

Whenuku Road Quarry

Quarry Management Plan



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1 Introduction

This Quarry Management Plan (QMP) has been prepared for the quarry situated at the end of Whenuku Road, approximately 6km from Normanby, Hawera.

The purpose of this Quarry Management Plan is to revise the existing plan that was submitted with South Taranaki District Council consent RML14076, approved August 2015. This plan will outline the operation management strategies for the proposed quarry extension and enable compliance with the Resource Consent.

1.1 Background

Whenuku Road Quarry was established in 2011 by Grant Cudby Contracting Limited and was taken over by Horizon Trust Management Limited in November 2016.

The site currently produces and supplies aggregates for the local community of Hawera, mainly used as base course products in roading, pathways, drainage, cow races and foundation works for infrastructure projects such as the new Hawera countdown building and carpark. The land occupied by the quarry is owned by Bill and Mary Schrader.

The site is identified in the Rural Zone of the Proposed South Taranaki District Plan. The surrounding environment is rural in nature, with land use predominantly used for dairy farming. There is an unnamed tributary of the Waingongoro River that passes through the quarry site, that has been diverted and partly pipes as per an existing Taranaki Regional Council resource consent.

The proposed extraction area (76,000m²) is adjacent and directly north of the existing quarry operation. The area is undulating rolling hills, currently in pasture, and bounded by the Waingongoro River to the west and to the north.

2 Site Preparation, Operation and Management

Site preparation, operation and management will be undertaken in accordance with the provisions of the following sections of the QMP. These provisions are to ensure the activity is managed under best practice guidelines and enable continuing compliance with the conditions of the Resource Consent.

2.1 Quarry Methodology

The proposed quarry expansion area is roughly rectangular in shape with dimensions of approximately 140m by 530m. This area to be quarried has a surface area of approximately 7.6 hectares (76,000m²). It is proposed to extract down to a total depth of approximately 17m (up to 10m above the water table, and 7-8m below the water table). The proposed expansion site is shown in the Site Plan attached as Appendix A.

The applicant intends to extract 1,100,000m³ of material from the expansion area. Based on this quantity the resource area identified will be mined out roughly over a 15-20 year period, depending on demand fluctuations.

2.1.1 Extraction Methodology

The new extraction areas will be worked on using the same methods applied throughout the site to date. This is a response to the stable nature of the geology of this area.

Slope batters will be a 5:1 ratio (as per the existing site) including in the area to be extracted below ground water table.

If required benching the area below the water table, can be undertaken to provide additional stability. Experience of the site to date leads the applicant and his Quarry Manager to anticipate that benching will not be necessary.

Detailed extraction methodology

The following detailed extraction methodology will be applied in each extraction area (i.e A1, A2, A3, A4, B1, B2, B3 and B4);

Extraction will occur above the water table in long strips, with a depth of approximately 8-10 metres.

Extraction below the water table will be carried out in approximately 8 stages of 25m by 25m (625m²) square blocks, that have a depth of 7 – 8m. Each block will have an approximate volume of 5000m³. This will also be extracted in strips.

Extraction and backfill of a square block will take approximately 4 weeks. Over a 4 week period, the extraction face would grow from 10m to 17m then over a few days of reinstating will be back to 10m again.

This is to ensure that the extraction face exposure at the face of the river, below the water table, is limited and exposed for a short period of time.

2.1.2 Staging of extraction and overburden removal

Over the next four years the existing quarry working area will be progressively reinstated. This is discussed in section 2.12 below.

The proposed extraction areas A and B (outlined in purple in Figure 20) will be extracted in stages.

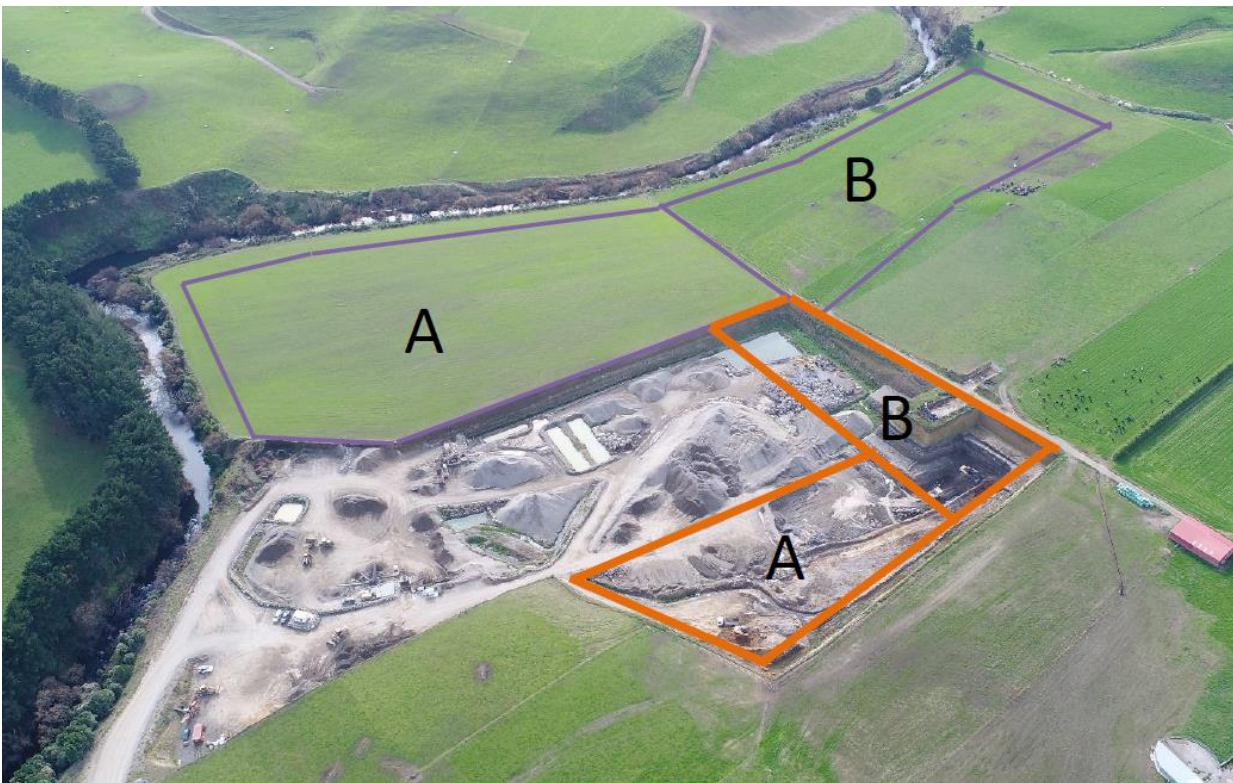


Figure 1: Extraction areas A and B within the purple lines.

Extraction Area A (38,000m²)

Area A will be extracted first over four stages, in order from A1 to A4 (Figure 2).



Figure 2: Staging of extraction Area A

Table 1: Extraction Area A detail

Area	Size (m2)	Overburden (m3)	Resource material (m3)	Timeframe (months)
A1	11,000	33,000	154,000	36
A2	9,000	27,000	126,000	24
A3	9,000	27,000	126,000	22
A4	9,000	27,000	126,000	20
Total	9,000	27,000	126,000	102 months (8.5yrs)

Extraction Area A1

Overburden will be stripped in one removal taking approximately 2 weeks. The 33,000m³ of overburden will be relocated to deposit areas A and B for reinstatement (as shown outline in orange in Figure 1). The extraction program of Area A1 will be completed in 3 years. This area will be left open for the following two years and progressively restored as areas A2, A3 and A4 are extracted and reinstated.

Extraction Area A2

Topsoil will be stripped and stored around the perimeter of the extraction area. Rest of the overburden will be stripped and stored on the adjacent extraction area (A3). A small portion will be transported and deposited in deposit Area B shown on page one. The andesite in this area will take two years to extract.

Extraction Area A3

Topsoil will be stripped and stored around the perimeter of the extraction area. Rest of the overburden will be stripped and stored on the adjacent extraction area (A4) well away from the river. The andesite in this area will take just under two years to extract.

Extraction Area A4

Topsoil will be stripped and stored around the perimeter of the extraction area. Rest of the overburden will be stripped and stored on the adjacent extraction area (B4) well away from the river.

Extraction Area B (38,000m²)

Andesite material from extraction area B will be extracted once extraction area A has been fully exhausted. This area be extracted in order from B4 – B1 (Figure 3).



Figure 3: Staging of Extraction Area B

Table 2: Extraction Area B detail

Area	Size (m ²)	Overburden (m ³)	Resource material (m ³)	Timeframe (months)
B4	10,000	30,000	140,000	20
B3	10,000	30,000	140,000	20
B2	10,000	30,000	140,000	20
B1	8,000	24,000	112,000	18
Total	38,000	114,000m ³	532,000	78 months (6.5yrs)

Extraction Area B4

Topsoil will be stripped and stored around the perimeter of the extraction area. The rest of the overburden will be stripped and stored on the adjacent extraction area (B3) well away from the river. The andesite in this area will take approximately 20 months to extract.

Extraction Area B3

Topsoil will be stripped and stored around the perimeter of the extraction area. The rest of the overburden will be stripped and stored on the adjacent extraction area (B2) well away from the river. The andesite in this area will take approximately 20 months to extract.

Extraction Area B2

Topsoil will be stripped and stored around the perimeter of the extraction area. The rest of the overburden will be stripped and stored on the adjacent extraction area (B1) well away from the river. The andesite in this area will take approximately 20 months to extract.

Extraction Area B1

Topsoil will be stripped and stored around the perimeter of the extraction area. The rest of the overburden will be stripped and stored south of B1. The andesite in this area will take approximately 18 months to extract.

Note: Once the existing quarry areas A and B are reinstated, there will be a maximum of two extraction areas exposed (A1 – A4 or B1 – B4) at any one time. The first area will be in a process of reinstatement and the other will be the extraction area with fines and overburden used to reinstate.

2.1.3 Overburden and topsoil stockpiling

The overburden from each stage will be either stored around the adjacent extraction area or relocated to deposit sites A and B for restoration, as explained in the above section 2.1.2.

Only topsoil will be stored around the perimeter, at a depth of approximately 300mm thick. This will be hydro-seeded as soon as practical to minimise the risk of erosion and silt runoff. Topsoil will be stored at a minimum of 5m from the paddock fenceline, this is approximately 10m from the river.

Clay overburden stock piles, of around 2.5m depth, will be stored well away from the river, on the next adjacent extraction area.

2.1.4 Dewatering process

As the proposed extraction will go below the water table, dewatering will be required.

Water will be pumped from the proposed extraction areas to three ponds. These will be established in the open working area (see Figure 4 below), and progressively serve each extraction area as required.

The pumping rate of abstraction will not exceed 40l/s and will cease when the flow in the Waingongoro River is at or below 821 l/s (2/3 MALF, in accordance with recommendation in the Hydrology Assessment)

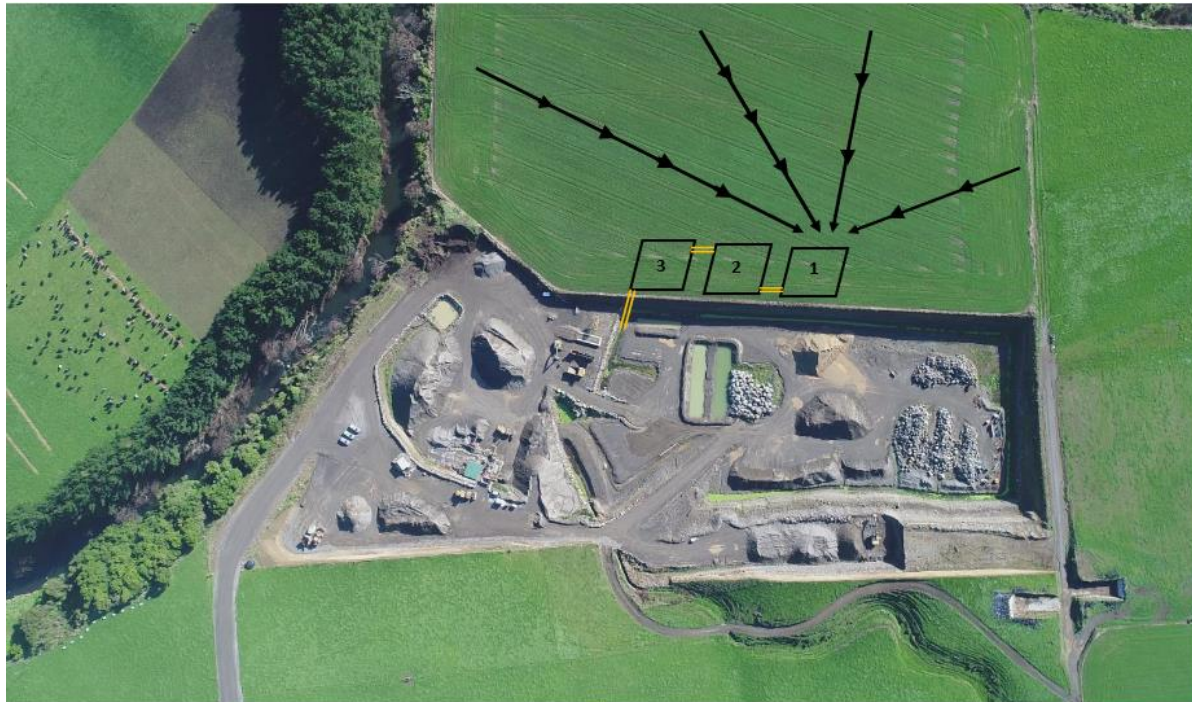


Figure 4: Proposed dewatering filtration system

These ponds will be 30m long x 30m wide x 6m deep. Each pond will hold approximately 5,400m³ of water, which equates to 5,400,000L. In total the three ponds will have a holding capacity of approximately 16,200,000L (16,200m³ x 1000L).

The water will enter the ring drain system, which will go through the existing stormwater system as explained in section 2.9 below. The ring-drain will also catch water that may leach from the sides of the new extraction face.

2.2 Equipment

All crushing, stockpiling and loading activities are to take place onsite. The permanent equipment onsite includes the following;

- A main plant (primary crushing plant, secondary crushing plant, and a generator),
- A Wash plant (a pump, sand wheel, screen and trammel),
- Digger x3 (Volvo EC300, Komatsu PC18MR-3 and a Komatsu PC360LC-11)
- Loader truck x2 (Komatsu WA380)
- Screening machine (Portafill CT5000)
- Allied Fuel Pump x2,
- Dump truck (Komatsu HA250-3)
- Excavator x3 (30T hydraulic excavator, 36T hydraulic excavator, 1.8T excavator).

Other equipment can include a portable site office, storage container, water cart trailer and quad bike.



Figure 5: Site layout for equipment. A- Crushing plant and generator. B- Wash plant processing. C - Digger (Volvo EC300) and excavator (30T). D - Excavator (36T). E/F - Processing stock pile areas. G - Screen machine. H - Fuel pumps. I - excavator (1.8T). J - area where dump trucks will be working

2.2.1 Excavation

Excavation of the resource is carried out by use of a hydraulic excavator. A loader and dump trucks area used to move material around the site and feed the crushing plant.

Excavation is carried out so that all faces and benches are safe and that water runoff is controlled and directed into the sediment control system.

2.3 Commencement and Operating Hours

Quarrying of the proposed expansion area is intended to commence following the granting of the consent application.

Quarry operation hours will be:

- 7:00am – 7:00pm Monday to Fridays,
- 8:00am to 4:00pm Saturdays
- Closed on Sundays and Public Holidays unless emergency work is required.

Shop hours, and truck movements are limited to between;

- 7:00am – 5:30pm Monday to Fridays,
- 8:00am – 12:00pm Saturdays by request only

2.4 Management Responsibility

The operation will be managed by the Managing Director and Quarry Manager who will be responsible for ensuring compliance with this Mangement Plan, and the requirements of the Resource Consent are complied with.

The Quarry Manager shall keep a list of names, addresses and telephone or electronic contact numbers of the owners/representatives of land adjoining and for ongoing consultation purposes and in case of emergency at the site.

2.4.1 Staff and Occupational Safety

Staff training will include awareness of the provisions of this Management Plan, and its application to the operation of the quarry on a day to day basis. All staff will be required to maintain appropriate certification in terms of operational management of the quarry, all equipment, and the use and storage of hazardous substances.

Lubricants are stored onsite in a locked storage shed/container. The volumes of potential spillage are minimal and their containment on the site manageable under normal circumstances. Should a spill occur, sand will be used to absorb the spill and then will be dug out and removed from the site to an authorised waste facility. Settling ponds are bunded to prevent chemical contaminants from entering the water system.

2.5 Access and Transport

The site has a designated access located at the end of Whenuku Road. The access way is a 4m wide metalled track from the end of Whenuku Road to the quarry area. The access way is fenced on both sides and a gate fitted at the entrance.

Two quarry specific signage is in place to slow truck speeds and to warn drivers to be courteous to other road users.

A traffic assessment has been prepared, to assess the proposed changes to the existing quarry operation along Whenuku Road.

2.5.1 Vehicle Movements

The majority of the Whenuku Road Quarry's 'Heavy Vehicle' quarry traffic is made up of light trucks and truck only units.

There will be a maximum of 40 heavy vehicles (80 movements) per day, and a maximum of 60 heavy vehicles (120 movements) for 10 days of the year. Each heavy vehicle (truck) has a capacity of 7m³ (seven cubic metres of product) and a truck and trailer has a capacity of 18m³ (18 cubic metres of product).

To protect the Whenuku Road surface and to respect the landowner's requirements, truck speed will be restricted to 50km/hr.

2.5.2 Freight Vehicle Management Plan

A "Freight Vehicle Management Plan" (FVMP) was implemented in June 2019. The FVMP addresses many of the community concerns relating to historic behaviour and effects of quarry customers using the road. The document has been enclosed as Appendix 2.

The management plan sets out traffic management methods for all drivers operating heavy vehicle. These can include the following;

- Enter and exit Whenuku Road via Ketemarae Road,
- Not exceeding 50km per hour.
- Not using engine brakes; in, out or along Whenuku Road.
- Comply with signage*
- Reduce speed for pedestrians, cyclists and children.
- Adhere to quarry hours.
- Sign the South Taranaki Quarries Driver

* Signage has been erected along Whenuku Road and within the quarry site that outlines the expectations on drivers, including speed and engine braking restrictions and responsible driving precautions.

The FVM plan has been provided to all quarry customers and it appears that drivers are adhering to the road signage and road user policies as detailed. The applicant believes this strategy together with the significant upgrade to the road width and condition will assist in protecting road users and neighbours and improve road safety.

2.6 Fuel Storage

Fuel for the plant is stored onsite, in two bunded Allied Petroleum tanks. These comply with all Hazardous Substances Regulations as set out in the Hazardous Substances and New Organisms Act 2001 and associated Regulations and all local authority requirements.

2.7 Control of Noise Emissions

Noise emissions are naturally attenuated by the topography of the site and the surrounding area.

The Operative and Proposed District Plan requires that activities in the rural zones do not exceed 55 dB LAeq at any point within the notional boundary between the hours of 7.00am and 7.00pm.

Noise from a worst-case extraction activity are predicted to be below the 55 dB LAeq noise criteria when assessed at the notional boundary of any residential dwellings in adjacent sites.

No blasting of rock will be undertaken at the site. The operator will continue to implement best practice standards for the management of noise during quarry operations and ensure ongoing compliance with this rule.

2.8 Processing Site

The raw material will be processed on site using the primary and secondary crushing plants as required, as per the STDC existing consent RML14076.

2.9 Stormwater Control

Stormwater will be treated via the settlement ponds. The concept is to use 2 ponds for sequential settling of sediment. One pond at the top end of the pipe extends to the Waingongoro River. This finishing pond is located in the section of the quarry being reinstated and the settling pond would be located at the bottom of the section currently being quarried.

As each section of the quarry 'expansion area' is opened a new settling pond will be constructed in conformance with the earthworks guideline and the old settling pond will become the new finishing pond. Sediment from the settlement pond will be removed prior to it becoming the new finishing pond. The discharge pipe will be extended to the new finishing pond and the old finishing pond will be drained and reinstated to the same contours as the surrounding land surface. In this leap-frog manner, stormwater management will follow the quarrying progression up gradient through the expansion area. The settling pond would receive all surface flow of water from the quarry floor and would be sized for the extent of the current anticipated quarrying phase.

All quarry vehicles will be refuelled at the fuel tank situated in the processing area, to remove any chance of spillage reaching the settling ponds.

2.10 Dust Control

Quarrying and aggregate processing have the potential to generate significant amounts of dust under certain circumstances. The activities that have the potential to generate excessive dust emissions, and the management methods to control dust emissions are outlined below:

Primary crushing and screening

- This rock material being extracted is naturally damp and dust emission are expected to be negligible. There will be a water cart available and fit to use at all times to dampen down areas as required.

Stockpiling of material

- With the natural dampness of the rock this is considered to be an operation that is unlikely to generate excessive dust.
- All overburden/ topsoil stockpiles will be hydro-seeded at the completion of the extraction works.

Traffic Movements

- The use of the water application by water cart will minimise the generation of dust.
- Sprinkler system on the fence line of the quarry site is turned on intermittently as required to dampen dry areas.

The Quarry Manager will continually monitor weather conditions and the site to identify periods of higher risk of adverse effects due to dust. Factors to be monitored by the Quarry Manager that may contribute to excessive dust generation may include:

- sustained periods of dry weather,
- the direction and speed of forecast or actual wind events,
- the composition and dust generating potential of the material extracted,
- the size and positioning of stockpiles,
- the operational activities undertaken,
- the activities to be undertaken.

When excess dust is generated, dust suppression by wetting down exposed surfaces will be employed. A water cart with a dust suppressing agent will always be available for dust minimisation should excessive dust be generated, or considered likely to be generated. Water will be utilised from the settling ponds onsite.

2.11 Archaeological Findings

Should there be any archaeological sites or artefacts be unearthed during quarry operations the following advice will be followed:

Should any archaeological sites, remains, artefacts, taonga or koiwi be unearthed, dislodged, uncovered or otherwise found or discovered on the quarry or surrounding area sites under the control of the consent holder, work shall cease immediately, and the consent holder shall advise the Environmental Manager of the controlling Iwi Authority, the New Zealand Historic Places Trust and the Consent Authorities Environmental Planning Manager. Work will recommence on written authority being given by the Consent Authority to proceed.

2.12 Reinstatement

The proposed quarry expansion area will be reinstated progressively using overburden and by using imported cleanfill material.

The extraction areas will be reinstated using the following mix of material:

- 55% clay,
- 25% andesite fines,
- 15% imported clean fill; and
- 5% topsoil.

Rehabilitation will occur progressively as follows;

- Grade and contour the resultant surface to provide a free draining base surface
- Spread the overburden and cleanfill material to create a new slope
- Spread the topsoil to provide a consistent depth and contour
- Sow grass seed and fertilise to stimulate for pasture growth.

Cleanfill be deposited directly to the required reinstatement area. It will not be stockpiled. The dump site location will be wherever the current reinstatement area is.

The overburden material that will be used to reinstate each section will be stored on the adjacent section as explained section 2.1.2 and 2.1.3 above.

Earth will be used from the hill south of the proposed extraction area B to re-contour the landscape of an improved finish for pastoral farming.

Appendix A – Site Plan

Appendix B – Freight Vehicle Management Plan

Appendix C – Resource Consent Conditions

To be inserted with approval by South Taranaki District Council

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