

FWP0001104

# MANUKA MINE FORWARD PROGRAM

Wednesday 23 November 2022 to Saturday 22 November 2025





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## Summary

DETAIL	
Mine	Manuka Mine
Reference	FWP0001104
Forward program commencement date	Wednesday 23 November 2022
Forward program end date	Saturday 22 November 2025
Forward program revision (if applicable)	
Contact	Nadia Aurisch
Mining leases	ML 1659 (1992)
Project location	MANUKA RESOURCES LTD
Date of submission	Tuesday 24 January 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

The Manuka Mine is located approximately 85km south of Cobar within ML1659 on the "Manuka" property. Approved activities under development consent DA2010/LD-00074 include the following:

- Development and mining of ore from four open-cut pits and placement of waste rock to adjoining waste emplacements and in-pit.
- Operation of a ROM Pad, processing plant, water storages and ancillary structures, capable of crushing, screening and milling up to 1Mtpa.
- The processing of up to 350 000t of ore mined/stockpiled at the Mt Boppy Mine and imported to the Mine in accordance with D 2010/LD-00074, and DA2011/LD-00070.
- Operation of an above ground TSF, capable of containing up to 1.5 Mt of tailings.
- Stabilisation of the remaining voids, waste emplacements and TSF, and return to a low intensity agricultural land use.

DA2010/LD-00074 does not specify an approved life of mine, however, based on the planned mining and rehabilitation schedule the anticipated year of relinquishment is 2034.

## Description of surface disturbance activities

## **Exploration activities**

An extensive exploration drilling program has been undertaken since 2021 and will continue into Year 1 of the Forward Program to assist Manuka Resources in identifying and determining the presence and suitability of potential future silver reserves and resources. The Company is also investigating the suitability of neighbouring resources in the region which could be suitable feedstock for the Manuka Mine plant.

No drilling will take place before approval is obtained under Part 5 of the EP&A Act for drill sites located beyond the current or approved disturbance footprint.

It is noted that all future plans are subject to a review of the results of the past and proposed future exploration drilling results.

#### Construction activities

Additional Waste Rock Emplacements (WREs) will be constructed once the Belah and Bimble Pits become operational. Currently forecast for commencement in Year 2, the Belah and Bimble

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WREs will be created adjacent to their respective pits. The Belah WRE will be constructed to the north of the Belah Pit. The Bimble WRE will be located north-west of Bimble Pit and north of Manuka Pit.

Other planned construction activities during the Forward Program include the following:

- Two new tanks and a thickener to be constructed within the existing infrastructure of the current processing plant,
- Installation of the new mercury Retort and a Retort enclosure, and
- Fabrication and installation of carbon ducting, scrubber, and fume extractor.

### Mining schedule

Mining development method and sequencing and general mine features.

The mining schedule during the Forward Program Period will consist of the following activities.

#### Year 1:

Processing of the existing ROM stockpiles, pit stockpiles and site stockpiles situated adjacent to haul roads. The boundaries for disturbance of the northern Belah and Bimble areas will also be delineated.

#### Year 2:

Completion of processing of existing stockpiles. Commencement of mining within the Belah Pit and recommencement of mining within the Manuka Pit (within the existing developed mining area). Prior to mining and waste rock placement, soil material will be stripped and placed within the soil stockpile area located west of the Belah Pit.

#### Year 3:

Commencement of mining within the Bimble Pit and continuation of mining within the Belah and Manuka Pits. The disturbance area of the Manuka Pit will be extended. Prior to mining and waste rock placement, soil material will be stripped and placed within the soil stockpile area located north and west of the Bimble WRE.

Mining will be undertaken using conventional 'truck and shovel' and/or scrapers with ore transported to the ROM stockpile area for processing. All tailings will continue to be placed within the existing tailings storage facility (TSF) with no further lifts required during the Forward Program period.

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

The Manuka WRE will remain as an active operational area throughout the reporting period. Two additional emplacement areas, the Belah and Bimble WRE will become operational when the Belah and Bimble Pits commence.

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Based on the mining schedule of the Forward Program, waste rock management will be as follows.

Year 1: No waste rock movement or placement

Year 2: Waste from the Belah Pit will be placed within the Belah WRE adjacent to the Pit. No waste rock is expected to be removed from either Manuka or Boundary Pits.

Year 3: Waste from the Bimble Pit will be placed within the Bimble WRE adjacent to its Pit. Waste from the Belah and Manuka Pits will continue to be placed on the upper lift of the Bimble WRE.

Placement of waste rock onto the existing Boundary WRE is now complete. Erosion on some batters has been noted and has been included in further rehabilitation planning.

Waste rock will be initially paddock dumped and then pushed flat using a bulldozer prior to construction of the next layer. Subsequent layers will then be built by establishing a tip head on the active emplacement face. The WREs will be constructed as two 10m lift from the outer margins of the emplacement towards the centre, allowing for the final face angle for each lift of 1:3 (V:H). Between each lift, a 5m wide berm with a 5% backslope and 1% longitudinal grade is constructed.

Water management structures will be constructed during the shaping of each emplacement to reduce the risk of erosion.

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

A mineral processing plant is located at the Mine, including feed preparation, carbon-in-leach circuit, carbon regeneration and Merrill process (mercury removal and silver smelting). The processing operations utilise the same carbon-in-leach processing methodology for the Mt Boppy and Manuka Mine ores.

The TSF has been designed in accordance with the Australian National Committee on Large Dams Guidelines and to satisfy the requirements of Dam Safety NSW. A Construction Certificate has been completed, including Work-as-Executed Drawings and a Construction Report.

In summary processing at the site is as follows:

- Crushed and screened ore delivered to the plant and placed on the ROM Pad.
- The crushed ore fed to the mill, with lime added to control pH, for gold / silver recovery.
- Product material recovered from the ore using the same processing methodology as the existing silver recovery circuit, namely:

o leaching of mineral (gold or silver) from the ore using sodium cyanide in the existing carbon-in-leach circuit

o adsorption of mineral onto activated carbon

o stripping of the mineral from the carbon in a new elution circuit





o precipitation of a mineral-rich precipitate in a new electrowinning cell

O production of mineral doré using the existing calcine oven and furnace.

The Tailings Storage Facility will remain as an active operational area throughout the reporting period, given the potential for continued mining and processing at the Mine.

### Waste disposal and materials handling operations.

No change to current management of production waste and non-production waste is proposed.

- General waste and recyclables will be stored in covered bins or skips and will be collected on a regular basis by a licensed waste contractor and transported to a licensed waste disposal facility
- Waste oils and greases will be stored within the bunded Oil & Grease Bay by the processing plant and collected on a regular basis by a licensed waste contractor and transported to an appropriately licensed facility for recycling
- Contaminated soil from unplanned spills is contained, cleaned up and is removed from site as required by a licensed contractor.

#### **Key production milestones**

**MATERIAL UNIT** YEAR 1 YEAR 2 YEAR 3  $(m^3)$ Stripped topsoil 10,000 58,107 98,602 (if applicable) Rock/overburden  $(m^3)$ 100,000 2,112,600 1,785,000 Ore (Mt) 0 750,000 1,020,000 Reject material<sup>1</sup> (Mt) 0 750,000 1,020,000 **Product** (Mt) 0 0.07 0.07

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<sup>&</sup>lt;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

The Mine will continue to operate within approved limits. With large areas of the Mine Site remaining active operational areas over the Forward Program, opportunities to rehabilitate the active mining area, infrastructure, or water management area Mining Domains will be limited.

Rehabilitation of the Boundary WRE and surrounding areas will be conducted progressively beginning in Year1. Landform stabilisation and ecosystem establishment is expected to be conducted on the northern portion likely progressed into and beyond Year 3 of the Forward Program.

The focus of rehabilitation activities during the term of the Forward Program will be on developing and implementing agreed techniques to salvage biological resources (e.g., seed bank, plant material, logs, hollows etc.) for use in rehabilitation based on outcomes of the material characterisation analysis. This will be prioritised in preparation for the potential for future disturbance associated with the Manuka Resources Conceptual Mine Plans, which will include the proposed Belah and Bimble Pits.

Manuka Resources also plans on progressive rehabilitation of the TSF walls including stabilising both the south-eastern and western batters of the TSF.

#### Stakeholder consultation

Consultation was undertaken in preparation of the Manuka Mine RMP. No further stakeholder consultation is currently planned or considered necessary during the Forward Program period.

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

Given the status of operations at the Mine, no formal rehabilitation research or trials are proposed. However, future rehabilitation of the supplementary pits and waste emplacements, should they proceed, could be planned around what has been most successful at the Mine to date.



## Rehabilitation research and trials

RRT NUMBER	PROJECT/TRIAL NAME	OBJECTIVE OF TRIAL/PROJECT	METHODOLOGY	EXPECTED DATE OF COMPLETION	STATUS
RRT0001079	Soil Remediation Trials	To confirm the recommended application rates of fertiliser for optimum vegetation establish and growth.	Application of a mixture of fertilisers and stockpile materials to select areas and measurement of vegetation growth and erosion to confirm recommended fertiliser application rates.	31 Dec 2025	Not started

## Rehabilitation maintenance and corrective actions

Adaptive management will be a key mechanism to address the major threats to, current and emerging risks to, the successful implementation of rehabilitation. Adaptive management steps include regular review of the RMP, including adaptation of targets and performance indicators, recognising potential risks to the successful implementation of the RMP and having a framework in place for corrective actions.

Where rehabilitation monitoring indicates that there is a significant threat to rehabilitation, Manuka Resources will undertake adaptive management in accordance with the Rehabilitation Trigger Action Response Plan as provided in the RMP.

## Rehabilitation schedule

The rehabilitation schedule during the Forward Program Period will consist of the following principal activities.

Year 1

Rehabilitation of the batters of the Boundary WRE will be undertaken including final shaping, spreading of growth medium and revegetation.

Rehabilitation and backfilling of northern bench of Boundary Pit will be undertaken utilising stockpiles of mineralised waste/low grade ore from site.

Land remediation and rehabilitation campaigns will also commence following removal of selected ore stockpiles on site and is expected to continue into Year 2.

Year 2

Rehabilitation of the walls of the TSF, including repair of erosion on the southeast corner of the TSF wall.

Final shaping / profiling of the upper surface of the Boundary WRE and northern bench on Boundary Pit is also expected to be completed.

Preparation and shaping of the Manuka WRE.

Year 3

Completion of rehabilitation of the Boundary Pit WRE including spreading of soil across the upper surface and revegetation.

Spreading of growth medium and revegetation on Manuka WRE. Manuka WRE to remain open until further site rehabilitation is progressed as material may be recovered from the upper surfaces for use in capping of the TSF.

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Commencement of landform shaping of the lower batters of the Belah WRE is planned following construction.

## Subsidence remediation for underground operations

No underground mining of any kind has been undertaken, nor is any anticipated. There is no subsidence monitoring or expected remediation works proposed during the term of the Forward Program.



## 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)	298.55	327.62	388.23
B Total active disturbance	(ha)	61.54	54.22	92.86
C Land prepared for rehabilitation	(ha)	14.45	50.83	72.82
D Ecosystem and land use establishment	(ha)	0	0	0

## Rehabilitation key performance indicators (KPIs)

FORECAST	UNIT	YEAR 1	YEAR 2	YEAR 3
O Total new active disturbance area	(ha)		29.07	60.62
P Area proposed for active rehabilitation	(ha)	14.45	36.38	21.99
Q Annual rehabilitation to disturbance ratio			1.25	0.36

## Attachment 1 – Reporting Definitions

REPO	ORTING CATEGORY	DEFINITION
Α	Total disturbance footprint  – surface disturbance	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.
		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).
		Underground mining operations should not include the footprint of underground mining areas/subsidence management areas in the total disturbance footprint.
В	Total active disturbance	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).
С	Rehabilitation – land preparation	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.
		Refer to the glossary of terms in this document for the definition of these phases of rehabilitation.
D	Ecosystem and land use establishment	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.
		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.

REPORTING CATEGORY	DEFINITION
0	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
Active	In the context of rehabilitation, land associated with mining domains is considered 'active' for the period following disturbance until the commencement of rehabilitation.
Active mining phase of rehabilitation	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.
Analogue site	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.
Annual rehabilitation report and forward program	As described in the Mining Regulation 2016.
Annual reporting period	As defined in the Mining Regulation 2016.
Closure	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).
Decommissioning	The process of removing mining infrastructure and removing contaminants and hazardous materials.
Decommissioning Phase of Rehabilitation	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.

WORD	DEFINITION
Department	The Department of Regional NSW.
Disturbance	See Surface Disturbance.
Disturbance area	An area that has been disturbed and that requires rehabilitation.  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).
Domain	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.
Ecosystem and Land Use Development	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.  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.  This phase of rehabilitation may include specific vegetation management strategies and maintenance such as tree thinning, supplementary plantings and weed management.
Ecosystem and Land Use Establishment	This phase of rehabilitation consists of the processes to establish the approved final land use following construction of the final landform.  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.
Exploration	Has the same meaning as that term under the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.

WORD	DEFINITION
Final landform and rehabilitation plan	As defined in the Mining Regulation 2016.
Final land use	As defined in the Mining Regulation 2016.
Form and way	Means the form and way approved by the Secretary. Approved form and way documents are available on the Department's website.
Growth Medium Development	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.
	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.
Habitat	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).
Indicator	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.
Land	As defined in the <i>Mining Act 1992</i> .
Landform Establishment	This phase of rehabilitation consists of the processes and activities required to construct the final landform.  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).
Large mine	As defined in the Mining Regulation 2016.
Lease holder	The holder of a mining lease.



WORD	DEFINITION
Life of mine	The timeframe of how long a mine is approved to mine, from commencement to closure.
Mine rehabilitation portal	<ul> <li>Means the NSW Resources Regulator's online portal that lease holders must use (via a registered account) to:</li> <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> <li>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.</li> </ul>
Mining area	As defined in the <i>Mining Act 1992</i> .
Mining domain	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).
Mining land	As defined in the <i>Mining Act 1992</i> .
Native vegetation	Has the same meaning as that term under section 60B of the <i>Local Land Services Act</i> 2013.
Overburden	Material overlying coal or a mineral deposit.
Performance indicator	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.



WORD	DEFINITION
Phases of rehabilitation	The stages and sequences of actions required to rehabilitate disturbed land to achieve the final land use. The phases of rehabilitation are:  active mining decommissioning landform Establishment growth medium development ecosystem and land use establishment ecosystem and land use development.
Progressive rehabilitation	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.
Rehabilitation Completion	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.
Rehabilitation Completion criteria	As defined in the Mining Regulation 2016.
Rehabilitation cost estimate	As defined in the Mining Regulation 2016.
Rehabilitation management plan	As defined in the Mining Regulation 2016.
Rehabilitation objectives	As defined in the Mining Regulation 2016.
Rehabilitation risk assessment	As defined in the Mining Regulation 2016.
Rehabilitation schedule	The defined timeframes for progressive rehabilitation set out in the forward program.



WORD	DEFINITION
Relevant stakeholders	Means any persons or bodies who may be affected by the mining operations, including rehabilitation, carried out on the lease land, and includes:  the relevant development consent authority the local council the relevant landholder(s) community consultative committee (if required under the development consent) or equivalent consultative group affected land holder(s) government agencies relevant to the final land use affected infrastructure authorities (electricity, telecommunications, water, pipeline, road, rail authorities) local Aboriginal communities, and any other person or body determined by the Minister to be a relevant stakeholder in relation to a mining lease.
Risk	The effect of uncertainty on objectives. It is measured in terms of consequences and likelihood (AS/NZS ISO 31000:2009).
Secretary	The Secretary of the Department.
Security deposit	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).
Surface disturbance	Includes activities that disturb the surface of the mining area, including mining operations, ancillary mining activities and exploration.
Tailings	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> .
Waste	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*.

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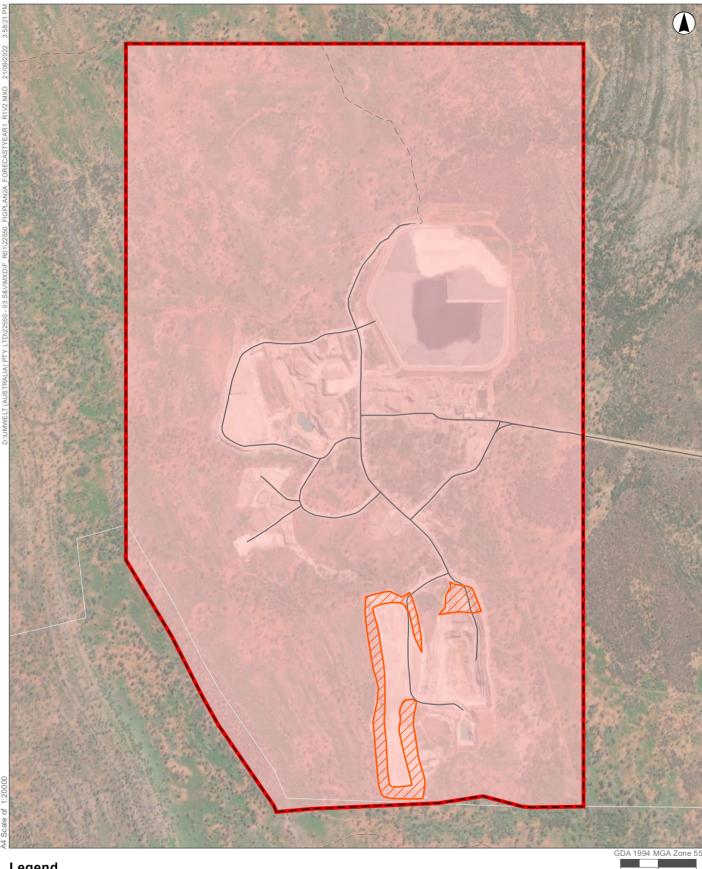


## Attachment 3 - Plans

22550\_FigPlan2a\_ForecastYear1\_r1v2.pdf 22550\_FigPlan2b\_ForecastYear2\_r1v2.pdf 22550\_FigPlan2c\_ForecastYear3\_r1v3.pdf

Forward Program (LARGE MINE) v2.





Legend

Project Approval Boundary
Minerals - Current Titles

Forecast Data Year1

Forecast Land Prepared for Rehabilitation

400 200 Metres

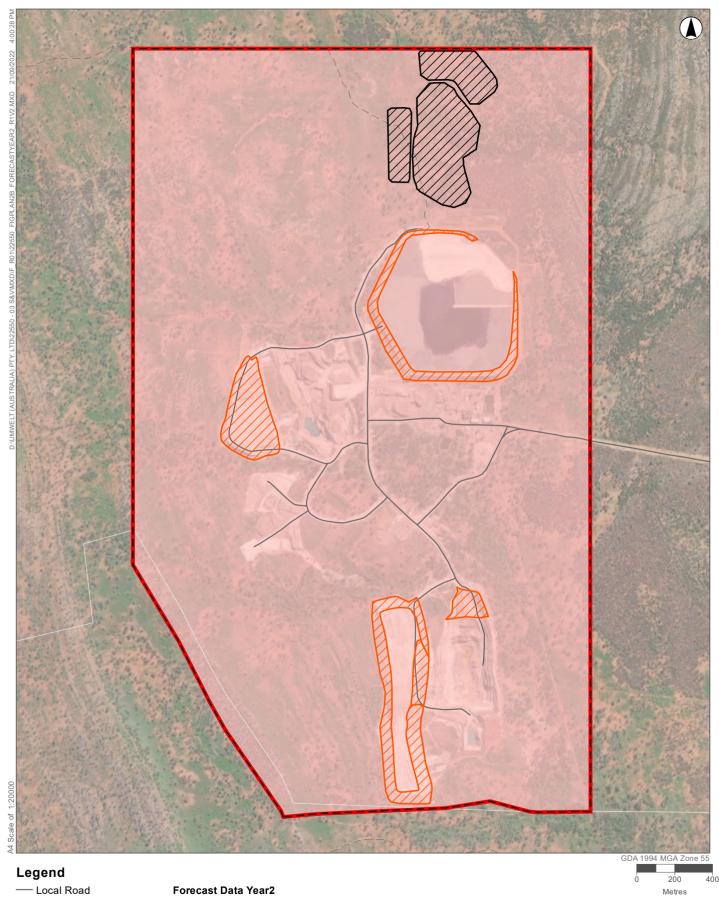
FIGURE 2A

Forecast Data - Year 1



FIGURE 2B

Forecast Data - Year 2



Data source: New South Wales State Government, SEED

Forecast Disturbance

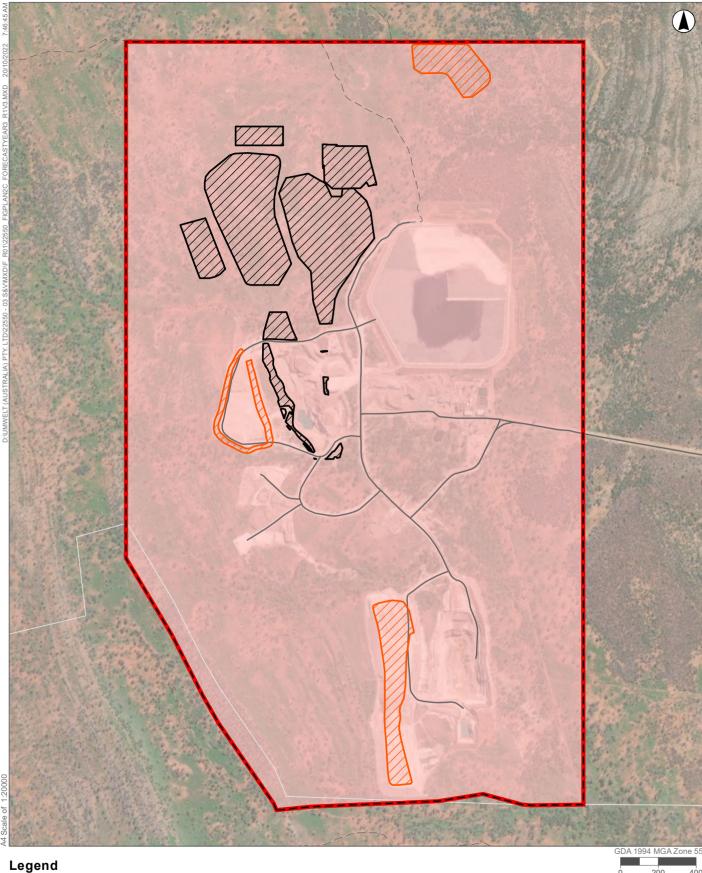
Forecast Land Prepared for Rehabilitation

- Track-Vehicular

Project Approval Boundary
Minerals - Current Titles

Cadastre





— Local Road - - Track-Vehicular Cadastre Project Approval Boundary
Minerals - Current Titles

#### Forecast Data Year3

Forecast Disturbance

Forecast Land Prepared for Rehabilitation

200 Metres

FIGURE 2C

Forecast Data - Year 3