Oparure Quarry South-Western Pit: Topsoil Management Plan

Prepared for

Graymont (NZ) Limited

July 2026

PATTLE DELAMORE PARTNERS LTD
Level 2
109 Fanshawe Street, Auckland Central 1010
PO Box 9528, Auckland 1149

Tel +64 9 523 6900
Web www.pdp.co.nz

solutions for your environment

Quality Control Sheet

TITLE	Oparure Quarry South-Western Pit: Topsoil Management Plan
CLIENT	Graymont (NZ) Limited
ISSUE DATE	17 July 2026
JOB REFERENCE	C038700004

Revision History

REV	Date	Status/Purpose	Prepared By	Reviewed by	Approved
1	30/06/2026	Draft	Luke Matheson Olivia Martin	Blair Thornburrow	Blair Thornburrow
2	17/07/2026	FINAL	Luke Matheson	Cazz Grima	Blair Thornburrow

DOCUMENT CONTRIBUTORS

Prepared by

SIGNATURE

Luke Matheson

Reviewed by

SIGNATURE

Cazz Grima

Approved by

Blair Thornburrow

Limitations:

This report has been prepared by Pattle Delamore Partners Limited (PDP) on the basis of information provided by Graymont (NZ) Limited and others (not directly contracted by PDP for the work), including Golder Associates (NZ) Limited. PDP has not independently verified the provided information and has relied upon it being accurate and sufficient for use by PDP in preparing the report. PDP accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the provided information.

This report has been prepared by PDP on the specific instructions of Graymont (NZ) Limited for the limited purposes described in the report. PDP accepts no liability if the report is used for a different purpose or if it is used or relied on by any other person. Any such use or reliance will be solely at their own risk.

Table of Contents

Table of Tables

Appendices

1.0 Introduction

1.1 Background

Graymont (NZ) Limited (Graymont) is proposing to establish the Oparure Quarry South-Western Pit ('SW Pit') at Oparure Road, Te Kuiti. This document outlines the objectives and processes that Graymont will follow to manage topsoil associated with the construction and operation of the SW Pit and new haul road.

The SW Pit may open potentially 59.6 hectares (ha) by 2053, although by 2053 some of the 37.7 ha is anticipated to have been backfilled with rehabilitated overburden. The SW Pit and associated infrastructure will include the following:

- New pit (SW Pit)
- New haul road
- Overburden engineered landform in the new pit (SW Pit)
- Placement of topsoil in the engineered landform

1.2 Scope

This document (the 'Oparure Quarry South-Western Pit: Topsoil Management Plan' or 'Topsoil Management Plan') establishes the framework for which Graymont will manage topsoil on the site.

This Topsoil Management Plan (ToMP) outlines the objectives, and introduces the processes associated with topsoil management, including roles and responsibilities associated with the implementation of the ToMP and worker education.

The purpose of this ToMP is to guide all topsoil reclamation activities undertaken on the site such that the soil stockpiled as part of the proposal retains, where practicable, its soil nutrient level and is suitable for the proposed progressive reclamation activities (draft WRC Condition 76) - with the objectives of:

- Returning the land to a form and appearance that is in keeping with the SW Pit's surroundings; and
- Providing for an environmentally sustainable use of the rehabilitated land.

2.0 Site Description

2.1 Layout

Graymont's existing Oparure limestone quarry located just off Oparure Road, Te Kuiti encompasses 37.9 ha of existing quarry pit, 8.0 ha of Run of Mine (ROM) and quarry processing areas, and approximately 4.2 ha of overburden engineered

landform inside the quarry pit. The proposed SW Pit is 600 m to the west of the existing pit.

The new pit will be accessed via a 1.3 km long haul road linking the new pit to the existing quarry ROM. Once fully developed the SW Pit will have a similar arrangement to the existing Oparure pit with exposed limestone rock in the highwalls and a rehabilitated engineered landform (i.e., the in-pit overburden stockpile). The topsoil stockpile area is around 3 ha.

2.2 Site Soils

Site soils (topsoil and overburden), which are typically 22 m thick, comprise four distinct layers as summarised in the sections below and Table 1.

Table 1: Site Soil Properties

Soil Material	Thickness (typical)	% Clay	% Silt	% Sand	% Gravel	Source
Topsoil	<0.2 m	25-38	65-56	10-18	0	2
Brown Ash (silty clay)	4.5 m	47	43	10	0	1
Papa – sandy mudstone	10 - 16 m	33	43	48	6	1
Caprock – upper limestone (waste)	2 m	Waste rock – not applicable				-

Notes:

1. *S-Map* (Landcare Research, 2019)
2. Soil sampling results based on PDP (2026a). *Graymont South-Western Pit – Geology and Soil Report, June 2026*

2.2.1 Topsoil

Currently the topsoil layer supports pastural grass, which is grazed by sheep and cattle. The soils are classified as 'typic orthic allophanic' and are well draining, with a permeability in the range of 4 – 72 mm/h (Landcare Research, 2019).

The topsoil will be selectively recovered and stockpiled for future reclamation activities.

The topsoil, in a disturbed state, is highly mobile and requires specific controls to mitigate the risk of the topsoil being mobilised during rainfall events and/or drying out and contributing to a possible dust nuisance.

Principle controls include:

- If possible, place recovered topsoil directly onto a rehabilitated surface.

Otherwise, the recovered topsoil shall be:

- Spread into broad, wide stockpiles which are designed to avoid soil loss or water ponding;
- Minimise heavy vehicle movements over the topsoil and subsoil stockpiles;
- Provide Erosion and Sediment Control (ESC) measures around the stockpile pad; and
- Grass the topsoil stockpile(s) if not required in the next six months.

2.2.2 Brown Ash

The Brown Ash unit is a Quaternary volcanic ash, clay layer and parent material for the organic rich topsoil layers. Due to the high mobility of this silty-clay layer, material handling is typically limited to periods of dry weather. Therefore, any stripped Brown Ash shall be placed in the overburden dump and/or ultimately a subsoil layer for the final capping/reclamation of overburden engineered landform (OPA) surface (i.e., below the topsoil layer).

The management of overburden below the topsoil layer is outlined in the Oparure Quarry South-Western Pit: Erosion and Sediment Control Plan (PDP, 2026).

2.2.3 Papa and Caprock

Papa was formed in the Early Miocene, and is a weakly bedded to massive, calcareous fine to sandy mudstone. Papa is a very weak or weak mudstone, and slakes rapidly on exposure (Adams, 2018). As mudstone overburden fill, the mudstone forms firm silty clay and weak mudstone lumps (mudstone slakes with moisture to clay).

The Caprock of the Otorohanga Limestone, of the latest Oligocene to earliest Miocene, is a capping limestone of medium strength, light grey, flaggy limestone (Adams, 2018).

3.0 Key Principles of Topsoil Management

The management of topsoil is important for three principal reasons:

(1) To minimise potential topsoil loss and maximise topsoil volume for reclamation;

(2) To return the land to productive pasture production following reclamation; and

(3) To minimise the potential adverse effects of sediment in stormwater runoff on the receiving environment (groundwater and/or possible surface waters).

Therefore, this ToMP incorporates a methodology to manage topsoil with best ESC practices outlined in the Erosion and Sediment Control Plan (PDP, 2026), in addition, methods to maintain the soil health during the storage/stockpiling of the soil. It is important to note that this ToMP is consistent with Waikato Regional Council's (WRC's) Regional Policy Statement:

> *"The soil resource is managed to safeguard its life supporting capacity, for the existing and foreseeable range of uses. Manage the soil resource to minimise sedimentation and erosion, maintain or enhance biological, chemical and physical soil properties; and retain soil versatility to protect the existing and foreseeable range of uses of the soil resource. Regional plans shall control the effects of activities to maintain soil quality and to reduce the risk of erosion. Avoid a decline in the availability of high-class soils for primary production due to inappropriate use or development."*

4.0 Topsoil Reclamation

Topsoil shall be removed and either used immediately or stored in stockpiles, before stripping the bulk of the overburden. The overall soil management approach is to use the recovered topsoil to progressively rehabilitate the site and only temporarily stockpile where necessary.

The potential effects of topsoil removal/handling are the depletion of nutrient value for future pastoral land use, poor stockpile management, and over consolidation during placement.

To assess topsoil reclamation aspects, PDP undertook sampling of the topsoil at the site. The objective of the sampling and laboratory analysis was to determine general topsoil thickness and organic content to estimate the volume to be reclaimed (depth of cut) and re-used for site reclamation.

4.1 Soil Horizons, Thickness, and Volume

The soil horizons listed below are based on visual assessments of physical characteristics of the soil, including colour and organic content. The typical soil profile is as follows:

- Horizon A - Organic rich soil, dark brown, sandy silt (0 – 50 mm bgl).
- Horizon B - Slightly organic, volcanic ash soil, medium brown, sandy silt, with low levels of organic material (50 – 200 mm bgl).
- Horizon C - Mairoa Ash, brownish red silt (>200 mm bgl).

Organic rich soil (Horizon A) is very thin (<50 mm) or non-existent on slopes >25° at the site. This topsoil is typically thicker on less steep slopes and in the valleys

(in some places >200 mm). The total area of slopes >25° where topsoil may not be present or very thin is around 13 ha (based on the topographic model supplied by Graymont).

Based on the SW Pit area of 59.6 ha, the recoverable topsoil volume (Horizons A and B) based on the average thickness of 150 mm is estimated to be around 89,400 m^3.

Horizon C (Mairoa Ash) (the subsoil), should also be recovered to bring the combined recoverable soil (and silt) to around 600 mm below ground level. This equates to approximately 268,200 m^3 of combined topsoil and subsoil.

4.2 Topsoil Analysis for Pasture Growth

An in-situ assessment of the organic and nutrient content of the topsoil in Horizons A and B should be undertaken prior to topsoil stripping to establish a suitable baseline for the final topsoil placement and land reclamation.

4.3 Topsoil and Subsoil Stripping and Recovery

It is recommended to carry out topsoil stripping when soil moisture is at 50% to 75% of field capacity (this refers to the amount of moisture the soil holds in the upper 150 mm horizon). For south Waikato, this soil moisture content typically occurs in late spring (November) and autumn (March to April), making these periods the optimal times for undertaking topsoil recovery. Following this timing guide helps to maintain the soil aggregates structure in a friable state and avoids soil smearing, over compaction, and avoids the dustier drier months.

Field capacity is the moisture content remaining after gravity drainage has ceased, typically 1–2 days after thorough wetting. Winter conditions are typically at or near 100% field capacity (saturated), whereas summer conditions may fall below 50% of field capacity (dry) depending on rainfall, soil type, and drainage characteristics.

Soil moisture devices may be used to measure moisture content of the soil in the field. Soil moisture can also be assessed by sampling and laboratory testing of the gravimetric soil moisture content. For South Waikato, the field capacity may be 25-40% of the gravimetric moisture content (depending on the actual soil structure and void space). Soil moisture levels can also be determined using the soil plasticity test[1].

It is however, recommended to develop a simple topsoil material management procedure (e.g., photographs of optimal and suboptimal soil conditions)

[1] A useful field method of deciding whether a soil is sufficiently dry to be moved safely is the spade test: plasticity is determined by hand-rolling a sample from the relevant horizon on the back of a spade to see if a thread of 3 mm diameter can be formed without crumbling. If a thread can be formed the soil is too wet for working (Ramsay, 1986).

supported by limited testing of soil conditions, for the operators to visually assess the suitable conditions for topsoil recovery.

The following outlines a general procedure to effectively strip and recover topsoil and subsoil:

- Remove fences and other farm infrastructure that interfere with the soil stripping site.
- Spray weeds (e.g., gorse) well in advance of stripping. If substantial weeds remain after spraying, delineate the weed-ridden soil areas and strip to waste separately, if possible.
- Remove trees, shrubs, and other vegetation prior to stripping, including tree stumps.
- Keep heavy traffic to defined tracks to the soil stripping site.
- Remove topsoil and subsoil using an excavator and trucks without trafficking. Extreme care needs to be taken to avoid shearing and compressive force on the soil (i.e., the inherent structure of the topsoil should be maintained as much as possible). Potentially use smaller excavators if topsoil layers are thin.
- Strip the topsoil to the subsoil layer (Brown Ash).
- Strip subsoil layer that will be required for reclamation and store until needed (Section 5.0).
- Selectively strip the topsoil (i.e., the operators shall grade and transport poor quality topsoil to the overburden stockpile).
- Where practical, place recovered topsoil directly on a rehabilitated surface. Where the quarry plan does not allow for direct placement then the recovered topsoil shall be placed in topsoil stockpile(s) (Appendix A) (Section 5.0).
- Remove all topsoil material from land prior to the commencement of any trafficking with heavy vehicles of the area and stockpiled in a secure predesignated area or applied directly to the area being rehabilitated.
- Operators must place topsoil in trucks in a carefully planned manner to minimise topsoil loss.
- Operators must know the type, grade, and quality of soil material they are handling, and know exactly where to place it in the stockpile area.
- Revegetate all disturbed areas not being actively quarried.

5.0 Topsoil and Subsoil Stockpiling and Storage

The following general procedure outlines the steps to be followed to manage topsoil and subsoil stockpiling and storage:

- Topsoil shall be stripped from the base of the stockpile pad (refer to Appendix A) and stockpiled immediately. The subgrade may require capping with rock to allow vehicle movements. Erosion and sediment control measures must be in place before preparations commence on the stockpile pad subgrade and access roads.
- Topsoil and subsoil must be placed in separate bunds on the stockpile pad to provide discrete separation of the soils, and ease for future reclamation works.
- Where topsoil grading (i.e., classification) identifies the need for multiple topsoil stockpiles, these shall be identified in a Material Management Plan for the operators.
- Stockpiles shall be arranged on the stockpile pad to minimise the risk of water ponding (i.e., there is good drainage below stockpiles or that stockpiles will not cause damming of overland flow paths).
- The topsoil stockpile(s) shall not exceed a depth of 2.5 m.
- The topsoil stockpile area has capacity for around 75,000 m^3 at 2.5 m with additional capacity in the haul road bund. Therefore, management and scheduling of the topsoil and subsoil volumes for the overburden stripping campaigns will be required. Surplus subsoils may be stockpiled in overburden disposal areas where the primary topsoil stockpile area is at capacity.
- Topsoil must be placed in windrows using a truck, and the topsoil stockpiles must be shaped by an excavator (i.e., not deposited and spread with a bulldozer or bucket compacted).
- Avoid tracking heavy equipment on, or over, topsoil stockpiles.
- Ensure the topsoil stockpile(s) is stabilised, if stored for long period of time (>6 months), with mulch, seeded with grass, or hydroseeded.
- Ideally, the stockpiled soil should be stored for periods no longer than 18 months to minimise the depletion of soil nutrients.

If the topsoil stockpile(s) is in storage for longer than 18 months, a process shall be implemented (testing prior to reuse or soil amendments following placement) to ensure that the soil nutrients are at a level suitable for reclamation to be achieved during or following topsoil placement/reuse.

As presented in Figure A1, the stockpiles will be sited between the existing pit and the SW Pit, adjacent to the new haul road. The stockpile site is on relatively flat land but does fall slightly to the north and south. The proposed ESC measures will include 'dirty water' diversion bunds directing any sediment-laden stormwater to either the north or south. Sediment retention ponds will be provided at each end of the diversion bunds to recover entrained sediment and reduce the sediment load in the discharges from the stockpile area.

5.1 Soil Storage Records

Soil storage (soil stockpile) details must be logged and should include:

- Date soil was stockpiled and the identifier of each stockpile.
- Classification of topsoil and subsoil materials.
- Stockpile maximum height and volumes.

5.2 Avoidance of Soil Compaction

Compaction and associated loss of soil structure is the main risk to being able to return the soil to a usable condition and be returned to productive agricultural use. Compacted soils have less porosity and hence lower drainage and aeration, lower plant available water (more prone to drought) and more resistant to plant root growth.

To minimise soil compaction[2]:

- Dump trucks should run on dedicated access routes;
- Only excavators should operate on the topsoil layers;
- The adoption of a bed/strip system avoids the need for the dump trucks to travel on the soil layers;
- Soil moisture of the topsoil should remain between 50% and 75% of field capacity;
- Cultivation should aim to minimise the number of passes over the site; and
- If possible, cultivation and levelling of the soil surface should be along the contour.

As an overarching principle, the handling of topsoil material should only be undertaken when soil moisture is between 50% and 75% of the field capacity when being moved (i.e., avoid interrupted work or double handling the material). This reduces the risk of soil compaction (soil too wet) or loss of soil by wind erosion (soil too dry).

[2] Good Practice Guide for Handling Soils in Mineral Workings Part One: Introduction (Humphries, 2021).

6.0 Topsoil Placement

Following the recovery and/or storage of topsoil, the effective placement of topsoil is required to maximise the soil fertility and minimise soil loss due to erosion. The following procedures outline the controls that should be followed during topsoil placement:

- Ensure that ESC measures are in place prior to soil placement activities.
- Only handle topsoil material when soil moisture is 50% to 75% of field capacity.
- Prioritise topsoil placement of the rehabilitated areas during optimal grass-growing months to limit erosion (i.e., spring and autumn).
- Provide conditions that support a viable growing medium for a variety of grass and herbaceous species (including those with deep root systems), and conditions that facilitates the land returning to productive use. This includes conditions such as a replacement soil thickness greater than 600 mm.
- Spread the Mairoa Ash (Horizon C) subsoil first over the ground surface. The subgrade (where rocky or blocky) should be sufficiently well graded to prevent migration of finer particles.
- Spread topsoil (Horizons A and B) in layers between 100 mm to 300 mm thick. Monitor final topsoil depth periodically to ensure optimum thickness is achieved.
- The final topsoil and subsoil profile should be at least 600 mm following natural settlement.
- If required, blend prior to spreading if the topsoil quality is poor and of higher than optimum water content.
- Use light track-driven machinery for soil placement to minimise soil compaction and degradation of soil aggregates.

6.1 Soil Health

Immediately following placement of the reclaimed topsoil, nutrient levels of the soil must be sampled. A Hills Laboratory Agricultural Soil Test must be carried out to check nutrient levels. If any nutrient levels are below the optimal range for pasture production, a nutrient management specialist must be engaged to advise on fertiliser and lime applications, as determined by soil tests, to ensure the soil is suitable for pasture establishment.

Suitable pasture species for the local conditions should also be sown. Pasture roots help create soil structure and penetrate the subsoil. This helps ensure the cracks needed for drainage and air supply in the soil are kept open. Ideally

deeper rooting species such as plantain and chicory should be included with a mixture of grass and clover species to help build soil structure and improve drought tolerance of the pasture.

Re-vegetation to pasture should be undertaken as soon as practicable after topsoil placement, when soil moisture conditions are suitable, usually in spring or autumn.

A management system which promotes grass harvesting (hay and/or silage) over the first two years shall be implemented. This helps prevent recompacting the soil. Good management of wet soil to avoid degradation of soil structure will be important, especially managing stock movement on the soils during wet periods when the soil is saturated and susceptible to pugging and compaction.

Areas of obviously impeded drainage, which show by way of surface ponding, should be examined to establish if any moisture restricting layer exists and appropriate ripping or subsurface aeration undertaken to shatter such compacted layers.

7.0 Maintenance, Monitoring and Inspections

7.1 Roles and Responsibilities

This section and Table 2 outline the primary roles and responsibilities for the implementation of this ToMP.

Table 2: ToMP Roles and Responsibilities

Primary Role	Position Responsible
Implementation of this plan	Environmental Advisor
Two-weekly inspections of site ESC devices	Oparure Superintendent

The **Environmental Advisor** will be responsible for implementing this plan and arrange the collection of soil samples for analysis. This will include:

- Ensuring a dedicated location on site for record keeping of versions of this plan;
- Ensuring a dedicated location on site for record keeping of all site control device inspections. Records may alternatively be stored online;
- Any roles and responsibilities described in this plan are assigned to suitably qualified person(s) and that such person(s) receive appropriate training, as required; and
- Ensuring a suitably qualified or trained person undertakes collection of soil samples as required.

The **Oparure Superintendent** will be responsible for fortnightly inspections of the ESC devices and updates to workers, including:

- Communicating to site workers the status of site ESC devices and required maintenance/repairs; and
- Conducting maintenance/repairs of site ESC devices.

7.2 Post Soil Placement Monitoring

Within three years following full establishment of the pasture vegetation, the soil should be able to support environmentally sustainable use of the rehabilitated land. As the pasture establishes over the first year, soil properties are expected to improve due to the beneficial properties of the pasture cover. Such benefits include development of soil aggregates and improved soil biological activity.

Annual soil quality (soil condition) monitoring shall be undertaken on newly reclaimed soil areas for the first three years following the completion of the reclamation areas, to ensure soil quality is maintained for agricultural production. If monitoring indicates a decline in soil fertility or structure, remedial actions such as soil amendments, ripping, or re-aeration must be undertaken, and the ToMP must be updated accordingly.

8.0 Education and Communication

All relevant site workers must become familiar with this ToMP. To achieve this, Graymont will present this ToMP to workers at a Business Review (a standard monthly meeting). Any changes to this plan will be communicated to workers during the next upcoming toolbox talk(s).

For new site workers, Graymont will incorporate a briefing of this ToMP into all employee inductions and new workers should accompany the Oparure Superintendent on one weekly inspection while this ToMP will be discussed.

8.1 Soil Management Training

Soil management training must be provided to all relevant site workers, as described below.

8.1.1 Soil Stripping and Removal

Operator performance in the lifting phase is important.

On-site guidance on soil horizon recognition and on machine routing should be provided.

8.1.2 Soil Placement

Operator performance in the placement phase is crucial.

The staged and incremental reinstatement of the excavated area allows for iterative checking and refinement of placement procedures to ensure the quality of the replaced soil profile.

Soil placement assessments should include the following:

- Visually assessing the placed soil profile, and examining for abrupt horizon boundaries, compacted layers, smeared layers, and visual evidence of restricted water movement.
- Classifying soils through a visual assessment during soil grading.
- Collecting topsoil and subsoil samples for soil chemical analysis.

9.0 Summary and Conclusions

This document will be used by Graymont for the management of soils at the SW Pit. The Topsoil Management Plan (ToMP), particularly in a quarry context, is a living document that will evolve as understanding of the site improves and as technologies and practices develop over time.

This ToMP outlines the principles and procedures for topsoil and subsoil stripping, recovery, stockpiling, storage, and placement to ensure the preservation of soil fertility and support successful reclamation. It incorporates best practice ESC measures, moisture-based handling protocols, and soil compaction avoidance strategies. This plan also defines roles and responsibilities for monitoring, maintenance, inspections, and worker soil management training.

Annual soil quality (soil condition) monitoring will be undertaken for newly rehabilitated soil areas for the first three years following reclamation. This monitoring will ensure the soil remains suitable for agricultural production and will inform any necessary updates to this ToMP.

10.0 Management Plan Approval and Revision

This plan will be reviewed, redrafted, and certified in accordance with the Resource Consent Conditions, and Graymont's management procedures.

Once certified, the ToMP will be reviewed at **least every three years** by Graymont and if changes are made to the plan shall be submitted to WRC for re-certification.

More frequent reviews may also occur due to any significant[3] change in the operations of the SW Pit or findings from any incidents and community complaint investigations. Reasons for making changes to the ToMP shall be documented. A copy of the original ToMP document and subsequent versions will be kept and

[3] Significant is defined a change in (1) soil conditions, (2) responsibilities and reduction in routine monitoring and maintenance, and (3) the reporting.

marked as obsolete. Each new/updated version of the ToMP will be issued with a version number and date to prevent obsolete documentation from being used.

11.0 References

Adams. (2018). *Oparure Limestone Quarry – Geotechnical Assessment. Report prepared for Graymont (NZ) Limited by Adams Geotechnical Limited. Ref: C104-J1802-D003-v1, dated 8 November 2018.*

Humphries, D. R. (2021). *Good Practice Guide for Handling Soils in Mineral Workings Part One: Introduction.* The Institute of Quarrying.

Landcare Research. (2019). *S-map Soil Report – Mairoaf [Mai_4a.1 (30% of the map unit at location (1784392, 5757746), Confidence: Low)]. Report generated: 3-Sep-2019 from https://smap.landcareresearch.co.nz.*

PDP (2026). *Oparure Quarry South-Western Pit: Erosion and Sediment Control Plan.*

PDP (2026a). *Graymont South-Western Pit – Geology and Soil Report, June 2026.*

Ramsay, W. (1986). *Bulk soil handling for quarry restoration. Soil and land use management Volume 2, No. 1. Pp30-39.*

Appendix A: Stockpile Location

S:\C03870\822\PROJECT\802_COPY_Existing_Catchments_RevD.qgz

(INFORMATION ONLY - NOT FOR CONSTRUCTION)

LONG, THIN SOIL STOCKPILE TO THE SOUTH OF THE HAUL ROAD

KEY:

- TOMO
- FOREBAY AND INFILTRATION SUMP
- CLEAN WATER DIVERSION BUND
- CLEAN WATER FLOW DIRECTION
- WATERTABLE/DRAIN
- QUARRY IMPACTED FLOW DIRECTION
- SOIL STOCKPILE DIVERSION BUND
- SOIL STOCKPILE DIVERSION BUND FLOW DIRECTION
- CULVERT
- DROP STRUCTURE
- HYDROSEEDED SURFACE
- SEDIMENT RETENTION POND
- SOIL STOCKPILE
- SEDIMENT PIT
- WATER CUT-OFF
- HAUL ROAD

0 100 200 m

METRES (A3)

SCALE : 1:7,000

NO.	REVISION	DATE	BY
B	DRAFT	JUN 25	HK
A	DRAFT	MAR 25	DT

NOTES

1. AERIAL IMAGERY SOURCED FROM THE LINZ DATA SERVICE [https://data.linz.govt.nz] AND LICENCED BY LINZ FOR RE-USE UNDER THE CREATIVE COMMONS ATTRIBUTION 4.0 INTERNATIONAL LICENCE.

CLIENT

GRAYMONT

FIGURE 01: TOPSOIL STOCKPILE LOCATION

SOUTH-WESTERN PIT - TOPSOIL MANAGEMENT PLAN

Appendix B: Consent Conditions

Table B1: Consent Conditions Compliance Assessments		
Condition Number	**Condition**	**Addressed**
76.	The consent holder shall engage an independent suitably qualified and experienced expert to prepare a Topsoil Management Plan (or '**ToMP**'). The purpose of the ToMP is to guide all topsoil reclamation activities undertaken on the Site such that the soil stockpiled as part of the Proposal retains its soil nutrient level and/or is suitable for the proposed progressive reclamation activities.	Oparure Quarry South-Western Pit: Topsoil Management Plan
77.	The ToMP shall include, but shall not be limited to the following:	
77.a.	The approach that the consent holder is to adopt for the reclamation of both the topsoil and subsoil layers on the site;	Section 4.0
77.b.	The measures that the consent holder shall take in relation to the immediate placement of reclaimed topsoil;	Section 4.3 and 6.0
77.c.	How the consent holder is to stockpile all topsoil on the site;	Section 5.0
77.d.	The minimum nutrient levels that are to be retained for the topsoil stockpiled on the Site and the proposed sampling and testing procedures; and	Section 6.1
77.e.	Where applicable, the soil amendments that the consent holder is to apply for nutrient deficient topsoil.	Section 6.1
78.	The consent holder shall keep a record of the quantity of topsoil that is stockpiled on site, and make this available to the to the Chief Executive Officer of the WRC (or delegate) within five working days of receiving a request to do so from the WRC.	Section 5.0 and 6.0