CALLIOPE ENVIRONMENTAL MANAGEMENT PLAN

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1. Introduction

Graymont (Calliope) Pty Ltd owns and operates the limestone quarry and associated processing plant, herein referred to as the Graymont Calliope Plant (GCP).

The GCP is located approximately 30km south of Gladstone, and 10km southeast of the township of Calliope in Central Queensland. It operates under two Environmental Authorities held by Graymont (Calliope) Pty Ltd:

- EPPR00881913
- EPML00969013

1.0. Purpose

This Environmental Management Plan (EMP) provides a governance framework for environmental management and is supported by several sub-plans and related documents where relevant.

Environmental Authority number: EPPR00881913, condition A8 specifies:

Environmental Management Plan An environmental management plan (EMP) must be implemented. The EMP must address the following matters: a) Describe the project and surrounding environment b) Identify relevant environmental values likely to be affected by the activities c) State the potential adverse and beneficial impacts on environmental values d) Provide details on how the proposal will protect and enhance the environmental values.

The environmental management strategies provided in the EMP have been developed to meet the requirements and obligations of EPPR00881913 and EPML00969013.

This EMP aims to:

- Ensure that the operation meets contractual, legal, and other environmental requirements including industry codes of practice.
- Comply with the requirements of EPPR00881913 by providing auditable commitments to practical and achievable strategies for the management of the GCP.
- Serve as an integrated plan for comprehensive monitoring and management of environmental risk through a set of environmental sub-plans that are issue specific.
- Provide all Graymont (Calliope) personnel with systems, procedure, and documentation necessary to undertake the activities of the operation in a sustainable manner, while meeting legislative and production requirements, and minimising potential impacts on the local and broader environment and community.

Figure 1 outlines the relationship between the operation specific environmental requirements, the EMP and associated plans, and support documentation for the operation.

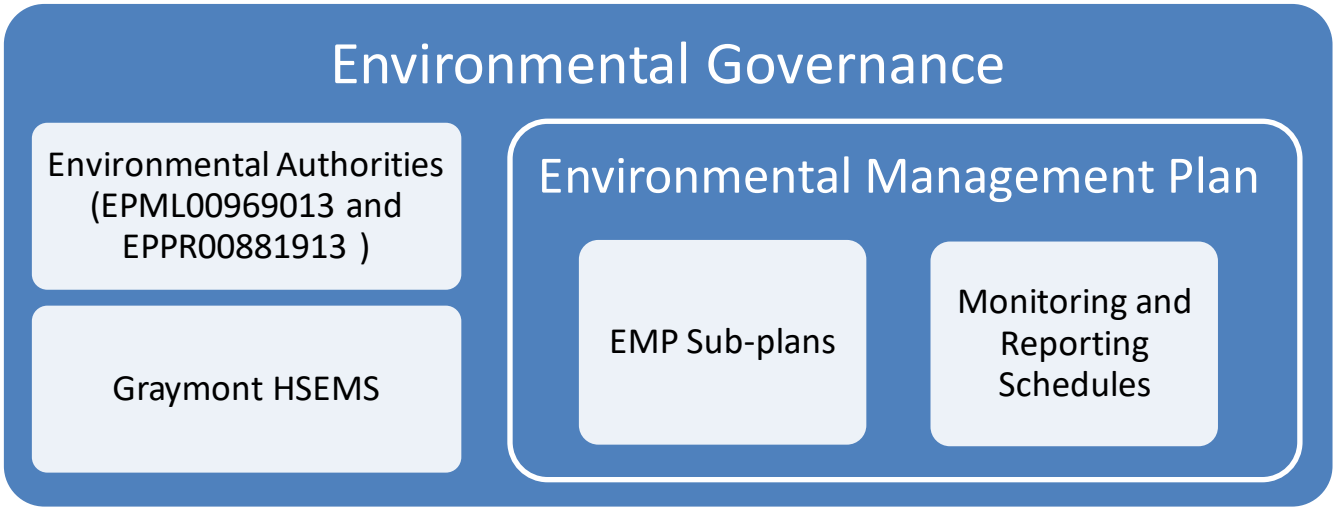

Figure 1 Environmental Governance

1.1. Authority / Legislative Details

Graymont is required to ensure that all mining operations are conducted in accordance with all legislative requirements, including the *Mineral Resources Act 1989*, the *Environmental Protection Act 1994* (EP Act), and associated environmental Authorities EPML00969013 and EPPR00881913.

Environmentally Relevant Activities (ERAs) are activities that will or have the potential to release contaminants into the environment that may cause environmental harm. It is a requirement of EP Act and the *Environmental Protection Regulation 2019* (EP Regulation) that anyone who conducts an ERA must possess an environmental authority.

The operation is approved as a resource activity under Chapter 5, Section 195 of the EP Act. Under Section 608 of the EP Act, an Environmental Management Plan may be required for an environmental authority (mining lease).

Two Environmental Authorities are effective for this site:

- EA EPML00969013 for all mining leases, and
- EA EPPR00881913 (original permit # SPCE04023712 issued under the Sustainable Planning Act 2009) which covers all of the land held by Graymont including Mining leases and Freehold land.

EPML00969013 permits the operation to carry out activities defined in Schedule 3, Item 21, of the EP Regulation, namely “A mining activity that is an ineligible ERA, other than a mining activity mentioned in items 9-20”. This activity is permitted to be carried out across all active mining leases for the operation, which are detailed below in Table 1. These leases are depicted in red in Figure 2.

Table 1: Mining Leases

Mining Leases
ML3594, ML3595, ML3596, ML3597, ML3598, ML3599, ML3600, ML3602, ML3603, ML3604, ML3605, ML3606, ML3608, ML3609, ML80036, ML80189, ML80190, ML80191, ML80192.

Environmental Authority EPPR00881913 was originally issued as permit number SPCE04023712 under *The Planning Act 2016* (previously the *Sustainable Planning Act 2009* at time of issue).
The operation has approval under Environmental Authority EPPR00881913 for the following ERAs:

- ERA 50(2) – Bulk material handling >100t day
- ERA 16(2) – Extracting in a year >1,000,000t of material
- ERA 16(3) – Screening in a year >1,000,000t of material

The Queensland Government changed the provisions of the EP Act and the EP Regulation on 31st of March 2013. Therefore, a number of ERAs that were previously regulated have been removed and will no longer require registration certificates to operate and will be exempt from licensing requirements (Gladstone Regional Council website lists deleted ERAs). This includes the following ERA which is listed in previous versions of this document:

- ERA 8 (3a) - Chemical storage >10m3 but <500m3 class C1 or C2 combustible liquids.

The EA EPPR00881913 approval covers the associated lots detailed below in Table 2.Table 2: ERA conditions corresponding to Lot numbers.

Environmentally relevant activity/activities	Location(s)
Prescribed ERA, ERA 50(2) - Bulk Material Handling: Loading or unloading 100t or more of bulk materials in a day or stockpiling bulk materials	Lot 22/SP215268, Lot 7/SP215269, Lot 1/RP610708, Lot 2/RP610127, Lot 26/SP228426, Lot 1/RP610127, Lot 2/RP610128, Lot 20/SP162111, Lot 2/RP209261, Lot 4/RP610128, Lot 44/CPCTN115, Lot 14/CPCTN64, Lot 100/CTN1823, Lot 30/SP152526, Lot 3/RP610127, Lot 1/RP610128, Lot 39/CPCTN79, Lot 2/RP610708, Lot 96/CPCTN408, Lot 5/RP610127, Lot 5/RP610929, Lot 4/SP183055, Lot 3/RP610128, Lot 39/CTN79, Lot 44/CTN115, Lot 96/CTN408, Lot 2/RP609261, Lot 14/CTN64
Prescribed ERA, ERA 16(2) - Extraction and Screening: Extracting, other than by dredging, in a year, the following quantity of material, more than 1,000,000t	Lot 30/SP152526, Lot 3/RP610127, Lot 1/RP610128, Lot 4/SP183055, Lot 5/RP610929, Lot 5/RP610127, Lot 96/CPCTN408, Lot 2/RP610708, Lot 39/CPCTN79, Lot 2/RP209261, Lot 4/RP610128, Lot 44/CPCTN115, Lot 14/CPCTN64, Lot 100/CTN1823, Lot 20/SP162111, Lot 3/RP610128, Lot 2/RP610128, Lot 39/CTN79, Lot 44/CTN115, Lot 96/CTN408, Lot 2/RP609261, Lot 14/CTN64, Lot 2/RP610127, Lot 7/SP215269, Lot 22/SP215268, Lot 26/SP228426
Prescribed ERA, ERA 16(3) - Extraction and Screening: Screening, in a year, the following quantity of material, more than 1,000,000t	Lot 2/RP209261, Lot 4/RP610128, Lot 44/CPCTN115, Lot 14/CPCTN64, Lot 100/CTN1823, Lot 20/SP162111

1.2. Related Documents

- Water Management Plan
- Progressive Rehabilitation and Closure Plan
- Ground Control Management Plan
- Waste Management Plan
- Erosion and Sediment Control Management Plan
- Pest and Weed Management Plan
- Community and Stakeholder Engagement Plan

1.3. Relevant Stakeholders

Relevant stakeholders are kept informed of activities at the operation as per the Community and Stakeholder Engagement Plan. These stakeholders are listed below:

- Gladstone Area Water Board (GAWB);
- Queensland Department of Resources;
- Queensland Department of Environment and Science (DES);
- Resources Safety & Health Queensland (RSHQ);
- Gladstone Regional Council;
- Nearby residences; and
- The local community.

2. Site Description

2.3. Location

The GCP is located in Central Queensland, approximately 30km south of Gladstone, and 10km southeast of the township of Calliope as shown in Figure 2. The GCP is situated to the west of Lake Awoonga and allotments held by the Gladstone Area Water Board (GAWB) within the Gladstone Regional Council Local Government Area (LGA). The surrounding area is predominantly forested with some grazing activities. The lots covered by the operation are outlined in Table 3, with active mining leases outlined in Table 4. Lots and mining leases associated with the operation are illustrated in Figure 3. All mining leases are held by Graymont (Calliope) Pty Ltd.

Table 3: Lots and mining leases covered by the GCP

Deposited Plan Number	Tenure Type
Lot 1 RP 610127	Freehold
Lot 1 RP 610128	Freehold
Lot 1 RP 610708	Freehold
Lot 100 CP CTN 1823	Freehold
Lot 14 CP CTN 64	Freehold
Lot 2 RP 609261	Freehold
Lot 2 RP 610127	Freehold
Lot 2 RP 610128	Freehold
Lot 2 RP 610708	Freehold
Lot 20 SP 162111	Freehold
Lot 22 SP 215268	Freehold
Lot 26 SP 228426	Freehold
Lot 3 RP 610128	Freehold
Lot 30 SP 152526	Freehold
Lot 39 CP CTN 79	Freehold
Lot 4 RP 610128	Freehold
Lot 4 SP 183055	Freehold
Lot 44 CP CTN 115	Freehold
Lot 5 RP 610127 (Previously Lot 5 SP 610127)	Freehold
Lot 5 RP 610929	Freehold
Lot 7 SP 215269	Freehold
Lot 96 CP CTN 408	Freehold

Table 4: Active mining lease area and currency for the operation

Mining Lease	ML Area (ha)	ML Expiry Date
ML 3594	32.37	28/02/2041
ML 3595	13.49	28/02/2041
ML 3596	9.10	28/02/2041
ML 3597	2.83	31/12/2041
ML 3598	12.448	31/12/2041
ML 3599	6.798	31/12/2041
ML 3600	8.093	28/02/2041
ML 3602	10.23	31/03/2027
ML 3603	8.34	31/03/2027
ML 3604	4.85	29/02/2028
ML 3605	9.45	31/07/2028
ML 3606	5.61	31/07/2028
ML 3608	57.14	31/10/2030
ML 3609	42.99	31/10/2030
ML 80036	18.73	30/06/2022
ML 80189	36.05	31/05/2043
ML 80190	22.5	31/05/2043

Mining Lease	ML Area (ha)	ML Expiry Date
ML 80191	1.6	31/05/2043
ML 80192	121.5	31/05/2043

Figure 2: Site Location

Figure 3: Lots and mining lease layout

Figure 4: Quarry Layout

2.4. Climate

The operation area is classified as being in a subtropical climate zone characterised by a hot, humid summer and low winter rainfall. Median annual rainfall is in the range 650mm to 1,200mm. The area does not tend to experience regular northwest monsoonal activity, nor does it experience higher latitude cold fronts.

The nearest Bureau of Meteorology station is located in Gladstone. Average annual rainfall experienced for Gladstone is around 850mm. There are two distinct seasons - wet and dry. The wet season is predominant from December to March and the dry season from June to September. The average summer temperatures for Gladstone average around 22 to 31˚C, whilst winter temperatures vary from around 7 to 24˚C (Bureau of Meteorology 2022).

It is possible for extreme climatic events, influenced by season or time of year, to occur in the area. These include severe thunderstorms and tropical cyclones. Although the considerable majority of cyclone impacts are located in north Queensland, occasionally a cyclone affects areas further south down the east coast including heavy rain, hail, and lightning.

The local government area relevant to the site is Gladstone Regional Council. The following document discusses possible extreme climatic events that may occur in the area:

Gladstone - local-disaster-management-plan (gladstone.qld.gov.au)

The operation is offered some protection from inundation due to floods by two barriers constructed at the site. A 1900m long earth and rock wall has been constructed adjacent to Raggote Creek, with a smaller wall to the east of the site, the crests of these walls are approximately 52m AHD. The walls are protected by a clay liner and outer rock layer to an elevation of 47m (the estimated 1 in 100-year flood level). These works were completed as part of a cooperative agreement between the operation's previous owners and the GAWB.

2.5. Topography, Geology, and Soils

The topography of the land is slightly undulating land that rises approximately 30m above the surface water level of Lake Awoonga Dam.

The site covers approximately 700ha, with approximately 685ha owned by Graymont Pty Ltd. The remainder is owned by the Gladstone Area Water Board (GAWB), who also own contiguous landholdings outside the operations area. With the exception of mining and quarrying activities, the land is put to no active use or is used for rural grazing activities.

The Taragoola limestone deposit comprises a large orebody of steeply dipping, north-south, striking limestone. The limestone is fine grained to crystalline, light grey with cream inclusions, very-high strength, fresh to slightly weathered, moderately jointed to massive. Discontinuities are sharp and generally clean.

Dissolution of the upper surface has created some minor karst features; predominantly a slightly irregular surface, dilated joint apertures, small caverns, and shafts. These features are most obvious to a depth of ≈20m below surface. These features are likely to have negligible detrimental influences on the performances of the walls.

The limestone is overlain by red-brown clayey sand. The cover ranges in thickness from 0.5m to 5m. Where thickest, it contains boulders of limestone up to 1m diameter. Stripping of the upper bench involves stockpiling clean soil east of the pit for future use in rehabilitation and sending bouldery soil to the waste rock dump.

Basaltic to andesitic mafic volcanics have intruded around the site. The most obviously regions are centred north of the pit at 321000E 7333000N and south of the pit at 321500E 7333000N. There have not been many significant intrusions into the section of the ore body being mined; most notable is those on the north and south walls.

2.6. Hydrology and Water Storage

The GCP is bound by Lake Awoonga to the east, south and west. Lake Awoonga forms the drinking water supply dam from the surrounding catchment area for the GAWB. To the west of the site is a significant bund wall adjacent to Pit 3 and Pit 4. The water body adjacent to the bund wall is known as Raggote Creek, which is a tributary that flows into Lake Awoonga.

The eastern side of Pit 4 has another bund wall to prevent inundation of the quarry site.

Groundwater at the site is hosted by limestone as a variably connected, in places karstic aquifer.
The operation site has three main water storage areas:

- Pit 1 – a non-operational mining pit final void that is backfilled;
- Pit 2 - a water storage used for the supply of water to the wash plant, Crushing Circuit and Production; and
- Pit 3 - a final void pit used for water storage and stormwater capacity during periods of high rainfall.

Water storage and sediment dams are described in more detail in the Water Management Plan in Appendix B.

2.7. Flora and Fauna

Prior to mining activities, the site area was used for low to moderate intensity grazing of native improved pasture. The original mixed Eucalypt woodland which occurred in the area has been significantly altered by clearing, grazing and quarry activities. Other regional changes have been brought about by agriculture and the extensive land inundation caused by Lake Awoonga.

The active mining leases and allotments associated with the operation are subject to the following categorised vegetation communities; category B remnant vegetation (least concern and of concern), category C regulated regrowth vegetation (least concern and endangered), category R reef regrowth watercourse vegetation, and category X non remnant vegetation.

The vegetation communities, as categorised under the *Vegetation Management Act 1999*, present within the site are:

- 11.11.15 least concern, sparse Eucalyptus crebra woodland to open woodland on deformed and metamorphosed sediments and interbedded volcanics.
- 11.11.4 Least concern, Eucalyptus crebra woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges
- 11.3.4 of concern, sparse Eucalyptus tereticornis and/or Eucalyptus spp. woodland on alluvial plains.
- 11.3.25 least concern, sparse Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines.

3. Description of Operations

3.1. Operation Overview

The GCP conducts limestone mining and extraction to produce a range of agricultural and industrial limestone products for sale. Waste rock is also removed and either stockpiled on site or crushed for use as aggregate in a variety of applications such as road base construction.

Mining activities include topsoil stripping and removal of clay rich overburden and waste rock followed by extraction of limestone ore of appropriate grade and chemical properties suitable for quicklime, hydrate production and other end uses. Suitable limestone ore is then crushed, screened, and washed on site before being transported to customers off site for further downstream processing. Extractive activities are also conducted on site where limestone of different grades and suitable physical properties follow a similar process to mining for the production of road base and aggregates etc.

3.2. Extraction

Open cut mining and quarrying are similar operations employing straight forward open cut mining/quarrying methods utilising a dedicated truck and excavator fleet. Vegetation, comprising mostly pasture grass, is removed together with an upper soil layer, and stockpiled or used as a final surface layer on spoil embankments to facilitate revegetation. Underlying the surface soil/ clay layer is a clayey limestone strata. This layer is excavated by earthmoving equipment, usually following drill and blast. This material is either spoiled or, if appropriate, stockpiled for later separation of clay and limestone by a heavy-duty rock screener.

Underlying the clayey limestone layer is dominantly homogeneous limestone which is drilled, blasted, and loaded out by an excavator serviced by a number of ridged dump trucks. A second excavator is on site as a backup for the open cut operations. Drilling and blasting is conducted at a rate of approximately one blast per month.

3.3. Material Handling

Material is hauled either to the Run-Of-Mine (ROM) pad for crushing, or to the stockpiles for screening or to the designated spoil dumps. Both a wet and dry plant are utilised.

The ‘dry’ plant sees material first screened by mobile rock screeners to separate oversized material and soils and scalping from the product. The material is then sent through the various crushers and stockpiled according to size.

A portion of the crushed material is then passed through the wash plant. This material is washed with reclaimed water from Pit 2 and screened into various sizes. The washed, sized material is then stockpiled before being exported by truck to customers. Water discharged from this process is collected in a settling pond system before being recirculated back to Pit 2 dam.

3.4. Transport

Approximately 1 million tonnes per annum of limestone products are currently transported from site by road. Limestone products are loaded by wheeled loader into B-double road trucks. The trucks travel north on graded and paved roads to the town of Calliope where they connect to the Dawson Highway.

The operation previously transported material via rail, however this activity is not currently occurring.

3.5. Management Roles and Responsibilities

The following people are the key Graymont personnel responsible for the implementation and review of this Management Plan. An organisational chart for the site can be found in Appendix H.

Table 5: Environmental management responsibilities

Personnel	Summary of Responsibility
Regional HSE Manager	• Facilitate and provide technical support for the development of this plan • Provide ongoing technical support for control and monitoring measures described in this plan. • Participate in the annual review of this plan
Director Operations Northern	• Ensure performance targets specified in this plan are being met
Plant Manager	• Ensure the implementation of all control, monitoring and reporting measures as specified in this plan • Ensure compliance with site specific requirements • Participate in the annual review of this plan
HSEQ Specialist	• Put onsite systems in place to implement all control, monitoring, and reporting requirements in this plan • Participate in the annual review of this plan

4. Environmental Risks and Controls

The Calliope Environmental Risk Register categorises risks and hazards and provides mitigation measures alongside original and residual risk ratings.

A summary of risks identified is presented in Table 6 below:

Table 6: Summary of risks identified

Activity	Summary of Risk
Air Quality	• Extractive activities • Vehicle movements
Water Management	• Discharge events from site • Inappropriate sampling methodology resulting in cross contamination • Cleaning chemicals • General water uses on site
Waste Management	• Inappropriate sampling methodology resulting in cross contamination • Recycling and landfill • Batteries and IT equipment
Noise and Vibrations	• Extractive activities • Vehicle movements
Energy use	• Office and operational power needs • Diesel consumption; vehicle use • Lighting causing community or environmental disruption
Chemical and Hazardous Materials	• Storage, handling and transport of hazardous goods • Pest control risks • Hydrocarbon spills
Vegetation removal	• For projects and site development
Climate Change	• Consideration for existing impacts and future impacts of upcoming projects and expansion • Travel
Cultural heritage	• As it relates to community and reputation risk as cultural heritage is generally intertwined with Environmental concerns under new projects

3.6. Risk and Consequence Ratings

Risk Assessment Matrix

Likelihood	Consequence				
	Extreme 5	Major 4	Moderate 3	Minor 2	Insignificant 1
Almost Certain 5	Extreme (25)	Extreme (20)	Extreme (15)	High (10)	Moderate (5)
Likely 4	Extreme (20)	Extreme (16)	High (12)	Moderate (8)	Low (4)
Possible 3	Extreme (15)	High (12)	Moderate (9)	Moderate (6)	Low (3)
Unlikely 2	High (10)	Moderate (8)	Moderate (6)	Low (4)	Low (2)
Rare 1	Moderate (5)	Low (4)	Low (3)	Low (2)	Very low (1)

Consequence Scale

Level	Descriptor	Definition
1	Insignificant	• Very low environmental and health impacts confined to a small area within the site • Prompt (typically within a shift) clean-up • Negligible loss of human, social, financial, or built capital/wellbeing • Negligible media coverage
2	Minor	• Low environmental and health impacts confined within the site • Short-term (typically within a week) clean-up • Small but noticeable loss of human, social, financial, or built capital/wellbeing, can be easily rehabilitated • Regulation breaches without fine or litigation • Negative local media coverage • Complaint from community
3	Moderate	• Reversible off-site environmental health impacts, requiring short-term clean-up (weeks) • Onsite medium term (months) clean-up • Moderate, noticeable loss of financial or built capital/wellbeing • Regulation breaches resulting in fine or prosecution. • Negative media coverage at local/regional level over more than one day
4	Major	• Major, off-site, environmental and health impacts requiring medium-term clean-up (months) • Onsite impact requiring significant clean-up effort (years) • Substantial loss of financial or built capital/wellbeing, will attract public concern • Major litigation at operation level • Negative national media cover age;
5	Extreme	• Prolonged or severe, off-site, or regional environmental and health impacts requiring long-term clean-up (years) with irreversible residual damage

Level	Descriptor	Definition
		• Extreme permanent loss of, financial or built capital/ wellbeing, with anticipated major public outrage • Major litigation or prosecution at parent company level • Loss of environmental licence

Likelihood Scale

Level	Descriptor	Definition
1	Rare	Unlikely to occur during a lifetime or very unlikely to occur
2	Unlikely	Could occur about once during a lifetime or more likely not to occur than to occur
3	Possible	Could occur more than once during site lifetime and more likely not to occur than to occur
4	Likely	Will probably occur in most circumstances
5	Almost Certain	Is expected to occur in most circumstances

5. Air Quality

3.7. Objectives

- To eliminate or minimise pollutant air emissions from GCP and their potential impacts on the environment, community, and ambient air quality; and
- To ensure compliance with the regulatory requirements for the air emissions relevant to this site.

3.8. Environmental Values

The mining and quarrying operations are situated in a rural setting where sources of air pollution include unsealed roads, general agricultural activities, and soot and fallout from bush fires and land clearing.
The principal environmental values for air quality are the social amenity and wellbeing of people.

3.9. Potential Impacts

Potential sources of air pollution include the generation and propagation of dust particles from mining and extraction activities and the emissions from the diesel engines of mobile equipment. Fumes may also be associated with the detonation of explosives.

Activities conducted within the Site area are well separated from sensitive places and the potential impact on air quality due to mining and quarrying activities is negligible. The nearest residential dwelling external to land owned or controlled by Graymont (Calliope) is a minimum of three kilometres distance in a northerly direction from mining and extraction activity areas.

The principal source of air pollution is the emission of dust due to the following activities:

- Land clearing
- Topsoil and overburden stripping and stockpiling
- Shot rock loading
- Raw material hauling and tipping
- Crushing and Screening
- Conveying
- Stockpiling
- Rail loading (when being utilised)
- Wind acting on stockpiles and exposed areas

3.10. Air Emissions Inventory

Table 7 details the activities on site that are likely to cause air emissions and/or impact air quality.

Table 7: Air emission inventory

Activity	Location	Hazard	Risk	Likelihood	Consequence	Risk Rating
Blasting	On site	Generation of dust impacting local residences and surrounding land uses. Dust deposition affecting water quality	Complaints from local residences and surrounding landowners. Negative impacts on water quality. Graymont required to conduct complaint-based monitoring.	Unlikely	Moderate	6 Moderate
Movement and handling	On site			Unlikely	Moderate	6 Moderate
Crushing and screening	On site			Unlikely	Moderate	6 Moderate
Transportation of product	On site, Taragoola Road, near rail loading facility	Windblown dust generation impacting local residences and surrounding land uses. Dust deposition affecting water quality		Unlikely	Moderate	6 Moderate
Stockpiling	On site			Unlikely	Moderate	6 Moderate

3.11. Control Measures

Table 8: Air emission control measure

Controls	Timing/ Frequency	Evidence of Implementation
Management of Air-Borne Dust on site	Ongoing	Review and audit of airborne dust emissions on site.
Vehicle operations on site follow Traffic Management Plan (speed, routes)	Ongoing	Review and audit of airborne dust emissions on site.
Deploy water carts to all unsealed roads to reduce the generation of dust from these areas	When required during dry days	Vehicle log detailing number of tank refills
Dust suppression devices installed on operating plant/crushers	When in use	Equipment equipped with dust suppression systems / sprays. Site supervisor daily inspection.
All trucks containing product must not leave the site without trailer covers	Ongoing	Weighbridge operator to report all instances of loads not securely covers to site supervisor.
Stockpiles to be located as far as practicable from residential areas	Ongoing	Site supervisor has predetermined and defined stockpile areas with updated weekly mud maps of locations
Activities which have the potential to cause significant dust emissions should be modified or cease operation under adverse (high wind) weather conditions where sensitive receptors may be impacted.	When required	Weather forecast maps are printed by the Administration staff weekly and communicated through the DOR. They are distributed to front office and DOR room for review. Should weather conditions change significantly, the forecast is consulted more regularly.
Continuous visual surveillance of dust emissions to ensure effectiveness of control measures	Ongoing	Report any issue of excessive dust emissions into JD Edwards incident and event reporting program
Mobile plant will be maintained to manufacturer's specifications to comply with dust and pollution emission control	Ongoing	Inspections to be recorded on vehicle pre-start inspection sheet

A continuous improvement program is actively undertaken on site to ensure that best work practices are implemented to avoid/or minimise generation of dust.	Ongoing	Regular internal audits of work practices, processes, and environmental objectives. Any corrective actions addressed in the audit are to be entered into JD Edwards.
Installation of screens and windbreaks around areas of potential dust emissions	When required	Job start checks and JRAs are undertaken before commencing work to identify the need for screens or wind breaks to avoid excessive dust in work area.

3.12. Monitoring

This section outlines the various modes of monitoring in order to quantitatively track and observe air emissions emanating from site. All monitoring requirements are detailed in Table 9 below. The EHS Inspection, Testing, and Monitoring Procedure should be used to provide further guidance in site monitoring requirements.

All monitoring and sampling is to be conducted by a competent person in accordance with the latest version of the administering authority's Air Quality Sampling Manual.

Table 9: Air emission monitoring measures

Description of monitoring	Timing/ Frequency	Parameters	Monitoring method
Ambient air quality monitoring for TSP at monitoring sites N, SE, SW, and S.	Monthly	TSP (g/m2/month)	Dust deposition gauges using AS/NZS 3580
Visual inspection of dust suppression devices on equipment as part of prestart checklist	During activities	Device is correctly fitted	Inspections noted in vehicle prestart check logbook. Any defects are tagged out and/or reported to supervisor.
Visual inspection of dust emissions from the primary crushing and screening plant	Daily	Visible dust	Any defects are tagged out and/or reported to supervisor.
Visual inspection of dust emissions from drilling and blasting activities	During activities	Visible dust	Non-compliance with dust emissions will be entered into the incident and corrective action reporting: JD Edwards
Visual inspection of dust control measures to ensure correct operation	During activities	Visible dust	Non-compliance with dust emissions will be entered into the incident and corrective action reporting, JD Edwards
Site compliance audit of operations by third party co-ordinated by Graymont HSE team.	3 yearly	Audit checklist	Environmental audit procedure. Audit forms to be filed and any actions arising from audit will be entered into JD Edwards

3.13. Reporting

Table 10 below details the reporting requirements for air emissions and air quality under this Plan.

Table 10: Air Emission Reporting Requirements

Description of reporting	Frequency of reporting	Reporting tool	Reporting to:
Dust deposition gauge results	Monthly	Monitoring data form	Graymont Calliope Environmental Monitoring Spreadsheet
Air emission complaints	As they occur	JD Edwards	Regional HSE team
Air emission related environmental incidents	As they occur	JD Edwards	Regional HSE team
Complaint Based Dust Monitoring Report	Within 14 days of complaint	Written advice	Administering Authority

Complaint Based Odour Monitoring Report	Within 14 days of complaint	Written advice	Administering Authority

6. Noise and Vibration Management

3.14. Objectives

- To eliminate or minimise material and non-trivial noise and vibration from the GCP and their potential impacts on the environment and the community; and
- To ensure compliance with the regulatory requirements for environmental noise and vibration for this site.

3.15. Environmental Values

The mining and quarrying operations are located in a rural setting and hence the acoustic environment is dominated by noise from local vehicle movements, operation of farm equipment, rustling of leaves, insects, birds, and animals.
The principal environmental values for noise and vibration are the wellbeing of the community within the region.

3.16. Potential Impacts

Noise and vibration impacts are related to the level of sound from the sound source and degree of attenuation from the source to receiver. Mining/quarrying activities conducted in the GCP area are well separated from sensitive places and the potential impacts due to noise and vibration are negligible. The nearest residential dwelling external to land owned or controlled by Graymont is a minimum of three kilometres North from mining and extraction activity areas.

Activities at the quarry which may generate noise include:

- Vegetation clearing
- Topsoil and overburden removal
- Drilling and blasting
- Rock breaking
- Loading, unloading and haulage of raw materials
- Pumping
- Crushing
- Conveying
- Material transfer
- Stockpiling
- Product reclaiming
- Rail loading (when being utilised)
- Maintenance works
- Heavy vehicle movements within the operation area and on haul roads.

Engine noise from the operation of mining equipment, rocks falling into metal truck bodies and bins, percussion hammering of the rock drill , crushing and screening activities are the principal noise sources. Table 12 presents those controls that assist on site in mitigating risk associated with noise impacts on personnel, community, and the environment.

3.17. Noise and Vibration Inventory

Table 11 below details the reporting requirements for noise and vibration inventory under this Plan.

Table 11: Noise and vibration inventory

Activity	Location	Hazard	Risk	Likelihood	Consequence	Risk Rating
Onsite vehicle movement	On site	Noise disturbances to local residences	Complaints from local residences and surrounding	Unlikely	Moderate	6 Moderate

Activity	Location	Hazard	Risk	Likelihood	Consequence	Risk Rating
Crushers and Screeners	On site		landowners. Graymont required to conduct complaint-based monitoring.	Unlikely	Moderate	6 Moderate
Road truck movements	On site and Taragoola Road			Possible	Moderate	9 Moderate
Blasting	On site	Noise and/or vibration disturbances to local residences		Unlikely	Moderate	6 Moderate

3.18. Control Measures

Table 12: Noise control measures

Controls
Fit and maintain effective exhaust mufflers to plant and equipment
Maintain all plant and equipment in good working order
Mobile plant to be regularly serviced to manufacturers standards
Implement complaints handling protocols which includes recording, investigating, and settling complaints
Ensure contractor trucks do not exceed noise limits and are maintained in good order.
Ensure that blasting is only undertaken during the hours listed in the EA conditions.
Ensure that hours of operation are consistent with EA conditions and local council bylaws
Ensure that mobile plant and machinery are operated in a manner to reduce excessive noise emissions

3.19. Monitoring

This section outlines the various modes of monitoring in order to quantitatively track and observe noise and vibration emanating from site. Noise monitoring at the operation is complaint driven, with no regular monitoring taking place.
All monitoring and sampling is to be conducted by a competent person.

Table 13: Air emission monitoring measures

Description of monitoring	Timing/ Frequency	Parameters	Monitoring method
Noise and vibration monitoring will be undertaken in response to noise related complaints	Within 14 days of complaint	EA Conditions	Latest edition of the administering authority's *Noise Measurement Manual*
Vibration and over-blast pressure monitoring is conducted during blasting	During blasting	EA Conditions	As per Environmental Authority requirements
Site compliance audit of operations by third party co-ordinated by Graymont HSE team.	3 yearly	Audit checklist	Environmental audit procedure. Audit forms to be filed and any actions arising from audit will be entered into JD Edwards

3.20. Reporting

Table 14 below details the reporting requirements for air emissions and air quality under this Plan.

Table 14: Air emission reporting requirements

Description of reporting	Frequency of reporting	Reporting tool	Reporting to:
Noise and vibration complaints	As they occur	JD Edwards	Regional HSE team
Noise and vibration related environmental incidents	As they occur	JD Edwards	Regional HSE team
Complaint Based Noise Monitoring Report	Within 14 days of complaint	Written notification	Administering Authority
Complaint Based Vibration Monitoring Report	Within 14 days of complaint	Written notification	Administering Authority

7. Water Management

A detailed Water Management Plan that describes catchment areas, stormwater flow, clean and dirty stormwater separation, groundwater monitoring, sediment dams, sediment control devices, and receiving waters is attached in Appendix B.

3.21. Objectives

- To ensure access to secure and sufficient water resources to service operations;
- To ensure the efficient and sustainable use of water recognising that water is a valuable resource;
- To provide protection of water resources and ecosystems by eliminating or minimising the impacts of water discharges from operations on the surrounding environment and meet community expectations regarding water quality. This can be done by:
    - Identifying, separating, and controlling clean, dirty, and contaminated water areas onsite;
    - Promoting the maintenance and/or improvement of water quality upstream and downstream of the site; and
    - Ensuring the appropriate treatment of discharge waters.

3.22. Environmental Values

Mining and extractive activities of the GCP are conducted within the catchment area for Lake Awoonga.

To date, mining and quarrying activities have co-existed with GAWB interests with the principal environmental value being the maintenance of water quality within Lake Awoonga.

3.23. Potential Impacts

The potential impacts to surface waters due to mining and quarrying include:

Surface Runoff
Mining and quarrying have the potential to alter surface water flows by capture in voids and re-direction by diversion/catch drains. Peak flows can be reduced by capture or concentrated by diversions. Construction of sediment containment structures also alters flow patterns.

Surface Water Quality
The quality of surface runoff can be affected by erosion from disturbed areas such as roads, spoil dumps, stockpiles, hardstands, benches/faces and so on. If released to the natural drainage system, turbid or otherwise contaminated water may impact on downstream surface water quality.

Void Water Quality
The final voids will fill with water either from surface flows or groundwater seepage or a combination of both. Final water quality may depend upon the final design, catchment characteristics and climatic factors.

Quarry Affected Water

Water is used for dust suppression on haul roads, working benches, hardstands, and stockpile areas. Water is applied at a controlled rate to prevent runoff. Water is also used for dust suppression at plant locations and for certain product washing, vehicle washdown, product moisture content control and product transportation. Excess water from product washing activities is directed to settling ponds essentially operating in a closed-circuit configuration.

3.24. Water Inventory

Table 15 details the below reporting requirements for water inventory under this Plan.

Table 15: Water inventory

Activity	Location	Hazard	Risk	Likelihood	Consequence	Risk Rating
Stockpiles and ROM areas	On site	Sediment Runoff; Hydraulic hose discharge on mobile plant	Pollution of waterways by sediment and/or hydrocarbons	Unlikely	Moderate	6 Moderate
Crushers and Screening area	On site			Unlikely	Moderate	6 Moderate
Haul roads	On site and Taragoola Road	Sediment runoff; Erosion	Sediment run-off into stormwater drains	Possible	Minor	6 Moderate
Blasting	On site	Sediment from blasting; Increase nitrogen levels	Increase nitrogen levels may be pumped to sediment dams	Rare	Moderate	3 Low
Rail siding area	On site	Sediment Runoff; Hydraulic hose discharge on mobile plant	Pollution of waterways by sediment and/or hydrocarbons	Unlikely	Moderate	6 Moderate
Workshop area	On site			Unlikely	Moderate	6 Moderate
Administration, weighbridge, and gatehouse area	On site	Sediment Runoff; Hydraulic hose discharge on mobile plant	Pollution of waterways by sediment and/or hydrocarbons	Rare	Moderate	3 Low
Active quarry pit	On site	Spillage of hydrocarbons or chemicals into pit water	Pollution of groundwater or water storage bodies if discharged from pit	Unlikely	Moderate	6 Moderate
Water storage dams	On site			Unlikely	Moderate	6 Moderate

3.25. Control Measures

Table 16 presents those controls that assist on site in mitigating risk associated with water impacts on personnel, community, and the environment.

Table 16: Water control measures

Controls
Land disturbance will be restricted to that which is essential for mining purposes
Disturbed land will be rehabilitated/revegetated as soon as is practicable to minimise erosion and sediment transport

Controls
The extent of disturbed / exposed areas is to be kept to the minimum area necessary for works
Vehicle wash-down to be carried out in a designated area so that washings (including concrete washings) will not enter waterways or stormwater drains
A steel sump has been installed at the C1 discharge point to assist in sediment control before continuing downstream.
Earth bunds and diversion drains are maintained around the perimeter of the site, particularly on the upslope, of excavations to prevent surface water entering these areas
Stabilised diversion drains are maintained to direct dirty water to sediment traps (e.g. straw bale filter, sandbag filter, sediment dams)
Spill control equipment is stocked at specific locations around the site for spill response.
The following procedure dictates Refuelling procedures on site: 620-P8.200.213 Main Hardstand Refuelling. Site has introduced an annual cleanout of humeceptor by competent and qualified contractors.
Vehicles to be well maintained to avoid fuel and oil leakages
Re-fuelling of trucks on site to take place away from drainage lines and in isolated/bunded areas to minimise the risk of environmental contamination and contain spills.
Fuels, oils, and chemicals required for construction and operation to be appropriately stored. Storage in open areas will be bunded to ensure any spills are contained
Any spillages to be immediately contained and absorbed with a suitable material and disposed in an approved manner.
Staff to be appropriately trained in procedures for the management of fuel and chemical spills and the location and use of spill kits
To the extent practicable, all water pumped from mining/quarrying operational areas (except for water used for dust suppression) will be directed to the recycle water storage near the plant area
The administering authority will be consulted prior to the release by pumping of void water to the natural drainage system other than what is allowed under the EA licence conditions (i.e. licenced discharge points F1 and C1).
Releases of pumped void water to natural drainage system will be in accordance with water quality standards, monitoring locations and frequencies as nominated by EA conditions.

3.26. Monitoring

The following section describes the site's water monitoring program. The program is designed to qualify and quantify the extent to which the key objectives of the subplan- Water Management Plan are being achieved. All monitoring is conducted by a suitably qualified/trained person. Surface water sampling and preservation of samples must be conducted in accordance with the administering authority's *Monitoring & Sampling Manual 2009*. Groundwater monitoring is to be regularly undertaken from piezometer FM5, FM5B, piezometer FM6

All water quality samples are sent to a laboratory for analysis that is NATA accredited for the parameters listed in the following tables.

Table 17 and Table 18 present the surface water and groundwater monitoring commitments for the quarry.

Table 17: Surface water monitoring program

Monitoring ID	Location description	Purpose	Frequency	Parameters	Sampling Method
F1 Discharge & Monitoring	321432E, 7332026N	EA Conditions	Weekly during discharge	pH, Electrical conductivity (µS/cm) and Total Suspended Solids (mg/L)	Latest version of the administering authority's Monitoring and Sampling Manual
F2 Monitoring	320399E, 7331469N				
C1 Discharge & Monitoring	320757E, 7333601N				
C2 Monitoring	320102E, 7333854N				

Table 18: Groundwater monitoring program

Monitoring Point	Easting (GDA 94)	Northing (GDA 94)		Monitoring Frequency			
			Groundwater Level	EC, TSS, pH	Metals: As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Major Cations, Major Anions, CO3	Hydrocarbon
FM5	321430	7332650	Quarterly (Jan, Mar, Jul, Sep)	Quarterly (Jul, Sep, Jan, Mar)	Annual (Jul)	Six Monthly (Jan, Jul)	Annual (Jul)
FM6 FM5B	321080	7334350					

3.27. Reporting

Table 19 details the reporting requirements for water management at the operation.

Table 19: Water reporting requirements

Description of reporting	Frequency of reporting	Reporting tool:	Reporting to:
Water monitoring as described in EA licence conditions	As per EA conditions	Notification to administering authority	Administering Authority

8. Waste Management

3.28. Objectives

- To avoid generation of waste material as far as practicable
- To ensure environmentally safe and effective management of wastes generated by operations
- Where waste is generated, controls should be put in place to reduce, reuse, or recycle waste generated; and
- Ensure appropriate classification and disposal of waste where required.

3.29. Environmental Values

Unmanaged wastes detract from amenity and have the potential to contaminate land, restrict post extraction land uses, attract vermin, pose a fire hazard, affect downstream water quality and impact on post extraction land use. The Environmental Protection Policy (Waste Management) nominated a waste management hierarchy in a preferred order of adoption. The hierarchy is as follows:

- Waste avoidance;
- Waste re-use;
- Waste recycling;
- Energy recovery from waste; and
- Waste disposal.

The principal environmental value for waste management is to conserve resources for the wellbeing of people and maintenance of ecological processes.

3.30. Waste Inventory

Table 20 presents those the onsite waste streams.

Table 20: Waste streams

Activity	Location
General Waste	On site

Activity	Location
General Recycle Waste (paper, cardboards, glass, etc)	On site
Hydrocarbon Waste	Workshops and Maintenance
Steel	Scrap yard
Batteries	Workshop

3.31. Control Measures

The proposed controls measures in Table 21 are in place to:

1. Avoid or reduce the waste generated onsite;
2. Manage the storage of waste onsite to ensure that waste does not enter the environment, and
3. Ensure appropriate treatment and/or disposal of waste.

Table 21: Waste control measures

Controls	Timing/ Frequency	Evidence of implementation
Generation		
Green waste to be mulched and used on site for landscaping and rehabilitation (where feasible)	When required	View via inspection
Absorbent pads and sawdust used to absorb hydrocarbon-based spills in workshop areas.	When required	Absorbent materials fully stocked in workshop areas
Waste recycling bins are provided at specific locations around administration buildings to divert waste from landfill	Ongoing	Waste contractor invoices
Wash down areas to maintain oil/water separating devices for wastewater reuse.	Ongoing	Oily water separator maintenance log
Clean water surface water/runoff to be diverted around quarry facilities	Ongoing	Inspection checklist
Storage		
Maintaining a dedicated safe storage area for waste oil	Ongoing	Visual Inspection
Waste oil storage containers are stored in a bunded area	Ongoing	Visual Inspection
All domestic waste is stored within onsite waste bins	Ongoing	Visual Inspection
Waste chemicals (including) solvents are to be segregated and stored appropriately awaiting collection by licensed waste contractor for suitable offsite recycling/disposal	Ongoing	Waste contractor invoices
Treatment/Disposal		
Correct classification and disposal of hazardous waste by an approved controlled waste contractor	Ongoing	Waste contractor invoices
General wastes from operations (food etc) to be disposed of at an appropriately licensed waste management facility	Ongoing	Waste contractor invoices
Waste metal materials to be separated onsite and collected by scrap steel recycling contractor or transported to appropriate waste management facility for recycling	Ongoing	Visual inspection and waste contractor invoices
Waste oils and greases to be segregated and stored appropriately until collection by a licensed waste contractor for appropriate offsite recycling/disposal	Ongoing	Visual inspection and waste contractor invoices

3.32. Monitoring

The volumes of waste generated and stored onsite are required to be monitored and reported. Volumes of waste that are reused onsite or recycled are also required to be monitored and reported. A site waste tracking form is

used to maintain these records. Furthermore, inspections of waste storage areas and audits of waste control measures is conducted.

Table 22 details the monitoring and reporting requirements for onsite waste management.

Table 22: Waste monitoring and reporting measures

Description of monitoring	Timing/ Frequency	Reporting requirement	Relevant forms/procedures
Environmental site inspection and audit of operations by HSEQ Specialist	Annually	Corrective actions to be reported in JD Edwards	Environmental Inspection
Inspections of all waste storage areas onsite to ensure waste is fully contained	Monthly	Corrective actions to be reported in JD Edwards. Regional	Environmental Inspection
Inspection of clean water diversion bunds and drainage	Monthly	Corrective actions to be reported in JD Edwards.	Environmental Inspection
Volume of general and recyclable waste removed by waste contractor offsite	Fortnightly	Waste tracking receipts shall be provided to site and recorded in the Environmental Monitoring Spreadsheet	Waste contractor invoices; Environmental Monitoring Data Spreadsheet
Volume of waste oil generated onsite and disposed of offsite	Monthly	Waste tracking receipts shall be provided to site and recorded in the Environmental Monitoring Spreadsheet	Waste contractor invoices; Environmental Monitoring Data Spreadsheet

9. Land Use Management

3.33. Objectives

- To undertake a strategic and integrated approach to land management that recognises the current and potential use of land to maximise environmental outcomes, economic return and maintain access to future resource;
- To protect heritage items/aspects, flora and fauna and preserve biodiversity;
- To ensure rehabilitation is considered and incorporated throughout the design, development, operation, and closure of sites to optimise post closure social, environmental, and economic outcomes; and
- Where site contamination has occurred, properly identify, and manage the contamination to protect the health and safety of personnel and the community and to minimise or eliminate environmental impact.

3.34. Potential Impacts

Open cut mining / quarrying disturbs the land surface, drainage patterns and creates a different landform and affects ecological processes. Disturbance of the land surface can lead to increased erosion resulting in increased turbidity of surface waters and increased sedimentation of watercourses and lagoons.

Topsoil stripping has taken place prior to mining activities in certain areas. The value of the soil for rehabilitation can be reduced if not managed properly to prevent compaction and loss of biomass.

Limited potential exists for any significant land contamination as wastes will not be stored or disposed of on the leases or adjacent lands. Possible land contamination could occur due to accidental hydrocarbon and/or other chemical spillage.

Potential impacts to native ecosystems could include:

- Land clearing required for extraction of raw materials;
- Vehicle movements outside designated operational areas damaging vegetation and habitats;
- Mobile stationary equipment noise 'scaring off' native animals;
- Dust affecting vegetation;
- Indiscriminate waste disposal encouraging feral animals;
- Land disturbance resulting in an increase in weed infestation; and
- Fires resulting in the accidental burning of bushland.

3.35. Rehabilitation

Refer to the Progressive Rehabilitation and Closure Plan for all details on all rehabilitation objectives, methodologies, monitoring and reporting requirements.

3.36. Weed and Pest Management

A Weed and Pest Management Plan has been developed for site, which can be seen in Appendix G. Currently the site supervisor is responsible for inspecting noxious weeds and feral pests on site, and either managing these internally or engaging an external licenced contractor to control weed and pest infestations as required.

Table 23: Weed and pest control measures

Management Issue	Control/action measure	Timing/ Frequency	Evidence of Implementation
Land disturbance	Engage pest controllers at regular intervals to address feral animals.	As required	Pests minimised
	Land disturbance will be restricted to that which is essential for mining purposes	As per Weed and Pest Management Plan	Land disturbance mapped and within ML and extractive boundaries.
	Topsoil will be stripped and used directly for rehabilitation to the maximum practicable extent	Refer to LRMP	Topsoil plan implemented.
	Topsoil will be stripped during favourable weather conditions and will not be stripped when it is too wet or too dry	Refer to LRMP	Topsoil plan implemented.
	Stockpiled topsoil will be configured to minimise erosion and maximise future viability	Refer to LRMP	No significant erosion of topsoil stockpiles.
	Appropriate erosion control measures to protect undisturbed land and downstream water quality will be implemented	Refer to LRMP, SWMP and ESC Plan	Erosion control measures in place
	The operation area will be inspected regularly for declared plants and weed control programs implemented as necessary	Refer to Monitoring Table 11-4	Records kept.
	The lighting of fires will be restricted to when permits have been issued by the local fire warden	Ongoing	Permits kept on file.
	Site vehicles will be restricted to designated areas	Ongoing	Traffic Management Plan

3.37. Erosion and Sediment Control

Erosion and sediment control are covered in Appendix F: Erosion and Sediment Control Plan.
The site supervisor is responsible for maintaining erosion control due to mining operation, stockpiling, maintenance of roads, drains, sediment pits, and as a result of natural stormwater run-off or unseasonal high rainfall events.
Sediment control devices such as silt fencing, bunding, berms, diversions and silt pits should be used to collect sediment from flowing outside of the mining lease area.

Stormwater drains, channels and diversions should be used to separate clean stormwater due to rainfall away from disturbed land areas. Disturbed or plant water should not be allowed to contaminate or mix with clean stormwater flow or storage.

Table 24: Erosion and sediment control monitoring

Description of monitoring	Timing/ Frequency	Monitoring Method
Visual inspection of sedimentation pond to ensure basin is free of weeds	Monthly	Inspection by site supervisor
Regular cleaning and removal of sediment from sediment collection devices, pits, and dams	When required	Following inspection report
Visual inspection of sediment control fencing to ensure its effectiveness	Monthly	Inspection by site supervisor
Rehabilitated areas shall be monitored periodically to check for the possible onset of soil erosion	Monthly	Inspection by site supervisor

3.38. Land Inventory

Table 25: Land Inventory

Activity	Location	Hazard	Risk	Likelihood	Consequence	Risk Rating
Land Clearing	On site	Removal of natural vegetation	Clearing excessive vegetation	Rare	Moderate	3 Low
Driving on undisturbed vegetation	On site	Damaging existing or rehab vegetation	Increasing disturbed areas; Possible increase in erosion of soil	Unlikely	Minor	4 Low
Topsoil Storage	On site	Reduced quality of topsoil	Poor rehab coverage and species diversity	Possible	Minor	6 Moderate
Weed and Pest Management	Onsite	Increased weeds and pests on site	Degradation of land and vegetation quality	Likely	Minor	8 Moderate
Stockpiles and ROM areas	On site	Sediment Runoff; Hydraulic hose discharge on mobile plant	Pollution of waterways by sediment and/or hydrocarbons	Unlikely	Moderate	6 Moderate
Crushers and Screening area	On site	Sediment Runoff; Hydraulic hose discharge on mobile plant	Contamination of land. Increased possibility of erosion	Unlikely	Moderate	6 Moderate
Haul roads	On site and Taragoola Road	Sediment runoff; Erosion	Instability of land and loss of soil	Possible	Minor	6 Moderate
Rail siding area	On site	Sediment Runoff; Hydraulic hose discharge on mobile plant	Contamination of land. Increased possibility of erosion	Unlikely	Moderate	6 Moderate
Workshop area	On site			Unlikely	Moderate	6 Moderate

Activity	Location	Hazard	Risk	Likelihood	Consequence	Risk Rating
Administration, weighbridge, and gatehouse area	On site	Sediment Runoff; Hydraulic hose discharge on mobile plant	Contamination of land. Increased possibility of erosion	Unlikely	Moderate	6 Moderate
Active quarry pit	On site	Spillage of hydrocarbons or chemicals into pit water	Contamination of land. Increased possibility of erosion discharged from pit	Unlikely	Moderate	6 Moderate

10. Monitoring and Maintenance

Graymont must ensure that a competent person conducts all monitoring where monitoring is a requirement of the relevant operation permits.

Table 25 summarises the routine monitoring conducted on site to meet environmental requirements.

Table 25: Monitoring requirements

Management Issue	Timing /Frequency	Description of Monitoring	Monitoring Method
Air Quality	Monthly	Ambient air quality monitoring for TSP at monitoring sites N, SE, SW, and S.	Dust deposition gauges using AS/NZS 3580
Air Quality	Continuous	Monitoring of onsite weather conditions	BOM
Air Quality	Daily	Visual inspection of wind speed and direction	Observations
Air Quality	During activities	Visual inspection of dust suppression devices on equipment as part of prestart checklist in accordance with Dust Management Plan - Calliope	Inspections noted in vehicle prestart check logbook. Any defects are tagged out and/or reported to supervisor.
Air Quality	Daily	Visual inspection of dust emissions from the primary crushing and screening plant	Any defects are tagged out and/or reported to supervisor.
Air Quality	During activities	Visual inspection of dust emissions from drilling and blasting activities	Non-compliance with dust emissions will be entered into the incident and corrective action reporting.
Air Quality	During activities	Visual inspection of dust control measures to ensure correct operation	Non-compliance with dust emissions will be entered into JD Edwards.
Noise and vibration	During blasting	Vibration and over-blast pressure monitoring is conducted during blasting	Each Blast
Surface water	Weekly during discharge	F1- Discharge point for water pumped from Pit 3. F2- Intention of this monitoring point is as a downstream reference point for receiving water quality.	Latest version of the administering authority's Monitoring and Sampling Manual

Management Issue	Timing /Frequency	Description of Monitoring	Monitoring Method
		C1- Discharge point for stormwater pumped from mining and production. Water is circulated where possible within water storage facilities. C2- Intention of this monitoring point is as an upstream reference point	
Erosion and Sediment	Monthly	Visual inspection of sedimentation pond to ensure basin is free of weeds	Inspection by site supervisor
Erosion and Sediment	When required	Regular cleaning and removal of sediment from sediment collection devices, pits, and dams	Following inspection report
Erosion and Sediment	Quarterly	Visual inspection of sediment control fencing to ensure its effectiveness	Inspection by site supervisor
Erosion and Sediment	Monthly	Rehabilitated areas shall be monitored periodically to check for the possible onset of soil erosion	Inspection by site supervisor
Waste	Annually	Environmental site inspection by HSEQ Specialist.	Environmental Inspection
Waste	Monthly	Inspections of all waste storage areas onsite to ensure waste is fully contained	Environmental Inspection
Waste	Monthly	Inspection of clean water diversion bunds and drainage	Environmental Inspection
Waste	Fortnightly	Volume of general and recyclable waste removed by waste contractor offsite	Waste contractor invoices; Environmental Monitoring Data Spreadsheet
Waste	Monthly	Volume of waste oil generated onsite and disposed of offsite	Waste contractor invoices; Environmental Monitoring Data Spreadsheet
Land - Contaminated Land	As required	Conduct soil and groundwater monitoring in accordance with any incidents of suspected contamination.	
Land – Weed and pest	Annually	Monitor the spread of declared weed species across the site. Monitor via visual inspection and photographic record. Incorporate weed species spread, type and condition monitoring into site wide vegetation survey as mentioned above.	
Site compliance audit of operations by third party co-ordinated by Graymont HSE team.	3 yearly	Audit checklist	Environmental audit procedure. Audit forms to be filed and any actions arising from audit will be entered into JD Edwards

3.39. Maintenance

Graymont is required to:

- Install all measures, plant, and equipment necessary to ensure compliance with the conditions of the relevant environmental authority;

- Maintain such measures, plant, and equipment in a proper condition; and
- Operate such measures, plant, and equipment in a proper manner.

11. Reporting

Graymont is required to:

Record, compile and keep for a minimum of five years all monitoring results required by the relevant environmental authority and make available for inspection all or any of these records upon request. Graymont use ORACLE by JD Edwards as a reporting system to record and manage incidents on site.

Table 26 presents the routine monitoring conducted on site to meet reporting requirements.

Table 26: Environmental management responsibilities

Management Issue	Frequency of Reporting	Description	Responsible Authority
Air Quality	Monthly	Dust deposition gauge results	Environmental Monitoring Spreadsheet
Air Quality	Quarterly	Air emission related environmental incidents	JD Edwards
Noise and vibration	Quarterly	Noise and vibration related environmental incidents	JD Edwards
Water	As per EA conditions	Water monitoring as described in EA licence conditions	Administering Authority
Waste	Annually	Waste monitoring results	HSEQ Specialist
Land	5-yearly	Vegetation mapping and condition survey	HSEQ Specialist
Land	Annually if required	Progress of remediation of contaminated site	HSEQ Specialist
Land	5-yearly	Progress on rehabilitation including: New areas of revegetation (ha) in the reporting year Total area revegetation (ha) Volume of topsoil stockpiled Evaluation of rehabilitation success against targets	HSEQ Specialist

An environmental management plan will usually require reporting arrangements for two purposes. Reporting arrangements assist with effective implementation and with external reporting. External reports may include reports on environmental incidences to the regulator, reports to stakeholders, reports to inform reviews of the plan and reports to meet the reporting requirements of the conditions of approval.

The description of reporting requirements should include:

- A list of required reports including where appropriate monitoring, environmental incidents, non-compliance, corrective action, and auditing
- A description of the standard report content
- The schedule or triggers for preparing a report
- Who the report is provided to
- Document control procedures
- Reporting commitments should also be consistent with any reporting to the Department required by the conditions of approval.

3.40. Environmental Incident

As per Condition 20 of EA – EPPR00881913 a written notice detailing the following information must be provided to the administering authority within 14 days of any advice provided to the administering authority within 14 days of any advice provided:

- The name of the operator, including their approval/registration number;
- The name and telephone number of a designated contact person;
- The quantity and nature of substance released;
- Vehicle and registration details;
- The names of person/s involved in the release and/or clean up;
- The location and time of release;
- The suspected cause of the release;
- A description of the effects of the release;
- Details of the area of impact;
- The results of any sampling performed in relation to the release;
- Actions taken to mitigate any environmental harm caused by the release and details of the success of these actions; and
- Proposed actions to prevent a recurrence of the release.

3.41. Emergency Contacts

Refer to Incident Reporting Policy and Acknowledgement Calliope Plant - for a full list of contact personnel in the event of an Environmental Incident.

12. Environmental Training

As a minimum all on site staff and contractors shall be made aware of the requirements of health and safety, and environmental requirements through site specific inductions. Key elements of this EMP will be covered in all site induction materials. All site personnel responsible for implementing the components of this plan shall ensure they have the appropriate training and competencies to ensure this Plan is implemented correctly and fully.
Where monitoring or sampling collection is required on site, this shall only be undertaken by a competent person who has been appropriately trained in monitoring and sampling techniques.

All people involved with the operation should receive relevant environmental training to ensure they understand their responsibilities when implementing the environmental management plan. People to be trained include those at the site/s of all operation activities and operations, including contractors, subcontractors, and visitors. The training should be tailored to the role of the individual in the operation.

The environmental management plan should describe the training to be implemented and could include:

- Site inductions
- Identification of key points of environmental value and any relevant matters of national environmental significance
- Understanding the requirements of the environmental management plan and the individual's role
- Environmental incident emergency response procedures
- Site environmental controls
- An outline of the potential consequences of not meeting their environmental responsibilities.

Records of all training conducted should be maintained and include:

- The person receiving the training
- The date the training was received
- The name of the person conducting the training
- A summary of the training.

13. Community Engagement

The environmental values for local community are to maintain the natural environment surrounding the quarry, including maintaining or enhancing the biodiversity and conservation values that the area provides. The nearest sensitive residential dwelling is over 3km distance from the quarry.

The mining operation proactively ensures that the local residents and community enjoy an environment that is conducive to human health and well-being by ensuring a continuation of:

- Undisturbed sleep;
- Being involved in recreation, including relaxation and conversation;
- The qualities of the natural environmental that are conducive to protecting the amenity of the community.

Potential Impacts
The operation directly employs approximately 25 persons, all of whom reside locally. Other direct employment results from the engagement of various contract services including transport, maintenance, fabrication, electrical and plumbing.
The location of the operation is relatively remote from residential communities which limit potential impacts from dust, noise, vibration, and odour. The principal potential impact relates to water quality with Lake Awoonga, which is the raw water supply for the Gladstone region.
Potential impacts on community stakeholders include noise, dust and vibration issues at nearby residences and roads, and contamination of Lake Awoonga.

3.42. Control Measures

Focused and timely communication of relevant activities conducted on site leads to effective community engagement. The following communication methods detailed in Table 27 provide the proactive and reactive approaches to community and stakeholder engagement conducted by the GCP. This is to ensure planning, construction projects, and ongoing site operations continue efficiently, and key stakeholders are adequately informed and consulted to ensure community concerns are considered and addressed throughout site operations.

Table 27: Communication methods for community and stakeholder engagement

Proactive	
Communication Methods	Timing
Advise key stakeholders via letter or other approved means prior to a change in standard operations that may cause disruption to the local community	As required
Maintain a single complaint contact and advise key stakeholders of his/her details.	Continuous
Consultation with relevant government agencies shall be conducted for all new developments proposed onsite. Consultation will be sought at the concept phase to determine approval processes and key stakeholder issues associated with the proposal.	As required
Reactive	
Communication Methods	Timing
Complaints received shall be managed in accordance with the **Environmental Authorities.**	When received
Media enquiries received by the site shall be managed by the Plant Manager.	When received
Government agency enquiries shall be responded to by the Environmental Manager.	When received

3.43. Community Complaints

All complaints received must be recorded including details of complainant, reasons for the complaint, investigations undertaken, conclusions formed, and actions taken. This information must be made available for inspection by the administering authority on request.

Dust, noise, and odours are not expected to adversely impact on neighbouring stakeholders as long as operational activities are carried out with the relevant safeguards identified in this EMP. The environmental complaints register, and the investigations of any complaints received will be maintained.

All complaints shall be recorded.

The complaints register should report the following information:

- Date and time of complaint
- Date and time of incident
- Location
- Weather data to determine wind speed and direction to assist in identifying source of nuisance, if appropriate
- Type of complaint – noise, dust, odour, truck movements, community, etc.
- Description of complaint
- Contact details of complainant
- Who recorded complaint
- Who was responsible for investigating complaint
- Immediate actions that were undertaken, and
- Results and outcome for investigation and follow up.

14. Audit and Review

3.44. Environmental Auditing

The GCP must ensure that a third-party audit of the site's compliance with the conditions of Environmental Authority (EPPR00881912) is completed every 2 years as per condition A10 of the Environmental Authority).

A Site compliance audit of operations is co-ordinated by the Graymont HSE team and takes place on a 3 yearly cycle by a third-party auditor. These audits are used to monitor environmental performance of operations against the risks identified and commitments made within this EMP.

3.45. Environmental Management Plan Review

This Plan will be reviewed every two years. The review shall be conducted with the HSEQ Specialist, Environmental Manager and the Plant Manager.

The process will involve the review of all monitoring data, complaints and incidents and comparing this data and information to mandatory limits and internal KPIs.

Procedural changes or a review of targets and/or KPIs should be employed if targets are not met.

15. Associated (referenced) Documents

- Calliope Environmental Risk Register
- Water Management Plan
- Progressive Rehabilitation and Closure Plan (PRCP)
- Ground Control Management Plan
- Waste Management Plan
- Erosion and Sediment Control Plan
- Pest and Weed Management Plan