

SUBERA'S PROGRESSIVE REHABILITATION AND CLOSURE PLAN

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Environmental Authority Holder – Fura Gems Australia Pty Ltd

C/- Hetherington Exploration & Mining Title Services (Qld) Pty Ltd, PO Box 49, Spring Hill
LPO Spring Hill Qld 4004

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1. Introduction

This report documents the rehabilitation planning and background information for the Subera Mine operated by Fura Gems Australia Pty Ltd (Fura Gems). FURA operates the neighbouring three Fura Gems Holdings Pty Ltd mining leases. The international parent company FURA, is a semi-precious gem miner (website <https://www.furagems.com/>) and is the world's single largest producer of Sapphires. FURA's blue, green, teal and 'parti' or multi-hued sapphires are gaining recognition in the fashion and luxury world for their natural beauty and exotic appeal. FURA is building a global market with state-of-the-art grading system for these magnificent gems. Queensland sapphires even feature in the crown jewels of European monarchs. In the late 20th century, Australia accounted for nine-tenths of global sapphire supplies. FURA is actively working on marketing of Australian Sapphires with an intent to regain their lost glory on the global platform.

The content of this report aims to meet the relevant guidance notes published by the Qld Department of Environment and Science including "Guideline – Progressive Rehabilitation and Closure Plans (PRC plans)" ESR/2019/4964 V2 and "Submission of a progressive rehabilitation and closure plan" ESR/2019/4967 V3.00.

PRCP Order

- Project Planning –
 - Baseline Information
 - Site Locations
 - Project Description
 - Tenure
 - Primary Mine Features
 - Type of Mining Operation
 - Rehabilitation Planning
- Community Consultation –
- Post-Mining Land Use
 - Assessment of PMLU options
 - Details of each PMLU
- Non-Use Management Areas –
- Rehabilitation Management Methodology –
 - Hydrogeology
 - Flooding
 - Soil and capping material assessment
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 - Water Management
 - Revegetation
 - Plant Areas (TSF)
 - Voids
 - Underground Mining
 - Built Infrastructure
- Risk Assessment –
- Monitoring and Maintenance
- Large Tables
- Figures

2. Baseline Information

2.1. Site Topography

The Subera Mine is located east of the Sapphire to Rubyvale Road. Figure 21 displays the regional topography of the area with the remnant olivine basalt plugs to the west. Figure 22 displays the local topography. Watersheds drain west to east with the lease area undulating.

2.2. Climate

The Gemfields experiences cool to mild winters and warm to hot summers. Winters are usually drier, and the summer is characterised by “wet season” rains. Sapphire township has recorded a mean annual rainfall of 618mm with a 10%ile of 373mm and a 90%ile of 903mm. Table 1 list monthly totals for Sapphire.

Table 1: Rainfall Sapphire Post Office (BOM Station 035062)

Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	93.8	114.4	61.7	34.6	29.6	29.9	26.6	19.3	21.4	36.7	60.0	82.3
Median	79.8	77.8	36.0	13.0	13.6	15.0	9.9	6.1	4.9	25.1	46.5	65.0
Highest Daily	176.0	246.4	170.0	114.0	88.0	96.3	120.7	79.0	66.0	117.0	122.4	196.9

Mean maximum temperature at Emerald Airport range from 34.7°C in January to 23.4°C in June with mean minimum temperatures ranging from 22.3°C in January to 9.1°C in July.

Table 2 lists the Monthly Mean Daily Global Solar Exposure at the Emerald Airport.

Table 2: Monthly Mean Daily Global Solar Exposure

Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	24.9	23.1	21.7	18.8	15.8	14.1	15.3	18.3	21.5	24.1	25.5	25.9	20.7
Lowest	19.2	17.5	16.6	13.9	13.7	11.2	12.6	15.7	15.5	20.7	17.1	19.6	17.7
Highest	29.2	28.4	25.3	21.2	17.6	15.9	17.5	20.3	24.1	27.0	29.5	29.8	22.8

The windiest months at Emerald are September, October and November. The prevailing wind is from the southeast and is usually less than 5km/hr.

Table 3 list the monthly evaporation rates in the Emerald-Capella region.

Table 3: Monthly Evaporation Rates

Month	Evaporation (mm)
January	230
February	185
March	180
April	145
May	115
June	90
July	90
August	135
September	170
October	230
November	240
December	220
Average	5.7mm/day.

2.3. Climate Change

The Fura Gems acknowledge that the climate will change over time. This change may have an impact along with property management and soil fertility change on the pasture on Subera and the ability to achieve completion criteria. The impact is likely to be on pasture composition and productivity. Any change may impact on the future land use or productivity. Fura Gems will seek a change to completion criteria by EA amendment if the completion criteria do not reflect the pasture on the background property “Subera”.

2.4. Geology

Geological Setting

Fura Gems is currently mining sapphires from a large low-grade alluvial deposit on the property “Subera”, a pastoral lease situated approximately 40km west of Emerald in Central Queensland. The deposit is the most significant found in Queensland in the past 50 years. The deposit occupies an area of approximately 2,00 hectares (ha) and is situated approximately 2km east of the existing Anakie- Rubyvale Gemfields.

The sapphire deposits on Subera” are covered by the Emerald 1:250,000 Geological Sheet (Sheet SF/55-15) and the Rubyvale 1:100,000 Geological Sheet (Sheet 8451). The oldest rocks in the area are pre-Devonian to middle Ordovician (400 to 500 million years old) schist, phyllite, quartzite, slate and crystalline limestone of the Anakie Metamorphics.

Geology

The Anakie Metamorphics are in part intruded by the Upper Devonian (360 million years old) Retreat Granite, forming part of the Anakie Inlier, which lies to the northwest of the Fura Gems Mining Leases (MLs). To the west, lie fluviatile sediments of the Devonian-Carboniferous (300 to 400 million years old) Drummond Basin.

The MLs are situated within the Permian (250 million years old) Bowen Basin, and cover

Cainozoic and Quaternary (0 to 65 million years old) alluvial sediments. These sediments are composed of detritus derived from the erosion of the Anakie Metamorphics, the Retreat Granite and the sediments of the Devonian-Carboniferous Drummond Basin and the Permian Bowen Basin.

Evolution

Numerous Tertiary olivine basalt plugs, dating from 25 to 65 million years ago, have intruded both the Anakie Inlier and the Drummond Basin sequence. Locally known as the Hoy Basalts, these are believed to be the source of the sapphire and zircon found in the gravels from the Tertiary and Quaternary periods on Gemfields.

Extensive volcanic activity during the Tertiary period brought sapphires to the surface in the Rubyvale-Sapphire-Anakie area, depositing sapphire-rich volcanic rocks atop much older igneous and metamorphic rocks of the Drummond Range, just west of Subera. Eastern Australia experienced heavy rainfall during this time, which caused significant erosion of the Drummond Range and led to the creation of widespread alluvial sediment blankets on the surrounding lowlands. As a result, sapphires became concentrated in some of the coarse boulder-rich alluvial "wash" layers in the Rubyvale-Sapphire-Anakie area, forming economically viable deposits. The wash at Subera varies between 1 m and 4 m thick and is composed mainly of very coarse pebbly to boulder sediments, topped by a layer of fine- to medium-grained sandy clays. The main components of the sapphire-bearing wash are quartzite and hornfels (a fine-grained metamorphic rock), with smaller amounts of granite and basaltic rocks.

2.5. Site Hydrology and fluvial networks

The major watercourses draining the project area are Policeman's and Retreat Creeks. Retreat Creek to the south of the project area is the only named Creek in the vicinity. There are no flood plains on the lease area. The creeks are part of an easterly watershed system with their waters flowing into the Nogoa River approximately 15 km northeast of Emerald. The creeks are ephemeral flowing following prolonged wet weather. Both streams regularly flood out of the low flow channel. There are several drainage lines between Policeman's Creek and Retreat which pond water for a period following rain.

To mitigate the risk of surface run-off or floodwaters entering active pits, Fura Gems will not mine low lying reserves if BOM forecasts are for wetter than average seasons. All voids are protected by a bund constructed around the pits. Water collected in pits is pumped to the return water pond in the active Plant Area for use in the washing process or road dust suppression. Recycled water or water from dewatering mining pits is used preferentially over water from the licenced bore.

Water quality of surface water (Table 10), stock water storages (Table 11), bore (Table 12) and Plant wet tails and recycled water ponds (Table 13) has been recorded. Surface water, stock water storage water quality are similar with slightly elevated salt levels in the recycled water within the Plant Area. Water quality reflects the geology of the area and the fact that mining occurs in the weathered zone above the “Line of Oxidisation” (LOX line).

2.6. Flooding

The major watercourses draining the project area are Policeman’s and Retreat Creeks. Retreat Creek to the south of the project area is the only named Creek in the vicinity. As such, there are no flood plains on the lease area. The creeks are part of an easterly watershed system with their waters flowing into the Nogoa River approximately 15km northeast of Emerald. The creeks are ephemeral flowing following prolonged wet weather. Both streams regularly flood out of the low flow channel. There are several drainage lines between Policeman’s Creek and Retreat Creek which pond water for a period following rain.

2.7. Hydrogeology

The Quaternary alluvium appears to be a productive aquifer. Groundwater within the alluvium is of relatively low EC, generally < 1,000 μ Siemens/cm. The bedrock aquifers (Fork Lagoons beds, Devonian granite) tend to record higher EC groundwater, generally >5,000 μ Siemens/cm and in some cases >10,000 μ Siemens/cm. At the margins of the alluvium, the EC of alluvial groundwater is closer to the EC of the bedrock aquifers, indicating that inflow from the bedrock aquifers to the alluvium occurs at the marginal contacts. Water Quality in the Maybe Something Plant Area (~ 5,000 μ Siemens/cm) on the northern lease boundary is higher than water quality at other Plants. This is consistent with the higher EC at the margins of the alluvium stated in the Groundwater Data Review. Recharge to the alluvium is via direct rainfall recharge, or via downward seepage from the various ephemeral creeks when they are in flow. The groundwater flow direction honours topography, with flow generally from west to east (see Figure 1).

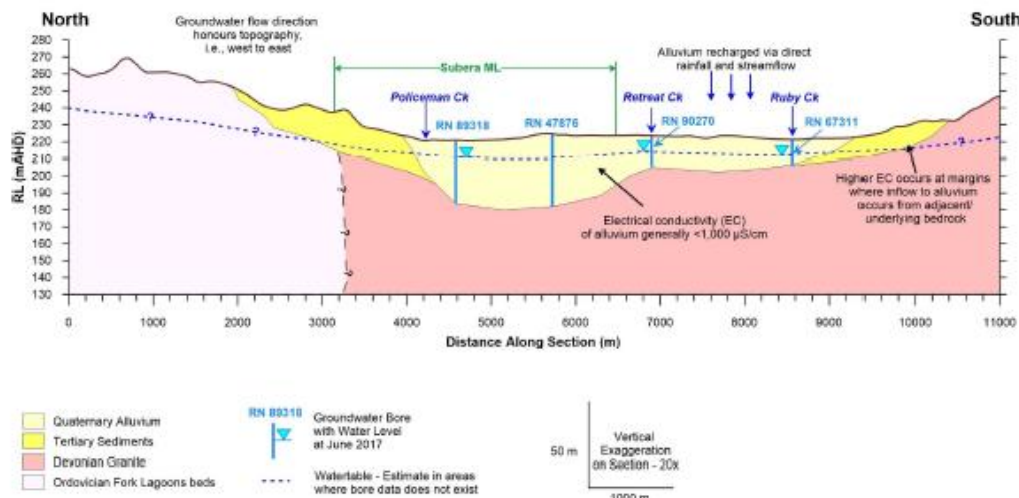


Figure 1: Conceptual Groundwater Model

The Rainfall Residual Mass Curve (RMM) for Subera is shown in Figure 2. Water depth data from the groundwater database in the locality of Subera shows the correlation with the RMM.

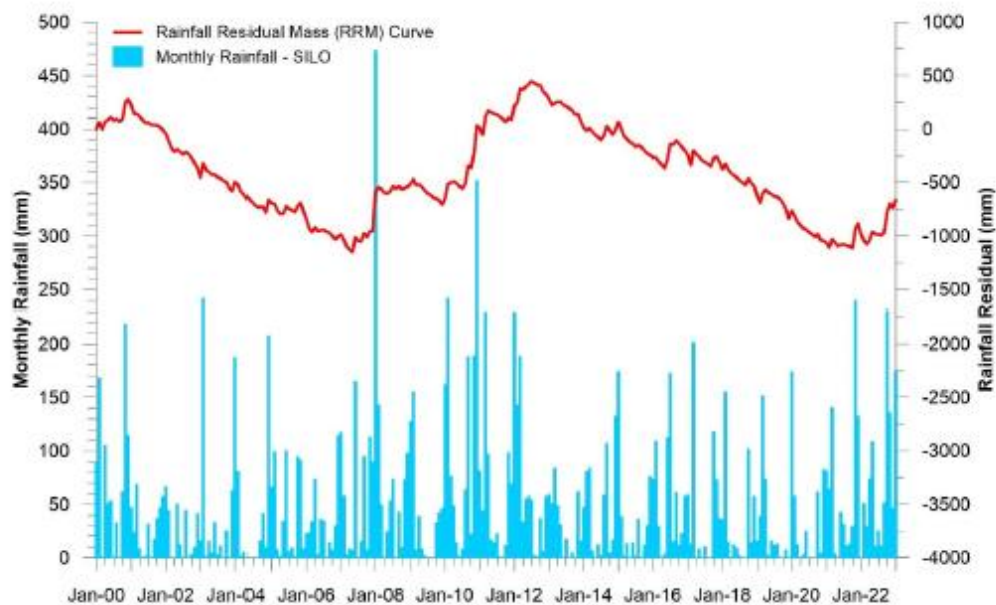


Figure 2: Rainfall Residual Mass Curve

2.8. Groundwater levels and properties

Fura Gems has one registered bore RN89318 and a Water Licence 403159 with an annual allocation of 150ML. Annual take for 2019/2020 and 2020/2021 has been 150ML. Water quality was tested in 2020. pH was 8.01 and Electrical Conductivity was 374 μ Semiens/cm.

The bore draws water from an aquifer ~2–14 m below ground level below the surface. A bore pump is installed with a capacity of 40,000 litres per hour. The bore supplies water to the Plant Area and the main industrial area as required.

The bore's location is within the Highlands Groundwater Management Area as described in the Water Plan (Fitzroy Basin) 2011. At that location, taking of water for any purposes that are not exempt e.g., stock and domestic supplies require an authorisation. The water plan has a moratorium on the taking of any additional allocation.

2.9. Soil Types

Soils on the low-lying areas of Subera are grey-black alluvial cracking clay soils on Cainozoic alluvial sediments. Soils on the Quaternary uplands are texture contrast. These soils are moderately fertile. The soils are up to one metre deep in the drainage lines, but only the first 100mm contains humic material vital for rehabilitation. Topsoil i.e., the top 100-200 mm of the profile is stripped from each domain, stockpiled on the perimeter of the disturbed area, and redistributed evenly across the disturbed area once the desired landform has been formed.

No detailed soil mapping has been undertaken but from a regional scale, the land systems covered by the project are described in 'Lands of the Nogoa – Belyando Area, Queensland' CSIRO 1967.

1. Alpha Land System

This consists of alluvial plains with box and texture-contrast soils in non-basaltic alluvium. The limitations affecting this land system are low nutrient status and moderate to severe physical properties affecting plant growth.

2. Monteagle Land System

This land system is described as lowlands with box and texture contrast soils on slightly stripped Tertiary land surface. The limitations affecting this land system are moderate to severe physical properties affecting plant growth and slightly to moderately affected by salinity.

3. Humboldt Land System

This land system is described as lowlands and plains with blackbutt and brigalow and texture contrast soils formed on acid clay exposed within the Tertiary weathered zone. The limitations affecting this land system are moderate to severe physical properties affecting plant growth and moderately affected by salinity.

2.10. Land Stability

"Subera" has been extensively cleared and developed with improved pastures. The landform is stable with low to moderate slopes. Fura Gems is committed to return disturbed areas to a slope of less than 15%. Except for the legacy areas of the Main Dam Site and Reject Hill, the rehabilitated landform is within 2 m of the pre-mined contours. Reject Hill is one of the rehabilitated areas certified. Fura Gems has no control over the landholder's management practices other than the terms and conditions of the compensation agreement. The current agreements with the landholder are on a

per hectare basis. The mining area has never been excluded from grazing for the last 24 years being the life of the current operation. All previously mined areas were progressively rehabilitated in the ongoing mining program since 2003. Two applications of certified rehabilitation have been accepted during this time. To date mining and grazing have cohabitated the area successively. There is no reason to date that this will change but the risk remains. Wet tails in the process of being rehabilitated is fenced to exclude stock from the area as there is a risk of cattle becoming bogged.

The town common has pre-existing degradation/erosion in many areas including the Fura Gems leases. The leases have been extensively mined by fossickers and small miners with little to no rehabilitation or salvaging of topsoil. This with the ongoing grazing of the town common exposes any sloping areas to ongoing erosion. Fura Gem's two leases on the town common have areas of slopes, depressions holding water and with ML 70286 an elevated overburden dump which is now traversed with a power line making further reshaping of the area unsafe. The local community accept the condition of the town common and fossicking areas as part of the ambience/uniqueness of the area and is part of the continuing attraction of the area to tourists.

2.11. Vegetation Communities

Three land zones (Table 4 and Figure 23) with associated regional ecosystem communities (Table 5, Figure 24 and Figure 25) covered the lease area prior to clearing.

Table 4: Land Zones

Land Zone	Description	Regional Ecosystems
3	Cainozoic Alluvial Plains and Piedmont Fans	11.3.2/11.3.3/11.3.1/11.3.25 (50/25/15/10)
4	Cainozoic clay deposits gently undulating plains	11.4.8/11.5.3 (65/35)
4	Cainozoic clay deposits gently undulating plains northeast	11.4.8/11.4.9/11.5.3 (50/30/20)
5	Cainozoic sand deposits extensive flats or gently undulating plains	11.5.3

Table 5: Regional Ecosystem Communities

Regional Ecosystems	Vegetation Communities
11.3.2/11.3.3/11.3.1/11.3.25 (50/25/15/10)	Poplar Box Woodland on alluvial plains (50%) Coolabah Woodland (25%) Brigalow/Blackbutt (15%) River Red Gum fringing drainage lines (10%)
11.4.8/11.5.3 (65/35)	Blackbutt/Brigalow (65%) Poplar Box Woodland (35%)
11.4.8/11.4.9/11.5.3 (50/30/20)	Blackbutt/Brigalow (50%) Brigalow (30%) Poplar Box Woodland (20%)
11.5.3	Poplar Box Woodland

The area of the MLs has been extensively modified since the area was first settled.

Current mapping of the biodiversity status for the lease area is shown in Figure 26. Extensive clearing of the virgin timber followed by regular chaining for regrowth control has reduced the woody vegetation to sparse regrowth < 2m in height. A range of introduced pasture species plus grazing pressure has reduced the presence of native ground cover except for low-lying areas.

Except for bambatsi, the introduced species do not flourish in these areas. Bambatsi has only been introduced in the last few years.

A variety of floral species remain on the MLs. The predominant species remaining are brigalow (*Acacia harpophylla*), belah (*Casuarina cristata*), wilga (*Geijera parviflora*) and current bush (*Carissa ovata*). There are a few bauhinia trees (*Lysiphyllum hookeri*) in the area and narrow leaved ironbark (*Eucalyptus crebra*). Ground cover is comprised on grasses, herbs and sedges. The grass species comprise both native and introduced species.

Essential Habitat mapping is shown in Figure 27. Areas mapped at Essential Habitat are excluded from mining in the Environmental Authority. Mapped Essential Habitat and creek lines with woody vegetation are excluded from the area available for mining in the PRCP. Matters of State Environmental Significance are shown in Figure 28.

2.12. Fauna

The lack of mature vegetation and the grazing of cattle have also had an impact on the native fauna assemblages on the MLs.

Native species that have been recorded in the area include the grey kangaroo, plains turkey (bustard), and various species of waterbird including the brolga. Feral species include rabbits, pigs and cats.

2.13. Properties and Productivity

The land capability of the Subera leases is Class V1. (*Reference* - A Land Capability Classification for Agricultural Purposes by J Rosser, GL Swartz, NM Dawson and HS Briggs Division of Land Utilisation Technical Bulletin No 14 May 1974).

The drainage lines of Policemen's Creek and the area between Policeman's Creek and Retreat Creek are waterlogged for some time after heavy rainfall. Due to the water logging, pasture species such as buffel and rhodes grass do not grow. Bambatsi panic, a pasture species recently introduced into the mix, does tolerate water logging with individual plants identified during the January 2022 monitoring. These low-lying areas are covered with a variety of native grasses and sedges. These species are not highly palatable but maintain the stability of the area. The vegetation on the rehabilitated areas will be consistent with areas not disturbed by mining.

3. Site Location

Fura Gems mining leases are 40km as the crow flies West Northwest of Emerald. The leases are east of the Sapphire to Rubyvale Road and approximately 65 km by road to Emerald via the Capricornia Highway.

4. Project Description

4.1. Mining Tenements

Fura Gems holds 29 MLs on “Subera”. Leases are listed in Table 18. Figure 29 shows the lease outline whilst Figure 30 shows the individual leases on “Subera”. Great Northern Qld Pty Ltd was granted the initial leases on “Subera” in 1998.

Fura Gems holds two MLs on the “Scrub Lead” Fossicker’s Area. ML 72085 (Figure 34) and ML 72086 (Figure 35) have been extensively mined prior to Fura Gems acquiring the leases. Figure 34 and Figure 35 shows the area mined by Fura Gems as a shaded polygon within the lease boundary.

4.2. Underlying landholders

The Subera mining leases except for ML70285 and ML 70286, occur on the property “Subera” owned by S & A Benny (see Figure 31). ML70285 and ML 70286 are located within the “Scrub Lead” designated fossicking land on the town common and are owned by the State.

4.3. Pre-mining land use

Mining occurs within the existing designated area of the environmental authority, which includes 1,515 ha of grazing land on “Subera” (total 3,048 ha) and 26 ha of Scrub Lead designated fossicking land (total 1,541 ha). Parts of “Subera” and the Scrub Lead Fossicking Area have been mined by others over many years and leases have lapsed or been abandoned leaving land unrehabilitated. ML 70285 and ML 70286 have been selectively mined and rehabilitated by Fura Gems as shown by the shaded polygon. The rest of the MLs has been mined in the past leaving TSFs and elevated overburden piles.

“Subera” is a grazing property. The property produces beef running a breeding, growing, and fattening operation. “Subera” has been extensively modified for grazing by repeated treatment of woody regrowth and the sowing of improved pasture.

The Scrub Lead Fossicking Area has been part of the town common since the early days of Rubyvale and Sapphire. Local residences graze cattle, horses and camels on the town common.

4.4. Activities on the EA

The only ERA conducted on site is Schedule 3 20: Clay pit mining, dimension stone mining or mining gemstones (including the material from which gemstones are extracted) (c) more than 1,000,000t in a year.

Activities conducted on the lease include operating and maintaining fixed and mobile plant, storage of fuel and lubricants, storage of spare parts, wash plant and gem sorting infrastructure. The industrial area has an office, septic toilet and wash down bay. Rainwater tanks supply drinking water.

4.5. Primary Mine Features and Infrastructure

An industrial area is located on Subera (see Figure 32). The area contains office accommodation, gem sorting, workshop, laydown yard and a mini plant for the washing of exploration holes.

Next to the industrial area are the elevated rehabilitation areas including TSFs namely Main Dam Site and Rejects Hill. This rehabilitated Plant Area is a legacy of past mining activity when all wash was carted to this central point for washing. The elevated landform is the accumulation of wash. Current mining operations utilise a mobile plant to reduce the haulage distance between mining pits and the Plant Area. The reduced haul distance facilitates the return of tails and oversize to mining pits eliminating overburden deficits and elevated TSFs.

The disturbed domains (see Figure 33) are either designated as mining pits, proposed Plant Areas, active Plant Areas or mining/Plant Areas undergoing rehabilitation. Given the short duration of mining, the disturbed footprint changes continuously.

Roads and access tracks for both mining and pastoral activities cover the lease area.

4.6. Existing Rehabilitation

Rehabilitation of disturbed area mined under the authority of the current tenure and/or pre-requisite tenure is the responsibility of the current tenure holder.

ML 70285 and ML 70286 on the Scrub Lead were granted on 5/11/2009. Records of the area disturbed during the period of the tenure have been kept by Fura Gems and are shown in the following figures. This area has been ripped and seeded with Fura Gems responsible for progressing this ripped and seeded rehabilitation through to the status of certified rehabilitation. Fura Gems is not responsible for the historical disturbance existing at the time of lease grant. Figure 3 and Figure 5 display the disturbance on the mining leases at lease grant with Figure 4 and Figure 6 showing current disturbance. The area mined to date by the current tenure holder on the two Scrub Lead mining leases has been rehabilitated (RM4). The elevated overburden dump is outside the area mined by Fura Gems. The current landform in the mined area of ML 70285 and ML 70286 has slopes of < 5%. Erosion rills are present in the rocky subsoil present on these leases. A shrub layer has established on ML 70285 with ground cover species establishing under the shrub cover. A similar process is expected in ML 70286. The company expects to obtain a rehabilitation standard equating to analogue sites on adjacent areas of the Scrub Lead, an area that continues to be disturbed by mining.



Figure 3: ML 72085 prior to grant



Figure 4: ML 72085 in 2022



Figure 5: ML 72085 prior to grant



Figure 6: ML 72085 in 2022

Figure 7 shows the current and past leases on the relevant area of the Scrub Lead demonstrating that mining has occurred in the area under past tenure holders.

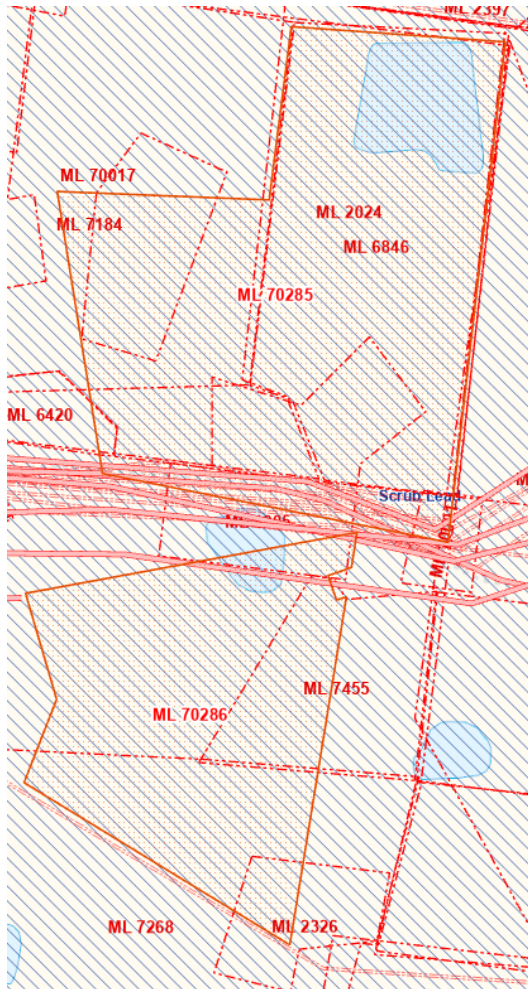


Figure 7: Previous Tenure

On Subera the rehabilitation of the disturbance left by the previous owner of the tenure has been rehabilitated over time. The current lease holder is not responsible to historical disturbance i.e., disturbance that occurred prior to the grant of the current tenure.

Historical disturbance on Subera is shown in Figure 8 to Figure 10. The disturbance of this mining extends into the current leases. Access to these mining areas can be observed to the west demonstrating that it was mined by others with a separate access. Figure 9 indicates that by 2012 the disturbance has been rehabilitated prior to relinquishment. Figure 10 is of a breached dam south of the industrial area. No records exist as to the timing of construction or the responsible party for the dam. Spatial data of the historical disturbance has been recorded from the 2001 mosaic in Qld Globe and from the current Google Earth image (see Figure 11).



Figure 8: Historical Disturbance 2001 – Others



Figure 9: Historical Disturbance 2012 - Others

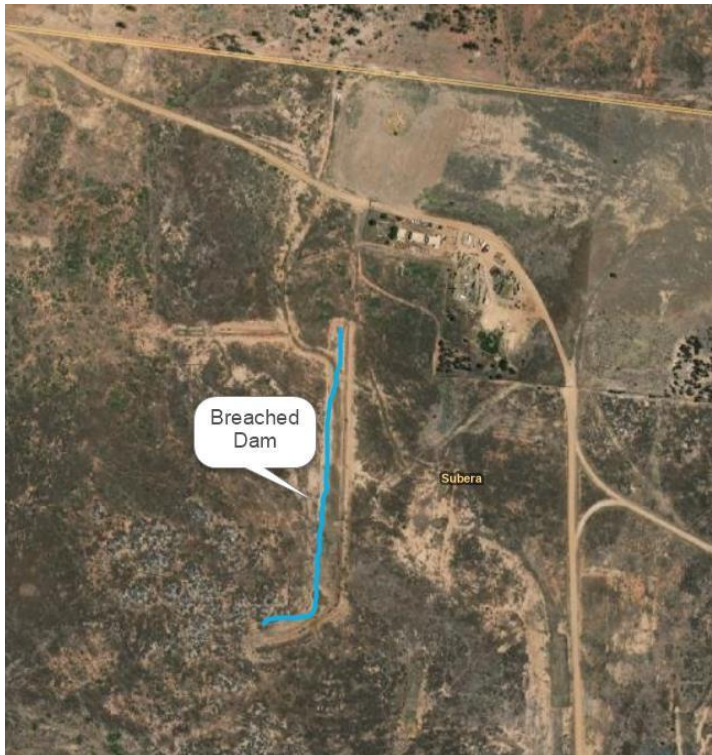


Figure 10: Historical Disturbance - Others

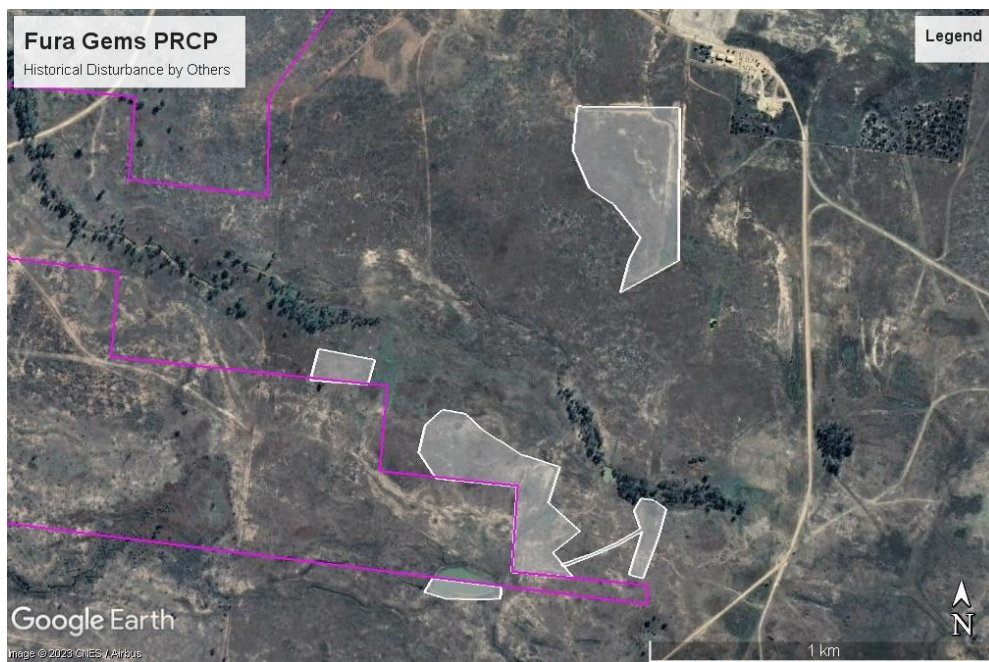


Figure 11: Historical Disturbance Spatial Data

Rehabilitation was a priority for Great Northern Mining Pty Ltd when the Company acquired the leases in 2003 and remains a priority for the current owners. The rehabilitation technique described later in Section 8 is the technique utilised to rehabilitate all disturbed domains on the MLs. Minor changes in technique are a result of the continuous improvement cycle as the miner searches for opportunities to improve the rehabilitation outcome or reduce the time and effort required to achieve the

nominated rehabilitation milestones.

It took 15 years following acquisition in 2003 for the acquired disturbance to reach RM4 i.e., “ripped/seeded”. Rehabilitation of the Main Dam Site and Rejects Hill was the costly exercise for the previous owners as the company had to operate the Main Dam Site area as a Plant to achieve sufficient cover in the accumulated wet tails to cap this area.

Current disturbed and rehabilitated domains are shown in Figure 33 and Table 6. Table 7 and Table 8 show disturbance categories in total and as a percentage. Fura Gems has 80% of the area disturbed by mining either rehabilitated or certified rehabilitation.

Subera had two tranches of rehabilitated domains certified in 2014 and 2020. Individual domains certified are listed in Figure 33 and Table 6. The area of several domains certified have been reduced since due to the encroachment of adjacent mining pits as the Company seeks to maximise resource recovery.

Rehabilitated areas include Plant Areas as these facilities have a capacity of approximately 2 years of production. Plant Areas have been successfully rehabilitated. **Rejects Hill and Lois Lane are certified rehabilitation domains containing tails ponds.** The area's geology, lithology or water quality indicate that all materials in a TSF are inert. This is supported by the rehabilitation outcomes. The rehabilitation technique for future rehabilitation is as described in Section 8.

Table 6: Disturbance Domains

Disturbance	Total Area (ha)	Disturbance	Total Area (ha)
Pointsetta	4.2	Heartbreak	1.4
Laneway West	2.0	Just Looking	5.2
Nardoo South	0.7	Lagoon	6.0
North Pit East	3.0	West Lagoon	16.3
Vella Pit	1.0	West Lagoon Ext	1.6
Main Dam Site	11.0	Retreat	5.5
Rejects Hill	10.5	North Retreat	5.4
Industrial Area	0.7	Promised Land	14.9
Main Dam Hardstand	1.5	Promised Land 2	11.8
North Pit Area 2	0.8	Windmill	3.3
North Pit Area 3	8.2	Tryangle East	17.3
Nardoo	0.0	Tryangle East West	2.5
Pig Pit	7.3	Tryangle West	11.6
South East Pit	1.5	Tryangle East South	1.9
ML 7157	1.9	BOT	7.2
Eastern Creek	12.6	Banana	2.9
South Pit	7.4	Small Hill	9.7
Creek View	4.4	North Retreat 2	6.13
Cattle Yard	2.0	Laneway East	5.5
Nunan	0.6	Maybe Something	19.3
Lois Lane	6.4	Sunset Way	7.2
Old Laneway	13.4	Sweet Wash	6.3
Tryangle 1	2.32	Promised More (PM)	7.8
Tryangle 2	0.2	Road	1.8
Tryangle 3	0.5	Tracks	0.3
New Laneway	12.9	Total	295.6
Certified Rehabilitation		65.6	
Rip/Seed		141.3	
Disturbed/Partially Rehabilitated		84.3	
Infrastructure		4.3	
TSF			
Stock Water Storages			

Table 7: Disturbance Categories Summary

Disturbance Categories	Area (ha)
Mining	32
Tails Ponds	19
Infrastructure - Others	8
Infrastructure rehab reqd	1
Roads/Tracks	0
Rehabilitated	174
Certified Rehabilitation	66
Certification Application	0
Total	302

Table 8: Disturbance Categories (%)

Disturbance Categories	%
Mining/TSF	17%
Rehabilitated (RM5)	58%
Certified Rehabilitation	22%
Other	3%

4.7. Mining operation

The operation is typical of sapphire machinery miners on the Gemfields. The topsoil, subsoil and overburden are removed by bulldozer and stored separately. The wash material is selectively mined by excavator, loaded into trucks, and taken to the plant area for processing.

The planned footprint of a domain will be mined in a form of terrace mining. Topsoil will be stripped and pushed out of the footprint of the pit and overburden piles into a discrete stockpile. Subsoil will be then stripped and pushed by dozer out of the footprint of the pit ensuring separation from the topsoil stockpiles. Overburden is pushed off a block approximately 50 by 50 m to expose the wash. Once wash is mined and carted to the Wash Plant, overburden from the next planned block will be pushed onto the mined area.

The post mining landform will be achieved over mined out blocks as the mining progresses through the planned disturbance. For mining pits, the rehabilitation milestones up to seeding (RM1 to RM4) may be achieved for initial blocks mined within months of mining commencement and before the final wash has been removed. The formation of the final landform may be delayed with the last blocks whilst sufficient oversize or tails from the Plant Area is returned to overcome any identified overburden deficit. The additional fill usually oversize is placed in the bottom of the pit. The void space in the oversize may be filled with wet tails. The last of the overburden is then reshaped to achieve the final landform.

Areas designated as future Plant Areas are identified prior to mining. With Plant Areas, the topsoil and subsoil is stripped and pushed or carted to the perimeter of the planned Plant footprint in the first instance to prevent re-handling. Placement of overburden is planned to create the landform required to set up a mining pit as a Plant Area. Plant

Areas require one or two ponds for recycled water used for processing and a larger dry tails pond. A built-up area next to the dry tails pond is required for the processing plant. Areas within the domain footprint not required for the plant will be treated as mining blocks with rehabilitation being achieved sequentially over the mining blocks.

4.8. Wash Plant

Wash Plants are constructed in exhausted mining pits and typically have the capacity for two years. A Plant Area comprises an elevated pad on which the physical plant is located to allow gravity to be used for tails disposal. Typically, 3 ponds are constructed using overburden and lined with clay to prevent the loss of process water. The larger pond adjacent to the physical Plant stores the dry tails with two smaller ponds to trap the wet tails and store return water. The Plant is located close to the areas mined.

The wash is hauled to a stockpile area and fed by a loader to a dry screening plant where up to 35% of the feed (oversize (plus 18 mm)) is rejected. This material is either returned to the mining pits by the trucks on their return journey or used for earthworks. The remaining 65% of sapphire bearing gravels is washed using a trommel and pulsator to a concentrate. No chemicals are used in the process. Manual and mechanical sorting of sapphires from the concentrate is undertaken at the Industrial area. The quantity of concentrate is less than 0.01% of the wash. The dry tails mainly sands and gravels settles out of the tails stream rapidly. Dry tails can be walked on immediately on settling out. Trafficability for all machinery occurs within days. The dry tails can be mined for removal once the beach is wide enough to form a bund. Wet tails are fine and retain water for some time.

The oversize material from the plant, overburden and dry tails is used capping of wet tails and backfilling exhausted mining pits to achieve the desired landform of +/- 2 m from the original surface.

The Plant operates until there is sufficient volume located in the bunds, dry tails and oversize to reshape the domain to achieve the final landform whilst capping the wet tails/return water pond.

4.9. Mining Sequence

As mining of these leases has occurred for 23 years and several operators are long term employees, there is considerable knowledge of the previous domains mined and location of the wash in the lease area. Exploration originally was conducted by exposing the wash with excavators and visually assessing or small-scale processing of the recovered wash. Fura Gems owns a Lodrill drill (see Figure 36) purchased from the USA to obtain better resource definition including depth and width of the sapphire bearing wash. This drill can recover a 900mm core sample. Wash is carted to the Industrial Area for washing in the mini plant. A potential mining area is grid sampled to determine the extent of gem bearing wash. Once a resource is mapped large enough to become a future plant area e.g., 7-8 ha, exploration is concentrated on nearby areas to minimise the haul length improving mining efficiency. Exploration aims to understand the full extent of gem bearing wash in the area as the mining operation aims to exhaust all reserves in the locality. Given the spasmodic nature of the wash location and the fact that not all wash contains sufficient gems to make mining economic, the mapping of gem bearing wash is not always successful.

The disturbance of certified rehabilitation has occurred as Fura Gems seeks to mine nearby areas to fully exhaust the resource in a specific area with a view of relinquishing MLs when the resource with the lease has been extracted. Fura Gems records any reduction in certified rehabilitation in the Annual Return and advises the Department by email annually of any changes.

4.10. Area available for Mining

Land available for mining is shown in Figure 37. The available land on the MLs is defined in the PRCP and is land that is not covered by Matters of State Environmental Significance dated 2022, patches of woody vegetation or tree lined drainage lines. This available land is the location of probable resources. All the available land not previously mined on Subera is considered to contain probable resources. **The total lease area within Subera is approximately 1,500 ha of which 1,268 ha is available for mining.**

The area mined to January 2025 is 286 ha. Estimated disturbance rate is approximately 22 ha/yr or 770 ha in next 30 years. Although gemstone size and quality vary across Subera, exploration drilling indicates that most areas contain mineable reserves, and consequently much of the available land is likely to be mined over the life of the project.

4.11. Proposed Duration of Operation

Great Northern Qld Pty Ltd was granted mining leases on Subera prior to 1999. The leases were purchased by Daryl Mosley in 2003 under the name of Great Northern Mining Pty Ltd. Fura purchased Great Northern Mining Pty Ltd in 2021.

Fura Gems or its predecessors have held leases on “Subera” for 23 years. There is evidence of mining in the area prior to the leases being granted in 1999.

Fossicking and small-scale mining has occurred in the region since 1891. Industrial scale mining in the region has occurred since the 1960s.

The company plans to mine until resources identified during the ongoing mining operations are exhausted. A time frame of 30 years is realistic. Individual leases will be relinquished as the resource is exhausted.

4.12. Rehabilitation Planning

Figure 33 shows the areas mined and rehabilitated up to 2025 by Fura Gems or in the case of legacy areas acquired with the purchase of the Company shows the domains rehabilitated. The timeframe for mining selected areas is from 2 months to 3 years.

Designated Plant Areas are in exhausted mining pits. These designated areas are reserved for approximately 2 years to ensure continuity of operations. Plants Areas typically operate for two years. **Plant areas take up to 5 years once available for rehabilitation to reach the ripped/seeded stage i.e. RM4.**

Future mining operations are planned to deplete economic gem reserves progressively from the southern to the northern areas. However, factors such as overburden ratios, market demand for gems, or the need to coordinate Fura Gems' resources with those of

the adjacent Nardoo site may influence the choice of mining locations. For operational efficiency, mining will continue in grouped clusters around the Plant Areas.

Regardless of where future extraction takes place, mining will remain confined to distinct domains, allowing ongoing rehabilitation to be incorporated into the mining process.

These domains have varied in size from 0.2 hectares to 20.2 hectares, averaging 5.8 hectares each.

The PRCP schedule programs mining to continue over the available area until 2061 with final lease relinquishment in 2062.

4.13. Closure Vision

On successful relinquishment of Fura Gem's MLs, the leases on the Scrub Lead will once again be available for fossickers. With the leases on "Subera", mining will cease with grazing the ongoing sole land use. As the rehabilitation plans to return the land to approximately the original landform +/- 2 m for the "Subera" leases, the topography will remain as it is today. The post mining landform is shown in Figure 38. The Common leases have been mined previously and are likely to be mined again by others after lease relinquishment. There is no planned change to the current landform.

5. Community Consultation

5.1. Consultation undertaken

Fura Gems has taken a two-pronged approach to community consultation about their leases. Community consultation and responding to the community is important for the two leases on the town common. Fura Gems is a temporary land user on "Subera" with two parties to deal with regarding rehabilitation and closure. These are the landholder and the Department. The landholder has set out his vision for rehabilitation and closure to Fura Gems. The responsibility to consult with the community lies with the landholder.

"Subera" Leases

The compensation agreements for leases on "Subera" are akin to the Conduct and Compensation Agreement required for coal and gas exploration. The agreement sets out the conduct i.e., the objective of returning the land after mining to grazing land to the satisfaction of the landholder and the compensation which is based on a rate for the total area disturbed per annum. As a temporary land user under a compensation agreement, Fura Gems has no rights to determine the land outcome on "Subera" land. The land outcome is at the direction of the landholder. Other stakeholders if dissatisfied with the mine's rehabilitation outcomes are obliged to consult the landholder.

A representative of the landholder lives on and manages the grazing operation on "Subera". This person is in regular contact as he conducts his daily routine on the property.

Communications between the Manager (Mine & Plant Operations) and the owners of "Subera" have been ongoing since the leases were originally granted to ensure that

both parties understand what is happening and what is planned with regarding to mining and rehabilitation. The objective is to ensure that both the mining and the grazing operations can operate together successfully with mining returning the disturbed areas to pasture as soon as practical. Communication includes face to face meetings, telephone calls, written correspondence, and face to face meetings. Communications are vital to ensure that there is a clear understanding of the mine plan, rehabilitation outcomes and property management. The ongoing agreement of the mining and rehabilitation of each domain will influence the miner's mining and rehabilitation program.

The PRCP reflects the agreements made between the property owner and mine management on all aspects including property infrastructure and rehabilitation outcomes since mining commenced. The initial agreement on mine outcomes was signed in 2002. The landholder has supported the certification of rehabilitation areas. Given this ongoing liaison, no specific consultation with the landholder was considered necessary in preparing this PRCP. A register of communications with the owners of "Subera" is listed in Table 15.

Community

The community of Rubyvale/Sapphire is Fura Gems's key community stakeholder regarding the Scrub lead leases on the town common. The Company was owned by Daryl Mosely from 2003 to 2021. Daryl was born on the Gemfields and remains connected to the local community. FURA has taken steps to maintain Fura Gems's long standing relationship with the community aiming to ensure that communication channels are open allowing the community to raise any issue either operational or rehabilitation with Fura Gems representatives. The Company Director who lives locally is responsible for community liaison.

Fura Gems has not been approached by other stakeholders regarding their operation or rehabilitation outcomes.

Common Leases

Community

FURA has taken steps to maintain Fura Gems's long standing relationship with the community aiming to ensure that communication channels are open allowing the community to raise any issue either operational or rehabilitation with Fura Gems representatives.

John Merritt, Bilyarra Consulting Pty Ltd meet with Mitch Brown, Rubyvale Gem Gallery in January 2022 to inspect the proposed Rubyvale Parkland Project proposed by the Rubyvale community. Mitch was asked for comment on the two mining leases held by Fura Gems on the Scrub Lead. Mitch stated that the mining leases on the Scrub lead decreased the area available for fossickers. Fossicking is a draw card for tourists and tourists are the life blood of the local community.

A register of community liaison conducted by FURA, owner of Fura Gems and Capricorn Sapphire Pty Ltd is listed in Table 16.

5.2. Consultation on future rehabilitation

“Subera” Leases

Ongoing communication with the owners of “Subera” (see Table 15) will be maintained, with the frequency determined by relevant issues such as renewal of compensation agreements, daily liaison, and matters relating to closure. Methods of communication will include in-person meetings, telephone conversations, written correspondence, and other appropriate channels. Effective communication is essential to ensure mutual understanding regarding the mine plan, rehabilitation objectives, and property management responsibilities. These aspects are closely interrelated and contribute significantly to achieving successful operations and closure from the Landholder’s perspective.

No consultation with local stakeholders is planned concerning future rehabilitation activities, as Fura Gems’ obligations in this regard are stipulated within the Conduct and Compensation Agreement with the current landholder. As “Subera” operates as a commercial grazing property, Fura Gems considers community consultation on rehabilitation outcomes to be the responsibility of the landholder. Such consultation could potentially impact the ongoing relationship between Fura Gems and the landholder.

Common Leases

Fura Gems will liaise (Table 17) with the Qld Sapphire Miners Association and local advocates e.g. Mitch Brown to discuss the community expectations for rehabilitation and lease relinquishment when the decision is made to make the two leases available for rehabilitation. Liaison will again be required when Fura Gems is preparing the documentation to demonstrate achievement of RM6. All recommendations from the community will be reviewed by management as the endorsement of the rehabilitation outcomes by the Rubyvale/Sapphire community is key to lease relinquishment. Lease relinquishment will require the approval of the Department of Resources.

6. Post-mining Land Use

State and Council Planning Regulations

The MLs lie in the Central Highlands Regional Council (CHRC) and the CQ

Region. The CHRC Planning Scheme 2016 states that Lot 9 PT203 is included in the Rural Zone – Gemfields Precent. An extract from the Planning Scheme for the property is listed in Figure 39. The property lies within the Nogoia River catchment and the GBR catchment.

There are no specific requirements listed in the Planning Scheme. CQ Regional Plan October 2013 prioritises Agricultural Areas within the region (see Figure 40). The mapped area does not cover “Sibera”. However, the PMLU of grazing for that area is consistent with the priority. There are no specific requirements listed in the Regional Plan.

The Scrub Lead leases are within the area covered by the Sapphire/Rubyvale

designated fossicking land. Relevant legislation is the Fossicking Act 1994 and Fossicking Regulation 2019.

Development Approval

There are no developmental approvals over land underlying the MLs.

Previous/Current Land Use

The mining leases are divided into two discrete groups being those leases lying within the boundary of the property “Subera” and the 2 common leases that lie within the “Scrub Lead Fossicker’s Land”. The PMLU for the leases on “Subera” is grazing and the 2 leases on the town common will continue to operate under the conditions stipulated for the Scrub Lead Fossicker’s Land i.e. land for fossicking (see Figure 41).

All leases are listed in Table 18. All leases except for ML 70285 and 70286 lie within the property “Subera” owned by a third party. Fura Gems has compensation agreements with the owners of “Subera” for the term of the mining leases. The financial terms of the compensation agreements are based on actual hectares available for mining. At lease relinquishment, the land will remain part of the property “Subera”. The land for the term of the mine lease of the lease area will continue to be an integral portion of the property. The miner is for the term of the tenure under the compensation agreement required to liaise with the landholder gaining his agreement on mining. On lease relinquishment, management decisions on the land will continue with the landholder.

Fura Gems holds written agreements with the landholder for the transfer of the Industrial Area, stock water storages, certain roads and tracks and any poly pipelines at lease relinquishment. **Any future stock water storages will be the subject of written agreements prior to inclusion in the rehabilitation process for a particular domain. All domains certified have received written sign off from the landholder as to being capable of sustaining grazing and are of a standard consistent with the surrounding grazing land.** Acceptance by the landholder supported by the certification by the Department of rehabilitated domains demonstrate the proposed land use is viable and consistent with how the land was used before mining. Importantly, grazing is a land use with an economic return. A vital pre- requisite to a sustainable post mining land use.

ML 70285 and 70286 are held within the Scrub Lead Fossicker’s Land on the town common. This land is covered under the Qld Fossicking Regulation 1994 which sets out the rights and obligations of fossickers. On lease relinquishment this land will be administered solely under this regulation. The land at lease relinquishment will be a viable entity within the Scrub Lead and “Fit for Purpose”. There is no infrastructure on the 2 common leases.

There is an ongoing economic benefit to the State from the Scrub Lead Fossicker’s Land. A vital pre-requisite to a sustainable post mining land use.

Community Consultation

Local stakeholders were not consulted over the nominated post mining land use as the post mining land use was pre-determined. Under the conduct and compensation agreement with “Subera” owners, the land is leased to Fura Gems for mining and will be returned to “Subera” landholders on rehabilitation to continue to be utilised as grazing land. The two leases on the town common are part of the Scrub Lead Fossicker’s land under the Qld Fossicking Regulation 1994.

PMLU Summary

The PMLU for all mining leases held by Fura Gems is consistent with how the land was used before to the leases being granted. “Subera” will a grazing property prior to, during and post relinquishment of Fura Gems’s mining leases. The 2 leases on the town common were part of the “Scrub Lead Fossicker’s Land” prior to the grant of the mining leases and will return to being available land on lease relinquishment. The land continues to be grazed by the animals running on the town common.

Stable Condition

Parcels of land rehabilitated to date have been assessed as certified rehabilitation. This has demonstrated that the rehabilitation is in a stable condition as the land has been proven to be safe i.e., minimal erosion gullies and no active or gaping subsidence, no demonstrated environmental harm to the rehabilitated land or water draining from these landscapes and can sustain the nominated PMLU. The commitment to return the disturbed land to within 2 metres of the pre-mining landform results and rehabilitate areas with the topsoil and subsoils of the area with pasture species dominated by the existing pasture species of the area results in no material change to the landscape. There is no material chance to the landscape’s erosional stability.

7. Non-Use Management Areas

No NUMAs are proposed.

8. Rehabilitation and Management

8.1. Hydrogeology

The major watercourses draining the project area are Policeman's and Retreat Creeks. Retreat Creek to the south of the project area is the only named Creek in the vicinity. As such, there are no flood plains on the lease area. The creeks are part of an easterly watershed system with their waters flowing into the Nogoa River approximately 15km northeast of Emerald. The creeks are ephemeral flowing following prolonged wet weather.

Both streams regularly flood out of the low flow channel. There are several low-lying drainage lines between Policeman's Creek and Retreat which pond water for a period following rain.

Drainage lines have been mined and will be mined in future. Domains mined include low lying areas:

- Nardoo South (certified rehabilitation)
- Pig Pit (rehabilitated)
- ML 7157 (certified rehabilitation)
- Eastern Creek (certified rehabilitation)
- South Pit East (rehabilitated)
- Creek View (rehabilitated)
- Lois Lane (certified rehabilitation)
- Old Laneway (certified rehabilitation)
- Part of New Laneway (rehabilitated)
- Lagoon (rehabilitated)
- BOT (rehabilitated)
- Heartbreak (rehabilitated)
- Banana (rehabilitated)
- Tryangle East (current Plant Area)
- Retreat (rehabilitated)
- PL2; and
- North Pit Areas 2 and 3 (rehabilitated).

The mined low-lying land will be returned to grazing along with the drained landscape where improved pasture will establish just as the pre-mine land use is grazing. The post mining vegetation being a mixture of improved pasture on drained area with native vegetation on the low-lying areas. The rehabilitation technique will be as stated in RM 1 to RM7. The ponding will kill pasture species except for Bambatsii with the native vegetation developing over time. Whilst this process of natural evolution will be slower than establishing a pasture of exotic species the grazing pressure is less. History shows that RM7 can be achieved in the nominated 10-year period due to favourable conditions i.e. a profile retaining moisture for a longer period with surrounding vegetation spreading seed onto the final landform.

The two records of the water level data for the production bore (89318) as being in the range of ~2–14 metres below ground level. The current maximum depth of economic mining is 12 metres. The maximum depth of future mining is expected to remain around

the current depth. Mining to date is not impacted by groundwater make. Mining has occurred from north to south and west to east on the Subera mining leases. Future mining will be interspersed within the current disturbance with no anticipated change in groundwater make in mining pits which will all be backfilled to ± 2 m of the original ground level. Worked water collected in the pits can be attributed to rainfall.

Fura Gems has one registered bore RN89318 and a Water Licence 403159 with an annual allocation of 150ML. Annual take for 2019/2020 and 2020/2021 has been 150ML. Water quality was tested in 2020. pH was 8.01 and Electrical Conductivity was 374 μ Semiens/cm.

The bore draws water from an aquifer approximately 35m below the surface. A bore pump is installed with a capacity of 40,000 litres per hour. The bore supplies water to the Plant Area and the main industrial area as required.

The bore's location is within the Highlands Groundwater Management Area as described in the Water Plan (Fitzroy Basin) 2011. At that location, taking of water for any purposes that are not exempt (e.g. stock and domestic) require an authorisation. The water plan has a moratorium on the taking of additional water.

Table 10 to Table 13 in Section 2.5 lists water quality results for the surface water, stock water storage, bore water and Plant Area across Subera. Observed water quality is consistently within cattle drinking water guidelines for all waters tested. These observations demonstrate that there has been in the past any changes to surface water or ground water quality from mining activity.

8.2. Flooding

The major watercourses draining the project area are Policeman's and Retreat Creeks. Retreat Creek to the south of the project area is the only named Creek in the vicinity. As such, there are no flood plains on the lease area. The creeks are part of an easterly watershed system with their waters flowing into the Nogoia River approximately 15km northeast of Emerald. The creeks are ephemeral flowing following prolonged wet weather. Both streams regularly flood out of the low flow channel. There are several drainage lines between Policeman's Creek and Retreat Creek which pond water for a period following rain. The flooding risk profile of the final landform will not change from the flooding or inundation risk of the pre-mining landform as the final landform is not changed from the pre-mine landform. Low-lying areas of the Subera MLs will suffer the same incidence of inundation, and Policeman's Creek will extend beyond the low flow channel just as it has done for centuries. Flow upstream and downstream will not be altered. Fura Gems did not conduct any flood modelling as the modelling will not change the risk profile or the consequences of flooding or inundation of any rehabilitated domains. The information that the modelling will provide is an estimate of the RL of flooding for various rainfall percentiles. A visual inspection of the vegetation on the leases will provide similar information as to the extents of past floods providing evidence as to the eventual pasture/vegetation expected on rehabilitated disturbed domains. The native vegetation returns to the low-lying areas quickly enough to deliver RM7 as committed in the schedule.

The company does not propose to leave a final void on Subera at closure. Overburden from the mining pits will be stockpiled in the final mining pits. This overburden, tails and

oversize from the Plant Area will allow the landform to be returned to the pre-mine landform +/- 2 m. The Scrub Lead Leases at the grant of the lease were not fully rehabilitated with ponded water in low lying areas (see Figure 34 and Figure 35). Mining is planned over a limited area of the two leases with the rehabilitation planned to maintain the existing landform. Ponded water in mining voids exist over the entire town common and are part of the “ambience” of the area.

8.3. Soil and Capping Assessment

8.3.1. Topsoil

Soils on the low-lying lands are grey-black alluvial cracking clay soils. Soils on the Quaternary uplands are texture contrast. Soils are moderately fertile with the clay soils suitable for growing of crops, provided sufficient water is available. The soils are up to one metre deep, but only the first 100mm contains humic material vital for rehabilitation. Topsoil i.e., the top 100 -200mm of the profile is stripped from each domain, stockpiled on the perimeter of the disturbed area and redistributed evenly across the disturbed area once the desired landform has been formed.

Topsoil stripped, stockpiled, and placed back on the reshaped landform has successfully rehabilitated areas on the Subera leases. Mining has taken place over the extent of the Subera leases to date with rehabilitation success. Past performance gives Fura Gems confidence that the stripped and stockpiled topsoil will be suitable for successful rehabilitation of domains for the life of mine. It is acknowledged that topsoil quality varies over Subera to some extent.

This variation can be observed visually. However, the topsoil on Subera supports pasture on all areas away from the drainage lines. The drainage lines support native grasses, sedges and Nardoo which is the vegetation aimed for in low-lying areas. The variation is reduced during the topsoil stripping with the mixing of all topsoil as it is pushed off the proposed mining area to be stockpiled and then pushed back into place in the rehabilitation. This variation in topsoil quality can be observed in cropping land and even irrigated cropping land when observing the “heat maps” of yield generated from the headers or the tagged cotton bales. With either cropping land or pasture, the soil profile produces the desired vegetation albeit with a natural variation.

The company commits to soil testing selected domains both rehabilitation and reference sites to understand the relationship between soil nutrients, soil structure and vegetation performance. Fura Gems will review the soils database annually. Any identified relationship between soil properties and inferior pasture performance will be identified and additional controls including fertilizers and ameliorants proposed.

The critical aspect regarding topsoil is the adherence to the topsoil management plan of stripping and stockpiling as identified in Section 9.

Previous mining on the Scrub Lead Fossicker’s Area disregarded topsoil management with many areas of the town common, including the two Fura Gems leases now devoid of topsoil. However, the overburden and wash do achieve a standard of rehabilitation accepted in this area.

8.3.2. Waste Characterisation (Hostile Spoil)

The geology and evolution of the Rubyvale-Sapphire-Anakie sapphire deposits demonstrate that the components of the wash and the overburden are inert and do not leach or breakdown to a potentially damaging material. All mining occurs in the weathered zone above the LOX line. All mining occurs above the groundwater table removing the risk of anaerobic conditions.

The Gemfields covers an area of almost 900 square kilometres. The area has been mined for 100 years with the Subera leases mined for at least 30 years. There are no reports of hostile spoil or seepage into surface water or groundwater across the area.

Water recirculated many times in the wash plant has an EC from 1,500 to 4,000 $\mu\text{S/cm}$ except for Nardoo and Maybe Something Plant area. This level of salinity is elevated over the groundwater reading of $\sim 380 \mu\text{S/cm}$ and stock water storages of $<600 \mu\text{S/cm}$ EC and meets stock water drinking guidelines. This level of conductivity demonstrates that the overburden and wash has been transported, leached and deposited in the region.

Fura Gems has 2 certified rehabilitated domain that contained a Plant Area i.e. Rejects Hill and Lois Lane with its associated TSFs. Rejects Hill/Main Dam Site is an elevated Plant Area. Figure 12 shows the area in plan view in 2001. Green Polygon is the now certified rehabilitation of Rejects Hill. Figure 13 shows the area looking north-east in 2017.



Figure 12: Rejects Hill 2001



Figure 13: Rejects Hill 2017

The above evidence demonstrates that the Fura Gems leases do not contain hostile spoil with ARD potential or saline seepage. There is no justification for any further overburden characterisation.

8.3.3. Capping Assessment

Capping is not used in the rehabilitation or proposed to be used as all strata mined can sustain vegetation when covered with topsoil.

8.4. Landform Design

Subera Leases

The final landform for all future mining on Subera will be within 2 m of the pre-mine topography except for any future stock water storages. The past mining technique with a fixed plant area beside the industrial area led to an accumulation of wash trucked in from satellite pits. The outcome is the elevated Main Dam Site and Rejects Hill. Reject Hill is a certified rehabilitation area. The Fura Gems certified rehabilitation provides further evidence of the safe and stable rehabilitated landform. Rejects Hill is now grazed with the fence excluding stock from the area being removed in 2021. Removal of the fence was a decision of the landholder.

Since the introduction of the mobile wash plant, the landform of rehabilitated domains has replicated the pre-mine landform. This outcome can be achieved by the mining method going forward. With no change to the pre-mine landform except for Main Dam Site/Reject's Hill, no further modelling or specific landform requirements are proposed. With no change to the landform proposed by mining, the safety and stability of the proposed landform at closure will not be altered from the pre-mine landform's safety and structural stability.

Common Leases

The two Scrub Lead leases as part of the Scrub Lead fossicking area will potentially be subjected to future mining once relinquished by Fura Gems. ML 70286 has an elevated area of overburden which is now covered by a local power line preventing any further reshaping of the area.

The planned final landform for the current leases will maintain the landform existing at lease grant.

8.5. Cover Design

As covered in Section 8.3.2 Waste Characterisation (Hostile Spoil), Fura Gems has not identified a risk of hostile spoil. No capping is proposed.

8.6. Water Management

No contaminants have been observed during the 27-year mine life that will limit the final land use under the rehabilitation methodology. This is supported by the evidence from the wider Gemfields where mining has been carried out for 100 years. Standing water in the drainage lines on Subera, the Fura Gems bore, dams, and stock water storages are sub 3,000 µSiemens/cm EC indicating low salinity levels (see Table 10 to Table 13).

Individual salts, potential contaminants, must be at lower levels than the overall EC levels.

The elevated TSF Reject's Hill has no toe seepage evident. The Main Dam site does seep on the southern edge of the landform. Seepage does not limit the growth of pasture on the slope or drain.

No voids will be left at closure. Current drainage lines will not be diverted by mined landforms at closure.

8.7. Revegetation

"Subera" is a grazing property with Fura Gems as a "lessee". The rehabilitation objective for the Subera leases as outlined in the Compensation Agreements is to return the land following mining and rehabilitation to the landholder so that he can continue to manage the property as a grazing property. **As a grazing property, the disturbed land will be returned to pasture (RA2).**

The two mining leases on the town common are part of the Fossickers Lead and will be return to this use on lease relinquishment (RA1).

All proposed mining areas on "Subera" are discussed with the landholder prior to disturbance. Agreement to mine will include an agreed outcome for each domain. **Typically, a domain will be returned to pasture (RA2).** Pasture is dominated by buffel and Indian bluegrass on elevated areas whilst the native sedges, grassed and Nardoo dominate the low-lying areas. If the disturbance includes tracks or fences, agreement will be reached on the temporary and final locations for these farm assets. The landholder and the miner may agree that a stock water storage will be included. If so, this stock water storage will be documented in a written agreement between the Landholder and the Miner and will be added to Table F2 in the Environmental Authority by agreement.

Common Leases rehabilitation aims to return the land to a similar condition to the current landform and vegetation.

There are no plant species of conservation significance relevant to the mine's approval to be included in the seed mix. No fauna habitat is targeted with the rehabilitation technique. The pasture desired by the "Subera" landholder is buffel grass. However, Indian bluegrass is becoming the dominant species in significant areas of "Subera" pasture. Pasture in low lying area will be native sedges, grasses and nardoo.

Rehabilitation milestones RM1 to RM7 will be met by pasture on "Subera" (RA2). Completion criteria for pasture cover are set from the levels in Stocktake. Analogue or reference sites may be used to justify pasture cover levels if these do not meet the described completion criteria or to demonstrate the higher levels of weed in the transect. In low lying areas, analogue sites may be used to compare rehabilitated sites with background ground cover. **A selected analogue site will be non-mined land adjacent to the targeted domain.**

Mining areas will be rehabilitated within 2 years of removing the last of the wash from the void. Plant Areas will be rehabilitated within 5 years of the cessation of processing at this pit.

Rehabilitated areas will be monitored and maintained on achieving RM4 with a target of 10

years to achieve the rehabilitation milestone of certified rehabilitation. 10 years is the minimum period from RM4 to RM7 to allow for the natural cycle of dry and wet periods.

Access tracks no longer required for mining that are not required for use by the landholder will be ripped and seeded. Topsoil is not stripped off any tracks. Tracks and roads to be transferred to the landholder (RA2) will achieve RM7. On achieving RM7, the industrial area on “Subera” will be transferred to the landholder on closure.

Rehabilitation Methodology

The planned footprint will be mined in a form of terrace mining. Topsoil will be stripped off planned mining areas and stockpiled outside the area set aside for mining blocks and the associated overburden. Overburden will be pushed off a block approximately 50 by 50 m to expose the wash. Once wash is mined and carted to the Wash Plant, overburden from the next planned block will be pushed onto the mined area. The post mining landform will be achieved over mined out blocks as the mining progresses through the planned disturbance. For mining pits, the rehabilitation milestones up to seeding (RM1 to RM4) may be achieved for initial blocks mined within months of mining commencement and before the final wash has been removed. The formation of the final landform may be delayed with the last blocks whilst sufficient oversize or tails from the Plant Area overcomes any identified overburden deficit. The additional fill is placed in the bottom of the pit prior to reshaping the last of the overburden.

The plant footprint may not require all the area of a mined pit. Areas not required will be treated as a mining pit and rehabilitated accordingly. This action could see areas of the disturbance treated as mining pits rehabilitated up to 7 years prior to the designation of the entire pit as reaching RM4.

The rehabilitation methodology described applies to mining pits. The methodology described has been applied to all domains presented in this report. A Plant Area includes tails and recycled water ponds described under PRCP guidelines as a TSF. Further details on operation and rehabilitation of Plant Areas are described in Section 8.8.

Area that are disturbed for mining only will be available once all planned wash is mined and carted to the Plant Area and any overburden deficit rectified with tails or oversize from the Plant Area. The schedule allows 2 years for rehabilitation up to RM4 to occur. Plant Areas may be an entire domain or part of a domain. Plant Areas will be available once the physical Plant has been removed from the site. The schedule allows 5 years to reach RM4 for a Plant Area.

RM1 through to RM4 will be performed sequentially in the nominated 2-year period. Seeding i.e., RM4 will occur at any time of the year once RM3 has been achieved. Seeding will not be performed at a set time of the year. Milestones 1 to 4 will be achieved for portions of a domain reach the designated criteria. RM 5 and 6 will be assessed for the entire domain.

Rehabilitation 1 – Site decommissioning

All infrastructure, equipment, and services decommissioned and removed unless agreed

to be retained by the landholder. All rubbish and waste removed.

Rehabilitation Milestone 2 – Landform Development and Reshaping

The final landform for all domains will confirm with the pre-mine contours. This is critical with disturbances in low lying areas where the final landform must approximate the pre-mining contours to allow the local drainage networks to function. Mining and Plant Area pits will be returned to a landform less than 15% slopes with all other domain types returned to less than 5% slopes. The desired landform is obtained through the placement of overburden and oversize or tails from the Plant Area as required.

If the domain is to include a stock water storage area, overburden may have to be removed to achieve the desired void. These storages are lined with clay material from the upper horizons of the overburden and drainage lines into the void lined with oversize from the Plant Area to minimise erosion.

Rehabilitation Milestone 3 – Surface Preparation

Subsoil then topsoil reserved for each individual domain is pushed by dozer over the final landform creating uniform layers equating to the quantity of subsoil and topsoil stripped from that domain. No ameliorants have been used or are proposed to be used in the rehabilitation process.

The topsoil is smoothed. As the topsoil is a black-brown clay, the spread topsoil is often lumps which make it difficult to spread evenly over the landform. Fura Gems uses a heavy inverted track from a dozer pulled by a chain linked to the dozer ripper to drag over the area to break up and evenly distribute the topsoil prior to ripping and seeding.

The area is ripped with a grader or dozer. Usually, Fura Gems rips with the rear tynes of a grader.

Rehabilitation Milestone 4 – Area seeded with desired seed mix

A drum seeder towed behind the grader spreads the pasture seed on top of the ripped ground. The weight of the seed and subsequent rainfall sows the seed into the ground permitting germination.

The seed mix may change from time to time based on availability of cultivars and feedback from the landholder. Current seed mix is 35% buffel grass, 35% rhodes and 30% bambatsi panic planted at 10kg/ha. The seed mix is purchased from an Emerald business that supplies pasture seed to the grazing industry. The cultivars of buffel and rhodes included will depend on availability at time of purchase. Biloela or Gayandah are the preferred buffel cultivars. A diploid and a tetraploid rhodes grass cultivar is preferred in equal portions.

Indian bluegrass (*Bothriochloa pertusa*) is endemic to the region. Areas of pasture on “Subera” are dominated by Indian bluegrass. At no time has the landholder indicated that they wanted these areas to be returned to native species.

Rehabilitated domains on “Subera” have achieved the status of certified rehabilitation without the use of ameliorants and no ameliorants are proposed to be used in future site

preparation for rehabilitation.

Rehabilitation Milestone 6 – Achievement of PMLU for RA1 Scrub Lead fossicking area

- Total ground cover and visible erosion is similar to analogue transects. Analogue transects will be located on ML70285, ML70286, or adjacent land on Scrub lead;
- Slope gradient is <15% for spoil dumps, tailings ponds, dams, roads and tracks;
- Slope gradient is <5% for excavations/voids, topsoil dumps and infrastructure areas;
- All domains certified as safe and stable by a SQEP; and
- Feedback from community consultation documented. All reasonable requests made by the community during community consultation have been completed.

Rehabilitation Milestone 7 – Achievement of PMLU for RA2 - Subera

Vegetation achieves the following criteria when measured by a SQEP using the FutureBeef Stocktake land condition monitoring procedure: ≥50% of quadrats have vegetation cover >30%

Total weed cover satisfies one of the following:

- <5% total cover, or;
- less than weed cover on adjacent pasture land

Weeds are plants that are listed as 'restricted' matter under the Biosecurity Act 2014

Slope gradient is <15% for spoil dumps, tailings ponds, dams, roads and tracks
Slope gradient is <5% for excavations/voids, topsoil dumps and infrastructure areas

The landholder has provided written agreement to take ownership of any infrastructure to be retained as part of the post-mining land use (buildings, laydown areas, roads, access tracks, and water storages)

Road to the industrial area and cattle yards to be retained meets the following:

- is ≤6 m wide
- had a formed crown with table drains each side
- may be gravelled
- drainage lines may be built up with gravel using poly pipe as

culverts Access tracks to be retained meet the following:

- are ≤2 m wide
- disturbance limited to 2 wheel tracks are not gravelled
- do not have culverts
- do not have visible signs of erosion

Stock water storages to be retained meet the following:

- retain water

- ii. water EC <6000 µS/cm
- iii. have stable water entry points
- iv. are safe for stock to enter when water levels are greater than 30% of total storage capacity.

All domains certified as safe, stable, and fit for purpose by a SQEP

Rehabilitation Milestones submitted in the schedule are listed in Table 14. The nominated rehabilitation milestones are based on the rehabilitation stages used by Fura Gems since owning the leases. The key milestones are RM4 (ripped/seeded) and RM6/7 when the domain is capable of certification. At RM4, 97% of the total cost of rehabilitation has been sunk. Costs remaining to reach RM6/7 are the cost of maintenance and monitoring.

8.8. Plant Area (TSF) Characterisation

8.8.1. Plant Area Description

Area that will serve as future Plant Areas are identified prior to mining. With Plant Areas, the topsoil is stripped and pushed or carted to the perimeter of the planned Plant footprint in the first instance to prevent re-handling. Placement of overburden is planned to create the landform required to set up a mining pit as a Plant Area once all wash is removed for processing. Plant Areas require one pond for recycled water used for processing, one pond for wet tails and a larger dry tails pond. A built-up area next to the dry tails pond is required for the processing plant (see Figure 14). Overburden is stockpiled on the pond perimeters. This overburden combined with oversize and dry tails is used to obtain the final landform and to cap the wet tails. Plant Areas typically have the capacity for two years of tails.

Areas within the domain footprint not required for the plant will be treated as mining blocks with rehabilitation being achieved sequentially over the mining blocks.

The wash is hauled to a stockpile area and fed by a loader to a dry screening plant where up to 35% of the feed (oversize @ plus 18mm) is rejected being conveyed onto a truck (see Figure 15). This material is either returned to the mining pits by the trucks on their return journey or used for earthworks. The remaining 65% of sapphire bearing gravels is washed using a trommel and pulsator to a concentrate. No chemicals are used in the process. The waste stream flows by gravity onto the dry tails beach. The pipe is continuously moved to manage the beach and wet tails/return water flow. Dense rocks from the trommel and pulsator are collected in the base of the Plant. This material containing the sapphires is removed daily and further separated in the Industrial Area. Dense rocks are less than 0.01% of the wash tonnage with the sapphires are a similar percentage of the dense rocks.

Given the slight expansion of the overburden and wash on mining, there is sufficient material to backfill all voids to ground level.



Figure 14: Wash Plant



Figure 15: Oversize from Screen conveyed into Truck

Dry Tails

Dry tails deposit on an elevated beach with water and wet tails flowing off. The dry tails are sands and gravels and are trafficable immediately (see Figure 16). As the dry tails beach expands, the bund and the dry tails (Figure 17) can be removed maintaining a bund of dry tails to contain the return water and wet tails.

Particle Size distribution is shown in Figure 19 with the full test report for Atterberg Limits displayed in Figure 42. Soil particle density is 2.66 t/m^3 (Figure 44). The size distribution and density analysis support the field experience of immediate trafficability of dry tails.

Dry tails are alkaline and low salinity consistent with surface water quality (see Table 9).



Figure 16: Dry tails beach



Figure 17: Dry Tails Vertical Face

Table 9: Analytical Properties

Sample date:	15/08/2022	Dry Tails	Wet Tails
pH 1:5 (Soils)			
pH Value	pH Unit	9.9	9.5
Electrical Conductivity (saturated paste)			
Electrical Conductivity	µS/cm	209	2,680
Moisture Content (Dried @ 105-110°C)			
Moisture Content	%	7.2	72.0

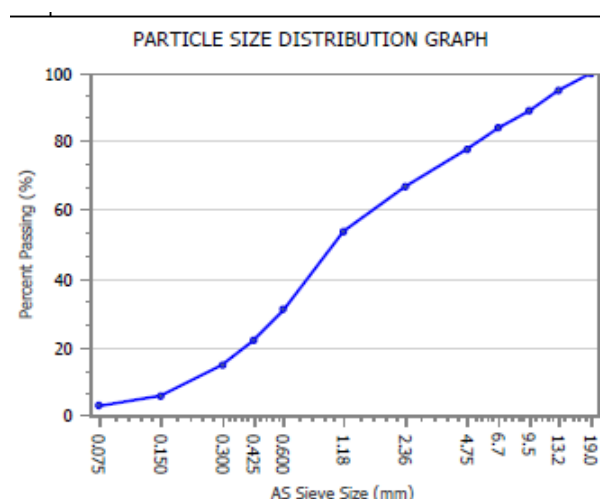


Figure 18: Particle Size Distribution

Wet Tails

The wet tails are deposited in the standing water. As the dry tails beach expands, the beach forces the wet tails into the first of the ponds. The objective is to fill the first of the ponds with wet tails not the second.

A full test report for Atterberg Limits displayed in Figure 43 with particles less than 0.075mm. Soil particle density could not be measured (see Figure 45). The size distribution and density support site knowledge and the accepted timeframe of a maximum of 5 years to achieve RM2.

The wet tail's pH and salinity equate to TSF water quality (see Table 9). Water content of wet tails is high. Moisture content for Promised Land 2 wet tails which has been available for rehabilitation for 2 years is 70%. The wet tails surface rapidly crusts on drying (see Figure 19). Vegetation has established and grown on this pond (see Figure 20). Recent crowding of the wet tails has drowned the vegetation. Crowding and drying out of the wet tails take time and is the reason for the maximum of 5 years scheduled from a Plant Area being available to achieving RM2 i.e., final landform achieved. Fura Gems crews understand the nature of the wet tails and have successfully rehabilitated all wet tails to date with two Plant Areas achieving certified rehabilitation status in addition to two areas achieving RM4.



Figure 19: PL2 Wet Tails showing crusting



Figure 20: PL2 Wet Tails - Vegetation Growth

The mined wash nor the overburden is hostile as all material is above the “Line of Oxidation”. Wash is sand, gravels and gemstones eroded from the line of volcanoes west of the leases and deposited in the region by the great rivers flowing at that era. TSF have been successfully rehabilitated with Rejects Hill, a TSF/oversize dump being successfully certified. All new Plant Areas including TSFs will be within metres of the pre-mine landform and less than 15% is slope.

8.8.2. Tailings Characterisation

The geology and evolution of the Rubynvale-Sapphire-Anakie sapphire deposits demonstrate that the components of the wash and the overburden are weathered and inert and do not leach or breakdown to a potential contaminant. All mining occurs above the LOX line in weathered material. All mining occurs above the groundwater table removing the risk of anaerobic conditions.

The Gemfields have been mined for 100 years with the Subera leases mined for at least 30 years with no evidence of low pH (<5) soils or surface waters. Any pyritic material exposed to water and oxygen will oxidise within 6 months lowering the pH of the material and any resultant run-off.

Recycled water (Table 13) recirculated in the wash plant had an Electrical Conductivity from 1,500 to 4,000 μ Semens/cm except for Maybe Something and Nardoo Plant Areas on the northern boundary (See Section 2.7). This level of salinity is only slightly elevated over the groundwater reading of $\sim$ 400 μ Semens/cm. This level of conductivity again demonstrates that the overburden and wash has been transported and deposited in the region.

Fura Gems has 2 certified rehabilitated domains that contained a Plant Area i.e. Rejects

Hill and Lois Lane with its associated dry and wet tails. Rejects Hill/Main Dam Site is an elevated Plant Area.

The Guideline “Progressive Rehabilitation and Closure Plans” states that “Tailings storage facilities (TSF) commonly contain some of the most hazardous materials on a mine site and may represent a significant long-term risk to environmental values”. The site geology, ground water and successful certification of the rehabilitation of two Plant Areas with associated TSFs demonstrate that Fura Gems TSFs whilst challenging to rehabilitate the wet tails do not represent a significant long-term risk to environmental values.

Plant Area Rehabilitation Methodology

The rehabilitation methodology for Plant Areas closely resembles that used for mining pits, with the primary distinction being the timeframe required to achieve RM 2—specifically, ensuring wet tailings are securely covered with an adequate layer of dry tailings or overburden to permit progression through stages RM2 to RM4. Additionally, a section of the Plant Area functions as a Tailings Storage Facility (TSF) in accordance with PRCP guidelines.

Oversize, overburden and dry tails are used to cap the wet tails to achieve RM2. The dry tails are shaped to create the desired landform with excess used to crowd and cap the wet tails. Areas achieving the final landform within the domain will progress through the Rehabilitation Milestones.

The Plant will continue to operate until the wet tails and dry tails ponds are filled. On removal of the Plant to a new domain, the plant area will be available for rehabilitation. The first step will be to remove any available water by pumping the water to the new Plant Area. Bunds and drains will be installed to create a free draining landform for the duration of the rehabilitation process. The dry tails pond is trafficable for dozers immediately. Dry tails may have already been utilised for back filling of mining voids to achieve the final landform. Initial dozer push is to push excess overburden and dry tails towards the wet tails and return water ponds. Overburden from the surrounds of the wet tails and return water ponds is used to slowly cap the wetter areas. The pushing of the fill from all sides of the wetter areas by a D7 size dozer crowds the wet tails. Time is required to cover the wet tails with overburden keeping it within the footprint of the ponds. The wet tails will gradually settle with time. This is accommodated by overfilling the area. Wet tails will settle sufficiently prior to milestone RM7. This slow process takes the total time to achieve RM4 for a plant area to 5 years.

Fura Gems is trialing a process of mixing oversize and wet tails in mining pits once the wash has been removed prior to pushing the remaining overburden in place and topsoiling. There is always a deficit of overburden in mining pits with the removal of wash with this deficit is typically made up with dry tails and oversize. The volume of wet tails is limited to what the voids in the oversize can accommodate. The mix supports heavy machinery allowing RM2 to be achieved immediately. This trial if proved successful will reduce the volume of wet tails in the Plant Area with the potential to reduce the time taken to achieve RM2 over the wet tails.

8.9. Voids

Fura Gems does not plan to leave any voids in the landform at the completion of mining and presentation of the closure vision. This will be achieved by stockpiling an overburden, tails and oversize inventory during the last years of mining to backfill the last mining voids and rehabilitate the Plant Area. The critical aspect of leaving no voids will be the timing of the filling of the Plant Area. The rehabilitated landform incorporates stock water storages.

There may be future stock water storages constructed with Fura Gems following due process.

8.10. Underground mining

Fura Gems has not conducted underground mining on the Subera or town common leases. No future underground mining is planned.

8.11. Built Infrastructure at Closure

Fura Gems holds written agreements with the “Subera” landholder for the transfer of the Industrial Area, stock water storages, certain roads and tracks and any poly pipelines at lease relinquishment. Any future stock water storages will be the subject of written agreements prior to inclusion in the rehabilitation process for a particular domain.

The two leases on the town common do not have any built infrastructure owned by Fura Gems.

9. Risk Assessment

The Manager (Mine & Plant Operations) is the responsible person for all operations on site including rehabilitation. Rehabilitation is integrated into the mining process. The mining pits are rehabilitated as mining progresses with the last area of disturbance rehabilitated once sufficient fill is placed in the last void to overcome any overburden deficit.

Risk Management demands a risk rating for identified aspects/hazards with existing controls in place. Fura Gems has achieved certified rehabilitation in 25 domains covering 66 ha and rehabilitation in 26 domains covering 141 ha. Rehabilitation has been an integral part of the mining operations since 2003. Whilst there are several factors that may cause delay in achieving RM4 that can be successfully managed to meet the commitment of 24 months between a domain being available for rehabilitation and meeting RM2, the risk assessment is focused on identified risks in achieving RM6 for RA1 or RM7 for RA2 with existing controls.

The annual rehabilitation monitoring and inspections for the Annual Return aims to check the disturbance and the status of all rehabilitated areas and report back to the Manager (Mine & Operations). While monitoring is not a risk management control, monitoring is included in the risk register.

The risk matrix for the assessment is shown in Table 20. The risk register is shown in Table 21.

10. Monitoring and Maintenance

Maintenance

Maintenance of areas that have achieved RM4 is an ongoing process with issues identified by the mining crew treated immediately. In addition, a consultant conducts an inspection prior to the preparation of the annual return in March and annual rehabilitation monitoring mid-year. Maintenance issues observed are discussed with the Manager (Mine & Plant Operations) at the close out meeting and any maintenance documented in the report to management.

Examples of issues and the maintenance program for rehabilitated areas are:

- Subsidence caused by rainfall wetting the backfill and compacting the profile. Maintenance is to backfill the area if the subsidence renders the landform unsafe or impacts on drainage lines.
- Poor establishment of pasture. Maintenance is to re-rip and seed again.
- Settlement of tails ponds. The initial landform of these known areas of risk is 2 to 4 metres higher than the proposed long-term profile to allow for settlement. There is usually sufficient fill in the area to allow the filling of the subsidence if subsidence is more than anticipated. Alternatively dry tails from the current Plant Area is carted to the area and pushed into place with a dozer.

Monitoring Routine

Rehabilitation areas are inspected twice per year by an environmental consultant engaged by Fura Gems. Observations by this suitably qualified and experienced professional, mine management and the landholder or his representative are the key to on-going successful rehabilitation through timely maintenance.

The January/February inspection aims to verify the disturbance statistics for the Annual Return. A report is provided to management detailing the verified disturbance categories as at 31 December the previous year. This report includes a summary of the previous year's rehabilitation maintenance and recommendations for maintenance for the coming year.

The April-June visit inspects selected rehabilitated domains with issues of maintenance raised with management. A yearly monitoring report is produced.

The following aspects are monitored during the April-June inspection:

- Topsoil stockpiles – physical inspection of quality and location in relation to pit;
- Subsidence;
- Selected domains will be cored to 1 m where practical for soil testing;
- Routine cover and species transect monitoring; and
- Collected satellite imagery to determine over health of paddocks disturbed.

Domains will be monitored for cover and species dominance using the Stocktake methodology on one to three transects to collect a sufficient dataset to demonstrate the achievement of the cover and weed criteria for RM7. If pasture cover is below the set criteria in the PRCP schedule or weed levels are higher than the set criteria then base

line monitoring will occur for benchmarking of nearby pasture.

The Stocktake website is <https://stocktakeglm.com.au/about.html>. Key to this process is the monitoring of total cover levels of pasture, weed and species present in a 50cm by 50cm quadrat 34 times over a 100m transect. Transects are randomly selected with GPS co-ordinates recorded for the start and end of the quadrat. Monitoring results to date are listed in Appendix B. Pasture yield is estimated using Brigalow Belt Pasture Photo Standards for Buffel Grass <https://futurebeef.com.au/resources/brigalow-belt-pasture-photo-standards/>.

Pasture yield and cover for transects are compared with output from <https://www.longpaddock.qld.gov.au/aussiegrass/products-information/rainfall-and-pasture-growth-maps/>. To date, the output from the long paddock website is too coarse to compare against the actual transect but it does allow comparison at the property scale.

If analogue sites are required for comparison, transects will be selected from the area adjacent to the domain that are consistent with the desired outcomes for the domain.

Annual monitoring of rehabilitation has occurred since 2012 with a successful application for certification occurring in 2014 and 2020. Completion criteria are listed in the EA issued in 2006 with completion criteria for roads/tracks to remain as landholder access and stock water storages added in 2020. These completion criteria have been transferred to this document.

Rehabilitation Milestone Monitoring

Rehabilitation Milestones submitted in the schedule are listed in Table 14. The nominated rehabilitation milestones are based on the rehabilitation stages used by Fura Gems since owning the leases.

Records of milestone (see Table 21) will be kept by the Manager (Mine and Plant Operation). Each disturbance polygons will be inspected at the twice a year monitoring for completion of each rehabilitation milestone with the exception of RM7, cross checked with a discussion with the Manager (Mine & Plant Operations) and recorded in the yearly monitoring report.

The consultant will be responsible for the preparation of a report demonstrating the RM6 or RM7 has been achieved by a particular domain.

Discrete portions of a disturbance polygon may be progressed through RM1 to RM4 at the discretion of the Manager (Mine & Plant Operations). The entire polygon will be assessed for RM5, 6 and 7.

Post Closure Monitoring

No post closure monitoring is proposed as the PRCP schedules forecast mine closure in 2062. The first domains were declared certified rehabilitation in 2012. At closure, the initial domains certified will be 50 years older and managed by the landholder. With management of the rehabilitated areas handed over to the landholder on achieving RM7,

after 50 years the proportioned responsibility of the miner for the ongoing success of the pasture is limited.

Tables

Table 10: Surface Water quality

Site	Date	pH	Electrical Conductivity µSiemens/cm
Creek Nardoo	7/06/2023	7.73	280
Dam (near Eastern Ck)	15/07/2009	8.98	385
Dam (near Eastern Ck)	29/04/2020	7.99	213
Drainage line Nardoo	15/08/2022	7.40	214
Drainage line to NF2	15/08/2022	8.43	237
ML 70286 pond	8/06/2023	7.97	210
North Pit Area 2 drainage line	15/08/2022	8.89	312
Dam (near Tryangle West)	29/04/2020	8.33	602

Table 11: Stock Water Storage water quality

Site	Date	pH	Electrical Conductivity microSiemens/cm or µSiemens/cm
Laneway West Stock Water Storage	25/07/2024	8.84	230
Laneway West Stock Water Storage	15/08/2022	9.33	210
Laneway West Stock Water Storage	7/06/2023	9.06	211
Nardoo Stock Water Storage	28/04/2020	8.06	204
Nardoo Stock Water Storage	15/08/2022	8.75	220
Nardoo Stock Water Storage	25/07/2024	8.62	362
NF2 Nardoo North	15/08/2022	8.83	262
Northern Flats 4 Stock Water Storage	25/07/2024	8.05	422
Old Laneway 1 Stockwater Storage	15/04/2009	9.14	484
Old Laneway 1 Stockwater Storage	29/04/2020	8.00	190
Old Laneway 2 Stock Water Storage	29/04/2020	7.90	160
Old Laneway 2 Stock Water Storage	15/08/2022	8.57	175
Pig Pit Stock Water Storage	7/06/2023	8.49	196
Pig Pit Stock Water Storage	25/07/2024	8.49	227
Pig Stock Water Storage	6/11/2025	8.71	440
Pig Stock Water Storage	28/04/2020	8.02	210
Pig Stock Water Storage	15/08/2022	9.07	2,850
Pit 21 Stock Water Storage	15/08/2022	9.43	597
Pointsetta Stock Water Storage	28/04/2020	8.08	313
Pointsetta Stock Water Storage	15/08/2022	9.60	314
Pointsetta Stock Water Storage	7/06/2023	7.08	304
Pointsetta Stock Water Storage	6/11/2025	8.69	328
Retreat Stock Water Storage	28/04/2020	8.10	430
Retreat Stock Water Storage	7/06/2023	7.89	188
Retreat Stock Water Storage	6/11/2025	8.73	265

Table 12: Bore water quality

Site	Date	pH	Electrical Conductivity microSiemens/cm or µSiemens/cm
Subera Bore	29/04/2020	8.01	374
Subera Bore	15/08/2022	6.79	375
Subera Bore	6/11/2025	6.66	393

Table 13: Plant Area water quality

Site	Date	pH	Electrical Conductivity microSiemens/cm or µSiemens/cm
Main Dam Site seepage	7/06/2023	8.30	3,565
Main Dam Site seepage 1	25/07/2024	8.71	2,725
Main Dam Site seepage 2	25/07/2024	8.67	4,700
Maybe Something Plant	6/11/2025	8.67	7,427
New Laneway Return Water Pond	15/07/2009	8.69	2,180
New Laneway Return Water Pond	15/07/2009	9.27	2,550
Promised Land 2 Tails Pond Dry Tails	29/04/2020	8.01	2,670
Promised Land 2 Tails Return Water	29/04/2020	8.02	2,100
Tryangle East Plant	25/07/2024	8.44	453
Tryangle East Plant	6/11/2025	8.84	3,985
West Lagoon Dry Tails Pond	15/08/2022	8.45	2,647
West Lagoon Return Water Pond	15/08/2022	7.66	1,821
West Lagoon Return Water Pond	15/08/2022	8.87	1,537

Table 14: Rehabilitation Milestones

Milestone reference	Rehabilitation milestone	Milestone criteria
RM1	Site decommissioning	1. a) All infrastructure, equipment, and services decommissioned and removed unless agreed to be retained by the landholder 1. b) All rubbish and waste removed
RM2	Landform Development and Reshaping	2. a) Reshaping to final landform complete 2. b) Slope gradient is <15% for spoil dumps, tailings ponds, dams, roads and tracks 2. c) Slope gradient is <5% for excavations/voids, topsoil dumps and infrastructure areas 2. d) Waste rock and dry tails from Plant Area used to supplement landform development where insufficient material is available locally. 2. e) Wet tails ponds filled and capped 2. f) Drainage lines are established and conform to the contours of the final landform 2. g) All voids backfilled to ground level
RM3	Surface Preparation	3. a) Stockpiled topsoil spread uniformly over the disturbed area 3. b) Surface ripped
RM4	Revegetation	4. a) Pasture grass species seed applied at a rate of 10kg/ha.
RM5	Achievement of surface conditions	5. a) An assessment of soil and revegetation performance at each domain is prepared by an SQEP ¹ that states: i. if maintenance is required, and; ii. if maintenance is required under 5(a)(i), recommended actions to facilitate achievement of the following milestone 5. b) The recommended actions under 5(a)(ii) are completed ¹ SQEP – Suitably Qualified and Experienced Person
RM6	Achievement of post mining land use to a stable condition (RA1 – Scrub Lead fossicking)	6. a) Total ground cover and visible erosion is similar to analogue transects. Analogue transects will be located on ML70285, ML70286, or adjacent land on Scrub lead 6. b) Slope gradient is <15% for spoil dumps, tailings ponds, dams, roads and tracks

	area)	6. c) Slope gradient is <5% for excavations/voids, topsoil dumps and infrastructure areas 6. d) All domains certified as safe and stable by a SQEP¹ 6. e) Feedback from community consultation documented 6. f) All reasonable requests made by the community during community consultation have been completed ¹SQEP – Suitably Qualified and Experienced Person
RM7	Achievement of post mining land use to a stable condition (RA2 – Subera)	7. a) Vegetation achieves the following criteria when measured by a SQEP* using the FutureBeef Stocktake land condition monitoring procedure: i. ≥50% of quadrats have vegetation cover >30% ii. total weed² cover satisfies one of the following: a) <5% total cover, or; b) less than weed cover on adjacent pasture land 7. b) Slope gradient is <15% for spoil dumps, tailings ponds, dams, roads and tracks 7. c) Slope gradient is <5% for excavations/voids, topsoil dumps and infrastructure areas 7. d) The landholder has provided written agreement to take ownership of any infrastructure to be retained as part of the post-mining land use (buildings, laydown areas, roads, access tracks, and water storages) 7. e) Road to the industrial area and cattle yards to be retained meets the following: i. is ≤6 metres wide ii. had a formed crown with table drains each side iii. may be gravelled iv. drainage lines may be built up with gravel using poly pipe as culverts 7. f) Access tracks to be retained meet the following: i. are ≤2 metres wide ii. disturbance limited to 2 wheel tracks are not gravelled iii. do not have culverts iv. do not have visible signs of erosion 7. g) Stock water storages to be retained meet the following: i. retain water ii. water EC <6000 µS/cm iii. have stable water entry points

		iv. are safe for stock to enter when water levels are greater than 30% of total storage capacity³. 7. h) All domains certified as safe, stable, and fit for purpose by a SQEP¹ ²Weeds are plants that are listed as 'restricted' matter under the <i>Biosecurity Act 2014</i>
--	--	---

Table 15: Communications with Owners of "Subera"

Date	Details of communication	Decision/Outcome
Dec-20	Seasons Greetings send to the Land owner by Text.	message
Jan-21	Message sent to confirm e-mail address	responded
Feb-21	Requested to confirm documentation was received	confirmed
Mar-21	Send a message to request a call date	responded
Mar-21	Send a message to give land owner new e-mail address for receiving e-mails	responded
Apr-21	requested mail to be sent for annual compensation.	mail received
Apr-21	Land Owner asked to borrow a machine to clean some tracks on farm.	Dozer 7 borrowed
Aug-21	Land owner requested assistance to clear roads for private use on farm	grader borrowed
Oct-21	Land owner advised that there was a broken water pipe	repaired that day
Nov-21	Ask about Rain recorder	24mm on 7 Nov 2021
Nov-21	Ask about Rain recorder	31mm on 10 Nov 2021
Feb-22	missed call from land owner	met up face to face and had general chat.
Mar-22	message to ask if Land owner received agreements	followed with a phone call.
Mar-22	missed call from land owner	Miner called back to discuss details of compensation
Apr-22	message from land owner to borrow a machine	followed with a phone call to understand nature of job.
Apr-22	e-mail communication of compensation agreements for review	Agreed on site visit
Apr-22	message sent to request meeting on site for lease renewal	met up on 11th April with Landowner to site visit to inspect leases up for renewal and also discuss the new access road for adjoining MLA
May-22	Phoned land owner to confirm agreement signed	confirmed and will mail signed copy.

Table 16: Community Liaison

Date	Community / Authority	Actions requested/ required and discussed	Date Implemented
Apr-21	Gemfest	Sponsorship for the upcoming Gemfest (Community Event) in August	Aug-21
May-21	Gemfields Community Support Assoc	Requested to assist in Monthly Publication - Half yearly supply	Jun-21
May-21	Gemfields Community Support Assoc	Requested to assist in meal preparation for Meals on Wheels - Monthly assistance for one year	Jun-21
May-21	Queensland Sapphire Miners Association	Provide two Laptops for the Miners to access Mymines online and other Mines Department site	Jul-21
Aug-21	Gemfields Lapidary Club	Club requested assistance in supply of 10 units for skin polishing as the current units are broken	Sep-21
Aug-21	Gemfields Lapidary Club	Supply of Lower grade material to generate funds in Club Auction / 20 pcs provided	Sep-21
Sep-21	Queensland Sapphire Miners Association	Association requested help in supplying lower grade material as there is a short supply for the wash bags which they sell during tourism season / agree to provide 25KG's every Q @ subsidised rate of 250\$ a KG	Sep-21
Sep-21	Gemfields Lapidary Club	Supply of Lower grade material for Skin Polishing / Agree to provide 10 pcs a month from Jan22	Jan-21
Jan-22	Gemfields Community Support Assoc	Requested to help in providing COVID prevention kits to the community	Jan-21

Table 17: Future Community Consultation

Objective	Engagement	Frequency	Released Information	Feedback consideration
Successful closure of "Subera" leases achieving the PMLU of grazing with associated infrastructure returning the land to the background landowner for grazing	Face to face meetings Telephone calls Field Inspections Written Agreements with Landholder	Ongoing at least 10 times per year until 2062 (see Table 14 to understand past frequency of meetings)	Future mining locations for discussion and agreement with landholder prior to disturbance. Visual inspections with Landholder	Liaison to agree on outcomes for each planned disturbance and subsequently to ensure agreed outcomes for each disturbance polygon have been achieved
Successful closure of Scrub Lead leases with land returned to its background land use of Fossicking Area	Face to face meetings with locals and local community groups	1. When leases are available for rehabilitation 2. Prior to and during preparation of RM6 report	Visual inspection of the leases at the two nominated times with Fura Gems disturbance pegged. Any requested information would be provided if available.	1. Discussion on standard and extent of rehabilitation 2. 1 plus discussion on acceptance of rehabilitation std

Table 18: Subera Mining Leases

Mining lease (ML)	ML name	Area (ha)
ML400036	Subera Consolidated 1	81
ML400037	Subera Consolidated 2	100
ML400038	Subera Consolidated 3	100
ML400039	Subera Consolidated 4	91.6
ML400040	Subera Consolidated 5	83.2
ML400041	Subera Consolidated 6	96
ML400042	Subera Consolidated 7	90.1
ML400043	Subera Consolidated 8	100
ML400044	Subera Consolidated 9	100
ML400045	Subera Consolidated 10	100
ML400046	Subera Consolidated 11	98.8
ML70304	MOSLEY 1	20
ML70305	TRY-ANGLE	31.9
ML70357	"SUBERA" PLUS TWENTY	19.9
ML6830	"SUBERA" PLUS TWENTY ONE	19.5
ML70229	"SUBERA" PLUS THIRTEEN	19.6
ML70230	"SUBERA" PLUS SIXTEEN	24.2
ML70199	"SUBERA" NINETY EIGHT	85
ML70200	"SUBERA" ONE O FOUR	20
ML7168	"SUBERA" ONE O FIVE	20
ML7174	"SUBERA" ONE O SIX	20
ML7175	"SUBERA" ONE ONE O	20
ML7176	"SUBERA" ONE ONE ONE	19.8
ML7180	"SUBERA" ONE ONE TWO	13.2
ML7181	"SUBERA" PLUS FOURTEEN	14.4
ML7182	"SUBERA" ONE ONE TWO	14.4
ML70195	"SUBERA" PLUS FOURTEEN	20
ML70285	NINE TO FIVE	17.2
ML70286	REDBACK	9.7

Table 19: Risk Matrix

		Likelihood				
		Rare	Unlikely	Possible	Very likely	Extremely Likely
Consequence	Major	5	10	15	20	25
	Significant	4	8	12	16	20
	Moderate	3	6	9	12	15
	Minor	2	4	6	8	10
	Low	1	2	3	4	5

Very high risk
High risk
Moderate risk
Low risk

Table 20: Risk Register

	Overview of Current Controls, Measures & Actions In Place	Maximum Probable Outcome (With Current Control Measures)		
Risk / Threat (Aspect)		CONSEQUENCE	LIKELIHOOD	CURRENT RISK
Inadequate topsoil to rehabilitate discrete disturbance domain to depth equal to original topsoil depth	Topsoil Management Plan	4 Significant	2 Unlikely	Moderate
Water logging leads to subsidence of rehabilitated area making area unsafe	Maintenance & Monitoring Program e.g. backfill subsided areas if unsafe	4 Significant	2 Unlikely	Moderate
Settlement of tails is greater than planned making area unsafe	Maintenance & Monitoring Program - Redoze area to remove subsidence or cart in additional fill	3 Moderate	2 Unlikely	Moderate
Poor establishment of pasture preventing domain achieving criteria set out in RM6	Maintenance & Monitoring Program - Rip and seed area again	3 Moderate	2 Unlikely	Moderate
Overburden or topsoil changes across the project area preventing disturbance domains achieving RM6	Maintenance & Monitoring Program - Not occurred to date or expected in future; stockpiled topsoil will be inspected annually	3 Moderate	1 Rare	Low
External factors beyond the control of the Operator reduce the opportunity to achieve RM6 within the nominated PRCP schedule period e.g. climate change, critical pasture species not flourishing in area, property management changed resulting in a decline in property pasture productivity/ land condition.	Maintenance & Monitoring Program -internal review of annual monitoring program for any differences in soil types or management practices that highlight identified changes -reactive management of discussing observed alteration of pasture cover and condition with landholder - negotiation compensation for exclusion of select areas -Negotiation of amendment of completion criteria with background landholder and the Department	5 Major	3 Possible	High
Insufficient fill to create desired landform or cover wet tails in TSF	Oversize or dry tails carted from Plant Area to negate volume deficit prior to reaching RM1	3 Moderate	1 Rare	Low
Rainfall accumulated in void slowing rehabilitation process.	Water transferred to Plant Area for use	3 Moderate	1 Rare	Low

Wet weather prevents mining areas declared available in June being completed by December next year	Nominated timing gives the biggest window of dry weather in a yearly cycle; disturbed areas mining areas progress around polygon allowing progressive reshaping as part of the mining process	2 Minor	3 Possible	Moderate
Weather unfavourable limiting pasture development preventing domain reaching Rehabilitation Milestone 6 in nominated timeframe of 10 yrs	PRCP schedule nominates a period of 10 years between RM5 and RM7 to leave sufficient time for favourable weather conditions to progress pasture development. Annual monitoring will track progress and trigger maintenance as required	3 Moderate	3 Possible	Moderate

Table 21: Milestone Assessment

Milestone reference	Rehabilitation milestone	Milestone Assessment
RM1	Site decommissioning	Visual observation and report
RM2	Desired final landform achieved	Visual Observation at twice per year monitoring
RM3	Topsoil placed	Visual Observation at twice per year monitoring
RM3	Topsoil smoothed	Visual Observation at twice per year monitoring
RM3	Landform including topsoil ripped	Visual Observation at twice per year monitoring
RM4	Area seeded with desired seed mix	Visual Observation at twice per year monitoring and interview with Manager (Mine & Plant Operations)
RM7	Achievement of PMLU for Subera leases i.e. land in a condition to be returned to background landholder	Annual monitoring and reporting Landholder sign-off
RM6	Achievement of PMLU for Scrub Lead i.e. land in a condition to be returned to background landholder	Annual monitoring and reporting Community acceptance

11. Figures

Regional Topography

549792.83E 7434367.39N (Zone 55)

604084.50E 7434086.73N (Zone 55)



549610.77E 7380482.41N (Zone 55)

603703.89E 7380197.24N (Zone 55)

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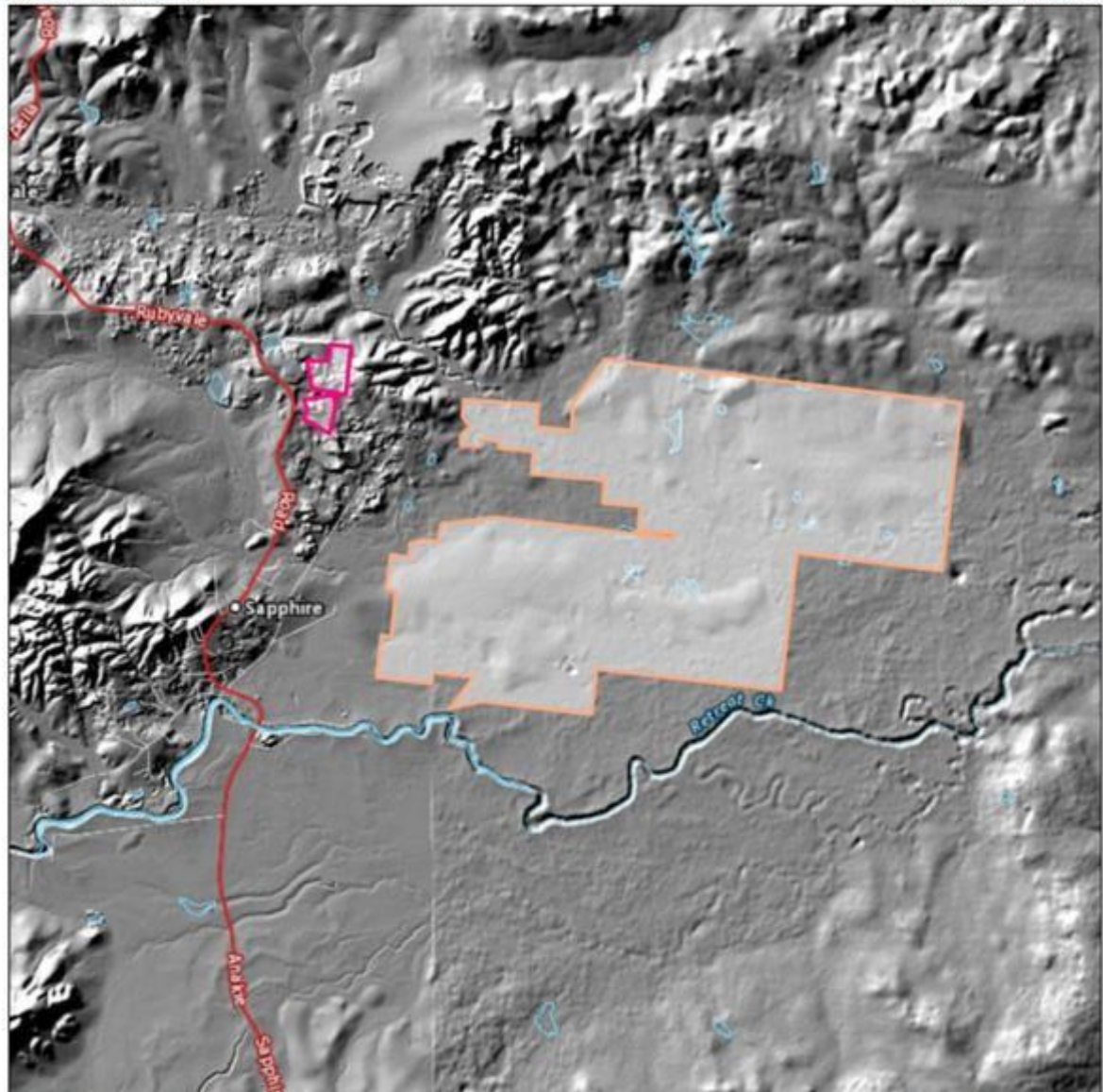


Figure 21: Regional Topography

Topography

57458.51E 741200.96N (Zone 55)

583282.66E 7412058.90N (Zone 55)



57401.42E 7400368.30N (Zone 55)

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583216.11E 7400306.03N (Zone 55)



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Figure 22: Local Topography

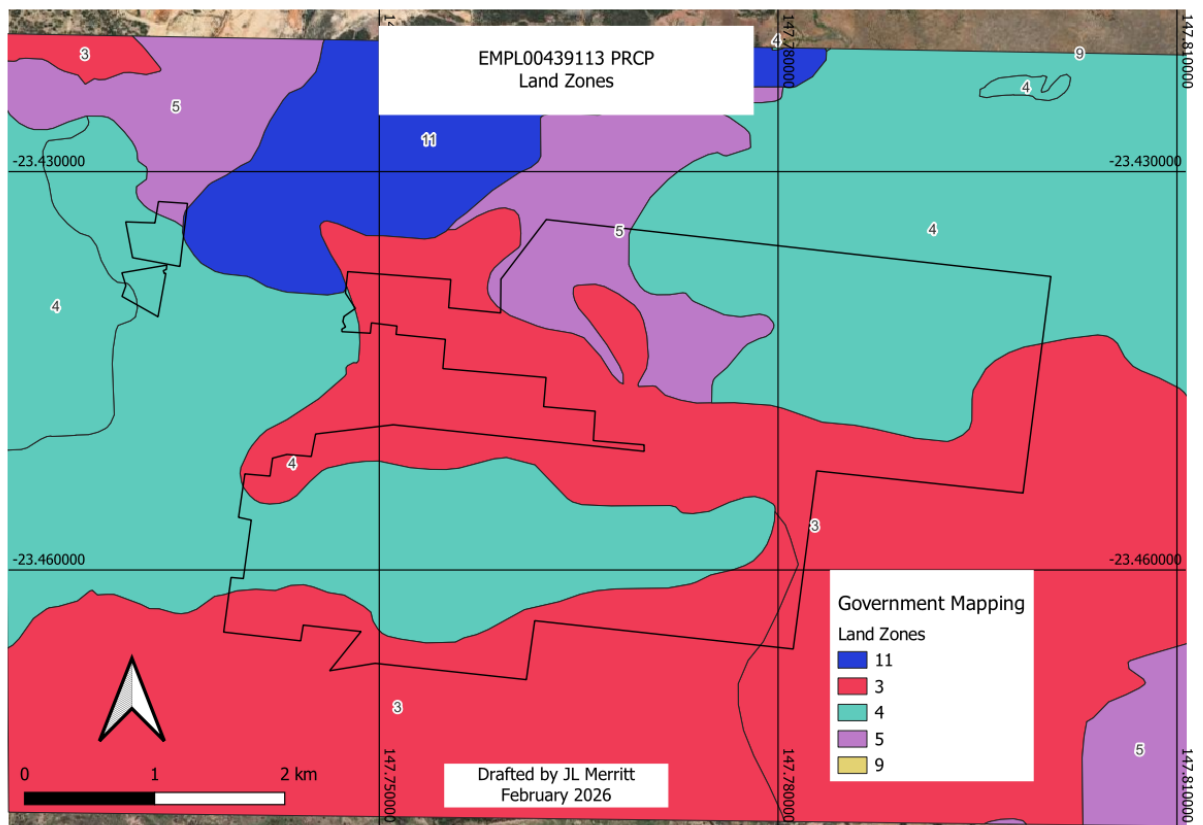


Figure 23: Land Zones

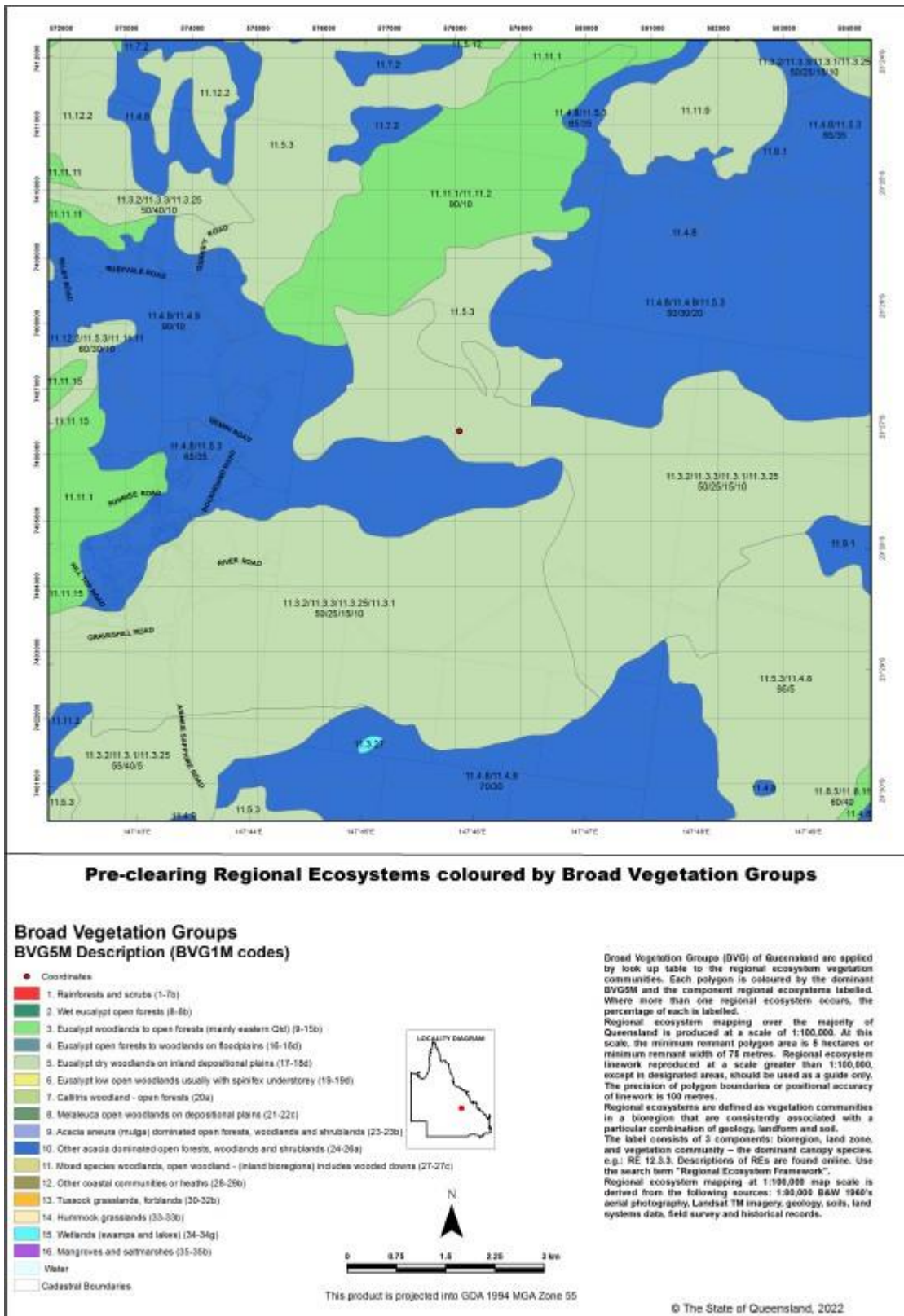


Figure 24: Pre-clearing REs by vegetation groups

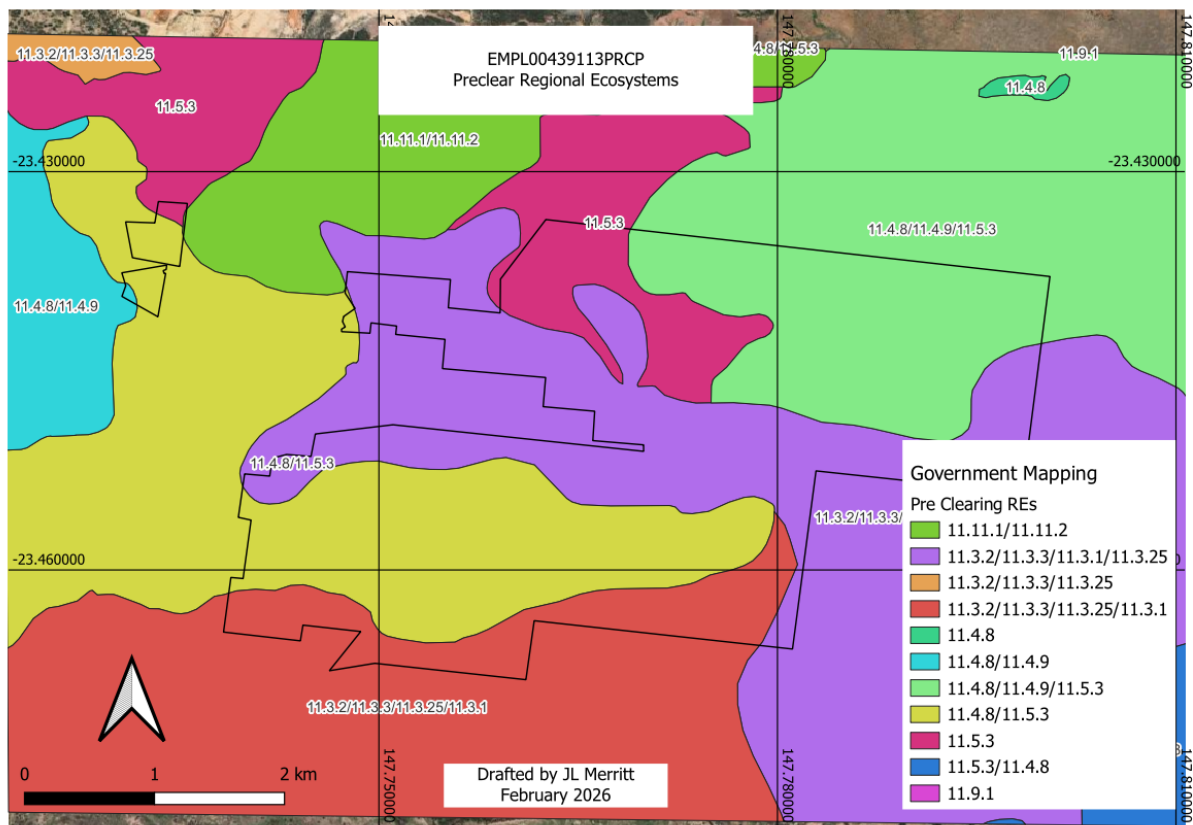


Figure 25: Pre-clear REs

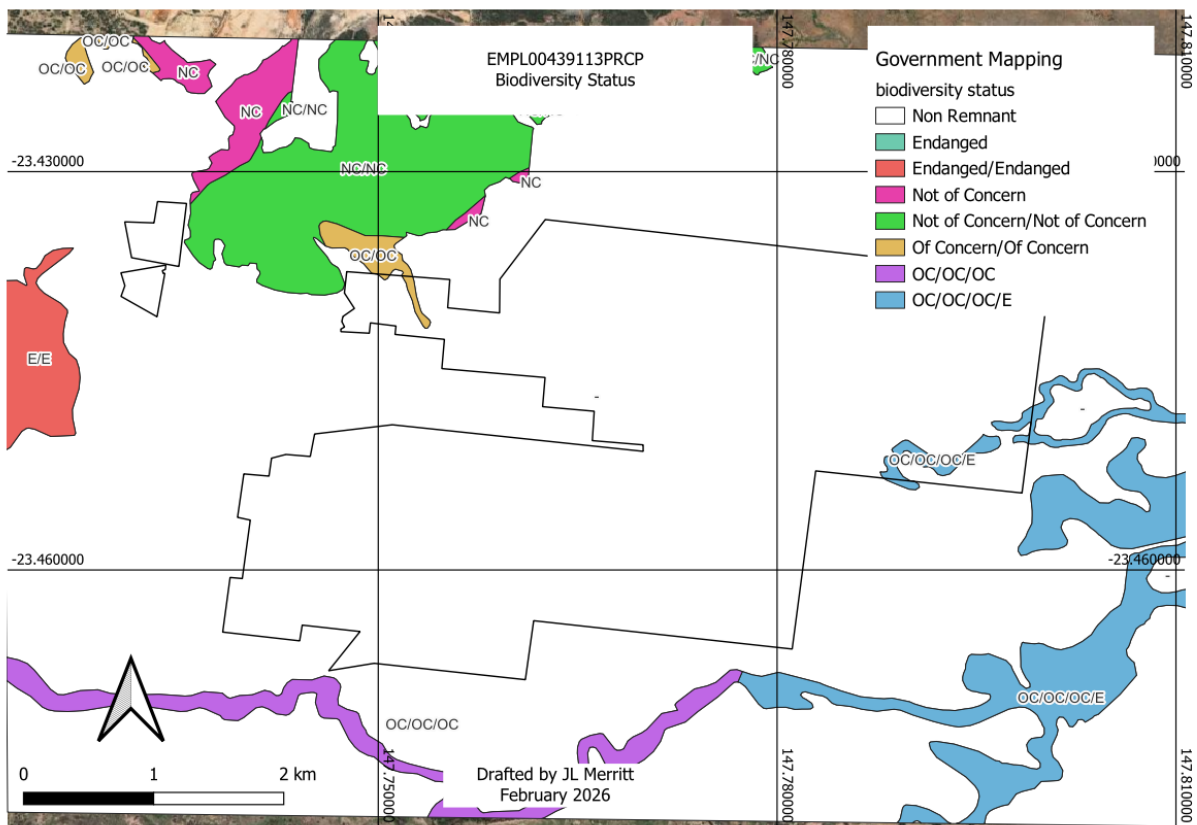


Figure 26: Biodiversity Status

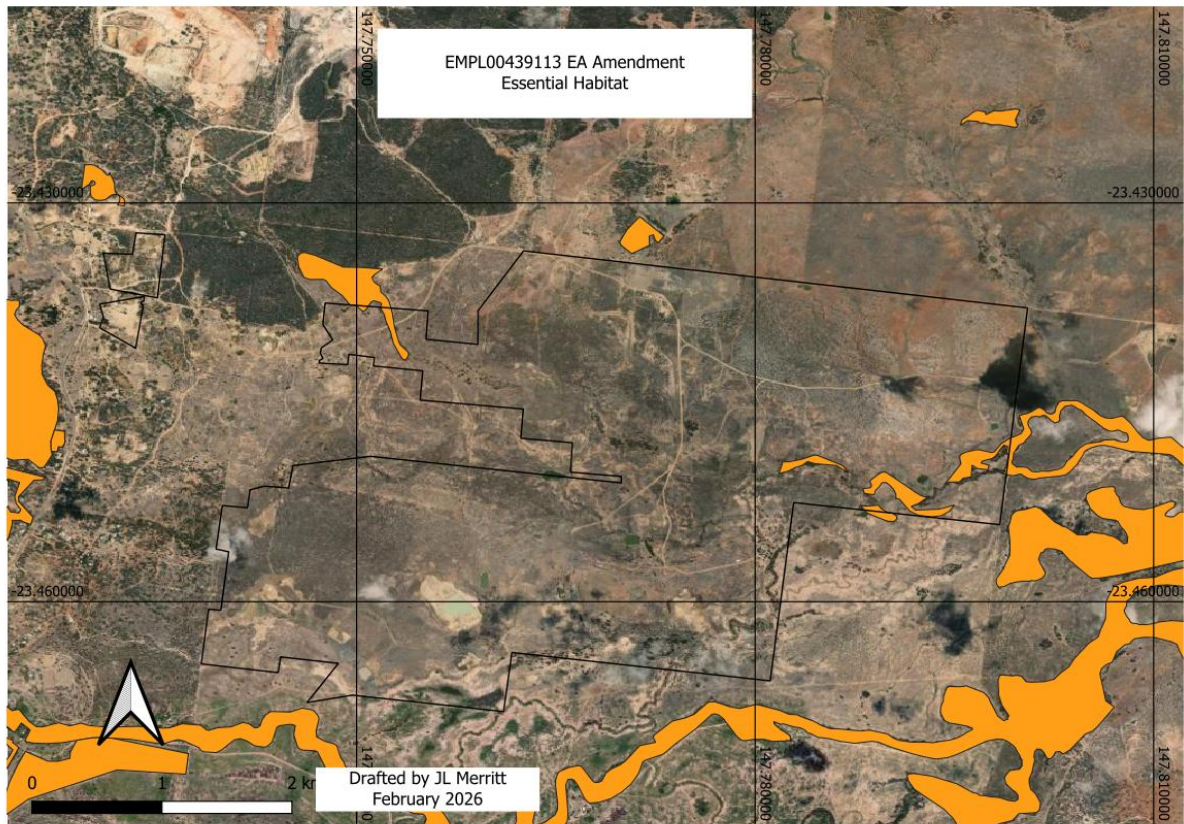


Figure 27: Essential Habit

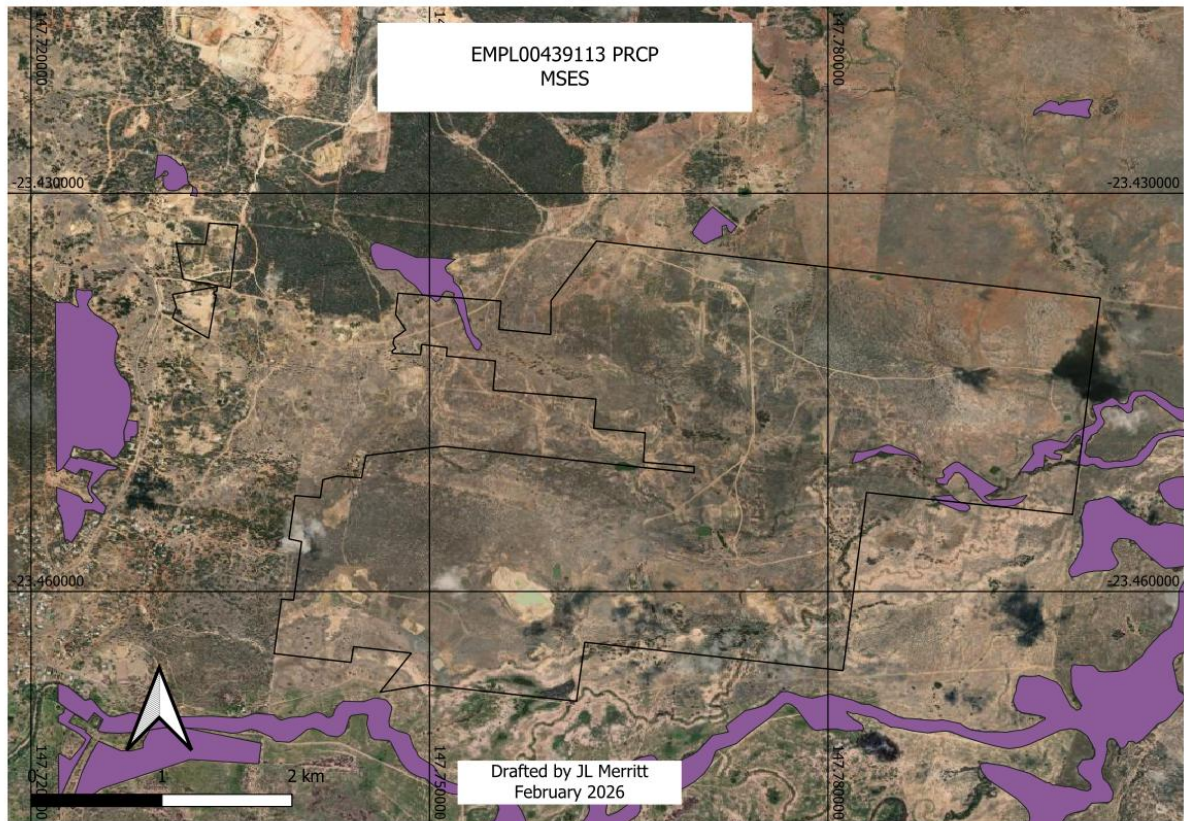


Figure 28: MSES

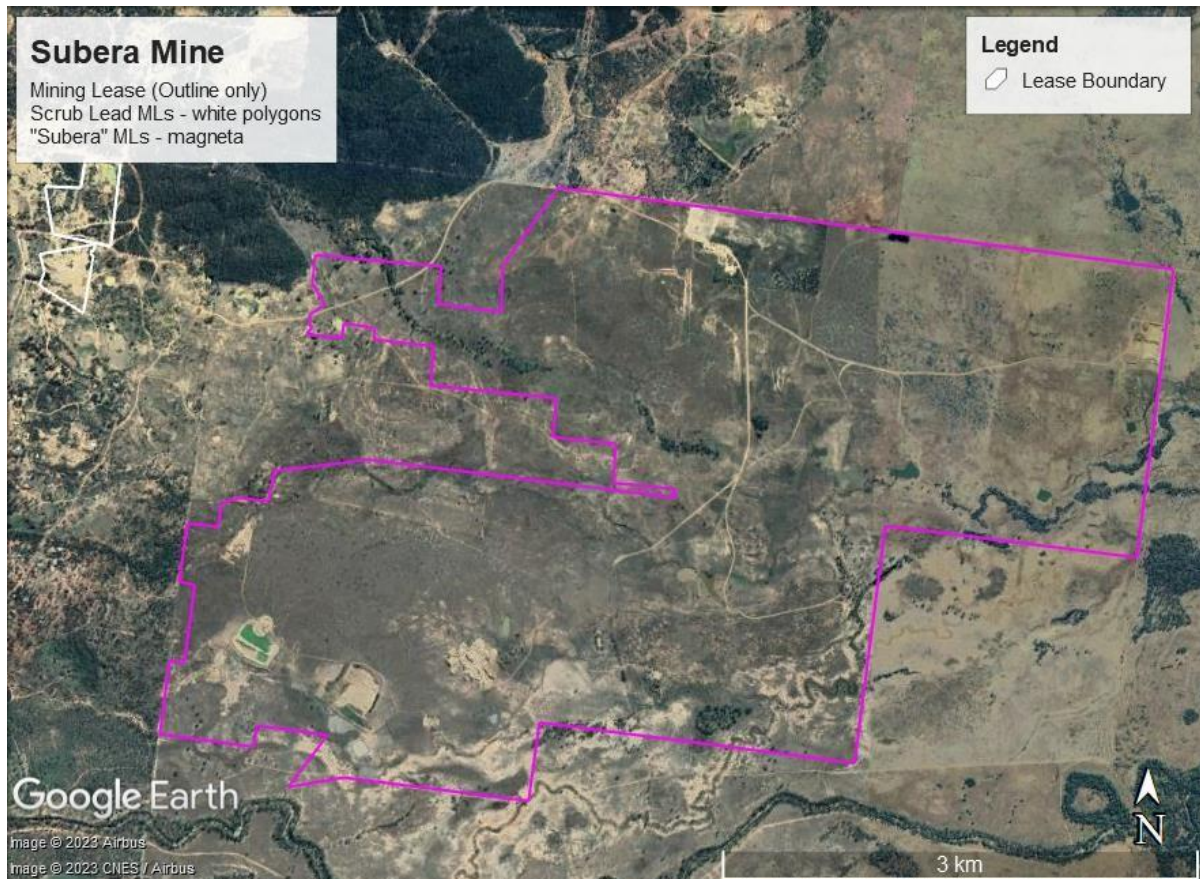


Figure 29: ML Boundary

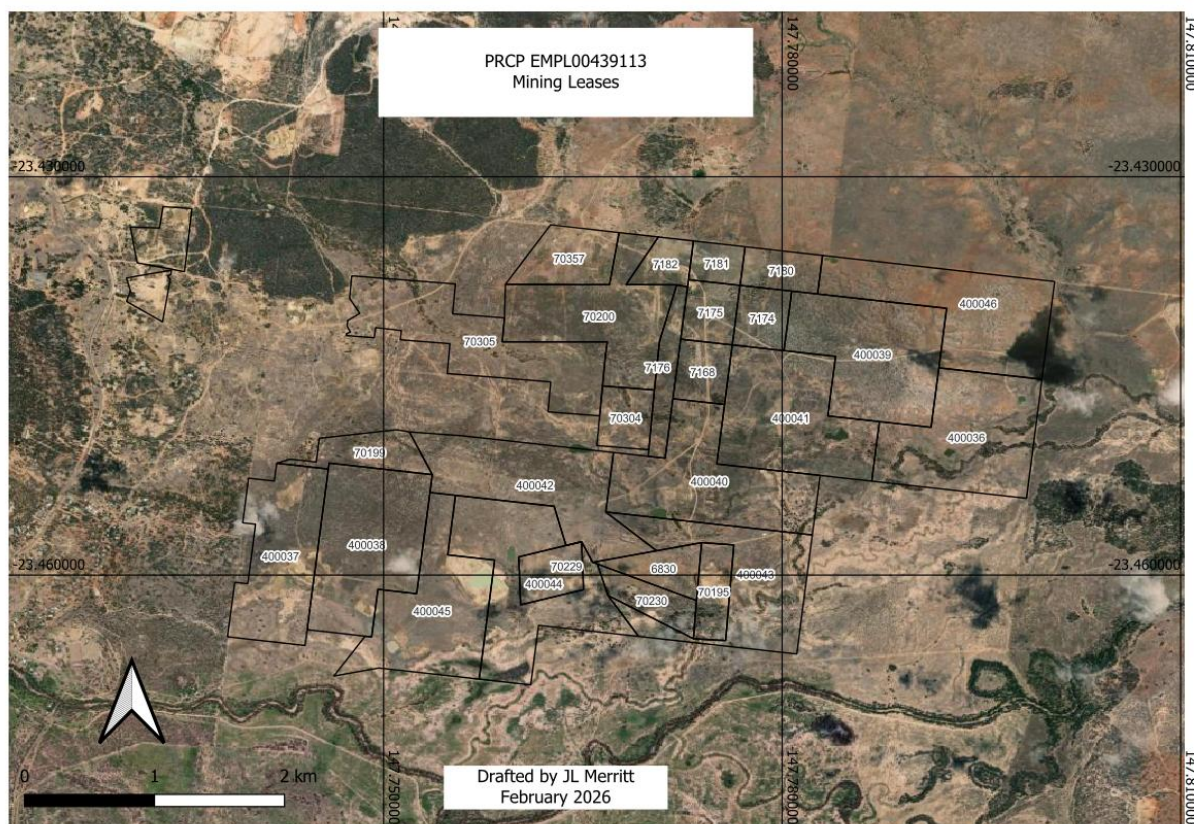


Figure 30: Mining Leases

" Subera"

574807.56E 7409462.32N (Zone 55)

582082.66E 7409423.56N (Zone 55)



574770.77E 7402230.07N (Zone 55)

582042.29E 7402191.23N (Zone 55)

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Figure 31: Subera Property

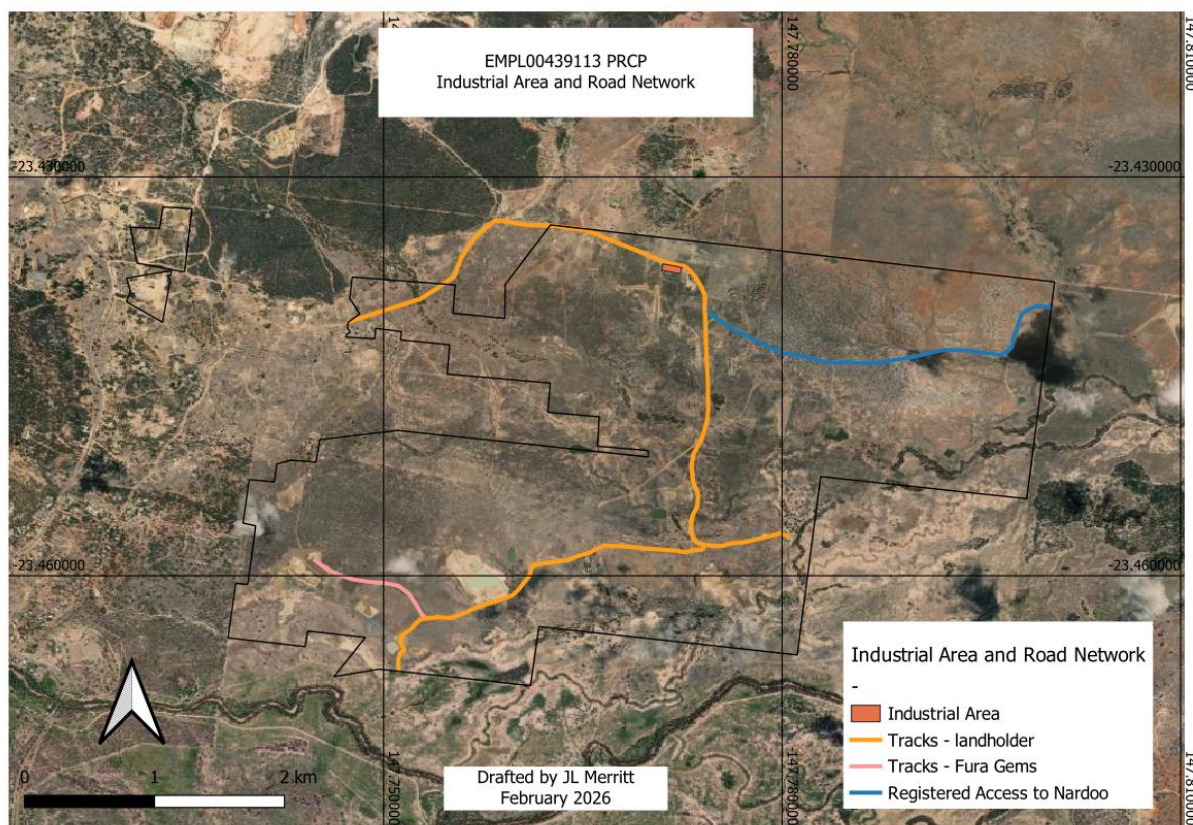


Figure 32: Industrial Area and Road Network

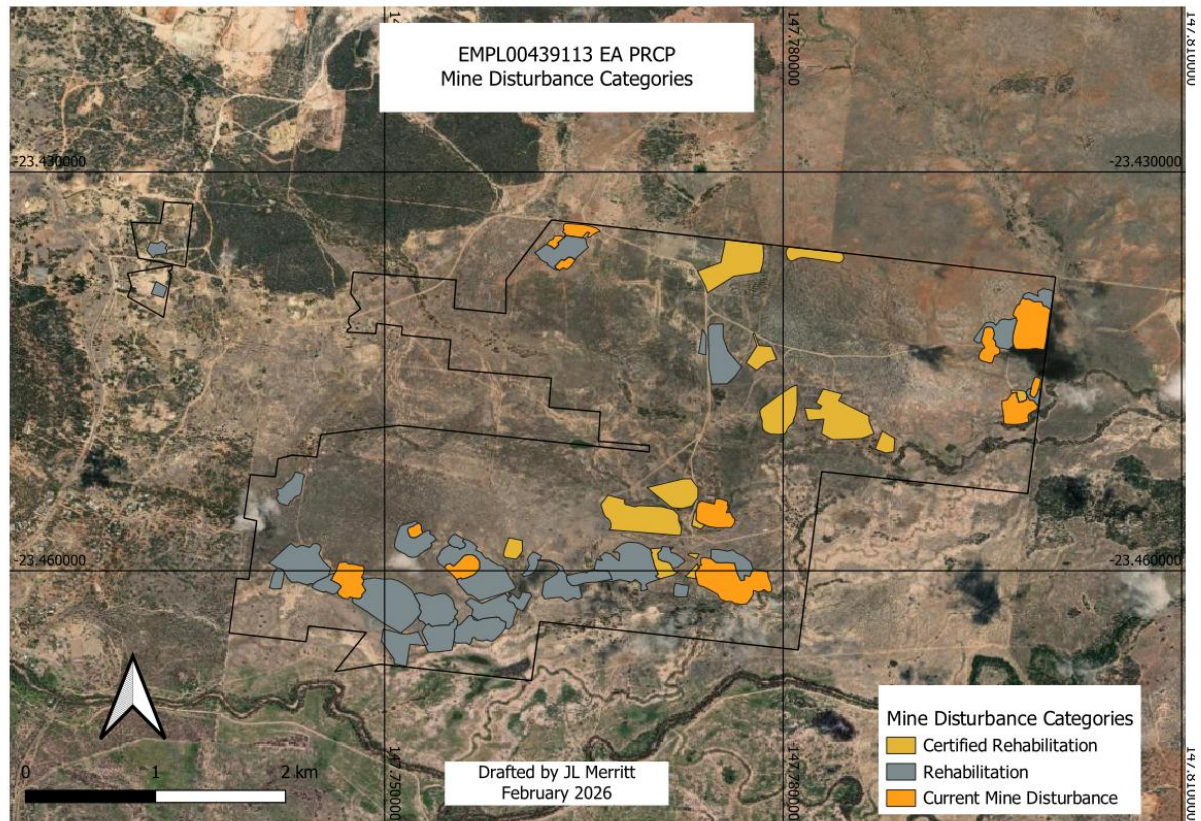


Figure 33: Mine Disturbance

ML 70285



Figure 34: ML 72285

Legend: ML outline – orange; Fura Gems rehabilitation – shaded polygon

ML 70286

57454315E 7407977.34N (Zone 55)

57508800E 7407974.57N (Zone 55)



574540.4E 7407435.58N (Zone 55)

575085.23E 7407432.87N (Zone 55)

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Figure 35: ML 70286

Legend: ML outline – orange; Fura Gems rehabilitation – shaded polygon



Figure 36: LoDrill used for Exploration

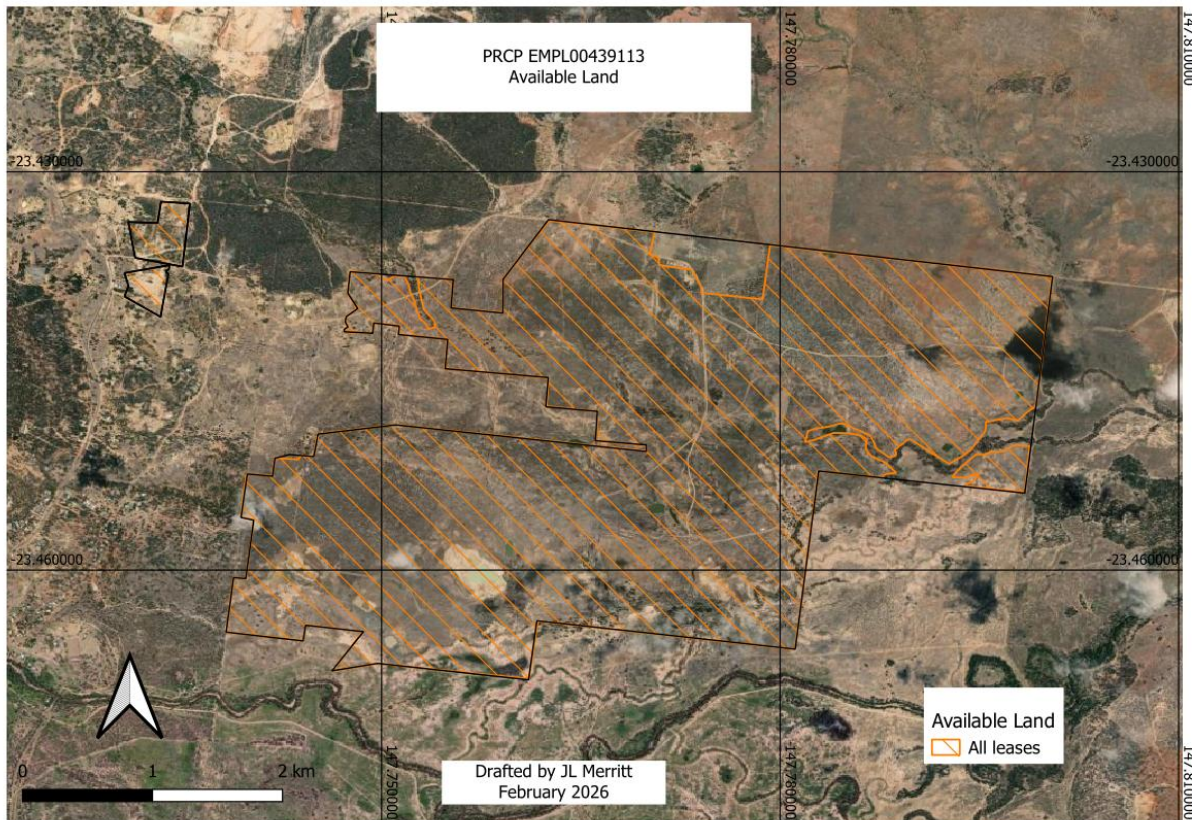
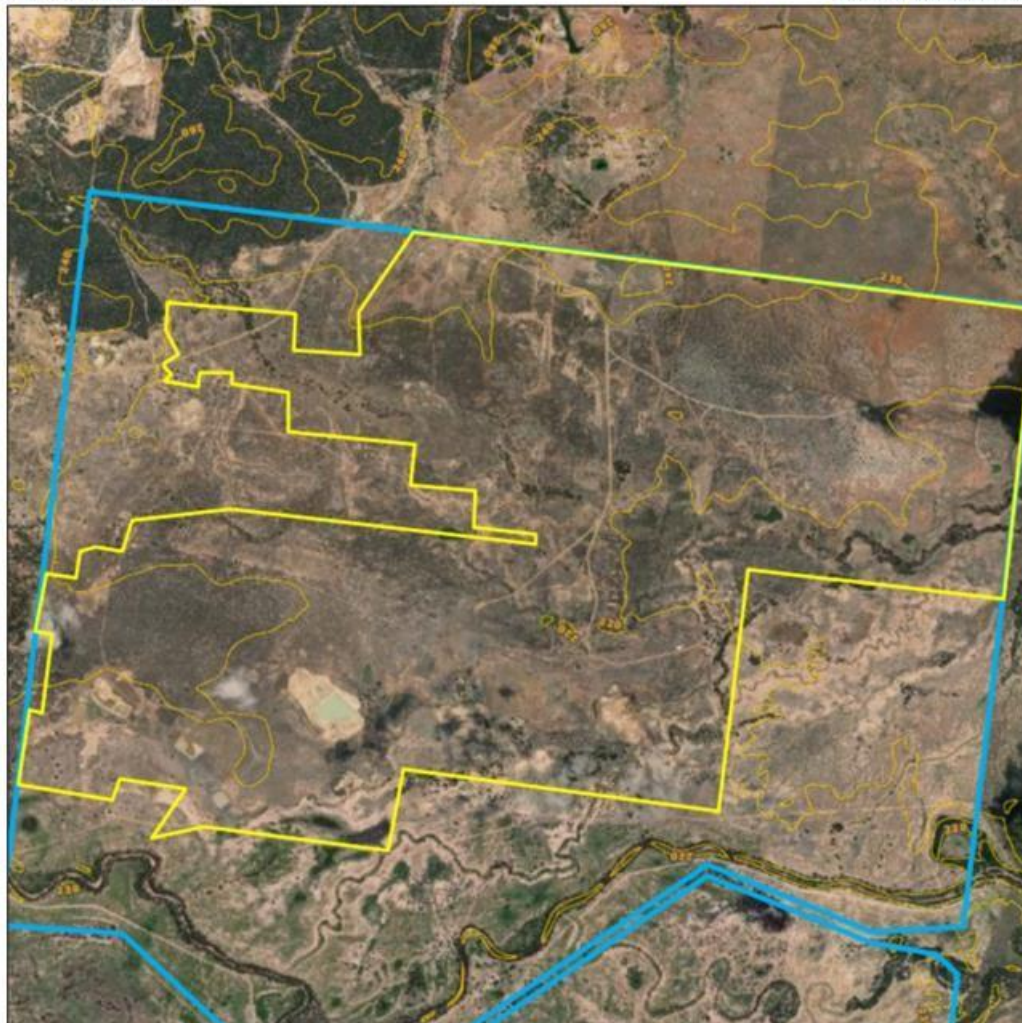


Figure 37: Available Land

Final Landform "Subera" Leases

575365.53E 7409682.14N (Zone 55)

581722.84E 7409648.23N (Zone 55)



575333.14E 7403362.07N (Zone 55)

5816877.2E 7403328.09N (Zone 55)



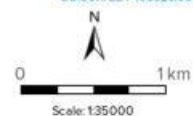
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Figure 38: Closure Landform (Contours 10m intervals)

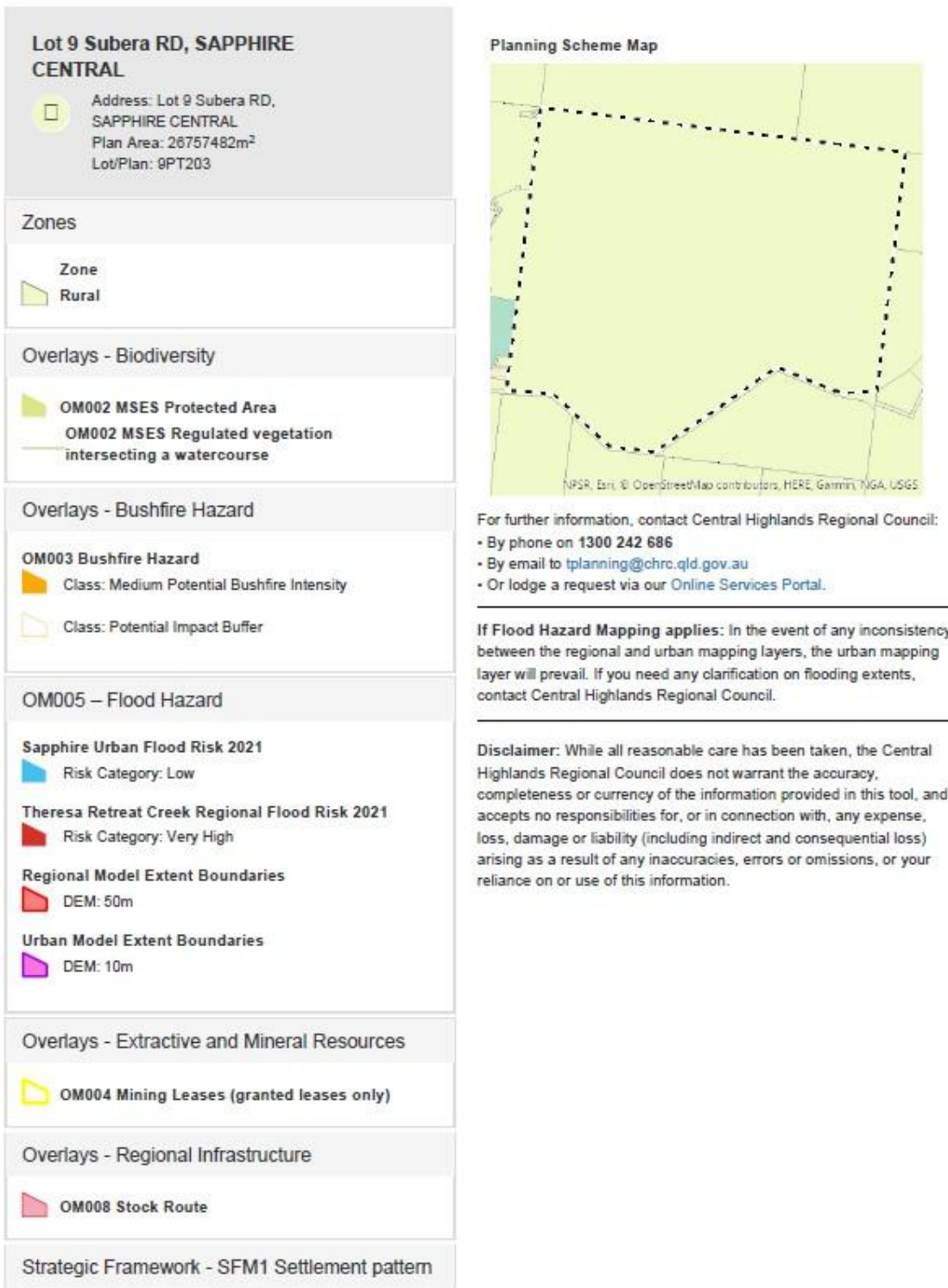


Figure 39: CHRC Planning Scheme

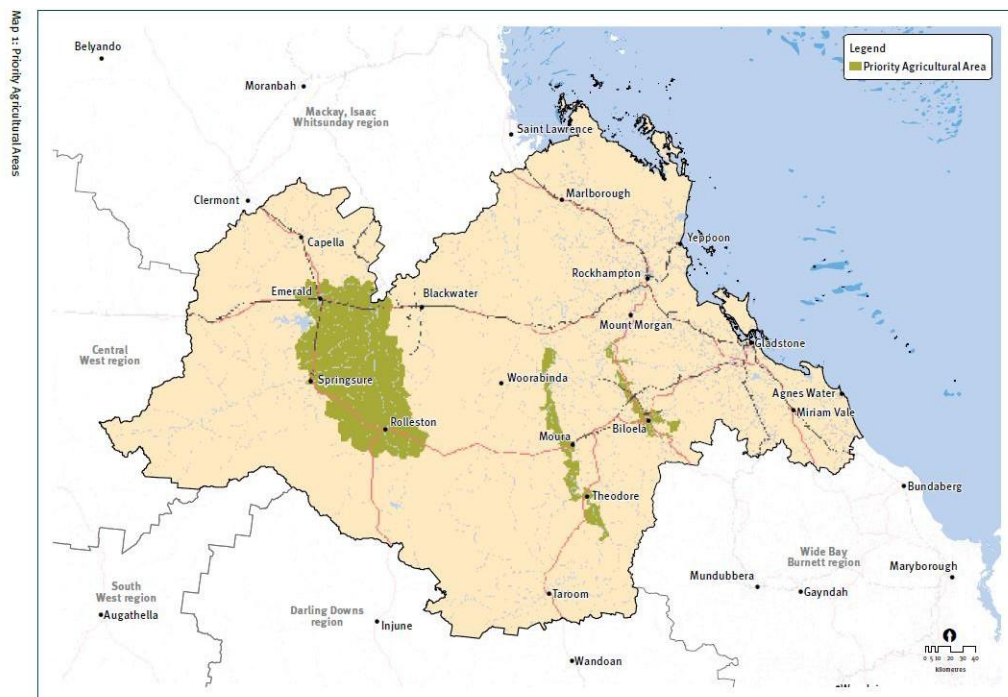


Figure 40: CH Regional Plan Agricultural Priority Area

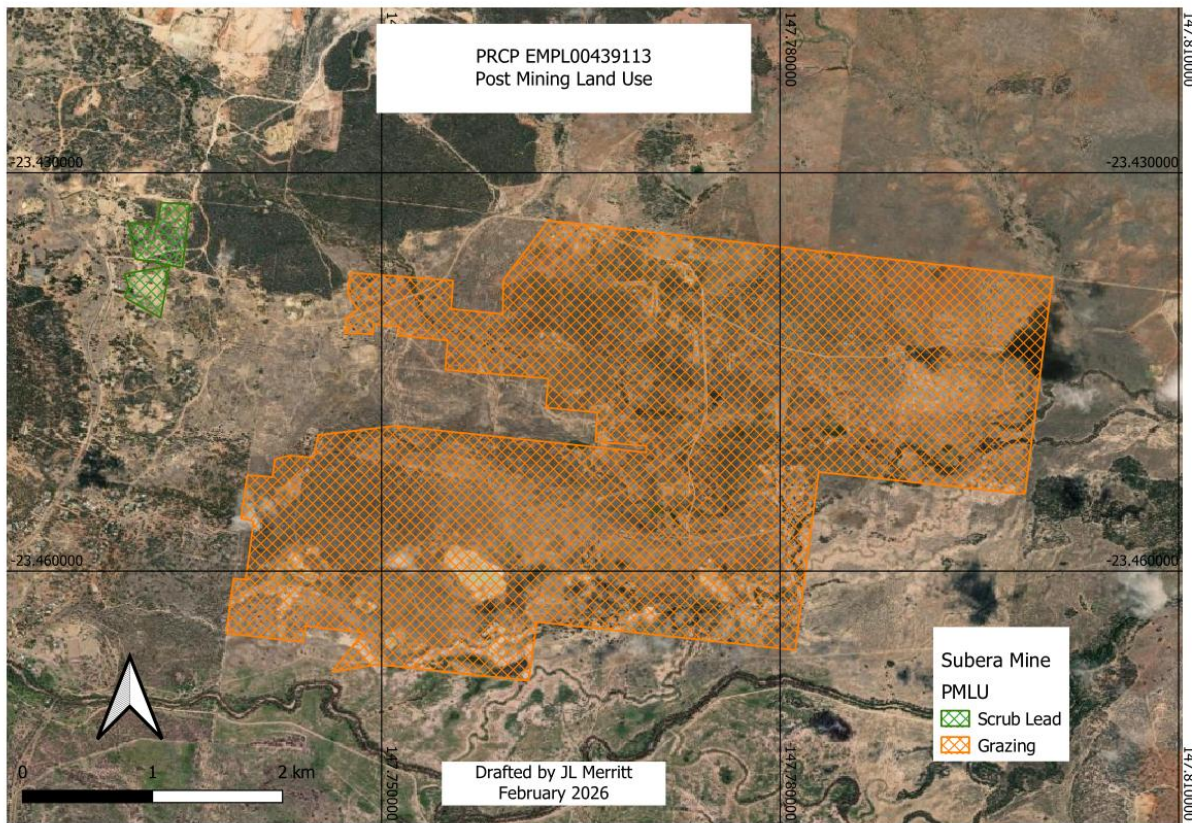


Figure 41: Post Mining Land Use

QUALITY OF MATERIALS REPORT

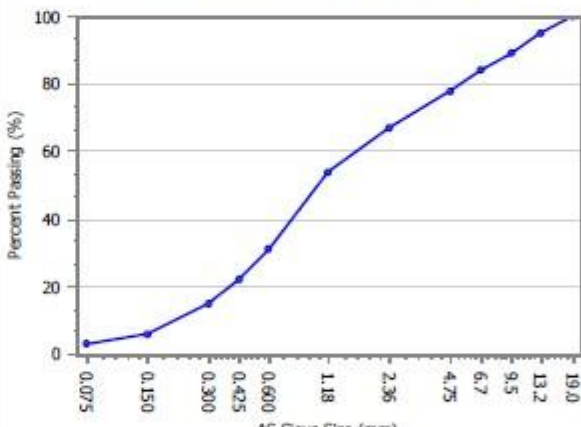
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Test Procedures AS1289.3.6.1, AS1289.2.1.1, AS1289.3.1.2, AS1289.3.2.1, AS1289.3.4.1, AS1289.2.1.1, AS 1289.3.3.1																																																					
Sample Number 4708/S/68114 Sampling Method Tested As Received Date Sampled 31/08/2022 Sampled By Client Date Tested 2/09/2022 Drying Methods PSD / ATT: Oven Dried Atterberg Preparation Dry Sieved	Location Dry Tailings Material Source Sapphire TSF Material Type Tailings Material Description Sandy GRAVEL, Brown																																																				
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>AS Sieve (mm)</th> <th>Specification Minimum (%)</th> <th>Percent Passing (%)</th> <th>Specification Maximum (%)</th> </tr> </thead> <tbody> <tr><td>19.0</td><td></td><td>100</td><td></td></tr> <tr><td>13.2</td><td></td><td>95</td><td></td></tr> <tr><td>9.5</td><td></td><td>89</td><td></td></tr> <tr><td>6.7</td><td></td><td>84</td><td></td></tr> <tr><td>4.75</td><td></td><td>78</td><td></td></tr> <tr><td>2.36</td><td></td><td>67</td><td></td></tr> <tr><td>1.18</td><td></td><td>54</td><td></td></tr> <tr><td>0.600</td><td></td><td>31</td><td></td></tr> <tr><td>0.425</td><td></td><td>22</td><td></td></tr> <tr><td>0.300</td><td></td><td>15</td><td></td></tr> <tr><td>0.150</td><td></td><td>6</td><td></td></tr> <tr><td>0.075</td><td></td><td>3</td><td></td></tr> </tbody> </table>		AS Sieve (mm)	Specification Minimum (%)	Percent Passing (%)	Specification Maximum (%)	19.0		100		13.2		95		9.5		89		6.7		84		4.75		78		2.36		67		1.18		54		0.600		31		0.425		22		0.300		15		0.150		6		0.075		3	
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4.75		78																																																			
2.36		67																																																			
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0.600		31																																																			
0.425		22																																																			
0.300		15																																																			
0.150		6																																																			
0.075		3																																																			
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 Accredited for compliance with ISO/IEC 17025 – Testing Accreditation Number: 1986 Corporate Site Number: 4708  Approved Signatory: Colin Scott Form ID: W85MCRP Rev 2																																																					

Figure 42: Particle Size Distribution – Dry Tails



**Construction
Sciences**

Construction Sciences Pty Ltd
ABN: 74 128 806 735
Address:
8 Kingdon Street,
Gladstone QLD 4680

Laboratory: Gladstone Laboratory
Phone: 07 4972 6571
Fax: 07 4972 7048
Email: Gladstone@constructionsciences.net

QUALITY OF MATERIALS REPORT

Client:	Bilyarra Consulting Pty Ltd	Report Number:	4708/R/25685-1
Client Address:	280 Blanchs Road, Thangool	Project Number:	4708/P/798
Project:	Tailings Testing	Lot Number:	
Location:	Thangool	Internal Test Request:	4708/T/14620
Component:	Tailings	Client Reference/s:	31/08/2022 - Dry / Wet Tailings
Area Description:	Wet / Dry	Report Date / Page:	19/09/2022 Page 1 of 1

Test Procedures	AS1289.3.6.1, AS1289.3.1.2, AS1289.3.2.1, AS1289.3.4.1, AS1289.2.1.1, AS 1289.3.3.1		
Sample Number	4708/S/68113	Location	Wet Tailings
Sampling Method	Tested As Received		
Date Sampled	31/08/2022		
Sampled By	Client		
Date Tested	2/09/2022	Material Source	Sapphire TSF
PSD Preparation		Material Type	Tailings
Atterberg Preparation	Dry Sieved / Oven Dried	Prep Material > 53.0mm (%)	

Material Description Silty CLAY			
AS Sieve (mm)	Specification Minimum (%)	Percent Passing (%)	Specification Maximum (%)
2.36		100	
1.18		100	
0.600		100	
0.425		100	
0.300		100	
0.150		100	
0.075		100	

PARTICLE SIZE DISTRIBUTION GRAPH

Test Result	Specification Minimum (%)	Result	Specification Maximum (%)	Test Result	Specification Minimum (%)	Result	Specification Maximum (%)
Liquid Limit (%)		101		0.075/0.425 Fines Ratio		1.00	
Plastic Limit (%)		55		PI x 0.425 Ratio (%)		4600.0	
Plastic Index (%)		46		LS x 0.425 Ratio (%)		1900.0	
Linear Shrinkage (%)		19.0		Linear Shrinkage Defects	Cracking and Curling		

Remarks	Results apply to the sample/s as received.
---------	--

Accredited for compliance with ISO/IEC 17025 – Testing		
	Accreditation Number: 1986 Corporate Site Number: 4708	
		Approved Signatory: Colin Scott Form ID: W85Rep Rev 3

Figure 43: Particle Size Distribution - Wet Tails



SOIL PARTICLE DENSITY REPORT

Client:	CONSTRUCTION SCIENCES - GLADSTONE	Report Number:	2128/R/73883-1
Client Address:	8 KINGDON STREET, GLADSTONE	Project Number:	2128/P/1335
Project:	General Testing	Lot Number:	
Location:	Gladstone	Internal Test Request:	2128/T/31195
Component:	John Merit - Tailings Testing	Client Reference/s:	4708/CC/704
Area Description:		Report Date / Page:	19/09/2022 Page 1 of 1
Test Procedures:	AS1289.3.5.1		
Sample Number	2128/S/143909	Sample Location	
Sampling Method	Tested As Received	Location	Dry Tailings
Date Sampled	31/08/2022		
Sampled By	Client		
Date Tested	15/09/2022		
Material Source	-	Material Type	-
Soil Particle Density (Fine)		Soil Particle Density (Coarse)	
Percent of Fine Fraction (%)	67.0	Percent of Coarse Fraction (%)	33.0
Temperature of Test (C°)	20	Temperature of Test (C°)	21
Supplied Result Reference	-	Supplied Result Reference	-
Average Particle Density Fine (t/m³)	2.64	Average Particle Density Coarse (t/m³)	2.72
Soil Particle Density (t/m³)		2.66	

Remarks	Results apply to the sample/s as received.		
	Accredited for compliance with ISO/IEC 17025 – Testing		
	Accreditation Number:	1986	
	Corporate Site Number:	2128	
		 Approved Signatory: Peter Clark Form ID: W14Rep Rev 1	

Figure 44: Soil Density - Dry Tails



SOIL PARTICLE DENSITY REPORT

Client:	CONSTRUCTION SCIENCES - GLADSTONE	Report Number:	2128/R/73882-1
Client Address:	8 KINGDON STREET, GLADSTONE	Project Number:	2128/P/1335
Project:	General Testing	Lot Number:	
Location:	Gladstone	Internal Test Request:	2128/T/31195
Component:	John Merrit - Tailings Testing	Client Reference/s:	4708/CC/704
Area Description:		Report Date / Page:	19/09/2022 Page 1 of 1

Test Procedures:	A51289.3.5.1	
Sample Number	2128/S/143908	Sample Location
Sampling Method	Tested As Received	Location
Date Sampled	31/08/2022	Wet Tailings
Sampled By	Client	
Date Tested	15/09/2022	
Material Source	-	Material Type
		-

Soil Particle Density (Fine)		Soil Particle Density (Coarse)	
Percent of Fine Fraction (%)	-	Percent of Coarse Fraction (%)	-
Temperature of Test (C°)	20	Temperature of Test (C°)	-
Supplied Result Reference	-	Supplied Result Reference	-
Average Particle Density Fine (t/m³)	2.56	Average Particle Density Coarse (t/m³)	-

Soil Particle Density (t/m³)	-
------------------------------	---

Remarks	Results apply to the sample/s as received.
---------	--

Accredited for compliance with ISO/IEC 17025 – Testing		
	Accreditation Number: 1986 Corporate Site Number: 2128	
		Approved Signatory: Peter Clark Form ID: W14Rep Rev 1

Figure 45: Soil Density - Wet Tails



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	DRY TAILS	WET TAILS	---	---	---
Sampling date / time					15-Aug-2022 00:00	15-Aug-2022 00:00	---	---	---
Compound	CAS Number	LOR	Unit		EB2225499-001	EB2225499-002	-----	-----	-----
					Result	Result	---	---	---
EA002: pH 1:5 (Soils)									
pH Value	---	0.1	pH Unit		9.9	9.5	---	---	---
EA010: Conductivity (1:5)									
Electrical Conductivity @ 25°C	---	1	µS/cm		85	404	---	---	---
EA032: Electrical Conductivity (saturated paste)									
Electrical Conductivity (Saturated Paste)	---	1	µS/cm		209	2680	---	---	---
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	---	1.0	%		7.2	72.0	---	---	---
ED006: Exchangeable Cations on Alkaline Soils									
Exchangeable Calcium	---	0.2	meq/100g		1.2	7.6	---	---	---
Exchangeable Magnesium	---	0.2	meq/100g		1.9	15.4	---	---	---
Exchangeable Potassium	---	0.2	meq/100g		<0.2	0.4	---	---	---
Exchangeable Sodium	---	0.2	meq/100g		1.1	14.4	---	---	---
Cation Exchange Capacity	---	0.2	meq/100g		4.2	37.9	---	---	---
Exchangeable Sodium Percent	---	0.2	%		27.0	38.1	---	---	---
Calcium/Magnesium Ratio	---	0.2	-		0.6	0.5	---	---	---
Magnesium/Potassium Ratio	---	0.2	-		---	34.2	---	---	---
ED040S : Soluble Sulfate by ICPAES									
Sulfate as SO4 2-	14808-79-8	10	mg/kg		<10	330	---	---	---
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	10	mg/kg		<10	840	---	---	---
ED093S: Soluble Major Cations									
Calcium	7440-70-2	10	mg/kg		<10	<10	---	---	---
Magnesium	7439-95-4	10	mg/kg		<10	<10	---	---	---
Sodium	7440-23-5	10	mg/kg		120	1430	---	---	---
Potassium	7440-09-7	10	mg/kg		<10	<10	---	---	---
ED093T: Total Major Cations									
Sodium	7440-23-5	50	mg/kg		330	5160	---	---	---
Potassium	7440-09-7	50	mg/kg		360	1750	---	---	---
Calcium	7440-70-2	50	mg/kg		900	3980	---	---	---
Magnesium	7439-95-4	50	mg/kg		980	7320	---	---	---

Figure 46: Analytical Results Wet and Dry Tails