

# **Appendix N**

## **Draft Quarry Management Plan**

McPherson  
Quarry  
Limited

# Quarry Management Plan



December 2019

Version: Draft

McPherson Road, Mangatawhiri

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## 1. Purpose

This document represents the current best practise compliance plan for the Consents issued for the McPherson Quarry (refer to **Appendix A**). The purpose of this plan is to ensure that operations and

environmental risks are managed appropriately, and within the conditions of the resource consents issued by Waikato District Council (WDC) and Waikato Regional Council (WRC).

All reviews and changes MUST be approved by both Councils before implementation.

## 1.1 Site Process

The site operates as a commercial weathered greywacke quarry with operations including:

1. Operations
  - Rock extraction, blasting, crushing, screening and sales
  - Control of dust, noise, stormwater and traffic
2. Projects
  - Stormwater treatment systems
  - Overburden stripping and storage
  - Cleanfill disposal
  - Silt and sediment controls
3. Monitoring
  - Control and mitigation of dust, noise, stormwater and traffic
  - Riparian planting
  - Water extraction

## 1.2 Emergency Contact Numbers

In the event of an emergency, a list of key contacts can be found in **Appendix B**. An emergency includes:

- Environmental compliance
- Civil defence

# 2. Operations

## 2.1 Accidental Discovery Protocols

McPherson Quarry have endorsed the Accidental Discovery Protocol outlined by Ngati Tamaoho and Ngati Te Ata which is discussed in their Cultural Values Assessment (CVA). This includes the accidental discovery of waahi tapu<sup>1</sup>, taonga<sup>2</sup> and other heritage sites<sup>3</sup>. The protocol outlined in the CVA states that:

- *Given the lack of any potential archaeological features or materials encountered during the site visit, as well as the high degree of modification to the landscape within the proposed works area, it has been determined that the risk of encountering intact archaeology during the proposed works is low. It is recommended that the proposed ongoing operation of the quarry proceed under an Accidental Discovery Protocol*

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<sup>1</sup> 'Waahi tapu' - means lands and places that hold special and/or specific meaning to tangata whenua; and include but are not limited to:

- A place known to be special or associated with their tupuna and which does not have obvious physical and surface attributes
- A place or feature that has special significance to Ngati Tamaoho and/or Ngati Te Ata;
- Land of special cultural, spiritual and historical meaning;
- Places which are sacred in the traditional and religious or ritual order;
- Objects or features (water and land) of special cultural, historical and emotion association and significance;
- Other natural resources that sustain life and that are culturally and historically important to the hapu to which they belong.

<sup>2</sup> 'Taonga' - means weapons, agricultural tools, decorated stones or shell and other cultural items used historically by tangata whenua

<sup>3</sup> 'Heritage sites' - means places that have archaeological or other physical features deserving of preservation or investigation.

*(ADP). Under an ADP, if suspected archaeological material is encountered, then works must stop and an archaeologist contacted for further advice; and*

- *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*

## Accidental Discovery of Koiwi

The following Accidental Discovery Protocols will be adopted in the event that koiwi<sup>4</sup> or taonga are unearthed or are reasonably suspected to be present during the preparation of vegetation clearance and removal:

1. Immediately it becomes apparent or is suspected by workers on site that koiwi or taonga have been uncovered all activity on the site will cease.
2. The machinery operator will shut down all machinery or activity immediately, leave the area and notify his/her supervisor or the responsible person of the chance find;
3. The Site Manager shall immediately secure the area to ensure that the koiwi or taonga remain untouched or undamaged;
4. The responsible person shall notify the NZ Police and Ngati Tamaoho and Ngati Te Ata representatives (and dependent on what is uncovered the NZ Historic Places Trust) that it is suspected that koiwi or taonga have been uncovered at the quarry;
5. The Site Manager shall ensure that the ground and area of the chance find under observation is roped off and protected. They will also meet and guide Kaumatua, NZ police, the NZ Historic Places Trust and other agency representatives to the place and assist with any requests that may be made;
6. McPherson in consultation with Ngati Tamaoho and Ngati Te Ata will ensure that the necessary legal requirements are met should koiwi or other taonga be located;
7. McPherson shall ensure that Ngati Tamaoho and Ngati Te Ata Kaumatua are given the opportunity to undertake karakia and other cultural observations as may be considered appropriate;
8. Following the completion of all legal requirements and the necessary kawa and tikanga, the koiwi or taonga shall be reinterred at Ngati Tamaoho and Ngati Te Ata urupa so as to avoid any further disturbance or effect.

## Accidental Discovery During Vegetation Clearance

Taonga of Ngati Tamaoho and Ngati Te Ata is important to them as it provides a direct link with their heritage and their past and must be preserved. In the event of a chance find of taonga significant to Ngati Tamaoho and Ngati Te Ata during vegetation clearance the following steps shall be taken in the order presented:

1. The work that uncovered the taonga is to cease immediately and a buffer zone with a 20 metre radius established;
2. McPherson’s Management Team will ensure that all construction equipment and activity within the buffer zone is shut down;
3. McPherson in consultation with Ngati Tamaoho and Ngati Te Ata may undertake activities that are necessary to recover plant from the site and buffer zone<sup>5</sup> and complete works necessary to satisfy health and safety requirements, stabilisation works or those that are necessary to control erosion from the site;
4. McPherson will ensure that immediate steps be taken to secure and mark out the buffer zone<sup>6</sup> in order to secure the find and to ensure the taonga or relevant site remains undisturbed and the site is safe in terms of health and safety requirements;

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<sup>4</sup> 'Koiwi' - means physical skeletal human remains

<sup>5</sup> For example, the recovery and transportation of materials and/or vehicles from the site and protection zone

<sup>6</sup> For the avoidance of doubt work may continue outside of the buffer zone

5. As soon as the buffer zone is established, and the site is secure McPherson shall ensure that Ngati Tamaoho and Ngati Te Ata representatives are notified;
6. All parties will work towards allowing construction works to recommence as soon as possible while ensuring that any taonga or relevant sites are protected, a decision regarding appropriate management is made and all legal requirements are met;
7. Works within the buffer zone shall not recommence until authorised by McPherson following consultation with Ngati Tamaoho and Ngati Te Ata and representatives of any other authority with statutory responsibility in order to ensure that all cultural and statutory requirements are met;
8. Information regarding the relocation and specifics of the taonga or relevant site is sensitive information and shall remain the property of Ngati Tamaoho and Ngati Te Ata to the extent that is possible under law;
9. In the event that Taonga is uncovered Ngati Tamaoho and Ngati Te Ata has the right to choose to have it undergo archaeological analysis. All information arising from any analysis of this Taonga must be returned to Ngati Tamaoho and Ngati Te Ata;
10. Subject to legal requirements McPherson agrees that the intellectual property rights to all ancestral information remains with Ngati Tamaoho and Ngati Te Ata.
11. Work at the McPherson Quarry will resume after all appropriate steps to protect, preserve, record or properly remove the chance find have been taken but shall be no more than two working days unless legal requirements provide for a longer period.

## 2.2 Hours of Operation

The hours of operation are between 7:00am to 6:00pm, Monday to Saturday.

## 2.3 Site Machinery

The machinery used for the quarry operation include:

- Cat 980H Loader
- Cat 980G Loader
- CatD10N Dozer
- Cat D8L Dozer
- Cat 336FL Excavator
- Cat 350A Excavator
- Cat 769D Dump Truck
- Road trucks and trailers
- Rock drill
- Mitsubishi HD550 Grader
- Mack Metroliner Water Cart
- Finlayson 883 Screen
- Finlayson 883 Screen
- Sandvik QH331 Cone Crusher
- Finlayson 883 Screen

The machinery will be appropriately maintained.

There is an onsite fuel tank located on the site compound, as seen in **Figure 1**. This fuel tank supplies all of the quarry machinery listed above. All other vehicles are fuelled offsite.



FIGURE 1: Fuel Storage Tank<sup>7</sup>

To avoid the spread of pests and diseases, all machinery shall be cleaned prior to being transported to the site to ensure that all seed and/or plant matter has been removed. Documentation should be kept in accordance with the National Pest Control Agencies A series, Best Practice (Code A16).

## 2.4 Traffic Management

### Site Visibility and Signage

The entrance from SH2 into McPherson Road is to be checked every 6 months to ensure that vegetation is not impeding site visibility. If vision is impaired, the Site Manager will arrange for the planting to be trimmed as soon as practicable.

### Traffic Management

#### *Access*

The quarry can easily be accessed by trucks entering and leaving the site by using the existing access roads. A speed limit of 10km per hour applies to all the internal roads.

#### *Deposition onto McPherson Road*

Care shall be taken to ensure that any material is not carried offsite onto McPherson Road by the tracking of vehicles. The long accessway between the site and McPherson Road has stationary sprinklers which allow for any mud, dust and sand to be largely removed prior to the vehicle entering

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<sup>7</sup> Source: HD GEO HD867 – McPherson Quarry – NESCS Review, Ref LUC0123/19. This document is located in the original resource consent applications.

the road. The Site Manager(s) will be responsible for checking the road in the vicinity of the site and removing any tracked material.

### *Movements (numbers and speeds)*

McPherson shall ensure that all truck movements to and from the site occur within the hours of operation and do not exceed the following levels:

- The daily truck movements will be 165 vehicles per day (82 inbound/82 outbound);
- Over an 11 hour day, this equates to 15 truck movements per hour;
- There are no non-truck movements as those working on site live onsite.

These movements are for the overall quarry activity. It is anticipated that when a cleanfill truck enters the site, it will exit with a load of aggregate.

### *Traffic Log*

A traffic log is to be filled out each time a vehicle enters the site and again. The log is located in **Appendix H**.

## **2.5 Air Discharge**

The site is to be managed to ensure no particulate matter or excessive<sup>8</sup> noise is released outside the boundaries<sup>9</sup> of the land owned for the Quarry that is deemed a nuisance or objectionable.

### **Dust**

Methods used on site to manage dust include:

- An onsite water cart; and
- 10 stationary sprinklers long the accessway
- 20 relocatable sprinklers

The Site Manager will ensure that:

- The site entrance is inspected daily to ensure it is clear of debris;
- The onsite water cart is inspected weekly to ensure it is operational;
- The water cart and/or moveable sprinklers is/are used at least daily to suppress dust from moving vehicles, unless it is raining or wet;
- McPherson Road is to be checked daily for fines being dragged off site. If the road requires cleaning the Quarry Management is to arrange cleaning within 24 hours with either:
  - A vacuum road sweeper truck to clean the road;
  - A road broom;
  - A water cart;
  - An immediate hand shovel; OR
  - A mixture of the above.

*Note: All of the above operations require a Traffic Management Plan. If the road is deemed dangerous by the Quarry Manager temporary speed restriction signs may need installing. All these works are to be notified to Council monitoring as soon as practical, or within 2 hours.*

- A water cart and/or the moveable sprinklers are operating as need be on the overburden/cleanfill area applying water on the access tracks while any machinery is operating within the overburden/cleanfill area and watering is required;
- All trucks transporting overburden/cleanfill shall travel below the site speed limit to minimise the risk of dust;
- A drop height of material being loaded onto trucks to be kept to a minimum (generally no more than 1 metre)

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<sup>8</sup> The extent to which the adverse effects of noise at a notional boundary of 20m from any dwelling house outside the site will be avoided, remedied or mitigated. this includes such effects associated with the use of particular access point to the site.

<sup>9</sup> The 'boundary' – is defined as the land projected to be used for the Quarry operation attached as **Appendix C**.

- Any activities that could potentially cause dust are to be avoided when the conditions are dry, winds are strong, or the wind is blowing towards any sensitive receptors.

### *Static Dust*

At times dust can be present when there is no machinery operating. The Site Manager will ensure that:

- Stockpiles are to be monitored daily to ensure wind is not creating dust plumes from these static piles. This can be managed by either wetting stockpiles or using handheld hoses on the water cart;
- All exposed areas are monitored or stabilised to ensure dust is not objectionable beyond the boundary of the quarry;
- Re-vegetation of the overburden and cleanfill site should occur
  - At regular intervals; and
  - Temporary stabilisation may be required if no work is planned for more than a month or on weekends (e.g. the start of the Winter season)

### *Compliance Monitoring*

The Site Manager shall ensure that dust levels are kept to a minimum, to ensure that there are no objectionable dust discharges beyond the boundary of the site:

In determining “objectionable”, the Regional Council officer will determine:

- The frequency, intensity, duration, location, and effect of the dust emission;
- Receipt of complaints from neighbours or the public; and
- Where a relevant written advice from an experienced officer of the Waikato District Council or the Waikato District Health Board has been issued

### *Dust Contingency Plan*

Should dust become a nuisance, the Site Manager will attempt to mitigate the dust by either:

- Adding an extra water cart<sup>10</sup>;
- Stopping work<sup>11</sup>;
- Progressively top soiling any fill areas to stabilise with hydro seed and/or mulch;
- Wetting stockpiles (will help dust issues caused by loading);
- Wetting soil around blast areas;
- Using dust extraction equipment with drilling rigs; and
- Washing or sweeping the main access road and McPherson Road

## **2.6 Noise**

Noise from the normal day to day operations consists of:

- Onsite machinery;
- Vehicle traffic;
- Crushing plant; and
- Blasting

### **Machinery**

On a daily basis the Site Manager is to ensure that all machinery used on site is fitted with the appropriate silencing equipment<sup>12</sup>.

The Site Manager is to audit contractors and customers daily to ensure their vehicles/machinery comply with site machinery rules.

<sup>10</sup> The existing site water cart to water the haul roads and the fill area as well as a project water cart may need to be together.

<sup>11</sup> Some project work may need to be stopped if there is excessive dust created.

<sup>12</sup> All machinery should be operating to noise levels recommended by the manufacturer.

## Traffic

The Site Manager is to audit vehicles arriving and leaving the site daily to ensure their vehicles comply with site noise limits<sup>13</sup>. All vehicles entering the site must comply with the noise limits prescribed by the Land Transport Safety Authority (now the New Zealand Transport Agency (NZTA)) which are:

**TABLE 1: NZTA Vehicle Noise Limits<sup>14</sup>**

Vehicle Class	Maximum noise levels (dBA)
LC, LD, LE (with engine capacity of 125 cm <sup>3</sup> or less)	82
LC, LD, LE (with engine capacity of more than 125 cm <sup>3</sup> )	86
MA, MB, MC, MD1, MD2, and NA	81
MD3, MD4, ME, NB, and NC (with power output of 150 kW or less)	86
MD3, MD4, ME, NB, and NC (with power output of more than 150 kW)	88

Should a vehicle exceed these limits (in the view of the Site Manager) it will be refused entry until it complies. Any vehicles turned away should be recorded in the transport log.

## Crushing Plant

The Site Manager is to ensure that the noise from the crushing plant is monitored daily to ensure that noise from the plant will not cause an objectionable effect beyond the site boundary.

## Blasting

Each blast is to be done by a suitably qualified person, with records of the blast and the seismic readings from the onsite monitoring equipment recorded on the weekly diary sheet.

## 2.7 Stormwater

### General

Operational stormwater from the site is defined as contaminated<sup>15</sup> and non-contaminated<sup>16</sup>.

### Non-contaminated Stormwater

Stormwater is managed in two ways:

1. Collected in two 19,000 litre tanks for dust suppression as outlined in bullet point 2;
2. Harvested for future use in the existing pond in the south eastern side of the property; and
3. Diverted and collected in the pond and wetland system.

The stormwater (along with water from two small spring located north of the quarry) moves through a buried culvert and t-bar decant. The decant increase the runoff detention during heavy rainfall events.

<sup>13</sup> Relates to issues like broken exhausts that may cause a noise complaint on our site.

<sup>14</sup> Refer to the Land Transport Rule - Vehicle Equipment Amendment 2007.

<sup>15</sup> 'Contaminated' – means anything that has been in contact with the active exposed soil and is likely to carry sediment

<sup>16</sup> 'Non-Contaminated' – means clean natural run-off

This water is then directed into sprinklers stationed along the access road to the quarry and other areas which are exposed, dry and operated on with wheeled machinery. The watercart and the moveable sprinklers use water from either of the water tanks or the harvest pond.

The stormwater not used for dust suppression is discharged to the unnamed Waipunga Stream tributary. This is because this site collects large volumes of water from surrounding watercourses and from rainfall, especially in large storm events.

## Contaminated Stormwater

### *Drainage Structures*

The sediment retention ponds are shown in the Erosion and Sediment Control Plan (ESCP) produced by Southern Skies Environmental Limited, attached as **Appendix D**. It is important to note that during overburden/cleanfill area and general operations, the integrity of the silt retention ponds and design storage capacities are maintained.

The Site Manager is to ensure that all drainage structures are maintained as specified, or otherwise twice monthly, including the clearing of inlet and outlet structures, drains and ponds.

Control/treatment structures will be inspected after significant rainfall events, or during prolonged rainfall, in addition to any regular scheduled inspections, to ensure they are working adequately at all times.

### *Stormwater Contingencies*

If there is a discharge of silt or fuel/oil during the operation, the Site Manager will:

- Identify the cause
- Remedy the non-complying discharge by either:
  - Temporary surface stabilisation with straw mulch or suitable soil binders;
  - Any temporary stockpile of material is away from drainage paths and waterbodies;
  - Ensure machinery is not parked in flow paths;
  - In the event that ephemeral flow paths require diversion, sandbags and unslotted nova coil pipes can be temporarily installed;
- Record this event on the weekly check sheet;
- Advise WRC and WDC within 48 hours of:
  - What happened;
  - How it was remedied; and
  - Steps taken to stop it happening again.

## Water Take

The site has a water take consent approved by the WRC. The Site Manager is to ensure that the pump flow meter and hour is read daily while in use, with the daily take not to exceed 50m<sup>3</sup>.

## 2.8 Erosion & Sediment Control (ESC)

All general earthworks, quarry operations, overburden disposal, the installation of clean water controls and the quarry water management is addressed by the Erosion and Sediment Control Plan (ESCP), attached as **Appendix D**.

### Methodology

Two sediment retention ponds are installed in the overburden area as seen in the ESCP. These will work alongside clean and dirty diversion bunds.

The catchment for the first sediment retention pond will be the quarry itself, which has a catchment area of 9 ha. The majority of the drains within this catchment will drain to the quarry floor before being piped to the SRP, followed by release into the wetland system.

The second SRP is sized for a catchment area of 4 ha and consists of the overburden and cleanfill area. Areas no longer in use will be top soiled and grassed regularly. Once the grass has grown to an 80% coverage rate or more, the perimeter bunds are to be adjusted to direct the clean areas offsite.

## Operation and Maintenance

The following ESC inspections will be carried out:

- On a weekly basis; and
- 24 hours after a rainstorm event.

Once these inspections are done, they are to be signed off on the ESC record by the inspector. This record will include the date and time of the inspection, any maintenance requirements identified and any maintenance that was undertaken.

## Chemical Treatment

Samples from the SRP are to be taken for bench testing once all ponds are filled with dirty water. This is to determine the benefits of chemical treatments. These results are to be submitted to the Waikato Regional Council once received.

When chemical treatment is considered to be beneficial, a Chemical Treatment Management Plan (CTMP) will be prepared and sent to the Waikato Regional Council. The treatment itself would be carried out as per the CTMP. If at any point the dose rate or delivery mechanisms change, this will be confirmed in writing to the Waikato Regional Council.

## 2.9 Ecology & Biology

The information below is a summary of information provided by Ecology New Zealand Limited (Ecology NZ) who have prepared an Ecological Management Plan; attached as **Appendix F**.

### Pest Controls

#### *Pest Plant Control*

A pest plant control programme is to be implemented within all restoration areas for a minimum period of five years to remove established pest plants and control any re-infestations. The type of pest plants and the corresponding control methods are outlined the below table:

**TABLE 2: Pest Animal Identification and Control Method**

Common Name	Species Name	Control Method
Blackberry	Rubus fruticosus agg.	Foliage spray - Using 60ml/10L Triclopyr with a knapsack sprayer.
Darwin's Barberry	Berberis darwinii	Grub out and Foliage spray – Swab the stump with 200ml Glyphosate/L or 2.5g Metsulfuron/L and then spray the plant with 5g Metsulfuron/L Metsulfuron/10L using a knapsack sprayer.
Elaeagnus	Elaeagnus x reflexa	Cut the plant low at stump and then apply 60ml/L Triclopyr to the cut stump.
Gorse	Ulex europaeus	Foliage spray - Using 60ml/L Triclopyr with a knapsack sprayer.
Hawthorn	Crataegus monogyna	Drill the plant and then pour 5g/L of Metsulfuron to poison the plant.
Himalayan Honeysuckle	Leycesteria Formosa	Foliage spray - Using 150ml/10L Glyphosate 510 with a knapsack sprayer.
Pampas	Cortaderia selloana	Foliage spray - Using 200ml Glyphosate/10L with a knapsack sprayer.
Woolly Nightshade	Solanum mauritianum	Cut the plant low at stump and then apply 60ml/L Triclopyr to the stump. If the plant is small enough to completely remove the root system, hand pull it out.

### *Pest Animal Control*

Pest animal control is to be undertaken within the northern planting corridor area during the lifetime of the quarry, along with controls within the southern riparian margin restoration sites over a five year period. The below pest control methods have the overall intent of restoring and enhancing the native biodiversity. The types of pest animals and the corresponding control methods are outlined in the below table:

**TABLE 3: Pest Animal Identification and Control Method**

Common Name	Species Name	Control Method
Possum	<i>Trichosurus vulpecula</i>	Trapping network or bait station approximately 50 metres apart in the northern part of the site and 75 meters apart at the southern part of the site. The bait stations should be checked every 4 weeks through February to May and again through August to November.
Rat (Ship and Norway)	<i>Rattus Sp.</i>	
Mustelids (Stoat, Weasel, Ferret)	<i>Mustela sp.</i>	Trapping network – same baiting method as the possums and rats just with a higher poison strength.
Hedgehog	<i>Erinaceus europaeus occidentalis</i>	
Wild deer	Various	Shoot – this should be undertaken by an experienced and competent operator. Records of all shooting events should be kept including the date, species, location, number, sex and age class if possible.
Feral goat	<i>Mustela sp.</i>	
Feral pig	<i>Sus scrofa</i>	
Feral cat	<i>Felis catus</i>	
Pukeko	<i>Porphyrio melanotus</i>	
Rabbit	<i>Oryctolagus cuniculus</i>	Night shoot – this method should be undertaken by an experienced and competent operator. Records of all shooting events should be kept including the date, species, location, number, sex and age class if possible.

### Restoration Planting

A restoration planting plan has been prepared by Ecology NZ, attached as **Appendix F**. This plan outlines the type of species and the placement of each species. In summary all planting is occurring during mid-to-late autumn in order for planting to occur directly into damp soils.

## 3. Overburden & Cleanfill

McPherson engaged HD Geo Limited (HD Geo) to carry out a geotechnical assessment on the overburden and cleanfill disposal area, attached as **Appendix J**.

The fill disposal area is shown in **Figure 2** below. The fill disposal area is offset 20 metres from the watercourse, with surface water collected in surface water controls and directed to engineer designed sediment control ponds.



**FIGURE 2: Cleanfill and Overburden Location (all stages)**

The temporary landform of the overburden and cleanfill area should include:

- A minimum offset of 20 metres from the stream;
- A maximum overall slope of 1V:3H (18 degrees);
- A minimum bench width of 5 metres with 5 metre lift heights;
- A maximum batter height of 5 metres at an 18 degree slope;
- Benches that are designed to fall towards a suitably sized open channel drain, located at the toe of the fill batter;
- Channel drains which are formed to direct collected water to the sediment controls ponds; and
- Any dams placed in the channel drains are to be installed at 20 metre intervals to reduce water velocities.

The final landform is to be shaped to follow a more natural hill/slope, with water to be channelled as/if required.

See Figure 3 for a proposed schematic of the final landform (copied from Earthfill Methodology, September 2019, HD Geo).

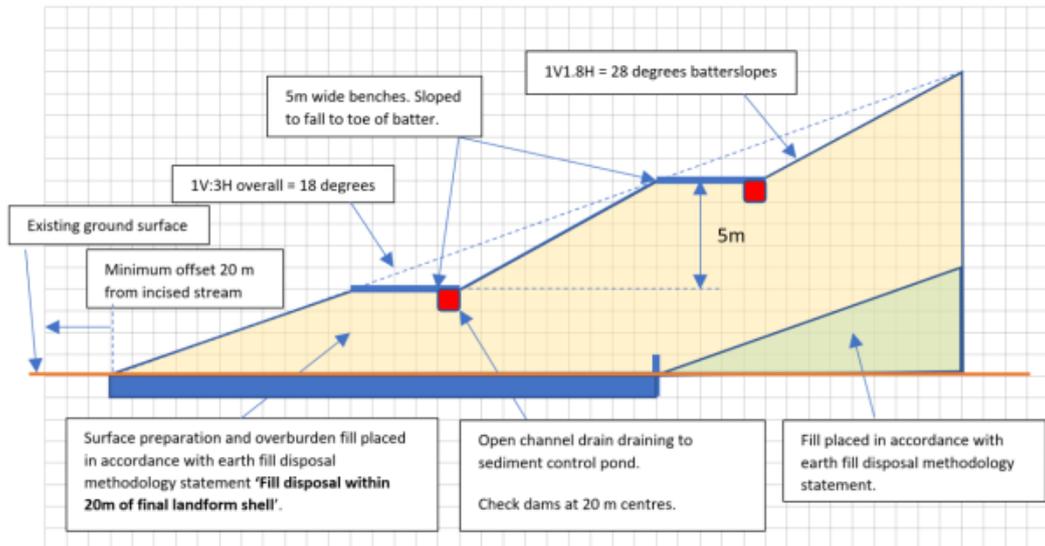


Figure 1 Schematic section of final landform layout

FIGURE 3. Final landform layout

### 3.1 Overburden Material

The overburden area is located south of the quarry and has a gentle slope of less than 5 degrees.

The overburden fill is generally silt, clay and gravel from ash soils and weathered greywacke from the quarry operation to the north.

#### Overburden Fill Methodology

The disposal of any overburden is to be carried out using the following methodology:

1. The fill is transported to the tip area by a dump truck;
2. The fill is tipped into the fill disposal area;
3. The fill is spread, levelled and track rolled to a depth of approximately 0.5m using a Bulldozer.

The fill slope is to be shaped in a manner so that it has a slight slope towards a water diversion channel that collects surface flows and directs them to the sediment control ponds.

### 3.2 Cleanfill Material

Cleanfill material is imported to the site (largely from cut earthworks for residential construction during the winter months). The cleanfill is to be either spread in thin layers between the overburden fill or thoroughly mixed with the overburden, depending on the level of saturation of the cleanfill.

#### Cleanfill Methodology

The disposal of any cleanfill is carried out using the following methodology:

1. The topsoil and/or any other unsuitable material is stripped to a thickness depth of approximately 0.2m;

2. The fill is imported to McPherson Quarry and spread into thin 0.3m horizontal layers and compacted with a bulldozer by method of track rolling or thoroughly mixed with overburden before compaction;
3. The final landform is overfilled and then cut back to shape. Any benches are to have a slight slope back to the toe of the batters above to collect water as/if required.
4. The benches and batterslopes are to be planted and maintained with grass or shrubs once finalised.

### 3.3 Cleanfill Acceptance

#### Vetting Procedures

Any material that is not specified in **Table 4** below is not to be accepted. There is no contaminated material accepted from any industry or site that is identified on the Hazardous Activities and Industries List (HAIL) produced by the Ministry for the Environment in 2011.

If there is any doubt about material destined for the site, soil testing certification is required prior to the material being transported to the fill disposal area.

**TABLE 4: Acceptable Materials in Cleanfill**

Material	Description
Asphalt (cured)	Weathered (cured) asphalt is acceptable: after asphalt has been exposed to the elements for some time, the initial oily surface will have gone, and the asphalt is considered inert
Bricks	Inert – will undergo no degradation
Ceramics	Inert
Concrete – unreinforced	Inert material. Ensure that other attached material is removed.
Concrete - reinforced	Steel reinforcing bars will degrade. However, bars fully encased in intact concrete will be protected from corrosion by the concrete. Reinforced concrete is thus acceptable provided protruding reinforcing steel is cut off at the concrete face
Fibre cement building products	Inert material comprising cellulose fibre, Portland cement and sand. Care needs to be taken that the product does not contain asbestos, which is unacceptable
Glass	Inert, and poses little threat to the environment. May pose a safety risk if placed near the surface in public areas, or if later excavated. The safety risk on excavation should become immediately apparent, so glass is considered acceptable provided it is not placed immediately adjacent to the finished surface
Road sub-base	Inert
Soils, rock, gravel, sand, clay, etc.	Acceptable if free of contamination
Tiles (clay, concrete or ceramic)	Inert

#### *Cleanfill Log*

Cleanfill needs to be monitored and; if necessary, logged in a cleanfill log. This is to ensure it meets MfE's "A 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.

#### Testing of Fill Quality

The below table outlines the steps that are to be taken to ensure the fill quality is kept to a high standard:

**TABLE 5: Fill Quality Testing Steps**

Step 1	If material is suspected of being contaminated, it will be required to be tested for those contaminants contained in <b>Table 6</b> . If the levels of contamination contained in the sample are less than those in <b>Table 6</b> column A, then the material can be accepted as 'cleanfill'.
Step 2	Should the levels of contamination exceed those levels accepted in <b>Table 6</b> then material will not be allowed to be imported onto the site.

**TABLE 6: Acceptable Contaminant Levels**

Parameter	Column A: Max 12 Month Rolling Mean Fill (>2.0m depth)
Arsenic	50
Benzo(a)pyrene (Equivalent) <sup>1</sup>	14
Boron	180
Cadmium	5.25
Chromium	280
Copper	225
Lead	175
Mercury	0.5
Nickel	225
Zinc	280
Benzene	0.14
Ethylbenzene	41
Toluene	35
Total xylene	21
Dieldrin	0.14
∑DDT <sup>2</sup>	8.5
C7 – C9	210
C10 – C14	210
C15 – C36	3920

### 3.4 Fill Rejection

If during the initial inspection, any load appears to contain contaminated or suspect material, the contractor will not be allowed to deposit the material on the site and will be directed to either take the material to landfill or have it tested and provide certification that the material is clean before returning to deposit it at the cleanfill site.

If during the 2nd inspection, a load appears to contain contaminated or suspect material, the material will be loaded back onto the contractors vehicle and the contractor will be directed to remove it to landfill.

#### Waste Acceptance Criteria (WAC)

Cleanfill material is received in accordance with the Waste Acceptance Criteria set out in in Section 4.2 of MfE Guide<sup>17</sup>.

<sup>17</sup> Ministry for the Environment, Module 2 – Hazardous waste guidelines: Landfill waste acceptance criteria and landfill classification, May 2004.

The delivery of material to the cleanfill areas must be supervised by the site manager at all times. A record of all material delivered to the cleanfill locations shall be kept and maintained by the Operator.

The information to be documented must include:

- Name of driver that delivered the cleanfill to the site;
- The date of deposition;
- The source of the cleanfill material;
- A description of the material, including material type, quantity in m<sup>3</sup> and a map showing the source of the material;
- Confirmation that the source of the waste has not been contaminated by current or historical land use activities i.e., identified on the Ministry for the Environment's Hazardous Activities and Industries List (HAIL).
- Copies of any soil testing results completed for the source of the waste. Copies of any resource consents authorising the earthworks/land disturbance held for the source of the waste.
- A signed (contractor) form certifying that the soil is not contaminated.
- Verification by the Site Manager that the material complies with the material acceptance criteria.

For cleanfill imported to the site, the delivery person will provide the information listed above and sign a declaration form stating that the material to be used as fill meets the material acceptance criteria. This declaration form shall be completed daily and presented to the site Manager, or another designated staff member, for verification at the start of the next workday.

Where multiple loads from a source are deposited in a single day, the site manager or another designated staff member will collect the declaration from the delivery contractor when they have finished for the day and visually inspect the day's fill to verify the information provided in the declaration form. All declaration forms and other documentation shall be stored at the main office, or any subsequent administration building established to serve the cleanfill site.

The Site Manager will prepare and submit a report to the Waikato Regional Council and the Waikato District Council by the end of April each year, which provides information on the progression of the clean filling and site rehabilitation for the site, and any other requirements in accordance with the resource consent conditions.

## Staging

The expansion of the quarry has been broken down into three stages which will be carried out over a 40-45 year period. The below table outlines the volume of work that is involved for each stages. It should be noted that the figures in **Table 7** are conservative.

**TABLE 7: Stage Volumes<sup>18</sup>**

Stage	Overburden disposal onsite
One	1,733,900m <sup>3</sup>
Two	2,590,000m <sup>3</sup>
Three	1,297,100m <sup>3</sup>



**FIGURE 3: Staging Plan**

<sup>18</sup> The total overburden expected to be deposited over the three stages is 4,458,595m<sup>3</sup>

## 4. Monitoring and Reporting

### 4.1 Water Quality Monitoring

The site has a discharge consent authorising the discharge of stormwater to the water, refer to **Appendix A**.

The site manager is to ensure that when rainfall exceeds 15mm in any 24-hour period:

- Samples are taken from the following monitoring points:
  - Downstream of the site
  - SRPs<sup>19</sup>
- Samples to be field tested for:
  - Suspended Solids
  - pH
  - Discharges from the site sediment ponds are not to exceed 100g/m<sup>3</sup>
  - If any sample is greater than 80g/m<sup>3</sup> then it should be sent to an accredited laboratory to verify field testing
  - If the discharge is greater than 100g/m<sup>3</sup> then the discharge cannot increase the suspended solids downstream of the discharge
  - If any sample exceeds the consented discharge standard a sample is to be sent to a registered laboratory to confirm field tests
  - The Site Manager is to investigate the cause<sup>20</sup> of this excess and report to Council as soon as the confirmed laboratory results have been received (refer 4.3).

### 4.2 Complaint Monitoring

If any complaints are received, the consent holder shall notify the relevant Council(s) of the complaints within 24 hours and send a report to the Council(s) within 5 working days.

When/if complaints are received, the consent holder shall record the following details in a complaints log:

- The time and type of complaint including details of the incident, e.g. duration, any effects noted;
- The name, address and contact phone number of the complainant (if provided);
- The location from which the complaint arose;
- The weather conditions and wind direction at the time of complaint;
- The likely cause of the complaint;
- The response by the consent holder and any corrective action undertaken by the consent holder in response to the complaint; and
- Any future actions proposed as a result of the complaint

### 4.3 Compliance Monitoring

The consent conditions attached include a number of compliance targets in relation to dust, noise, suspended solids, traffic movements etc.

Reporting non-compliance with these conditions will use the same timelines as set out in 4.2 above.

### 4.4 Landscape – Planting and weed control

The planting and weed control is to be undertaken in accordance with the approved Landscape Management Plan attached as **Appendix A**.

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<sup>19</sup> Measured at the end of the pipe prior to discharge

<sup>20</sup> The cause could include excessive rainfall, stream bank failure, sediment control failure or upstream failure

## 4.5 Annual Reports

An annual report is to be sent to Waikato Regional Council and Waikato District Council by the 1<sup>st</sup> of February of each year for the period ending on the 31<sup>st</sup> of December the year before.

The report is to include:

- Current Year:
  - Operations
    - Chance Finds (if any);
    - Dust, noise, blasting, stormwater, traffic management and incidents;
    - Monitoring undertaken for Fauna;
    - Vegetation removed;
    - New planting and ongoing maintenance;
    - Maintenance of control systems;
    - Water take data (pump hours and volumes);
  - Improvement works completed during the year;
  - Compliance issues; and
  - Complaints
    - Any complaints received;
    - The procedures used to deal with the complaints.
  - Recommendations for the following year
- Upcoming Year Planning:
  - Mining plan;
  - Vegetation clearance;
  - Overburden relocation;
  - Operational upgrades planned;
  - Update to the planting plan; and
  - Monitoring.

## 5. Health and Safety

A copy of the McPherson Health and Safety plan is contained in **Appendix I**.

### 5.1 Staff training/induction

All McPherson Staff are encouraged to attend various courses including safety and management courses. Other courses are also made available.

### 5.2 Qualified Staff

**NAME:** Mike McPherson                      **POSITION:** Site Manager

**RESPONSIBLE FOR:** Overall quarry management

**QUALIFICATIONS:** \_\_\_\_\_

**NAME:** \_\_\_\_\_                      **POSITION:** \_\_\_\_\_

**RESPONSIBLE FOR:** \_\_\_\_\_

**QUALIFICATIONS:** \_\_\_\_\_

**NAME:** \_\_\_\_\_                      **POSITION:** \_\_\_\_\_

**RESPONSIBLE FOR:** \_\_\_\_\_

**QUALIFICATIONS:** \_\_\_\_\_

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## **Appendix A – Resource Consents**

(as at the date of the Management Plan and subject to change via the normal RMA processes)

### **Waikato Regional Council**

- 116015 Discharge of Stormwater
- 110685 Water Take
- [TBC] Water Diversion
- [TBC] Overburden and Cleanfill

### **Waikato District Council**

- [TBC] Land Use for earthworks

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## Appendix B – McPherson Quarry Emergency Contacts

### NOTIFICATION NUMBERS

#### External

Waikato Regional Council	0800 800 401
Waikato District Council	07 824 8633

#### Internal

Mike McPherson (Owner/Operator)	021 926 037

#### Ngati Tamaoho (Trustees)


#### Ngati Te Ata (Trustees)


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## Appendix C – Property Boundaries

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**Appendix D – Southern Skies Environmental Limited –  
Erosion and Sediment Control Plan**

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**Appendix E – Ecology New Zealand Limited – Ecological  
Management Plan**

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## Appendix F – Traffic Management Plan

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## Appendix H – Health and Safety Plan

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**Appendix I – HD Geo Limited – Earthfill Methodology**

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