

# APPENDIX K

## LAND DEVELOPMENT ENGINEER REPORT

WDC

## Engineering Assessment (Land Use)

<b>Land Development Engineer</b>	<b>Inderpaul (Paul) Randhawa</b>
<b>Planner:</b>	Cameron Aplin / Victoria Majoor
<b>Date:</b>	19 November 2018
<b>Application No:</b>	LUC0123/19
<b>Applicant:</b>	Michael Peter Spencer McPherson, Iggy Limited, MFTC Limited
<b>Property Address:</b>	47 Mcpherson Road MANGATAWHIRI
<b>Legal Description</b>	ALLT 163 Mangatawhiri SD

## INTRODUCTION

### Background

McPherson quarry has been operating as small scale operation for many decades under existing use rights on this 156.8ha site in Franklin District. The site is tucked away in the foothills of Bombay Hills on McPherson Road with access from SH2. The quarry extracts weathered Greywacke and has been doing so for many decades. As result of this operation, a large amount of topsoil/overburden has been stripped across the site. There is an existing dedicated overburden disposal area located to the south of the quarry pit. It is understood that operators try to sell as much of the overburden as possible to keep the overburden disposal to a minimum but ability to sell clean fill /overburden is dictated by the market demand.

### Site plan



Figure 1. Staging Plan showing overburden fill disposal area

## SUPPORTING INFORMATION

The following documents that are used for engineering assessment have been submitted with the land use consent application.

- List relevant document
- Updated AEE report by Kinetic Environmental dated 12 Dec 2019
- McPherson Quarry, Earthfill Methodology, dated 20 September 2019, prepared by HD Geo
- Erosion and Sediment Control Plan for the operation of the current stage of the McPherson Quarry and the overburden disposal area. Prepared by Southern Skies Limited, dated 17 April 2019
- Hydraulics Assessment Report External Stormwater, prepared by OPUS, dated July
- Draft Erosion and Sediment Control Plan (ESCP), Quarry Development Stage # 1, prepared by OPUS, dated August 2018
- NZTA submission dated 26 June 2020
- NZTA letter to the applicant dated 19 March 2019
- McPherson Quarry – Heavy Impact Fee Assessment by Graymatter consultants dated 6 Nov 2017 ref: 17-125

## ASSESSMENT OF EFFECTS

### **General (include earthworks)**

The applicants are now proposing to expand the quarry operation seeking consent to extract 490,000 tonnes of material annually for the decades to come. It is also proposed to import clean fill to the site and dispose it off with the overburden. The estimated overburden volume from stage 1 is proposed to be 2,477,00 CuM, from stage 2 around 3,700,000 CuM and stage 3 to be around 1,873,000 CuM. The applicant is proposing that approximately 30% of the overburden will be on-sold and remaining 70% will be disposed on site during decades of operation.

The applicants engaged HD Geo to carry out geotechnical assessment of the overburden/clean-fill disposal area to prepare an Earth fill Methodology to minimise the risk of slope failure and erosion in the final landform. HD Geo has prepared a report titled McPherson Quarry, Earthfill Methodology, dated 20 September 2019. It is proposed that the final landform will be used for pasture/ grazing. In their report, HD Geo has made site specific observation and recommendations. The report states that the proposed fill area is flat or gently sloping at less than 5 degrees with very thin layer of topsoil with no indication of weak or saturated soils near the surface. Little or no preparation is likely to be necessary for most of the fill disposal area unless weak or saturated soils are encountered in which case undercut and subsoil drains may be required. Preparation will be required where fill area is to pass over the tributary. The report also recommends spreading the fill in thin horizontal layers and tracking roll it using a D10 bulldozer. Fill is to be monitored and a final geotechnical completion will be required for the fill site and quarry faces. Final landform design should take all recommendations into account. It is considered that with appropriate design and

continuous monitoring until final landform is completed, any adverse effects can be effectively managed and minimized.

The discussion in section 3.2.2 of the AEE report by Kinetic Environmental dated 12 Dec 2019 is of significance for quarrying methodology and operations. All existing and future rock faces exposed during the activity must be cut and benched in accordance with the Health & Safety at Work ( Mining Operations & Quarrying Operations) Regulations 2016 (Mining Regulations). It is understood that any existing rock faces which do not comply with the above said Mining Regulation will be amended as soon as practical. A confirmation to this effect may be required by WDC monitoring to ensure compliance.

It is understood that any adverse effects from the quarry operation on the neighbouring property on opposite side of McPherson road have been considered as reverse sensitivity assessment during recent subdivision consents granted to that property owners.

### **Water**

Not relevant

### **Wastewater**

Not relevant

### **Stormwater**

Stormwater is managed onsite with diversion bunds, silt ponds, erosion & sediment control devices before discharging safely to the receiving environment. Proposed stormwater management methodology including various erosion/sediment control measure and treatment of stormwater is acceptable. All erosion and sediment control measures need to be continually monitored to insure compliance with WRC guidelines. It is considered that if appropriately managed any adverse effects of stormwater from the site can be minimised to acceptable level.

## **PROPOSED ENGINEERING CONDITIONS**

### **General Conditions**

Prior to commencing any engineering design or construction works, the consent holder must appoint an appropriately qualified and competent Developer's Representative(s), acceptable to the Waikato District Council.

The consent holder's representative/s must be responsible for:

- (a) project management of the quarrying and filling activities during the planning and construction phases of the development;
- (b) arranging design, and obtaining necessary geotechnical investigation and reports for the quarrying and filling activities, including the preparation of engineering documents and obtaining necessary approvals from Waikato District Council;
- (c) supervision of the works;
- (d) arranging the necessary testing and inspections;
- (e) identifying any non-compliant work and arranging for correction; and

- (f) certification upon completion that the works have been carried out in accordance with the approved documents and sound engineering practice.

## **Prior to Construction**

### Engineering Design Management Plan

Within 3 months of the commencement of this consent or at least twenty (20) working days prior to the intended commencement of any works on-site, whichever is the sooner, the consent holder must submit to Waikato District Council for approval in a technical certification capacity, an Engineering Design Management Plan (EDMP).

The objective of the EDMP is to collate and detail in a single document the proposed engineering works associated with the managed fill and quarry operation in order to avoid and minimise the adverse geotechnical effects of the proposed activities.

The consent holder's representative must be responsible for the preparation of the EDMP. The consent holder's representative must appoint a geo-professional as defined in the NZS 4404:2010 to prepare geotechnical aspects of the EDMP. The EDMP shall include, but not be limited to the following matters:

- (a) proposed filling design and staging of the filling;
- (b) fill, overburden and rock slope angles, height, bench widths to be adopted in the extended quarry area and filling operations;
- (c) any further geotechnical investigation and subsequent design of the site as required in relation to rock extraction activities.
- (d) Groundwater and surface water controls measures; and
- (e) Reporting and review procedures for the site works and for the EDMP.

*Advisory Note: In preparing the EDMP the consent holder's Representative and geo-professional should follow the recommendations of and practices as per Health & Safety at Work ( Mining Operations & Quarrying Operations) Regulations 2016 (Mining Regulations).*

The consent holder must operate the site in accordance with the approved EDMP. Any changes to the EDMP must only be made with the written approval of an authorised officer of the Waikato District Council.

## **During Construction**

No later than three (3) months following approval of the engineering design plans required by the above condition, the consent holder must upgrade the site entrance in accordance with those plans for the entrance upgrade and to the satisfaction of the Waikato District Council's Land Development Engineering Team Leader.

A wheel wash facility must be established at an appropriate location in the access-way and main access track must be stabilised to stop debris tracking to the public road network to the satisfaction of the Waikato District Council's Land Development Engineering Team Leader.

The consent holder must require and ensure that all trucks leaving the site to travel over and operate the site wheel wash.

The consent holder must ensure that any debris tracking/ spillage onto any public roads as a result of the exercise of this consent must be removed as soon as practical, and within a maximum of 24 hours after the occurrence, or as otherwise directed by the Council.

The consent holder, upon becoming aware of the need to clean up the roadway, should advise Waikato District Council's Team Leader – Monitoring of the need for the road to be cleaned up, and what actions are being taken to do so.

The consent holder shall ensure that all vehicles associated with the operation of this consent are confined to within the site, and that at no time shall any vehicle be parked within the public road reserve.

The consent holder must ensure that all cleanfill and overburden disposal is carried out in line with the recommendations of the report titled McPherson Quarry, Earthfill Methodology, dated 20 September 2019, prepared by HD Geo unless an alternative geotechnical report is submitted and approved by Waikato District Council. All recommendations and engineering consideration of the geotechnical report must be adhered to.

Standard sub-soil drains must be constructed at the base of the fill where required.

The consent holder must maintain onsite erosion and sediment control measures in accordance with the Erosion & Sediment Control and Cleanfill Management Plan and the Waikato Regional Council's Erosion and Sediment Control Guidelines for Soil Disturbing Activities: January 2009. Erosion and sediment control measures must be maintained until the Waikato District Council's Team Leader-Monitoring is satisfied that the risk from erosion/sediment transportation has been reduced to a less than minor risk and has provided approval in writing.

### **Post Construction**

All works forming part of the consent which require engineering design, supervision, and testing must be certified by the Certifying Engineer and/or a Geo-professional (who is one of the consent holder's representatives) who shall be a Chartered Professional Engineer. Once appointed, the Certifying Engineer shall not be changed without the approval of the Waikato District Council's in writing.

Geotechnical investigations, completion and site stability/suitability reports must be prepared and signed by a Geo-professional (as defined in NZS4404:2010), who shall

provide evidence of suitable professional indemnity insurance cover for the works being investigated, supervised and certified.

Where subsoil drainage measures or toe bunds are recommended by a Geo-professional, these are to be installed and inspected, recorded and verified by the Geo-professional prior to burial. The consent holder must provide evidence of this certification to Council in the Annual Report required as per condition of this consent.

Rock, soil and waste slopes must be inspected annually by a Geo-professional, to confirm compliance with the EDMP and confirm whether any changes to the EDMP are required. A report detailing the findings of the inspection shall be provided to Council in the Annual Report required as per condition of this consent.

On completion of each stage of the filling activity, the consent holder must provide a final Geotechnical Engineering Report (GER) and Site Stability Report (SSR) prepared by a Geo-professional to the satisfaction Waikato District Council's Team Leader Development Engineering.

The report(s) must include plans showing the location, extent and depth of any fills constructed and the finished levels. The location and level of any underfill drains shall also be noted on these plans. The report(s) is also to confirm that the target static and seismic factor/s have been achieved.

### **On-going Conditions**

Erosion and sediment controls must be maintained and remain in place until the Waikato District Council's Team Leader Monitoring is satisfied that the risk from erosion and instability has been reduced to a less than minor risk and has provided approval in writing.

The consent holder must maintain a site log book of the quantity (m<sup>3</sup>) aggregates loads, clean fill load, clean fill backloads, where the material was sourced from, type of clean fill received. The site log book shall be made available to the Team Leader, Monitoring, within 48 hours of having received a written request. ‘

### **Advisory Notes**

CAR

A Corridor Access Request (CAR) must be approved in writing by the Waikato District Council - Services Department. prior to undertaking works within the Council road reserve.

**Signed By**

**Inderpaul (Paul) Randhawa**  
**Land Development Engineer**  
**Date: 19 November 2018**