure around the dwelling, reducing views toward the subject site. For properties on Irish Road, the extension of the overburden south of its current location may be



visible, although this is likely to be low in the landscape and spread over a wide area. The expansion is generally away from viewers in the south.

In general, the level of effect is considered to be very low to low taking into consideration all the mitigating factors. An isolated incidence of moderate effect may be experienced at a single residence at 93 Irish Road which is largely due to the close proximity of the potential overburden stockpile, although this may be offset by the proposed mitigation planting.

In summary, the effects of the quarry expansion on this property are likely to be low or less than minor as most of the expansion happens out of their view.

### 6.2.3 Natural character

A small amount of indigenous forest will be removed as the quarry expands. This will happen slowly over time and affect small patches of forest which form part of a much larger area. As noted earlier, the removal will occur in front of existing bush and the perception of removal will therefore be low.

There are changes to the landform (abiotic features) through the excavation of the site to expose the rock to be sourced. The excavation will be carried out over a number of years and change will be gradual. The process will continue in much the same way as it has to date, although benching will be at lower levels than the existing quarry face. The excavation will occur largely out of view from most surrounding areas and the perception of the site will not be markedly changed.

The effect on experiential attributes of the proposal will be slowly evolving as the change is introduced incrementally over an extended period.

In summary, the effect level on the natural character is considered to be low or less than minor.

### 6.2.4 Cumulative

The proposal is a continuation of an existing activity in the sense that in order to extract the available aggregate, the footprint of the quarry naturally has to expand. In other words, while this report refers to an expansion, this term refers largely to the actual footprint of the quarry. The expansion is inland from the existing activity and given the angle of view and the contour the expansion is over, the exposure to viewers is limited. The expansion could be considered cumulative of and in itself, but it is considered that the incremental change over a long period and the location largely away from views will counter this.

There are similar activities occurring in the wider area, but they not visually connected with the subject site. In other words, there are no cumulative effects arising from the proposal.

### 6.2.5 Magnitude of change

The magnitude of change is considered to be low and the sensitivity to change is also considered to be low, resulting in a slight effect for fixed and transient viewers. The impact on viewers is therefore considered to be neutral. The proposal enlarges the quarry area markedly when compared to the current state. The time period to achieve this is lengthy, with the ultimate form of the quarry achieved in 10-15 years for Stage 1 and 2 and up to 30 years for Stage 3 (or 45 years in total). The visibility of the proposed expansion is limited by the contour, the restricted view and the similar appearance in magnitude to the existing activity, or it diminishes as the quarry face moves to the north. In general, the magnitude of change is considered to be low or less than minor, resulting in a minor alteration of the landscape and the continuation of elements that are currently experienced in the landscape.

### 6.2.6 Mitigation

Mansergh Graham (in response to the peer review of the original LVA) found that the overburden area will be visual (through filtered views) from certain locations (such as along Irish Road and SH2). As a result, the mitigation proposed by the original LVA has now been defined, with an identified mitigation strip following the contour of the southern boundary of that area, per **Figure 13** below.

No other mitigation has been identified by either of WSP Opus or Mansergh Graham as practicable, given the size, location and topography of the quarry and the surrounding environment.



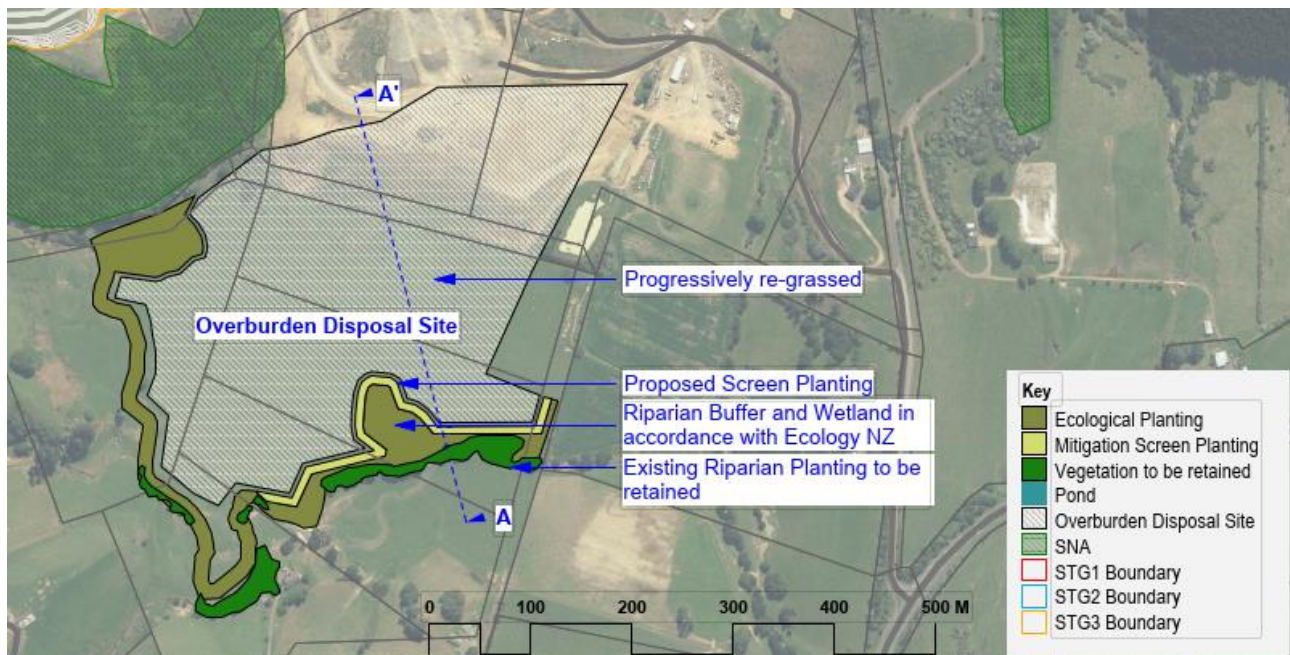


Figure 13. Mitigation Plan (extract from Mansergh Graham report)

#### 6.2.7 Summary

The proposed expansion of the existing quarry will take place over a period of 10-15 years for Stages 1 and 2 and up to 30 years for Stage 3, therefore the change will be incremental over a long period of time (as much as half a century). This length of time for change will help minimise any potential visual effects. Those interim effects which are practicable to mitigate against will be addressed through the mitigation planting proposed along the southern boundary of the overburden area.

In summary, the proposed expansion of the McPhersons Quarry will be a gradual process to an already existing feature. It is considered that effects overall will be less than minor, with minor effects for the closest neighbours (being 93 and 67 Irish Road, both of whom have provided written approvals to the proposal meaning effects on these properties cannot be considered for the purposes of section 95E of the RMA).

### 6.3 Amenity and Character

The LVA also considers the effects on amenity and rural character and confirms that the expansion of the quarry will not result in a loss of rural amenity values or rural character. The contributing factors to this include:

- Limited fixed viewing audience, views moderated by existing vegetation in the landscape;
- Limited clear views of the site and the proposed quarry expansion;
- Stage 3 is largely concealed from view due to its location;
- The transient viewing audience's experience is at high speed, with limited clear or prolonged views of the site;
- The relatively small increase in truck movements, particularly joining SH2 from McPherson Road;
- The activity is long established in the area and the expansion will be a continuation of the same visual elements over a very long period of time;
- The expansion of the overburden area will result in a change of land use, although the experience of this will be limited to immediate neighbours; and
- The planting of the southern edge of the overburden area will reduce the visual effects of the stockpiled material, with effects diminishing over time as the planting establishes and grows.

### 6.4 Noise

#### 6.4.1 Introduction

The applicant engaged Hegley Acoustic Consultants (Hegley) to prepare an assessment of noise effects (refer to **Appendix K**). Below is a summary of that assessment

#### 6.4.2 Predicted Noise Levels

One of the noisiest activities at the quarry is drilling of rock to blast it, so that the fractured rock can be removed or extracted. The sound spectrum of a rock drill when measured at 20 m from the drill location, ranges from 60 to 94 dB LZF 10, with the following specific values:

- LF 10 = 86.1 dB
- Leq = 82.5 dB
- LF max = 90.8 dB

Other machinery used which contribute to the noise levels are the excavators, bulldozers, dump trucks and loaders. The sound created by these machines range from 61, 76, 71 and 71 dB LAeq to (when measured at 80, 20, 40 and 30 m) respectively.

Another element creating noise is the mobile crusher, which typically creates noise of 82 dB LAeq when measured at 17 m.

In order to predict the noise created by the quarry activities and the cumulative workings of the above machinery, Hegley selected the most exposed location in the quarry, meaning the location in the quarry when the plant is at the maximum height and therefore has minimum screening. The noise modelling then assessed all of the referred to plant operating on a busy day for both Stage 1 and Stage 3 and compared those to the existing operations (refer to Figures 18, 19 and 20 in Appendix B of the Noise Report (**Appendix K**)). In response to a peer review of the supplied noise report, additional noise assessments were carried out. The results of the original and subsequent noise modelling are summarised in the below table (measured at notional boundaries).

House Site	Noise level – dB LAeq				
	Existing	Stage 1	Stage 2	Stage 3	Plus Overburden/Cleanfill
15 McPherson Rd (Graham)	48	48		48	49
40 McPherson Rd (Cowan)	45	48		45	49
77 Irish Rd (Murray)	38	39		40	39
93 and 105 Irish Road (McComb)	Written approval provided				
67 Irish Road (Murray)	Written approval provided				
57A Irish Road (Kuchlein/Miller)	Written approval provided				
46 McMillan Rd (Gallagher/Laker)	37	37		41	
351 State Highway 2 (Angell/Brown/Welsh)	40	41		40	41
371 State Highway 2 (McKee)	36	37		37	
231 Pinnacle Hill Road (Mt William Ltd)			42		
211 Pinnacle Hill Road (Bhanabhai)			36		
213 Pinnacle Hill Road (Jones)			34		
217 Pinnacle Hill Road (McCort)			33		
221 Pinnacle Hill Road (Jane)			33		
247 Pinnacle Hill Road (Baker/West)			31		

233 Pinnacle Hill Road (Hill Top Farms)			29		
233A Pinnacle Hill Road (Reay/Silva)			30		

The noise levels in the above table represent the ‘worst case’ scenario, which is unlikely to occur, and shows the noise levels from the quarry operation as being within the daytime allowed limit (per both the ODP and PDP) of 50 dBA LAeq in the Rural Zone. Generally however, the actual noise created by the quarry and processing area will be lower, as not all of the modelled noise sources will be operating at the same time.

#### 6.4.3 Conclusions

The noise from the increase in quarry production has been predicted based on all of the noise generating equipment identified operating at an exposed location and at the same time, in order to reflect the upper level of noise ever likely to be experienced by the neighbours. For the majority of the time however, there will be less equipment operating in the quarry and processing area than assumed by the noise assessment, meaning the neighbours will experience less noise.

Even based on these conservative assumptions, the noise experienced at the notional boundaries of all existing rural dwellings in the area will be well within the requirements of the ODP and PDP.

In summary, the noise effects generated by the quarry operations (existing and future) are less than minor.

### 6.5 Vibration

As noted earlier in this report, the McPhersons regularly receive vibration and blast reports from Orica Mining Services (Orica). Orica is a world leader in blasting technology and utilises the latest modelling software that achieves consistent quality blast outcomes taking into account site specific environmental constraints. They record the specifics of the blasts, such as:

- Peak vector sum velocity; and
- Peak overpressure.

The latest blasting records are attached as **Appendix I**, which show compliance with the ODP vibration requirements in section 23A.5.2.4(9) of the ODP which limits the peak overall sound pressure to 128 dB linear peak (the blast records show a maximum peak overpressure of 86 and 80.6 dBL respectively, with the last report from May 2019 confirming that at trigger levels of 110 dB, the blast monitor was not triggered). The results were recorded at the following locations”

- The boundaries of the site (rather than at notional boundaries, which are actually further away); and
- Irish Road (i.e. closer to sensitive receivers in the south).

Also attached as **Appendix I** is a brief report prepared by Hegley Acoustics (dated 2 July 2019) after receiving a request from WDC post-lodgement in respect of vibration effects on the dwellings to the north. That report confirms that the relevant ODP levels are found in Table 4-5 of Appendix J of Australian Standard AS 2187:2006 (Part 2 Explosives – Storage and use – Use of Explosives), which are as follows (*copied from Hegley’s letter*):

**Table 4-5 Recommended AS 2187 blasting – Human comfort airblast and ground vibration limits**

Category	Type of blasting operations	Peak sound pressure level (dBL)	Peak component particle velocity (mm/s)
Sensitive site <sup>a</sup>	Operations lasting longer than 12 months or more than 20 blasts	115dBL for 95% blasts per year. 120dBL maximum unless agreement is reached with occupier that a higher limit may apply.	5mm/s for 95% blasts per year 10mm/s maximum unless agreement is reached with the occupier that a higher limit may apply.

After undertaking field measurements of blast noise and vibration at a site distance similar to the distance to 231 Pinnacle Hill Road, the results gave an air blast noise of 109 dBL with minimal screening included and up to 2.54 mm/s vibration.

In other words, the vibration effects are well within the limits allowed by the ODP and can therefore be determined as being negligible.

## 6.6 Traffic Effects

### 6.6.1 Traffic environment

The posted speed limit on SH2 is 90 km/h and in 2014 average speeds in the vicinity of the site (but on SH2) were recorded under 90 km/h in both directions. The annual average daily traffic was recorded at 16,900 vehicles per day in 2017 with a heavy vehicle proportion of 12%. The flows in both eastbound and westbound directions are relatively constant throughout the day with no dominant peak periods.

A search of NZ Transport Agency's Crash Analysis System (CAS) has recorded 6 crashes within a 250 m radius of the SH2/McPherson Rd intersection between 1 January 2013 and 01 May 2018. Five of the six crashes did not lead to any injuries, while the remaining crash involved in a single vehicle that hit a pedestrian walking along the road (resulting in a fatality). All crashes involved single vehicles, with no vehicle to vehicle crashes. One of the loss of control crashes was recorded at the McPherson Road intersection but did not involve any other vehicles. Hence, none of the recorded crashes related to movements to and from McPherson Road.

### 6.6.2 SH2 realignment

The McPherson Road/SH2 intersection forms part of Section A of the proposed Pokeno to Mangatarata Improvements. As part of the Section A improvements, the NZ Transport Agency have proposed to realign SH2 south of McPherson Road to the start of Mangatawhiri Deviation (Section B) further to the east. Accordingly, if this realignment is constructed, the existing SH2 alignment within the vicinity of the McPherson Road intersection will revert to a local road, primarily providing access to local properties, meaning traffic volumes are anticipated to reduce significantly.

### 6.6.3 Traffic assessment

The estimated quarry extraction yield of 490,000 tonnes annually has been established based on potential hourly and daily truck and truck-and-trailer movements. This has been determined from the following assumptions:

- 50% of haulage vehicles are trucks (10 tonne payload) and 50% being truck and trailer units (30 tonne payload), resulting in an average payload of 20 tonnes per haulage vehicle;
- The quarry will operate between 7.00am to 6.00pm (11 hrs) for six days per week (Monday to Saturday);
- The quarry will operate 297 days a year (with the facility closed on Sundays and public holidays, as well as two weeks over Christmas, equating to 68 days a year);
- Consistent movement of trucks throughout the day; and
- 50/50 split between left and right turning trucks.

Using the above assumptions, the daily truck movements would be 165 vehicles per day (approx. 82 inbound and 82 outbound). Averaging the daily flow over the 11 hours, the hourly vehicle movements would be 16 (8 inbound and 8 outbound) assuming consistent movement throughout the day. As stated in Section 4 of this report, some trucks travelling to the quarry will transport cleanfill and leave loaded with extracted quarry material. As these trucks will be importing cleanfill and exporting quarry material, clean fill operations will not generate additional truck movements to and from the site. The only difference is that some trucks will arrive to the site loaded instead of empty.

### 6.6.4 Site distances

Site distances have been measured through a desktop exercise, the results of which confirm that the sight distances from the existing intersection is estimated to be 250 m to the west and 200 m to the east. Based on Austroads 2017, safe intersection sight distance is 214 m based on 90 km/h operating speed and 2 seconds reaction time. Comparing the existing sight distance with the Austroads requirements:

- the sight distance towards the west is meeting the requirement;
- the sight distance to the east has a shortfall of approximately 14 m, meaning some mitigation to enhance visibility is required;
- the forward visibility sight distance also has a shortfall of around 51 m, meaning some mitigation is required (as proposed in the Traffic Impact Assessment or TIA, refer **Appendix H**).





### 6.6.5 Turning treatment

Austrroads 2017 provides guidance for turning treatment based on the characteristics of a particular intersection. In this instance, based on the existing volume of traffic on SH2 combined with the turning volumes to and from McPherson Road, a channelized right turn (CHR) treatment and Auxiliary Lane (AUL) for the left turn for turning movements from the SH2 are warranted. The existing intersection does not provide a CHR treatment nor does it provide any AULs. As such, it is considered to not be fit for current purpose neither for anticipated future traffic volumes to and from the site and some mitigation is required, as proposed in the TIA.

### 6.6.6 Summary

The McPhersons have been in discussions with the NZ Transport Agency for some time in an effort to resolve the concerns around traffic safety. Following these discussions, the parties have agreed on the following mitigation measures:

1. Modification of the bank and vegetation on the southern side of the McPherson Road/SH2 intersection to provide at least 151 m forward visibility for westbound traffic to observe and respond to a right-turning truck from McPherson Road to SH2. Refer to **Appendix O** for confirmation from Waikato District Council that the relevant bank modification will be carried out by WDC's maintenance crews after relocating the boundary fence to gain access.
2. A 42 m right turn bay on SH2 to provide sufficient stacking space for a truck and trailer unit to wait on SH2 in order to undertake safe right turning movements into McPherson Road; and
3. An AUL for left turning vehicles from SH2 to McPherson Road. The AUL will be 100m long and commence at the barrier flare approximate 10 m east of Graham Bridge. It is recognised that it will be shorter than the MOTSAM requirements for a standard AUL; however, the AUL provides an improvement to the existing situation and the length is considered acceptable to the NZ Transport Agency.

The recommended mitigation measures are considered appropriate for the proposal taking into account the potential future alignment of SH2. The improvements are expected to address the adverse effects of the proposal on the safe and efficient operation of the network from a traffic perspective, meaning the effects will be negligible once these measures have been implemented.

## 6.7 Dust Effects

As noted in section 3.2.7 above, the quarry uses on average 50 m<sup>3</sup> of water per day as part of the quarry's dust suppression measures. In order to ensure that the applicant stays within its allocated water take consumption, a water harvesting system is proposed (with further details to come on the specific infrastructure required to make that work).

Waikato Regional Council have commented that:

*"Earthworks sites and quarries can require 50m<sup>3</sup> of water per hectare of open area per day for dust suppression, [and] it is not uncommon for this level of water availability to be added as a standard condition of earthworks consents."*

In response we note that to the applicant's knowledge, this quarry has never been subject to a confirmed complaint relating to dust beyond the property boundaries. In other words, there is no reason to believe that additional water to that already being used is required at this quarry, or that the proposed water volumes will give rise to objectionable effects outside of the boundaries of the quarry or on neighbouring properties.

In addition, the quarry (as it stands) has steep faces (as a result of a historical and brief change in the Mining Regulations on bench and face heights a number of years ago), which means that practically, there are limited opportunities for dust to spread to the north, west or east of the operating quarry.

Out of the two areas calculated to make up the catchment areas for Stage 1 by Southern Skies (9 ha and 4 ha), approx. 50% (or 6.5 ha) will be open and a smaller area again would require dust suppression at any given time, based on:

- Quarry faces are not watered down as this is an aggregate quarry and watering the faces would result in a health and safety hazard;
- Aggregate does not result in dust creation;
- Only haul roads and areas currently being worked on require dust suppression (see **Figure 11** above for an illustration of which areas would be watered at any given time);
- Approx. 0.5 ha make up the quarry floor/pit which floods with stormwater from the faces of the surrounding quarry (meaning no dust suppression is required).

Based on the 'general requirements' identified by Waikato Regional Council (50 m<sup>3</sup>/day per hectare), this quarry would require 50 m<sup>3</sup>/1 ha of open area, which (based on the above) would be somewhere between 4 and 5 ha. This would mean a water consumption of 250 m<sup>3</sup>/day (50 x 6.5). This is 200 m<sup>3</sup> more than the quarry uses for the current operations. Based on historical operations of the quarry and the lack of (known and confirmed) complaints relating to dust arising from the same, an increase in water used for dust suppression by 200 m<sup>3</sup> per day is difficult to justify (or see a need for), particularly in an oversubscribed catchment of the Waikato Region, where water conservation is not only encouraged but vital (meaning alternative dust management methods are required). As such, the applicant is of the view that the already consented 50 m<sup>3</sup>/day will ensure that sufficient dust suppression of this site is achieved, based on the particulars of this site, historical records of use, lack of historical confirmed complaints relating to dust and proposed dust management methods (refer QMP for details).

In addition, and as explained in section 3.2.7 above, the applicant proposes to operate under the guidance of a Quarry Management Plan which includes specific measures intended to deal with any potential dust effects. These measures include:

- Daily inspection of site entrance to remove debris;
- Weekly inspection of water cart;
- Use of water cart every day the quarry is operating, *unless* it is wet and/or raining;
- Daily (and repeated) inspections of McPherson Road to detect and, if need be, arrange for the removal of fines;
- Operation of water cart in overburden/cleanfill area during operation of machinery;
- Speed limits for trucks within the Site and on McPherson Road;
- Maximum drop heights for material being loaded onto trucks;
- Daily monitoring of stockpiles and exposed areas (and stabilisation of the same, as required);
- Re-vegetation of overburden/cleanfill area at regular intervals.

The QMP also includes a range of monitoring and contingency measures, all aimed at ensuring that there will be no objectionable dust beyond the Site boundaries. These dust management methods will ensure that the risk of any dust effects beyond the boundary of the property is minimised or avoided altogether.

In summary, the dust effects will be less than minor.

## 6.8 Vegetation Loss Effects

McPherson engaged WSP Opus to prepare a Vegetation Assessment Report, refer to **Appendix J**. This section is a summary of that report (with some minor adjustments to cater for updated information provided by Ecology NZ).

### 6.8.1 Types of vegetation removal

The main effects on vegetation is removal of the vegetation for quarry activities. The character of the area will be modified by the removal of aggregate and expansion of the quarry footprint. The effect on the vegetation character will be low as most of the vegetation is exotic pasture and gorse. Only small patches of indigenous vegetation at the edges of the Project area will be affected.

### 6.8.2 Assessment of Values

The pasture and gorse typify most of the vegetation within the quarry expansion and overburden storage areas and has been determined to have negligible ecological value. This is due to it being a highly modified rural environment with low representation of indigenous vegetation and low levels of diversity.

The survey of the regenerating bush areas impacted by the quarry expansion confirmed that the inclusion within the SNF is justified. The lack of primary forest in the Manukau Ecological District and presence of species identified as threatened on the flora conservation status lists are the primary criteria determining the significance of these areas.

The indigenous vegetation present has been evaluated in two parts. Firstly, the 2.08 ha block of indigenous forest in Stage 1, a locally significant SNA<sup>3</sup> and secondly, the small area north of the pond in Stage 3 (0.37 ha but not in the SNA layer). For the purpose of this assessment the value of the regionally significant SNA has been scored High and the

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<sup>3</sup> The Vegetation Report refers to SNF, being the definition under the ODP. However, as the PDP has immediate legal effects insofar as the SNA layer is concerned, this report talks only of the SNA layer, which is in line with the assessment and subsequent calculation of offset mitigation completed by Ecology NZ.

other area Moderate. Key to this is the presence of king fern in the Mt William Reserve to the west and a north Waikato hill country biodiversity corridor from Mt William scenic reserve to the covenanted Pourauroeroa Stream Bush in the east.

The attributes of Manuka as an At-Risk Declining determine the species value of all manuka as on site as High. Manuka has had its inclusion in the threatened species list due to the rise of Myrtle rust which has spread through the family Myrtaceae in New Zealand. Although, no myrtle rust was observed on the site visit its presence in the Auckland and Waikato regions puts areas of regenerating indigenous forest such as this north Waikato site at risk. Land on the McPherson property at 47 McPherson Road has been retired from grazing over the last decade. This led to the regeneration of 5 ha of manuka scrub. This scrub expands and buffers the existing older forest block in the adjacent gully and forms a continuous link to the forested area on the neighbouring property.

### 6.8.3 Assessment of Ecological Effects

#### *Magnitude of effects*

The EIANZ criteria for describing the magnitude and timescale of the effect was applied to the vegetation within the impact site including the overburden storage site.

The total impact site is approximately 40 ha in area (made up of all three stages, part of the existing quarry and the overburden/cleanfill area). The proposed overburden storage site is just under 12 ha of lowland area at the south of the properties and consists almost entirely of pasture. The proposed extraction site is approximately 30-31 ha of hill country (made up of 10 ha (Stage 1), 9 ha (Stage 2) and 11.8 ha (Stage 3). Existing quarry activities occupy approx. 8-9 ha and therefore has had vegetation already removed.

<b>Vegetation/Habitat/Species</b>	<b>Magnitude</b>	<b>Comments</b>
Effects on indigenous vegetation in Stage 1	Moderate	Loss of a small area of the extent of the SNA bush block it is attached to (about 2.08 ha). While modified by historic logging and grazing, a diversity of species is present.
Effects on indigenous vegetation in Stage 3	Low	Loss of a very small area of the indigenous vegetation outside of the SNA (0.37 ha). This vegetation is heavily grazed in the subcanopy and functions as wooded pasture.
Grazed pasture grasses	Low	The loss of pasture on the Project site is a small proportion of the available grazing land in the region.
Gorse	Negligible	Removal of gorse, an invasive species of NZ forests, will reduce the seed source into the surrounding forests. Balanced against the increase of edge effect from the quarry.

#### *Overall level of effects*

The table below provides an overall level of effects rating based on the EIANZ 2018 matrix. The Moderate overall effects rating resulting from the Stage 1 and 2 expansion effects on the SNF reflects the loss of a small proportion of a Moderate value (locally significant) vegetation, that while modified, still retains good plant species diversity. The Low overall effects rating for the Stage 3 expansion on the SNF reflects the very small proportion of the SNF impacted and the very high degree of modification of the habitat due to grazing. The Very Low level of effects on pasture and gorse reflects the lack of indigenous vegetation and scale of the removal relative to the pastoral land in the region and the positive impact on the surrounding forests of removing gorse from the Project site.

<b>Vegetation/Habitat</b>	<b>Ecological value</b>	<b>Magnitude of effects</b>	<b>Level of effect</b>
Effects on indigenous vegetation in stage 1	Moderate	Moderate	Moderate



Effects on indigenous vegetation in stage 3	High	Low	Low
Grazed pasture grasses	Negligible	Low	Very low
Gorse	Negligible	Negligible	Very low

#### 6.8.4 Effects Management

The Moderate overall effects rating for loss of indigenous vegetation during Stage 1 require consideration of measures to avoid, remedy or mitigate the effect. This is likely to be most effectively achieved by offset planting of vegetation of a similar character to the vegetation lost.

Where quarrying removes indigenous vegetation, it is recommended that care is taken to ensure stabilisation of exposed earthworks as soon as possible along the exposed edge, with suitable native tree and shrub species. It is also important that invasive weeds are managed along these edges.

The applicant proposes offset planting to mitigate for the loss of forest from the SNA on the eastern side of the quarry by creating a native planting corridor to the north of the quarry, refer to **Figure 13** below and the EMP in **Appendix K**.

Compensation is proposed through the creation of an approximately 100m wide ecological corridor that provides vegetative contiguity across the site's northern boundary. This planting will result in an area of approximately 4.53 ha being ecologically enhanced. The level of ecological enhancement will equate to a compensation ratio of 2:1 for the bush block in the eastern side of the site that is primarily within the SNA overlay, and a 1:1 ratio for the kānuka-dominant vegetation located next to the pond to address the proposed ecological impacts.

Once planted, these areas will be fenced from grazing and managed for pest plants and animals.

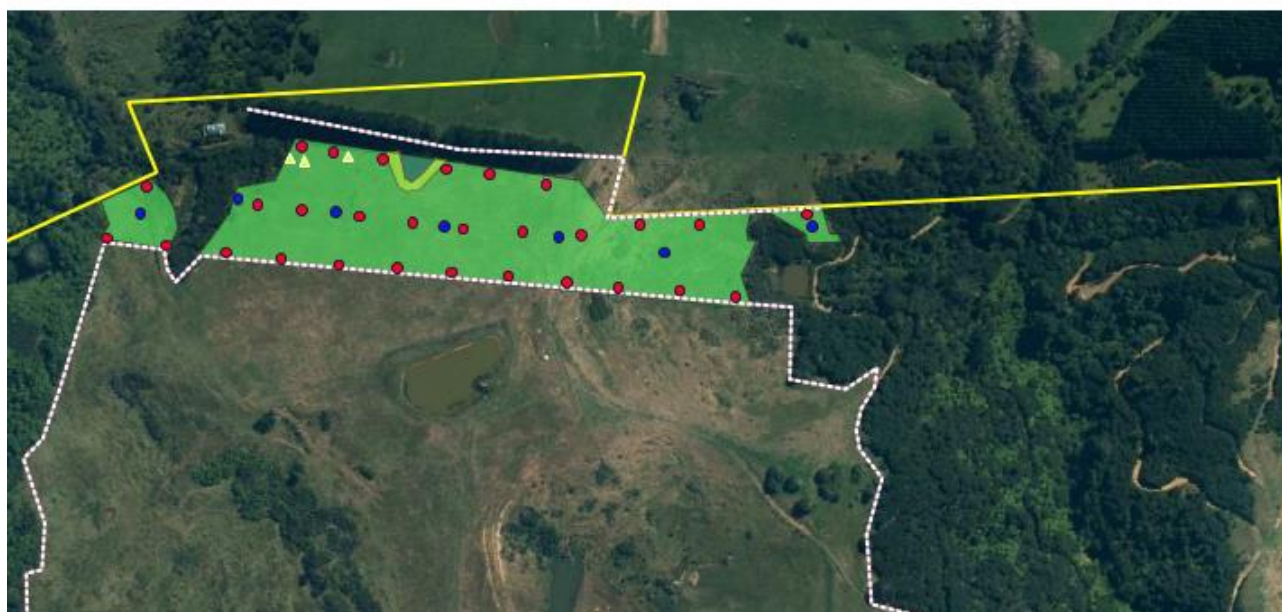


Figure 13. Proposed offset planting corridor

#### 6.8.5 Conclusion

With the implementation of the mitigation measures proposed herein, the effects of the removal of indigenous vegetation will be less than minor and will in fact result in a level of ecological enhancement.

### 6.9 Ecological Effects

#### 6.9.1 Terrestrial fauna effects

In response to a further information request from WRC, the applicant engaged Ecology NZ to prepare an EIA assessing effects on terrestrial fauna and freshwater flora/fauna. This was completed, after which a peer review was carried out. In response to said peer review, the application updated the EIA and made some tweaks to the proposal in an effort to



reduce the impact of the quarry operations, the applicant has now earmarked areas of SNA west of Stage 3 for avoidance. This has subsequently seen a reduction of 6,695m<sup>2</sup> in the proposed area of indigenous vegetation clearance associated with this project. Of this additional area to be avoided, 4,165m<sup>2</sup> is mapped as protected SNA.

Mapping updates have also led to the reduction of previously assessed vegetation clearance. An area of approximately 880m<sup>2</sup> of indigenous vegetation located north of Wetland 1 was previously assessed as an area proposed to be impacted. This has been reviewed and is now confirmed to be outside of the impact area.

Taking heed of the above information, a total of approximately 2.45 ha of indigenous vegetation is now proposed to be impacted.

### **Assessment of values**

The majority of the proposed quarry expansion area is comprised of pasture grasses and gorse-dominated scrub providing low quality habitat for native fauna. The kānuka-dominant forest block on the east of the site provided the highest valued habitat for native herpetofauna within areas proposed for impact.

While the kānuka-dominant forest does not provide high-quality roosting habitat for native bats; large specimen trees scattered throughout proposed development areas Stage 2 and 3 are expected to provide adequate roosting habitat for long-tailed bats. However, with only one possible bat pass detected within the Stage 1 area, the site is not likely a key area for long-tailed bats.

Based on the Waikato Regional Council criteria for determining significance of indigenous biodiversity, the site is classed as Significant. This is due to the designated SNA, which provides an interface between the Hunua Ranges and Mt William Walkway and the presence of At Risk and Threatened species onsite. However, the areas that meet the criteria for classification as significant are a small percentage of the overall proposed expansion area, and the At Risk and Threatened species observed were in low numbers.

### **Magnitude of effects: Pre-mitigation**

In its entirety, the site is largely composed of low-quality habitat for avifauna, chiropteran fauna and herpetofauna. The majority of terrestrial fauna impacts are localised to a single bush block within Stage 1. Therefore, the magnitude of effects for the site is assessed as low or negligible (depending on the area assessed).

### **Management of effects**

Though the overall level of effects for terrestrial fauna has been assessed as low, consideration for appropriate fauna management is recommended as native birds, bats and lizards are protected under the Wildlife Act 1953.

To effectively manage the potential direct injury/mortality threats to native birds and their eggs, mitigation is recommended by means of seasonal constraints for vegetation clearance activities across the higher quality SNA bush block in Stage 1. The removal of native woody trees and large shrubs should be undertaken outside of the peak bird breeding season (November to January inclusive). If this isn't possible, then those areas should be checked by an appropriately qualified ecologist for nesting birds immediately prior to vegetation removal and, if detected, vegetation removal should be put on hold until the area is deemed by an appropriately qualified ecologist to be clear of native nesting birds and fledglings.

Overall, potential habitat for native lizards was limited across the proposed footprint, but the kānuka-dominant areas hold the greatest potential for providing habitat for native lizards. As a result, the applicant proposes the imposition of a consent condition requiring additional lizard surveys prior to clearing the kānuka-dominant areas, which will only be a factor in Stage 1. Should lizards be found during those surveys, a Lizard Management Plan will be prepared by a suitably qualified herpetologist. If none are found, no further lizard surveys or other work will be carried out.

In addition, while the bat surveys only resulted in one bat pass, the EIA identified some potential bat roosting and foraging habitat and therefore Ecology NZ suggests that additional acoustic surveys be undertaken before clearing vegetation in Stages 2 and 3. The applicant proposes that a condition be imposed along the lines of what is proposed in the EIA, namely that further acoustic surveys be undertaken before clearing vegetation in Stages 2 and 3 and that if bats are found to be present, appropriate pre-clearance checks will be carried out on trees containing suitable roosting features.

The EIA further confirms that the proposed ecological corridor to the north of the site will provide necessary compensation for the loss of the SNA vegetation proposed to be removed in Stage 1, as well as provide additional benefits to native fauna. The level of planting required to mitigate the loss of indigenous vegetation has been calculated and is outlined in section 6.8 above. To ensure success, the EIA recommends that a Pest Animal Management Plan is



prepared, covering the restoration corridor as well as the southern riparian areas, which the applicant is happy to accept by way of a consent condition.

### 6.9.2 Freshwater

The proposed quarry expansion will result in the loss of Ponds 1, 2 and 3, the reclamation of Tributary 1 and the discharge of water from four sediment retention ponds into Stream 1. Given the difference in type and magnitude of effects at each location, each of these water bodies will be considered separately in order to assess the effects of the proposed activities.

#### **Magnitude of effects: Pre-mitigation**

Feature	Comment	Result
<b><u>Ponds</u></b>	<p>The proposed quarry expansion will result in the loss of 9,900 m<sup>2</sup> of poor quality, artificial, aquatic habitat. Whilst there is intermittent connectivity between Pond 2 and downstream environments, the connectivity between Ponds 1 and 3 and their downstream environment appears to be negligible. As such the removal of these ponds is unlikely to have an effect on their downstream environments. The primary effects of the proposed quarry expansion will be potential injury to or death of fish species, the loss of poor aquatic habitat and the loss of habitat and food sources for bird and insect species.</p> <p>The pre-mitigation magnitude of effect associated with the loss of pond habitat during quarry expansion is considered moderate, based on the artificial nature of the ponds and the availability of other artificial ponds in the wider catchment (making the proportional loss small).</p>	With the ecological value considered low and magnitude of effect considered moderate, the overall level of effects under EIANZ guidelines prior to mitigation is considered low.
<b><u>Tributary 1</u></b>	<p>The proposed quarry expansion would see the reclamation of Tributary 1 from immediately below Wetland 1 to immediately above Wetland 2 - approximately 311m in length. The channels within the wetland areas would be left in place to naturally revert to wetland ecosystems. The reclamation of this length of stream would remove all instream habitat within the impact reach and reduce migration pathways. This work also has the potential to cause death of or injury to native fish (although none were found during surveys and habitat availability is minimal).</p> <p>The magnitude of effect associated with the reclamation of this length of stream is considered high in the context of the complete and permanent loss of part of a degraded but natural stream system. This length of stream represents approximately 7% of all stream lengths within the site (based on Waikato Maps online mapping, 'river' layer). This loss is expected to cause minimal effect to the wider Mangatawhiri River catchment.</p>	With the ecological value considered low and magnitude considered high, the pre-mitigation level of effects under EIANZ guidelines is considered low.
<b><u>Stream 1</u></b>	Stream 1 will be the receiving environment for any treated stormwater runoff and associated sediment related to the construction of a new overburden storage area and additional cleared land due to the quarry expansion. Therefore, the direct impact will be the potential increase in peak flow due to the reduction in vegetation absorption and a potential increase in sediment or contaminants entering the waterway during rain events. Potential positive effects may include a reduction in nutrient input by converting what is currently stock-grazed land in	With a high ecological value and a high magnitude of effect, the unmitigated level of effect on Stream 1 would be very high, thereby requiring mitigation under EIANZ assessment guidelines.

	the greater riparian zone, into the overburden storage area on the true left of the stream.	
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## **Management of Effects**

### *Pond Reclamation*

The proposed extension of the quarry will see the total loss of 9,900 m<sup>2</sup> of low ecological value artificial ponds that under Waikato Regional Council criteria are classed as significant due to the presence of At-Risk species. While the overall pre-mitigation level of effect is low under EIANZ assessment guidelines, the presence of longfin eels and dabchicks utilising these ponds triggers habitat significance under the Waikato Regional Policy Statement Ecological Assessment Section 11A. Therefore, these effects require some form of ecological offsetting.

To offset the loss of habitat provision, it is recommended that raupō and rushland wetlands with open water areas be established within the site. Given that the level of effect is below that requiring mitigation/offset under EIANZ guidelines (as well as considering the artificial nature of the ponds and the expectation that the new wetland will provide a habitat with greater ecological function than the current ponds), the proposed area ratio is 1:0.5 to ensure that any ecological effect will be offset. In other words, for every square metre of pond reclaimed, 0.5 m<sup>2</sup> of wetland should be established and be protected in perpetuity.

It is envisioned that these wetlands will be created by restoring and extending the existing two wetlands in the lowland area of the site, resulting in a total wetland area of approximately 4900 m<sup>2</sup>. Tributary 1 would be directed into Wetland 1 and water would flow through this area before discharging into Stream 1. Wetland 2 would be fed by groundwater and by the outflow from the new proposed sediment pond adjacent to it. In addition to the newly created habitat for both terrestrial and aquatic fauna, the wetlands would provide additional filtration and flood mitigation services. Wetland 2 in particular will deliver further ecosystem services by providing polishing treatment to water discharged from the proposed sediment pond nearby. This type of wetland creation/enhancement will also aid in meeting iwi suggestions/requirements as indicated within the CVA by Ngāti Tamaoho Ngāti Te Ata, 2019.

The new areas of wetland would be created prior to infilling of the ponds and as such there would be time for the wetlands to become established and create additional habitat for native fauna species. This form of pre-impact offsetting allows for fully established habitat to be present at the time of habitat removal, as opposed to the standard approach which results in a time delay before the offset achieves ecological functionality/peek habitat provision.

If the above recommended compensation is carried out correctly, it is considered that the post-mitigation magnitude of effect will be negligible and may result in an increase in ecological functionality and habitat provision.

### *Tributary 1 Reclamation*

The proposed reclamation of Tributary 1 will result in the loss of approximately 311m of instream habitat, and will include the whole length of channel between Wetlands 1 and 2. While the level of effect is low under EIANZ assessment guidelines, the presence of longfin eel throughout the site's catchment results in the habitat being considered significant under Waikato Regional Policy Statement Ecological Assessment Section 11A. Therefore, these effects require some form of mitigation. In addition, Tributary 1 is a tributary of the Mangatawhiri River which flows into the Waikato River, and as such is subject to the requirements of the Vision and Strategy for the Waikato River.

To offset the loss of these functions it is recommended that riparian restoration along Stream 1 be undertaken. The main sources of degradation for Stream 1 are attributable to the lack of riparian vegetation and direct stock access. It is recommended that on both sides of Stream 1 a 7.5m margin be planted, a fence put in place to prevent stock access and a covenant be applied to protect the vegetation in perpetuity. Although it is acknowledged that this is not 'like-for-like' mitigation, it is considered that restoration of this large stream would deliver substantially more ecological benefit for the wider Mangatawhiri River system than finding and restoring a small length of degraded tributary elsewhere. It is considered that restoring the entire length of Stream 1 on site (approximately 930m in length or 13950 m<sup>2</sup> of stream area) should be sufficient to ensure that all ecological effects associated with the reclamation of 311m of Tributary 1 are offset.

The ecological improvements to be gained by restoring this length of Stream 1 will include:

- Creation of a riparian corridor extending down from the current area of native bush to the west;
- Bank stabilisation;
- Reduced peak flow rates during periods of heavy rainfall;
- Increased filtration activity to reduce sediment and nutrients entering the stream;



- Increased shading of Stream 1, thereby improving temperature regulation, improving dissolved oxygen levels and reducing overgrowth of periphyton;
- Increased organic debris input, providing food and habitat for macroinvertebrates (and thereby indirectly increasing food sources for native fish species); and
- Increased biodiversity by improving the interaction between the terrestrial and aquatic environments and providing habitat for terrestrial fauna species.

The current potential area for restoration of Stream 1 has been indicated within Appendix D of the EIA. A detailed site-specific planting plan will be created for this area by specialist ecological restoration contractors.

The water that would previously have flowed through Tributary 1 into Stream 1 would be captured by the proposed restoration and extension of Wetland 1, which would extend up to the edge of Stream 1 but remain “offline”. An outflow point would be created from Wetland 1 to allow it to flow into Stream 1 thereby maintaining connectivity with the upstream environment of Tributary 1.

Taking into account this proposed mitigation, the post-mitigation magnitude of effect for the reclamation of this reach of Tributary 1 is considered negligible.

#### *Sediment Output*

Vegetation removal and earthworks associated with the project have the potential to generate sediment which, if unmitigated, may enter the catchment’s freshwater ecosystems and cause significant ecological effects downstream. The implementation of stringent erosion and sediment control measures should be adequate to avoid adverse effects on the catchment’s freshwater ecological values. It is recommended that a project specific sediment and erosion control plan be prepared by a suitably qualified and experienced professional.

As part of this sediment and erosion control, four sediment retention ponds are already proposed within the current designs (two existing and two proposed). Stormwater flowing off the site will be captured by the sediment retention ponds and treated as it moves through these ponds prior to discharge. The magnitude of effect of the discharge of treated stormwater can only be estimated and depends on correct management and maintenance of the overburden storage areas and the treatment ponds. The overburden storage area should be managed to direct all stormwater runoff into one of the four sediment retention ponds and these ponds then treated with a suitable flocculant as appropriate.

If this sediment and erosion control is carried out correctly then the water entering Stream 1 should be similar quality to that currently within Stream 1, meaning the magnitude of effect is considered to be low or less than minor. The timeframe is still considered to be permanent as the proposed expansion stages of the quarry will continue for several decades.

#### *Fish Management*

Native fish are present within the ponds and potentially present within Tributary 1. Removal of the ponds and reclamation of Tributary 1 have the potential to cause injury to or death of native fish. Avoidance of reclamation or instream works within the channels flowing through the wetland areas will remove the risk of injury to or death of native fish in these reaches.

To minimise the risk to native fish it is recommended that prior to any works within the site’s aquatic environment an appropriately qualified and experienced freshwater ecologist should prepare and implement a project-specific Fish Management Plan (FMP). Any fish found within the areas to be reclaimed should be relocated to a suitable release site identified within the FMP.

If fish management is carried out correctly then the effects on native fish should be minimal (i.e. the risk should be substantially reduced and if any fish are injured or killed it will only be a tiny proportion of the population compared to the unmitigated situation). As such, the post-mitigation magnitude of effects for the areas to be reclaimed is considered low.

### **Conclusion**

The applicant proposes that consent conditions be imposed addressing the following aspects to ensure that any foreseeable ecological effects associated with the works are adequately managed and mitigated:

- Lizard Management
- Bat Management
- Bird Management
- Protection of re-vegetated areas in perpetuity by way of a covenant



In addition, a site-specific Ecological Management Plan (EMP) has been prepared for the site which aims to provide measures which will mitigate and manage foreseeable ecological impacts associated with the removal of protected habitat and enhance retained areas of indigenous biodiversity, refer **Appendix M**.

As discussed below, WRC have approved of the ESCP prepared by Southern Skies covering current and Stage 1 operations. The applicant has started the process of implementing this plan, which will ensure that there are no adverse environmental effects in respect of sedimentation and/or erosion.

With the imposition of the above, any adverse ecological effects of the expansion proposal will be managed so as to ensure they are less than minor or negligible.

## 6.10 Erosion and Sediment Effects

The operation and expansion of the quarry has the potential to create adverse erosion and sediment effects. This is particularly so for the overburden and vegetation removal in high risk erosion areas.

In an effort to address these effects, the applicant engaged WSP Opus to prepare an Erosion and Sediment Control Plan for Stage 1. In addition, a concept design was prepared for Stages 2 and 3, as it was considered too impractical to prepare a detailed design in this early phase for stages that are still many years in the future.

Upon lodging the original application, the ESCP prepared by Opus was peer reviewed by Bryant Environmental, who identified a number of points requiring refinement. At the same time, Bryant Environmental also completed an audit of compliance with existing consent conditions for the stormwater discharge consent (AUTH116015.01.01) which noted that a number of erosion and sediment control upgrades were required. Upon discussing the matter with WRC, the applicant engaged Southern Skies to prepare a new Erosion and Sediment Control Plan which addressed both the current non-compliances (identified by the audit) as well as the proposed Stage 1 design. This report is attached as **Appendix F** and was reviewed and signed off by Bryant Environmental (for WRC) and the applicant is in the process of putting in place the measures identified by said ESCP. The measures proposed by the ESCP will ensure that any erosion and sediment effects experienced are less than minor for Stage 1.

Insofar as designs for Stages 2 and 3 are concerned, we still contend that it is impractical to put in place detailed designs at this point in time, as the practicality and success of those plans would be too uncertain. As such, it is therefore proposed that a condition be imposed requiring the preparation (and approval by WRC) of detailed ESCPs for Stages 2 and 3 at appropriate times (such as upon the completion of Stages 1 and 2 respectively). Doing so will ensure that all anticipated effects are able to be managed and mitigated against appropriately.

In conclusion, the anticipated erosion and sediment effects will be less than minor.

## 6.11 Stormwater Effects

It is accepted that quarry activities have the potential to create adverse stormwater effects if appropriate mitigation measures are not imposed. As a result, the applicant engaged WSP Opus to prepare a Hydraulics Assessment report (**Appendix E**) detailing the external stormwater effects (to be differentiated from the internal stormwater effects, which are dealt with in section 6.10 above) and to identify appropriate mitigation measures to deal with those effects.

As outlined in sections 3 and 4 of this report, each of the three stages will involve a series of stormwater management devices. In order to ensure that the stormwater effects are appropriately addressed, these devices will be installed prior to the completion of each stage. This section provides a summary of the stormwater management objectives, the main risk components as well as proposed measures to deal with the same.

### 6.11.1 Proposed management approach

As part of planning the proposed expansion of the quarry, the applicant considered the preferred boundaries to ensure the most effective excavation methods to get the materials required, as well as the natural topography of the land to minimise effects. As the quarry expands into surrounding catchments, the overland flow management consists of cut off drains to divert flows away from the quarry face. In most areas, the ground falls away from the quarry and therefore, as the quarry expands, the catchment areas surrounding the quarry will reduce. The cut-off drains will be sized using the rational method and the management approach assumes that 'V' shaped drains will be constructed (however trapezoidal channels are also acceptable).

In areas of steep topography, the diversion drains will require energy dissipation and erosion protection. The management approach assumes that this will be provided in the form of rock rip rap protection given the materials availability, however alternatives such as flumes, geofabrics etc., are also acceptable. Areas consisting of vegetation (grazing and bush areas) are considered clean and discharge directly to the existing streams/channels. Any un-stabilised

rock faces are considered 'dirty' and are directed towards the internal treatment devices, as per the ESCP in **Appendix F**.

### 6.11.2 Risks

The Hydraulic Assessment identifies a number of risks as well as recommendations for how to manage the same (refer to section 5.1 of that report), repeated below for ease of reference.

Identified Risk	Description	Recommendation
Ponds/Dams	Pond D has been identified as being larger than the specified 4m retained height and therefore requires compliance with the NZ Dam Safety requirements. Dam volumes have not been calculated as no survey information below the water level is available.	Complete a dam safety assessment/audit on all ponds and follow any recommendations.
	As the quarry expands closer to the existing ponds, slope/face stability issues and seepage are likely to occur. Potentially water may enter the excavation pit and erode sections of the face increasing the stormwater management requirements.	Complete a hydrogeological/geotechnical risk assessment prior to the excavation face extending towards the existing ponds and follow any recommendations.  Storage of large water bodies above excavations are not recommended and removal of ponds may be required. Manage seepage and inflows.
Groundwater/watercourse	As the quarry expands closer to the existing watercourse to the west, slope/face stability issues and seepage are likely to occur.	Complete a hydrogeological/geotechnical risk assessment prior to the excavation face extending towards the existing watercourses and follow any recommendations.  Manage seepage and inflows.
Springs/seepage	As the quarry expands it is likely that the inflows from springs (into the quarry pit) will increase the water management capacity required.	As springs/inflows are identified/uncovered, these are to be assessed and managed. Estimate spring flows will need to be allowed for.  It is recommended that any stormwater infrastructure installed includes a contingency for these additional flows.

### 6.11.3 Mitigation

The Hydraulic Assessment makes a specific recommendation in respect of Pond D, which is greater than 20,000 litres and taller than 4 m. As such, WSP Opus recommends that the *Dam Safety Guidelines* are followed to ensure that the pond complies to the required safety standards. The assessment further notes that slope stability should be continually assessed as the quarry expands, and when existing ponds are removed, spring/inflows/seepage will need to be managed.

### 6.11.4 Summary

Due to the quarry pit extension reducing the adjacent catchments, the effects in terms of the external stormwater is considered minimal as the staging will reduce the total surface water flows. This reduction in external quarry flows relates to an increase in the internal quarry flows which is managed through the internal drainage. Although careful planning and risk management will be required for the expansion(s), the effects to the (external) overland flows and adjacent catchments are relatively easily managed by the staged approach. In other words, with the proposed mitigation and management methods, the stormwater effects will be less than minor.



## 6.12 Water take effects

### 6.12.1 Efficiency of Water Usage

The Waikato Regional Policy Statement and the Waikato Regional Plan outline a responsibility on users and Waikato Regional Council to ensure that any water taken from the Region's resources is used efficiently for the purpose for which it is taken. This is of the utmost importance now when the pressure on the Waikato River catchment is high (and constantly increasing).

As explained in sections 3.2.7 and 4.1.5 above, water is collected through the quarry face and stored in tanks. This is then used for dust suppression within the site. As explained earlier, the granted daily water take is 50 m<sup>3</sup> which allows the applicant to properly cater for dust suppression (with the assistance of appropriate water harvesting), which is considered to result in appropriate water efficiency as, while the quarry will expand, no additional water will be required to address dust (see further under section 6.7 above).

### 6.12.2 Impact on water flow

In terms of the impact on Waipunga Stream and its tributaries and while calculations of the relevant Q5 for the catchment have not been carried out, it is noted that a water take of 50 m<sup>3</sup>/day is unlikely to have any effects at all on the water flow. This is particularly so given that the water take is existing, and the water is not 'taken' from a watercourse but rather collected through the quarry faces. While it is accepted that collecting water in this fashion alters how the water flows within the catchment, volumes of this level are likely to be inconsequential to the overall flow of either of the Waipunga Stream or, eventually, the Waikato River.

## 6.13 Land Stability Effects – Overburden and Cleanfill Disposal

HD Geo has prepared an Earthfill Methodology for the disposal of overburden and cleanfill, refer to **Appendix M**.

The methodology has been further described in sections 3.2.3, 4.1.2 and 4.1.3 above and is not repeated herein other than to confirm that the purpose of the methodology is to ensure that any instability and/or erosion effects are appropriately addressed through fill design. In that sense, the anticipated land stability effects will be negligible when the methodology is adhered to. It is also noted that the Methodology more or less proposes methods already used by the McPhersons.

In addition, the Methodology includes a Trigger Action Response Plan, which provides detailed response actions should any of the identified risks or triggers occur onsite. Having the TARP in place will therefore further minimise any stability or erosion issues to the point where these are negligible.

## 6.14 Positive Effects

The quarry industry serves an important economic and social purpose in this district and this quarry forms part of that. This proposal makes good use of the natural resource on the site (being aggregate) and does so in a way that will not result in adverse environmental effects that are more than minor (subject to appropriate mitigation measures). The quarry also contributes to the economic and social wellbeing of the local community, in that it creates employment opportunities as well as revenue (both of which are beneficial to the district).

In summary, allowing the McPherson Quarry to continue operating (including the proposed expansion) will bring about positive effects for not only the McPhersons but also for the wider, local community in that it provides local employment opportunities, it increases the district's revenue stream and it ensures the sustainable and continued use of a valuable natural resource.

# 7 Planning Documents

## 7.1 Waikato Regional Policy Statement

The Waikato Regional Policy Statement (WRPS) became operative in May 2016 and provides for an overview of the resource management issues in the Waikato region. The objectives and policies that are of particular relevance to this proposal are:

- Objective 3.1 Integrated management
- Objective 3.2 Resource use and development
- Objective 3.9 Relationship of tangata whenua with the environment
- Objective 3.10 Sustainable and efficient use of resources



- Objective 3.11 Air quality
- Objective 3.15 Allocation and use of fresh water
- Objective 3.20 Outstanding natural features and landscapes
- Objective 3.21 Amenity
- Objective 3.24 Natural hazards
- Policy 4.1 Integrated approach
- Policy 4.4 Regionally significant industry and primary production
- Policy 5.2 Manage discharges to air
- Policy 6.8 Access to minerals
- Policy 8.2 All fresh water bodies
- Policy 8.7 Efficient use of fresh water
- Policy 11.1 Maintain or enhance indigenous biodiversity
- Policy 11.2 Protect significant indigenous vegetation and significant habits of indigenous fauna
- Policy 12.1 Outstanding natural features and landscapes

The impact of the proposal on the environment and its surrounds will be no more than minor provided that the mitigation and offset measures proposed in this report are implemented. In addition, the operation will provide for a nationally significant industry (being the quarry industry) and thereby enable McPhersons to sustainably use a resource while benefitting the local area's economic wellbeing.

In addition, Policy 6.8 refers specifically to the:

- need for mineral resources to be available for infrastructure and building developments; and
- potential benefits of further development of the region's minerals and providing for the continued operation of existing lawfully established mineral extraction activities.

In this instance, the McPherson Quarry has operated from this site for over 60 years, the majority of that time under existing use rights. In addition, quarries such as this one is best placed in the rural environment (see further under WRP and ODP below), being a less sensitive environment with less dense housing and where the environmental effects created by its operations are better accommodated.

In summary, the proposal is not considered to be contrary to the WRPS.

## 7.2 Vision & Strategy for the Waikato River/Te Ture Whaimana o Te Awa o Waikato

The Vision & Strategy for the Waikato River/Te Ture Whaimana o Te Awa o Waikato (Vision & Strategy) is the primary direction setting document for the Waikato and Waipa Rivers and prevails over any inconsistencies in a national policy statement or New Zealand coastal policy statement. It is deemed to be part of the Waikato RPS.

The Vision & Strategy states that the Waikato and Waipa Rivers are degraded and require, amongst other things, restoration and protection.

The particularly relevant objectives and strategies of the Vision & Strategy for this proposal are as follows:

Objectives	Strategies
a. The restoration and protection of the health and wellbeing of the Waikato River.	i. Encourage and foster a 'whole of river' approach to the restoration and protection of the Waikato River, including the development, recognition and promotion of best practice methods for restoring and protecting the health and wellbeing of the Waikato River.
e. The integrated, holistic and coordinated approach to management of the natural, physical, cultural and historic resources of the Waikato River.	
f. The adoption of a precautionary approach towards decisions that may result in significant adverse effects on the Waikato River, and in particular those effects that threaten serious or irreversible damage to the Waikato River	
g. The recognition and avoidance of adverse cumulative effects, and potential cumulative effects, of activities undertaken both on the Waikato River and within its	



catchments on the health and wellbeing of the Waikato River.	
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Comment:

The proposal is not considered contrary to the Vision & Strategy based on the fact that there are no adverse effects being introduced by the proposed water take or stormwater discharges. The quarry has been operating for many decades, and part of that with existing water take and discharge consents issued by WRC. In addition, the quarry is in the process of implementing a new erosion and sediment control system to ensure that all dirty water collected through the quarry activities is appropriately retained, treated and discharged at a reasonable rate. Details of this system and the anticipated improvements to the discharges are further described in sections 3.2.6 and 6.10 above.

In addition, the stormwater discharge point has been sampled over many years and the results have been provided to the Waikato Regional Council, with compliance regularly being assessed as high. It is acknowledged that one of the most recent reports identified a non-compliance with sediment levels, however this was tested before the installation of the new Sediment Retention Ponds, as designed by Southern Skies. With the updated erosion and sediment design in operation, it is anticipated that the quality of the water discharged will be improved and that any historical non-compliances will be addressed.

It is further noted that the EIA has confirmed that with the implementation of the EMP attached as **Appendix M**, any freshwater effects of the proposal will be managed in such a way that they are less than minor or even negligible, with a slight benefit being recognised based on the proposed improved wetlands and riparian planting of Stream 1.

By way of commenting on the specifics of the identified objectives and policies, the following points are made:

- a. The Waikato River will not be negatively impacted by this proposal, based on the low levels of water collected (rather than extracted) from the catchment and the improved erosion and sediment controls on site, which will ensure that any water discharged from the site will be of a better quality than existing in Stream 1 and discharged at a quantity that will not cause adverse effects.
- e. The quarry has formed part of the environment for over 60 years and this will continue to be the case as long as operations continue. The proposal to continue operating and expand the quarry contain a range of environmental 'safeguards' and holistic measures that ensure that, while aggregate is extracted from the site, the potential adverse impact on the environment is adequately mitigated against. In that sense, while a small amount of water that would otherwise have flown into the Waikato River will be used onsite, the vast majority of this will be returned and will be treated by appropriate water treatment devices in the process.
- f. This proposal will not result in 'significant adverse effects' on the Waikato River. In fact, any effects on the River will be negligible if at all noticeable, given the small 'water footprint' of the quarry operations and the measures proposed to address any effects created by the same.
- g. It is accepted that cumulative effects can have an impact on water (and the Waikato River in particular) and that this is an important factor to take into account when determining any proposed activity. However, in this instance the proposal involves an existing activity which already forms part of the overall environment. In addition, the quarry itself has operated under water take and discharge consents for the last 10 years, with only one known non-compliant result, which related to discharge water quality. This has since been rectified through the construction of a new and improved erosion and sediment control system, meaning the water quality will be improved going forward.

In addition and as noted above, the EIA confirms that the proposed riparian margin planting of Stream 1 (and fencing of the same) will lead to an improvement in water quality of the water in that stream. This improvement or betterment is considered in keeping with the level of effects generated by the proposal (all less than minor or negligible) and in summary, the Vision and Strategy is considered to be met.

## 7.3 Waikato Regional Plan

The Waikato Regional Plan (WRP) is intended to provide direction regarding the use, development and protection of natural and physical resources in the Waikato region. The relevant objectives and policies are assessed below.

Objectives	Policies	Comments
3.1.2 The management of water bodies	3.2.3.1: Management of Water Bodies  3.2.3.4: Waikato Region Surface Water Class	Water is used in order to manage the environmental effects associated with operating the quarry (such as dust suppression) and the discharges are all managed so that there are minimal adverse effects on the environment. At the same time, the activity benefits not



3.3.2 Water Takes	<p>3.3.3.8: How surface water takes will be classified in catchments that do not exceed the Table 3-5 allocable flows</p> <p>3.3.3.11: Consent application assessment criteria – surface water</p> <p>3.3.3.15: Consent duration for the taking of water</p> <p>3.3.3.16: Water take recording and reporting</p> <p>3.3.3.17: Water shortage conditions</p>	only the McPhersons but also the local community, in that it brings employment to the region as well as makes efficient use of the natural resource available on site.
3.5.2 Discharges	<p>3.5.3.1: Enabling discharges to water that will only have minor adverse effects</p> <p>3.5.3.7: Stormwater discharges (at-source management and treatment)</p>	
5.1.2 Accelerated Erosion	<p>5.1.3.1 Managing activities that cause or have the potential to cause accelerated erosion and encouraging appropriate land management practices</p> <p>5.1.3.2 Use of regulatory and non-regulatory approaches of management for soil disturbance/vegetation clearance activities in High Risk Erosion areas</p>	Provided that the measures proposed in this report are implemented, the expansion of the quarry and the associated vegetation clearance will not result in any increased erosion. In addition, the quarry has operated on this site for over 60 years with appropriate land management practices and without any major incidents relating to accelerated erosion.
5.2.2 Discharges onto or into land	5.2.3.1 Other discharges onto or into land	The quarry activities will not adversely affect the soil or the water quality provided that the methods proposed in relation to stormwater, erosion & sediment control and freshwater ecology are implemented.
6.1.2.3 Cumulative effects of discharges on ambient air quality	6.1.3.1 Low risk discharges to air enabled	As outlined in section 4 and 6 of this report, the air discharge created by the quarry is generally dust. This is managed through a variety of dust suppression methods (such as watering and road sealing), which means that there is no dust nuisance beyond the border of the site.

In summary, the proposal is considered consistent with the objectives and policies of the WRP.

## 7.4 Operative Waikato District Plan (Franklin Section)

Objectives	Policies	Comments
17A.2. To maintain and enhance the quality and quantity of water resources	N/A	As explained herein, the quarry deals with all water onsite and the water quality is not impacted by the operations.
17A.3. To preserve and enhance remaining indigenous ecological resources and enhance their contribution to biodiversity, landscape and amenity values.	N/A	It is acknowledged that the quarry is surrounded by an SNA, a small portion of which is contained within the site and which will be affected by this proposal. In saying that, the removal of indigenous vegetation is limited to 2.45 ha, which is a very small portion of the surrounding indigenous forest. In addition, the applicant is proposing to undertake offset mitigation
17A.4. To protect natural character, outstanding	N/A	



landscape features and values.		planting to ensure that the effects are appropriately managed.
17A.5. To recognise and provide for the life supporting capacity of versatile land and its contribution to the economic and social wellbeing of the district.	N/A	The quarry industry serves an important economic and social purpose in this district and this quarry forms part of that. This proposal makes good use of the natural resource on the site (being aggregate) and does so in a way that does not result in adverse environmental effects that are more than minor (subject to appropriate mitigation measures).
17A.7. To enhance opportunities to utilise the productive potential of natural resources in an environmentally sustainable manner.	N/A	
17C.2.1.2 To manage landuse activities, subdivision and development carefully so that versatile land resources are not compromised, reverse sensitivity issues are minimised and rural character and amenity values are maintained or enhanced.	17C.2.2.10 That the presence of agriculture and horticulture activities, mineral extraction sites, rural industry and major industrial activities be included as a relevant consideration in making resource management decisions.	<p>Mineral extraction sites are anticipated to be in the Rural zone, meaning that the effects associated with the same insofar as dust, noise, vibration, amenity and visual appearance are concerned, are common and expected in this zone. The McPherson Quarry has operated from this site for over 60 years and therefore forms part of the landscape and contributes to the wider amenity. In addition, the proposal includes a number of mitigation and offset measures to ensure that any adverse effects are appropriately managed, including those resulting from the need to remove a small area of indigenous forest (with specific plans to plant replacement indigenous bush and/or trees).</p> <p>The quarry contributes to the economic and social wellbeing of the local community, in that it creates employment opportunities as well as revenue (both of which are beneficial to the district).</p> <p>While it is acknowledged that quarries may give rise to reverse sensitivities, effects are able to be managed in such a way that the operations do not create unrealistic or unreasonable results for the immediate neighbours.</p>
17C.2.1.4 To avoid, remedy or mitigate the adverse effects of reverse sensitivity between agriculture and horticulture activities, mineral extraction sites, rural industry, major industrial activities and countryside living opportunities.	17C.2.2.13 Protect areas of significant indigenous vegetation and fauna habitats.	
17C.2.1.9 To provide for local social, cultural and economic non-residential activities of an appropriate size and scale that maintain and/or enhance rural character, rural productivity and the wellbeing of the people and communities of, and visitors to, the district.	17C.2.2.14 Encourage planting of indigenous forestry and sustainable forestry in appropriate locations.	
17C.3.1.2 To manage conflicts between different productive primary activities and with residential activities while recognising that a certain level of noise, odour and other adverse effects are characteristic of the rural and coastal environments.	17C.3.1.3.1 Activities in the rural area shall not create effects of noise, odour, dust and spray that would not normally be expected from a predominantly rural environment.	
17C.3.2.2.1 To avoid or minimise the adverse effects of activities on outstanding natural features and significant habitats	17C.3.2.4.5 Providing for mineral extraction as a Discretionary activity in the Rural Zone (refer to Rule 23A.1.4).	

In summary, the proposal is considered consistent with the objectives and policies of the ODP.

## 7.5 Proposed Waikato District Plan

The quarry is zoned Rural in the PDP, meaning that the proposal needs to be assessed as against the Rural zone objectives and policies (insofar as they are relevant to the proposal).

Objectives	Policies	Comments
5.3.1 Rural character and amenity values are maintained.	5.3.5 a. Manage the effects of earthworks to ensure that: i. Erosion and sediment loss is avoided or mitigated; ii. The ground is geotechnically sound and remains safe and stable for the duration of the intended land use; iii. Changes to natural water flows and established drainage paths are avoided or mitigated; Adjoining properties and public services are protected.	The earthworks associated with the quarry (i.e. vegetation, overburden and rock removal) are managed so as to ensure that erosion and sediment loss is avoided or mitigated. Any proposed changes to the drainage paths are well thought out and are intended to reduce the environmental effects further.
	5.3.7 a. Recognise the following features are typical of the rural environment and the effects are accepted and able to be managed: i. ... ii. Noise, odour, dust, traffic and visual effects associated with the use of land for farming, horticulture, forestry, farm quarries; iii. Existing mineral extraction and processing activities; b. Avoid adverse effects outside the site and where those effects cannot be avoided, they are to be mitigated. c. ... d. The scale, intensity, timing and duration of activities are managed to ensure compatibility with the amenity and character of the rural environment.	Being in a Rural zone, a certain level of noise, dust, traffic and visual effects are naturally anticipated and therefore protected by Policy 5.3.7(a). In this instance, the effects of the proposal will be managed so as to ensure that there are no unreasonable or more than minor adverse effects.  In addition, the quarry only operates during business hours Monday to Saturday, during which time other businesses in the zone will be operating and contributing to the effects identified as acceptable in this area.
	5.3.13 a. Provide for the rehabilitation of existing quarry sites, including landfill and cleanfill activities, where there is an environmental gain.	The quarry is still fully operative and is seeking to expand to ensure it can meet market demand. However, once the quarry is no longer operative or as stages become superfluous, it is anticipated that rehabilitation will be able to begin.
	5.3.15 a. Adverse effects of noise and vibration are minimised by: i. Ensuring that the maximum sound levels are compatible with the surrounding environment;	The quarry does a certain amount of blasting, which is required in order to extract the aggregate. This is not an everyday occurrence but happens as and when blasting is required. It is acknowledged that blasting results in adverse noise and vibration effects that need to be managed appropriately. In saying that, it is a temporary activity which has a short duration, which in itself means that the environmental effects are limited.



	<ul style="list-style-type: none"> <li>ii. Limiting the timing and duration of noise-generating activities;</li> <li>iii. Maintaining appropriate buffers between high noise environments and noise sensitive activities;</li> <li>iv. ...</li> <li>v. Managing the location of sensitive land uses, particularly in relation to lawfully-established activities;</li> <li>vi. ...</li> <li>vii. Ensuring the adverse effects of vibration are managed by limiting the timing and duration of blasting activities and maintaining sufficient setback distances between aggregate extraction activities and dwellings or identified building platforms on another site.</li> <li>i. Manage noise to protect existing adjacent activities sensitive to noise effects.</li> </ul>	<p>The McPhersons monitor their blasting and produce regular reports which identify the specifics of the vibration effects. All of these results have been well within the prescribed, legislative vibration requirements.</p> <p>It is also important to remember that the quarry has operated from its current location for over 60 years and has always been found to be compliant with noise and/or vibration standards.</p>
	<p>5.4.2</p> <ul style="list-style-type: none"> <li>a. Enable extractive industries provided that adverse effects are avoided, remedied or mitigated.</li> <li>b. Protect access to, and extraction of, mineral resources by: <ul style="list-style-type: none"> <li>i. Identifying lawfully established extractive industries in Aggregate Extraction Areas and Coal Mining Areas on planning maps;</li> <li>ii. Identifying the site of a potential extractive industry within an Aggregate Resource Area on planning maps;</li> </ul> </li> <li>c. Ensure that lawfully established extractive industries are not compromised by new subdivision, use or development;</li> </ul>	<p>As outlined in this report, the applicant proposes to implement a number of mitigation measures (many of which are already existing) aimed at addressing adverse effects related to dust, noise, vegetation removal, and onsite water management (including erosion and sediment control measures). In addition, the mineral extraction industry is very important to this region and creates employment for local residents by sustainably extracting a valuable natural resource.</p>

## 8 Statutory Considerations

### 8.1 Resource Management Act 1991

Section 104(1) of the RMA outlines matters which the consent issuing authority must have regard to when considering an application for resource consent. The matters that are particularly relevant to this application are:

- Any actual and potential effects on the environment of allowing the activity
- Any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity
- The WRPS
- The WRP
- Part II of RMA



The Assessment of Environmental Effects and assessment of the activity against the WRPS and WRP have been addressed above. The relevant sections of RMA are addressed below.

#### 8.1.1 Section 104

##### **Section 104B – Determination of applications for discretionary or non-complying activities**

*After considering an application for a resource consent for a discretionary activity or non-complying activity, a consent authority –*

- a) *May grant or refuse the application; and*
- b) *If it grants the application, may impose conditions under section 108.*

The AEE contained in section 6 of this report concludes that overall, the proposed activities will not have a more than minor level of effect on the environment, subject to appropriate mitigation and offset measures being put in place. Section 7 of this report assessed the proposal against the relevant objectives and policies. It was found that the proposed activities are not contrary to these objectives and policies. Accordingly, the proposal can be granted, subject to reasonable conditions.

#### 8.1.2 Part II

##### **Purpose – Section 5**

The overriding purpose of the RMA is ‘to promote the sustainable management of natural and physical resources’, as defined in section 5(2). Having regard to this definition, the McPhersons are applying for a suite of consents to allow their existing quarry operations to continue, as well as to allow for expansion over the next 45 years. These consents will enable the quarry to continue to provide for the social and economic wellbeing and health and safety of the community by ensuring that enough aggregate is continued to be supplied to the market. Aggregate products are vital for the building, construction, landscaping and infrastructure industries and are a key base material in many projects and when properly designed and managed, quarrying activities are important for the operation of society. The suite of consents will therefore promote the sustainable management of the relevant natural and physical resources in accordance with section 5 of the RMA.

##### **Matters of National Importance – Section 6**

Section 6 of the RMA requires a number of key matters of national importance to be recognised and provided for. These include the protection of outstanding natural features and landscapes from inappropriate subdivision, use and development, the protection of indigenous vegetation and fauna, the relationship of Māori and their culture and traditions with their ancestral lands, water, waahi tapu sites and other taonga.

While the proposal includes the removal of a small amount of indigenous forest over the course of the next 45 years, appropriate offset planting measures will be put in place to ensure that these effects are appropriately managed. In addition, the removal of said forest is necessary in order to make appropriate use of the resource, being aggregate. The proposed management methods and mitigation will ensure that any effects on freshwater and/or fauna are mitigated appropriately.

In summary, the proposal is considered consistent with section 6 of the RMA.

##### **Other Matters – Section 7**

Section 7 of the RMA sets out other matters that Council is to have particular regard to in achieving the purpose of the RMA. The key matters of relevance to this application are:

- b) *The efficient use and development of natural and physical resources;*
- f) *Maintenance and enhancement of the quality of the environment.*

The proposal is to ensure that McPherson can continue to extract and supply the market with aggregate, which is crucial to enable the further growth of the district. In doing so, the quarry will put in place appropriate mitigation and offset measures to ensure that any adverse environmental effects are less than minor. In other words, particular regard has been had to the relevant matters of section 7 of the RMA.

##### **Treaty of Waitangi – Section 8**



Section 8 of the RMA requires the principles of the Treaty of Waitangi (Te Tiriti o Waitangi) to be taken into account in the consideration of any resource consent application. While there is no single set of Treaty principles, over time a number of specifics have been determined by the Courts as applying, namely: partnership, reciprocity, autonomy and active protection.

While the applicant understands and accepts that these principles are relevant in decisions involving the environment, this application relates to an activity which has been in place for over 60 years. In that time, the applicant or its predecessor have on occasion had dealings with local iwi groups and/or Māori trusts and no concerns have been raised in relation to the quarry activities. Local iwi have assessed the proposal and have provided a CVA outlining a number of recommendations, all of which have been addressed by the applicant. In summary, it is considered that the proposal will not offend the principles of the Treaty.

## 8.2 National Policy Statement for Freshwater Management 2014 (amended 2017)

The only National Policy Statement relevant to the proposal is that relating to Freshwater Management (Freshwater NPS), which sets out objectives and policies for freshwater management. Some of the key requirements of the Freshwater NPS are to:

- consider and recognise Te Mana o te Wai in freshwater management
- safeguard fresh water's life-supporting capacity, ecosystem processes, and indigenous species
- safeguard the health of people who come into contact with the water
- maintain or improve the overall quality of fresh water within a freshwater management unit
- improve water quality so that it is suitable for primary contact more often
- protect the significant values of wetlands and outstanding freshwater bodies
- follow a specific process (the national objectives framework) for identifying the values that tāngata whenua and communities have for water, and using a specified set of water quality measures (called attributes) to set objectives
- set limits on resource use (eg. how much water can be taken or how much of a contaminant can be discharged) to meet limits over time and ensure they continue to be met
- determine the appropriate set of methods to meet the objectives and limits
- take an integrated approach to managing land use, fresh water and coastal water
- involve iwi and hapū in decision-making and management of fresh water

This proposal includes appropriate mitigation and offset measures which will ensure that any water effects are appropriately managed and that the water quality is not adversely affected. In summary, the proposal is not inconsistent with the Freshwater NPS.

## 8.3 National Environmental Standard for Air Quality

The only National Environmental Standard relevant to the proposal is that relating to Air Quality (Air Quality NES), which includes:

- seven standards banning activities that discharge significant quantities of dioxins and other toxics into the air
- five standards for ambient (outdoor) air quality
- a design standard for new wood burners installed in urban areas
- a requirement for landfills over 1 million tonnes of refuse to collect greenhouse gas emissions.

Given that the proposal relates to operating a quarry where the air discharges are going to be limited to non-contaminated dust (which will largely be contained within the site boundaries), the proposal does not give rise to any discharges specifically targeted by the Air Quality NES and is considered consistent with the same.

# 9 Conclusion

This report has outlined the existing and proposed quarrying activity and has demonstrated that the effects of the proposal will largely be less than minor, save for in relation to the vegetation removal, which may be minor on the immediate neighbours.

The existing quarry site and its surrounds are considered to represent an ideal location for the proposed expanded activities, given its long history of operating from this site and the ability to appropriately address any environmental effects created by its operations. The fact that the quarry has operated from this location for over 60 years also means that it very much forms part of the receiving environment, which further reduces the impact on the surrounding area.



This report has considered the proposal in terms of the relevant planning documents, particularly the Waikato Regional Policy Statement, the Waikato Regional Plan, and the Operative and Proposed Waikato District Plans. The proposed activities are considered to be consistent with the objectives, policies and assessment criteria of these plans. In addition, the quarry provides an important resource to both the district and to the region in an environmentally appropriate and sustainable manner. The provision of a secure source of high-quality rock product will be a valuable resource for all residents and will also provide local employment and revenue opportunities.

All in all, the purpose of the RMA is able to be achieved by granting consent for the existing and expanded quarrying activity, subject to appropriate consent conditions.





## Appendix A   Certificates of Title



## Appendix B   Staging Plan



## Appendix C Existing Waikato Regional Council Resource Consents



## Appendix D Landscape & Visual Assessment (Opus) and Peer Review Response (Mansergh Graham)





## Appendix E    Hydraulic Assessment (Opus)



## Appendix F Erosion & Sediment Control Plan – Stage 1 (Southern Skies)



## Appendix G      Concept Erosion & Sediment Control Plan – Stages 2 & 3 (Opus)



## Appendix H Traffic Impact Assessment (Opus)



## Appendix I     Blasting Records (Orica)





## Appendix J Ecological Impact Assessment (NZ Ecology) and Vegetation Report (Opus)



## Appendix K Ecological Management Plan (NZ Ecology)



## Appendix L Noise Assessment (Hegley Acoustics)



## Appendix M Earthfill Methodology (HD Geo)



## Appendix N Draft Quarry Management Plan





## Appendix O Correspondence Waikato District Council (Michelle Smart) and NZTA



## Appendix P Consultation Documentation



## Appendix Q Cultural Values Assessment







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