



**NSW  
Resources  
Regulator**

FWP0001212

# **ATTUNGA LIMESTONE MINE FORWARD PROGRAM**

Sunday 4 June 2023 to Wednesday 3 June 2026

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## Summary

### DETAIL

<b>Mine</b>	Attunga Limestone Mine
<b>Reference</b>	FWP0001212
<b>Forward program commencement date</b>	Sunday 4 June 2023
<b>Forward program end date</b>	Wednesday 3 June 2026
<b>Forward program revision (if applicable)</b>	
<b>Contact</b>	Lizz Norvill
<b>Mining leases</b>	ML 1394 (1992)
<b>Project location</b>	GRAYMONT (NSW) PTY LTD
<b>Date of submission</b>	Monday 31 July 2023

## Important

The department may make the information in your program and any supporting information available for inspection by members of the public, including by publication on its website or by displaying the information at any of its offices. If you consider any part of your program to be confidential, please communicate this to the department via the message function on this submission within the NSW Resources Regulator Portal.

# Three-year forecast – surface disturbance activities

## Project description

High-grade limestone is mined and processed at Graymont's Attunga Limestone Mine to deliver products for essential services while supporting vital industrial processes and agricultural needs. Crushed limestone is processed through a kiln and hydrator to produce lime products suitable for many applications. In addition, crushed limestone is sold directly into construction and agricultural markets. The Attunga site has a limestone resource of over 3 million tonnes. Graymont intends to mine or process limestone at the Attunga site for the long term (+twenty years). As well as the resources at Attunga, there are significant resources at both Sulcor and Carey's to extend the site life further. References to mining operations at Sulcor and Carey's are included for context only and to understand how the two operations relate to each other.

## Description of surface disturbance activities

### Exploration activities

The geology at the Attunga site is well understood and no further exploration activities are planned for the next three years.

### Construction activities

Nil construction activities planned in the next 3 years.

### Mining schedule

Mining development method and sequencing and general mine features.

The mine void has been fully developed in plan and no further lateral development is proposed. Consequently, there is no further land clearing or overburden stripping proposed with mining activities.

In August 2021, a multiple bench failure occurred on the southeastern side of the Jackson open pit. As a result, access to the open pit base was suspended while the slip was monitored for further movement. A geotechnical assessment of the failure was completed, and rehabilitation options were identified. The repair options' timing depends on the failure's stability, and the failure is now monitored by daily visual inspection and aerial photography. Before the wall failure, mining activities at the Attunga site focused on the quarry's southeastern portion. Since the wall failure, mining has focused on mining berms to the final width.

Areas identified for emplacements, the sequencing of emplacements, construction, and management.

The main waste and overburden emplacement is to the northeast of the mine void. This emplacement will continue to be used for placement of any out of spec rock, oversized material and kiln wastes.

Processing infrastructure activities and the location of tailings facilities and schedule for emplacement

- A processing plant area comprising a primary jaw crusher and screen, reclaim conveyors, hammer mill and screens, and storage bins for milled limestone. In addition, there are large workshops and store sheds, fuel & oils distribution tanks and sheds, and up to 6 transportable office and storage buildings.
- One dispatch weighbridge and silos for quicklime and Ag lime storage & distribution.
- Two vertical shaft kilns and associated milling and screening infrastructure, and storage silos.
- A hydration plant including a hydration bath, ball mill, feed silo, hydration building (to house the hydration plant), material transfer equipment (bucket elevators, screw conveyors, pneumatic transfer), storage silos, bagging plant and feed silo, packaging equipment and weighbridge.
- There are no tailings facilities

Waste disposal and materials handling operations.

The majority of waste rock from the operation comes from three sources:

- Weathered or clay contaminated limestone from all three layers (Upper, Middle, and Lower).
- Black shale and cherty limestones
- Green Andesite dykes - a durable volcanic rock

The largest proportion of waste is limestone, which is environmentally beneficial (used to improve soil). The other waste types are relatively benign, including the process waste and are encapsulated in the waste limestone. Water quality monitoring data, from the sediment traps below the overburden dump, show no adverse effects. Where possible, the waste rock will be used to backfill the Northern end of the open pit. This material will be used to reform the northern end of the open pit to a landform similar to the original surface. This will help block the view into the open pit from the north. Excess waste rock and process waste will be placed on the North-Eastern Overburden Dump. Material Production Schedule for the next three years is approximately 1,500m<sup>3</sup> of waste limestone per year to be placed on the overburden emplacement areas. General wastes such as office refuse, putrescible wastes, waste hydrocarbons etc are disposed offsite to a licensed facility.

**Key production milestones**

<b>MATERIAL</b>	<b>UNIT</b>	<b>YEAR 1</b>	<b>YEAR 2</b>	<b>YEAR 3</b>
<b>Stripped topsoil</b> <small>(if applicable)</small>	(m <sup>3</sup> )	0	0	0
<b>Rock/overburden</b>	(m <sup>3</sup> )	58,000	58,000	58,000
<b>Ore</b>	(Mt)	0.06	0.06	0.06
<b>Reject material<sup>1</sup></b>	(Mt)	0	0	0
<b>Product</b>	(Mt)	0.21	0.21	0.21

<sup>1</sup> This includes coarse rejects, tailings and any other wastes resulting from beneficiation.

# Three-year rehabilitation forecast

## Rehabilitation planning schedule

### Rehabilitation planning schedule

1. Identify analogue sites that represent the proposed final land use of native vegetation (with specialist support as required)
2. Determine plant species mix options for rehabilitation of native ecosystem final land use areas, for areas identified for rehabilitation in the coming four years (with specialist support as required).
3. Develop a topsoil inventory to document stripped, stockpiled and re-spread resources and review the material balance to make plans to create or acquire additional soil material, if needed.
4. Ensure inspections are continued and any issues identified immediately remedied with the help of Soil Contractors

### Stakeholder consultation

Consult with local revegetation organisations on recommended native species seed mix.

### Rehabilitation studies, risk assessments and/or design work

Ecological studies to be undertaken of R1-R9 areas to assess progress towards closure criteria.

Rehabilitation monitoring inspections of R1-R9 (ecosystem establishment phase) every six months by a specialist to allow early identification of any emerging threats to rehabilitation.

Soil Conservation Services NSW work scheduled to start in August 2023

## Rehabilitation research and trials

RRT NUMBER	PROJECT/TRIAL NAME	OBJECTIVE OF TRIAL/PROJECT	METHODOLOGY	EXPECTED DATE OF COMPLETION	STATUS
RRT0001101	<b>R8</b>	To determine if natural overburden soil supports growth of vegetation	To form up final land use of this area with untreated overburden soils or seeding to determine if natural plant growth can be supported in this soil without added organics/seedbanks.	31 Jul 2024	Ongoing
RRT0001098	<b>RRT0001013 Topsoil preparation trial</b>	Investigate options of external supplied mulch or blended material for topsoil preparation	Conduct soil testing to ensure adequate soil preparation for vegetation establishment	31 Jul 2025	Ongoing
RRT0001100	<b>RRT0001010 Upper eastern bench trial</b>	Safe access to eastern bench	Safe access will allow for rejuvenation of the area	31 Jul 2026	Not started
RRT0001099	<b>RRT0001012 Vegetation establishment – R9</b>	To not have a failure in vegetation establishment	Obtain advice from experts on causes of past failure. Alternate surface preparation recommended	31 Jul 2025	Ongoing



## Rehabilitation maintenance and corrective actions

Due to issues with hydromulch growth, we will be sourcing alternate suppliers for future rehab areas and Soil Conservation Services NSW has been approached to help with this issue. Mine Soils Pty Ltd also engaged for consulting on best practice moving forward in regards to soil health to promote plant growth.

No rehabilitation performance issues or knowledge gaps were identified in the 2022-23 Annual Rehabilitation Report.

## Rehabilitation schedule

- Infrastructure area internal identification IA3 East: Continuation of Landform Establishment
- Overburden Emplacement Area R1 – R9: Ecosystem and land use development to continue
- Overburden Emplacement Area R10: Growth media development to occur
- Overburden Emplacement Area 3: Growth Media to be developed
- AMA2-433 berm: Landform establishment to commence

## Subsidence remediation for underground operations

N/A

## Progressive mining and rehabilitation statistics

### Three-yearly forecast cumulative disturbance and rehabilitation progression

FORECAST	UNIT	YEAR 1	YEAR 2	YEAR 3
A Total surface disturbance footprint	(ha)	49.35	49.35	49.35
B Total active disturbance	(ha)	36.58	36.27	35.51
P Total new area of land proposed for active rehabilitation	(ha)	1.87	2.18	2.95

### Rehabilitation key performance indicators (KPIs)

FORECAST	UNIT	YEAR 1	YEAR 2	YEAR 3
O Total new active disturbance area	(ha)			
P Total new area of land proposed for active rehabilitation during the reporting period	(ha)	1.87	0.31	0.76
Q Annual rehabilitation to disturbance ratio				

## Attachment 1 – Reporting Definitions

REPORTING CATEGORY	DEFINITION
<p><b>A</b> Total disturbance footprint – surface disturbance</p>	<p>All areas within a mining lease that either have at some point in time or continue to pose a rehabilitation liability due to surface disturbance activities.</p> <p>The total disturbance footprint is the sum of the total active disturbance, decommissioning, landform establishment, growth medium development, ecosystem and land use establishment, ecosystem and land use development and rehabilitation completion (see definitions below).</p> <p>Underground mining operations should not include the footprint of underground mining areas/subsidence management areas in the total disturbance footprint.</p>
<p><b>B</b> Total active disturbance</p>	<p>Includes on-lease exploration areas, stripped areas ahead of mining, infrastructure areas, water management infrastructure, sewage treatment facilities, topsoil stockpile areas, access tracks and haul roads, active mining areas, waste rock emplacements (active/unshaped/in or out-of-pit), tailings dams (active/unshaped/uncapped) and temporary stabilised areas (e.g. areas sown with temporary cover crops for dust mitigation and temporary rehabilitation).</p>
<p><b>C</b> Rehabilitation – land preparation</p>	<p>Includes the sum of all disturbed land within a mining lease that have commenced any, or all, of the following phases of rehabilitation – decommissioning, landform establishment and growth medium development.</p> <p>Refer to the glossary of terms in this document for the definition of these phases of rehabilitation.</p>
<p><b>D</b> Ecosystem and land use establishment</p>	<p>Includes the area which has been seeded/planted with the target vegetation species for the intended final land use. However, vegetation has not matured to a stage where it can be demonstrated that it will be sustainable for the long term and or require only a maintenance regime consistent with target reference/analogue sites.</p> <p>Typically, rehabilitation areas would be in this phase for at least two years (and usually more) before rehabilitation can be classified as being in the ecosystem and land use development phase. This phase does not apply to infrastructure areas that are being retained as part of final land use for the site.</p>

REPORTING CATEGORY	DEFINITION
O	The area of any new active disturbance that will be created during the next three years, as defined under definition A1 (definition A1 Table 5).
P	The sum of any new rehabilitation to be commenced in the next three years. These areas may be in the phases “Rehabilitation - Land Preparation” or the “Ecosystem & Land Use Establishment” (definitions C & D in Table 5).
Q	The rehabilitation to disturbance ratio (S / R) indicates how many hectares of new rehabilitation are undertaken for each hectare of land disturbed during the three years. A ratio of 1/1 indicates that the area of new rehabilitation and disturbance in that period are the same.

## Attachment 2 – Definitions

WORD	DEFINITION
<b>Active</b>	In the context of rehabilitation, land associated with mining domains is considered ‘active’ for the period following disturbance until the commencement of rehabilitation.
<b>Active mining phase of rehabilitation</b>	In the context of rehabilitation, the active mining phase of rehabilitation constitutes the rehabilitation activities undertaken during mining operations such as salvaging and managing soil resources, salvaging habitat resources, and native seed collection. This phase also includes management actions taken during operations to manage risks to rehabilitation and enhance rehabilitation outcomes such as selective handling of waste rock and management of tailings emplacements.
<b>Analogue site</b>	In the context of rehabilitation, an analogue site is a ‘reference site’ that represents an example of the defining characteristics (such as vegetation composition and structure or agricultural productivity) of the final land use. Characteristics of analogue sites can be assessed to develop the rehabilitation objectives and completion criteria for final land use domains.
<b>Annual rehabilitation report and forward program</b>	As described in the Mining Regulation 2016.
<b>Annual reporting period</b>	As defined in the Mining Regulation 2016.
<b>Closure</b>	A whole-of-mine-life process, which typically culminates in the relinquishment of the mining lease. It includes decommissioning and rehabilitation to achieve the approved final land use(s).
<b>Decommissioning</b>	The process of removing mining infrastructure and removing contaminants and hazardous materials.
<b>Decommissioning Phase of Rehabilitation</b>	Activities associated with the removal of mining infrastructure and removal and/or remediation of contaminants and hazardous materials. In the context of the rehabilitation management plan this phase of rehabilitation may also include studies and assessments associated with decommissioning and demolition of infrastructure or works carried out to make safe or ‘fit for purpose’ built infrastructure to be retained for future use(s) following lease relinquishment.

<b>WORD</b>	<b>DEFINITION</b>
<b>Department</b>	The Department of Regional NSW.
<b>Disturbance</b>	See Surface Disturbance.
<b>Disturbance area</b>	<p>An area that has been disturbed and that requires rehabilitation.</p> <p>This may include areas such as on-licence exploration areas, stripped areas ahead of mining, infrastructure areas, water management infrastructure, sewage treatment facilities, topsoil stockpile areas, access tracks and haul roads, active mining areas, waste emplacements (active/unshaped/in or out-of-pit), tailings dams (active/unshaped/uncapped), and areas requiring rehabilitation that are temporarily stabilised (i.e. managed to minimise dust generation and/or erosion).</p>
<b>Domain</b>	<p>An area (or areas) of the land that has been disturbed by mining and has a specific operational use (mining domain) or specific final land use (final land use domain). Land within a domain typically has similar geochemical and/or geophysical characteristics and therefore requires specific rehabilitation activities to achieve the associated final land use.</p>
<b>Ecosystem and Land Use Development</b>	<p>This phase of rehabilitation consists of the activities to manage maturing rehabilitation areas on a trajectory to achieving the approved rehabilitation objectives and completion criteria.</p> <p>For vegetated land uses this phase may include processes to develop characteristics of functional self-sustaining ecosystems, such as nutrient recycling, vegetation flowering and reproduction, and increasing habitat complexity, and development of a productive, self-sustaining soil profile.</p> <p>This phase of rehabilitation may include specific vegetation management strategies and maintenance such as tree thinning, supplementary plantings and weed management.</p>
<b>Ecosystem and Land Use Establishment</b>	<p>This phase of rehabilitation consists of the processes to establish the approved final land use following construction of the final landform.</p> <p>For vegetated land uses this rehabilitation phase includes establishing the desired vegetation community and implementing land management activities such as weed control. This phase of rehabilitation may also include habitat augmentation such as installation of nest boxes.</p>
<b>Exploration</b>	Has the same meaning as that term under the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.

<b>WORD</b>	<b>DEFINITION</b>
<b>Final landform and rehabilitation plan</b>	As defined in the Mining Regulation 2016.
<b>Final land use</b>	As defined in the Mining Regulation 2016.
<b>Form and way</b>	Means the form and way approved by the Secretary. Approved form and way documents are available on the Department’s website.
<b>Growth Medium Development</b>	<p>This phase of rehabilitation consists of activities required to establish the physical, chemical and biological components of the substrate required to establish the desired vegetation community (including short lived pioneer species).</p> <p>This phase may include spreading the prepared landform with topsoil and/or subsoil and/or soil substitutes, applying soil ameliorants to enhance the physical, chemical and biological characteristics of the growth media, and actions to minimise loss of growth media due to erosion.</p>
<b>Habitat</b>	Has the same meaning as that term under the <i>Biodiversity Conservation Act 2016</i> and the <i>Fisheries Management Act 1994</i> (as relevant).
<b>Indicator</b>	An attribute of the biophysical environment (e.g. pH, topsoil depth, biomass) that can be used to approximate the progression of a biophysical process. It can be measured and audited to demonstrate (and track) the progress of an aspect of rehabilitation towards a desired completion criterion (i.e. defined end point). It may be aligned to an established protocol and used to evaluate changes in a system.
<b>Land</b>	As defined in the <i>Mining Act 1992</i> .
<b>Landform Establishment</b>	<p>This phase of rehabilitation consists of the processes and activities required to construct the final landform.</p> <p>In addition to profiling the surface of rehabilitation areas to the approved final landform profile this phase may include works to construct surface water drainage features, encapsulate problematic materials such as tailings, and prepare a substrate with the desired physical and chemical characteristics (e.g. rock raking or ameliorating sodic materials).</p>
<b>Large mine</b>	As defined in the Mining Regulation 2016.
<b>Lease holder</b>	The holder of a mining lease.

WORD	DEFINITION
<b>Life of mine</b>	The timeframe of how long a mine is approved to mine, from commencement to closure.
<b>Mine rehabilitation portal</b>	<p>Means the NSW Resources Regulator’s online portal that lease holders must use (via a registered account) to:</p> <ul style="list-style-type: none"> <li>■ upload rehabilitation geographical information system (GIS) spatial data</li> <li>■ develop rehabilitation GIS spatial data (using online tracing functions)</li> <li>■ generate rehabilitation plans and rehabilitation statistics using the map viewer and Rehabilitation Key Performance Indicator functionalities.</li> </ul> <p>Data submitted to the mine rehabilitation portal is collated in a centralised geodatabase for use by the NSW Resources Regulator to regulate rehabilitation performance of lease holders.</p>
<b>Mining area</b>	As defined in the <i>Mining Act 1992</i> .
<b>Mining domain</b>	A land management unit with a discrete operational function (e.g. overburden emplacement), and therefore similar geophysical characteristics, that will require specific rehabilitation treatments to achieve the final land use(s).
<b>Mining land</b>	As defined in the <i>Mining Act 1992</i> .
<b>Native vegetation</b>	Has the same meaning as that term under section 60B of the <i>Local Land Services Act 2013</i> .
<b>Overburden</b>	Material overlying coal or a mineral deposit.
<b>Performance indicator</b>	An attribute of the biophysical environment (for example pH, slope, topsoil depth, biomass) that can be used to demonstrate achievement of a rehabilitation objective. It can be measured and audited to demonstrate (and track) the progress of an aspect of rehabilitation towards a desired completion criterion, that is, a defined end point. It may be aligned to an established protocol and used to evaluate changes in a system.



<b>WORD</b>	<b>DEFINITION</b>
<b>Phases of rehabilitation</b>	<p>The stages and sequences of actions required to rehabilitate disturbed land to achieve the final land use. The phases of rehabilitation are:</p> <ul style="list-style-type: none"> <li>■ active mining</li> <li>■ decommissioning</li> <li>■ landform Establishment</li> <li>■ growth medium development</li> <li>■ ecosystem and land use establishment</li> <li>■ ecosystem and land use development.</li> </ul>
<b>Progressive rehabilitation</b>	<p>The progress of rehabilitation towards achieving the approved rehabilitation completion criteria. This may be described in terms of domains, phases, performance indicators and rehabilitation completion criteria.</p>
<b>Rehabilitation Completion</b>	<p>The final phase of rehabilitation when a rehabilitation area has achieved the approved rehabilitation objectives and rehabilitation completion criteria for the final land use. Rehabilitation areas may be classified as complete when the NSW Resources Regulator has determined in writing that the relevant rehabilitation obligations have been fulfilled following submission of <i>Form ESF2 Rehabilitation completion and/or review of rehabilitation cost estimate</i> application by the lease holder.</p>
<b>Rehabilitation Completion criteria</b>	<p>As defined in the Mining Regulation 2016.</p>
<b>Rehabilitation cost estimate</b>	<p>As defined in the Mining Regulation 2016.</p>
<b>Rehabilitation management plan</b>	<p>As defined in the Mining Regulation 2016.</p>
<b>Rehabilitation objectives</b>	<p>As defined in the Mining Regulation 2016.</p>
<b>Rehabilitation risk assessment</b>	<p>As defined in the Mining Regulation 2016.</p>
<b>Rehabilitation schedule</b>	<p>The defined timeframes for progressive rehabilitation set out in the forward program.</p>

WORD	DEFINITION
<b>Relevant stakeholders</b>	Means any persons or bodies who may be affected by the mining operations, including rehabilitation, carried out on the lease land, and includes: <ul style="list-style-type: none"> <li>■ the relevant development consent authority</li> <li>■ the local council</li> <li>■ the relevant landholder(s)</li> <li>■ community consultative committee (if required under the development consent) or equivalent consultative group</li> <li>■ affected land holder(s)</li> <li>■ government agencies relevant to the final land use</li> <li>■ affected infrastructure authorities (electricity, telecommunications, water, pipeline, road, rail authorities)</li> <li>■ local Aboriginal communities, and</li> <li>■ any other person or body determined by the Minister to be a relevant stakeholder in relation to a mining lease.</li> </ul>
<b>Risk</b>	The effect of uncertainty on objectives. It is measured in terms of consequences and likelihood (AS/NZS ISO 31000:2009).
<b>Secretary</b>	The Secretary of the Department.
<b>Security deposit</b>	An amount that a mining lease holder is required to provide and maintain under a mining lease condition, to secure funding for the fulfilment of obligations under the lease (including obligations that may arise in the future).
<b>Surface disturbance</b>	Includes activities that disturb the surface of the mining area, including mining operations, ancillary mining activities and exploration.
<b>Tailings</b>	A combination of the fine-grained solid material remaining after the recoverable metals and minerals have been extracted from the mined ore, and any process water <sup>2</sup> .
<b>Waste</b>	Has the same meaning as that term under the <i>Protection of the Environment Operations Act 1997</i> .

<sup>2</sup> Commonwealth of Australia (DITR), 2007. *Tailings Management*.

## Attachment 3 – Plans

Plan 2A.pdf

Plan 2B.pdf

Plan 2C.pdf

Forward Program (LARGE MINE) v2.1





**Legend**

**Forecast Data Year1**

- Forecast Disturbance
- Forecast Land Prepared for Rehabilitation
- Ecosystem and Land Use Establishment

Project Approval Boundary

World Imagery  
Low Resolution 15m Imagery  
High Resolution 60cm Imagery  
High Resolution 30cm Imagery  
Citations

**Notes**

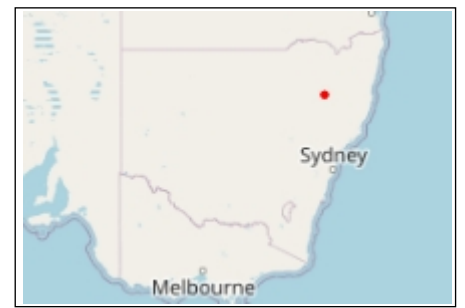
271.6 0 135.79 271.6 Meters

WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere  
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Legend

- Forecast Data Year2
  - Forecast Disturbance
  - Forecast Land Prepared for Rehabilitation
  - Ecosystem and Land Use Establishment
- Project Approval Boundary
- World Imagery
  - Low Resolution 15m Imagery
  - High Resolution 60cm Imagery
  - High Resolution 30cm Imagery
- Citations

Forecast Land Prepared for Rehabilitation - Year 2

Notes

271.6 0 135.79 271.6 Meters

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Legend

- Forecast Data Year3
-  Forecast Disturbance
  -  Forecast Land Prepared for Rehabilitation
  -  Ecosystem and Land Use Establishment
-  Project Approval Boundary
- World Imagery
- Low Resolution 15m Imagery
- High Resolution 60cm Imagery
- High Resolution 30cm Imagery
- Citations

Forecast Land Prepared for Rehabilitation - Year 3

Notes

271.6 0 135.79 271.6 Meters

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