



# ANNUAL REHABILITATION REPORT

## 1 February 2021 to 31 January 2022

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Mt Boppy Gold Mine  
Canbelego, NSW

Document ID: MRL-ENV-RPT-002.2022.002

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Document Date: 28 February 2022


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Review Period: 1 Feb 2021 – 31 January 2022

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Relevant Authority(s) for Approval of Updates: NSW Department of Planning Industry and the Environment - Resources Regulator

## Summary Table

<b>Name of Mine</b>	Mt Boppy Gold Mine	
<b>Annual Rehabilitation Reporting Period</b>		
Commencement Date	1 February 2021	
End Date	31 January 2022	
<b>Revision dates and version numbers</b>		
Revision date	18 February 2022	
Version number	1.0	
<b>Mining Operations Plan Period</b>		
Commencement Date	31 October 2021	
Completion Date	2 July 2022	
<b>Mining Authorisations</b>	<b>Lease Number</b>	<b>Expiry Date</b>
Mining Lease	ML311	12 December 2033
	ML1681	12 December 2033
Mining Purpose Lease	MPL240	12 December 2033
Gold Lease	GL3255	20 May 2033
	GL5836	15 June 2033
	GL5848	15 June 2033
	GL5898	12 December 2033
<b>Name of Lease holders</b>	Mt Boppy Resources Pty Ltd	
<b>Name of Authorisation holders</b>	N/A	
<b>Name of Mine Operator (if different)</b>		
<b>Name and Contact Details of the Mine Manager (or equivalent)</b>	David Power (+61 419 298 359)	
<b>Name of Representative of the Authorisation Holder</b>	Haydn Lynch	
<b>Title of Representative of the Authorisation Holder</b>	Chief Operating Officer	
<b>Signature:</b>		
<b>Date of submission:</b>	4 March 2022	

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## FOREWORD

This Annual Rehabilitation Report (ARR) for the Mt Boppy Gold Mine has been prepared by Manuka Resources Pty Ltd (“the Company” or “Manuka Resources”). Manuka Resources Ltd, is the parent company of Mt Boppy Resources Pty Ltd, the title holder to the Mt Boppy Gold Mine (the ‘Mine’). The Mine is located approximately 275 kilometres (km) west-north-west of Dubbo and 48 km east of Cobar, adjacent to the township of Canbelego in New South Wales (NSW).

The site was historically worked as an underground mine from 1901 to 1923, and in its day was one of the largest gold producers in Australia, having produced around 500,000 ounces (oz.). The 100 years of historical operations resulted in a series of surface tailings storage facilities, a relatively small open-cut void, process plant and other ancillary equipment remaining on the site.

The Mt Boppy site was purchased from Epoch Minerals in 1993 by Polymetals Pty Ltd and used for the treatment of silver and gold-bearing supergene tailings transported from the Pasmenco-owned Elura Mine. In 2002, Polymetals were granted the rights to recommence mining works, converting the site from an underground to an open cut operation. Polymetals produced around 70,000 oz. of gold from approximately 500,000 t of ore up until 2006 when operations were placed on hold and care and maintenance activities were implemented. Ore processing infrastructure was removed from the site during this time.

Mining recommenced in mid-2015 under Black Oak Minerals, who extracted ore which was sent to the nearby Wonawinta Silver Project for processing until Black Oak Minerals (then owner of Wonawinta Silver Mine) entered receivership in December 2015. The Mine was subsequently sold by the receivers to Mt Boppy Resources Pty Ltd (now a wholly owned subsidiary of Manuka Resources Limited) in 2016. Since 2016, extensive improvements have been made to the surface water management systems with earthworks improvements as directed by NSW EPA. Additional mine plan studies and reviews were undertaken by the Manuka Resources to recommence operations and processing at the Manuka plant (Wonawinta Silver Project) south of Cobar. Essentially the mining and processing strategy as started by BOML, was continued by Mt Boppy Resources Pty Ltd.

This ARR (formerly known as the Annual Environmental Management Report or AEMR) has been prepared in accordance with the Condition 3(f) of Transfer Approvals dated 16 December 2016, of the subject Mining Authorisations. The Report also follows the format and content requirements identified in *Environmental Management Guidelines for Industry: The Annual Environmental Management Report* (last updated January 2006) prepared by NSW Department of Primary Industries – Mineral Resources. This ARR for the Mt Boppy Gold Mine is applicable for the period 1 February 2021 to 31 January 2022 (the “Reporting Period”).

On 02 July 2021 the new mining lease conditions of the amended Regulation under the *Mining Act 1992* came into force. The [Mining Amendment \(Standard Conditions of Mining Leases—Rehabilitation\) Regulation 2021](#) (*the Regulation*) conditions are new compliance and reporting requirements for rehabilitation which prescribes setting clear, achievable and enforceable requirements for rehabilitation.

For existing mining leases that came into force before this date, these new conditions will apply from 2 July 2022. These new rehabilitation conditions, which include requirements for the annual rehabilitation reporting, will replace existing rehabilitation and environmental management conditions on current leases. The Mt Boppy ARR for the next reporting period will therefore follow the new format prescribed under the guideline [Form and Way: Annual Rehabilitation Report and Forward Program \(large mines\)](#).

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Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	4 of 51

**FOREWORD ..... 4**

**LIST OF ACRONYMS.....IX**

**1. ANNUAL REHABILITATION REPORT ..... 10**

1.1 COMPLAINTS REGISTER ..... 10

1.2 CURRENT DEVELOPMENT CONSENTS, LEASES, AND LICENCES ..... 10

1.2.1 Mining Lease..... 10

1.2.2 Development Consent..... 13

1.2.3 Environmental Protection Licence (EPL) 20192 ..... 13

1.2.4 Water Access Licences..... 13

1.3 MINE CONTACTS ..... 13

1.4 LAND OWNERSHIP AND LANDUSE ..... 14

1.5 STAKEHOLDER CONSULTATION ..... 14

1.6 ACTIONS REQUIRED FOLLOWING INSPECTIONS FROM NSW STATE & LOCAL GOVERNMENT REGULATORS ..... 14

**2. OPERATIONS DURING THE 2021 - 2022 REPORTING PERIOD ..... 15**

2.1 EXPLORATION ..... 15

2.2 LAND PREPARATION..... 16

2.3 MINING ..... 16

2.4 MINERAL PROCESSING ..... 16

2.5 WASTE MANAGEMENT ..... 17

2.5.1 Non-Production Waste ..... 17

2.5.2 Production Waste..... 19

2.6 ORE AND PRODUCT STOCKPILES ..... 20

2.7 WATER MANAGEMENT ..... 20

2.8 HAZARDOUS MATERIAL MANAGEMENT ..... 21

2.9 OTHER INFRASTRUCTURE MANAGEMENT ..... 21

**3. ENVIRONMENTAL MANAGEMENT AND PERFORMANCE ..... 22**

3.1 METEOROLOGICAL MONITORING..... 22

3.1.1 Further Improvements..... 23

3.2 AIR POLLUTION..... 23

3.2.1 Environmental Management ..... 23

3.2.2 Environmental Performance ..... 23

3.2.3 Reportable Incidents ..... 24

3.2.4 Further Improvements..... 24

3.3 EROSION AND SEDIMENTATION ..... 25

3.3.1 Environmental Management ..... 25

3.3.2 Environmental Performance ..... 25

3.3.3 Reportable Incidents ..... 27

3.3.4 Further Improvements..... 28

3.4 SURFACE WATER POLLUTION ..... 28

3.4.1	Environmental Management .....	28
3.4.2	Environmental Performance .....	29
3.4.3	Reportable Incidents .....	29
3.4.4	Further Improvements.....	29
3.5	GROUNDWATER POLLUTION.....	29
3.5.1	Environmental Management .....	29
3.5.2	Environmental Performance .....	30
3.5.3	Reportable Incidents .....	30
3.5.4	Further Improvements.....	30
3.6	CONTAMINATED AND/OR POLLUTED LAND .....	30
3.6.1	Environmental Management .....	30
3.6.2	Reportable Incidents .....	31
3.6.3	Further Improvements.....	31
3.7	THREATENED FLORA AND FAUNA.....	32
3.7.1	Environmental Management .....	32
3.7.2	Environmental Performance .....	32
3.7.3	Reportable Incidents .....	32
3.7.4	Further Improvements.....	32
3.8	WEEDS.....	33
3.8.1	Environmental Management .....	33
3.8.2	Environmental Performance and Further Improvements.....	33
3.8.3	Reportable Incidents .....	33
3.9	BLASTING .....	33
3.9.1	Environmental Management .....	33
3.9.2	Environmental Performance .....	34
3.9.3	Reportable Incidents .....	34
3.10	OPERATIONAL NOISE .....	34
3.11	VISUAL AMENITY AND STRAY LIGHT .....	35
3.12	ABORIGINAL AND NATURAL HERITAGE .....	35
3.13	SPONTANEOUS COMBUSTION .....	36
3.14	BUSHFIRE .....	36
3.15	MINE SUBSIDENCE.....	37
3.16	HYDROCARBON CONTAMINATION .....	37
3.16.1	Environmental Management .....	37
3.16.2	Environmental Performance .....	37
3.16.3	Reportable Incidents .....	37
3.16.4	Further Improvements.....	37
3.17	METHANE DRAINAGE / VENTILATION .....	38
3.18	PUBLIC SAFETY .....	38
3.19	OTHER ISSUES AND RISKS.....	38
<b>4.</b>	<b>COMMUNITY RELATIONS .....</b>	<b>39</b>
4.1	ENVIRONMENTAL COMPLAINTS .....	39
4.2	COMMUNITY LIAISON.....	39

<b>5.</b>	<b>REHABILITATION</b> .....	<b>40</b>
5.1	LANDFORM DESIGN, MATERIAL CHARACTERISATION AND REHABILITATION .....	40
5.2	BUILDINGS .....	41
5.3	REHABILITATION OF DISTURBED LAND .....	41
5.3.1	Mining Domain 1 – Infrastructure Area .....	41
5.3.2	Mining Domain 2 – Tailings Storage Facility .....	43
5.3.3	Mining Domain 3 – Water Management Area .....	43
5.3.4	Mining Domain 4 – Overburden Emplacement Areas .....	43
5.3.5	Mining Domain 8 – Other: Stockpiled Material .....	44
5.3.6	Mining Domain 6 – Active Mining Area: Open Cut Void .....	44
5.4	REHABILITATION TRIALS AND RESEARCH .....	46
5.5	FURTHER DEVELOPMENT OF THE FINAL REHABILITATION PLAN .....	47
<b>6.</b>	<b>ACTIVITIES FOR NEXT REPORTING PERIOD</b> .....	<b>48</b>
6.1	PROPOSED ACTIVITIES .....	48
6.2	EXPLORATION .....	48
6.3	CONSTRUCTION .....	48
6.4	MINING .....	48
6.5	REHABILITATION .....	48
6.5.1	Mining Domain 1 – Infrastructure Area .....	49
6.5.2	Domain 2 – Tailings Storage Facility .....	49
6.5.3	Domain 3 – Water Management Area .....	50
6.5.4	Mining Domain 4 – Overburden Emplacement Area (WRE) .....	50
6.5.5	Domain 5 – Stockpiled Material .....	51
6.5.6	Domain 6 – Open Cut Voids .....	51
6.5.7	General Site and Revegetation .....	51
<b>7.</b>	<b>BIBLIOGRAPHY</b> .....	<b>52</b>

**LIST OF FIGURES**

Figure 1 - Mt Boppy Gold Mine Locality Plan ..... 11  
 Figure 2: Mt Boppy Gold Mine Current Site Layout ..... 12  
 Figure 4: Comparative photos of the Eastern bank of the waste rock emplacement showing progress of groundcover species growth and minimal erosion. .... 26  
 Figure 5: Western side of the TSF embankment with established groundcover..... 27  
 Figure 6: Mt Boppy Domains, existing disturbance, and rehabilitation status..... 43

**LIST OF TABLES**

**Table 1-A: Mt Boppy Gold Mine tenements..... Error! Bookmark not defined.**  
 Table 1-B: Rehabilitation-Related Stakeholder Consultation during the 2021-2022 Reporting Period 14  
 Table 2-A: Exploration drilling completed on ML1681 for the 2021-2022 reporting period..... 15  
 Table 2-B: Calculated of mineral resources for the Mt Boppy Gold Mine on 30 June 2021. .... 16  
 Table 2-C: Non-Production Waste Management ..... 18  
 Table 2-D: Production and waste flow volume summary ..... 19  
 Table 2-E Waste Rock Volumes per Sulphur Percentage and Characterisation..... 19  
 Table 2-F: Existing stored water quantities ..... 21  
 Table 3-A Rainfall (mm) Total 2011 to 2022 Mt Boppy Gold Mine ..... 22  
 Table 3-B: Dust monitoring of results for the 2021-2022 reporting period ..... 24  
 Table 3-C: Blast monitoring activities during the 2021-2022 reporting period. .... 34  
 Table 5-A: Rehabilitation Summary..... 45  
 Table 5-B: Maintenance Activities on Rehabilitated Land..... 46

## LIST OF ACRONYMS

AEMR	Annual Environmental Management Report
ARR	Annual Rehabilitation Report
bgl	Below Ground Level
DA	Development Approval
DRE	Division of Resources and Energy
EL	Exploration Licence
ESCP	Erosion and Sediment Control Plan
EPA	NSW Environment Protection Authority
MBR	Mt Boppy Resources Pty Ltd
ML	Mining Lease
MOP	Mining Operations Plan
NOW	NSW Office of Water
PAF	Potentially Acid Forming
RL	Relative Level
RO	Reverse Osmosis
ROM	Run-of-Mine
TSF	Tailings Storage Facility
WRE	Waste Rock Emplacement

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Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	9 of 51



# 1. ANNUAL REHABILITATION REPORT

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## 1.1 COMPLAINTS REGISTER

No reportable complaints have been received during the reporting period.

## 1.2 CURRENT DEVELOPMENT CONSENTS, LEASES, AND LICENCES

The Mt Boppy Gold Mine (“the Mine”) is located approximately 275 kilometres (km) west-north-west of Dubbo and 48 km east of Cobar, adjacent to the township of Canbelego in New South Wales (NSW) (refer to Figure 1 - Mt Boppy Gold Mine Locality Plan).

### 1.2.1 Mining Lease

The mine is comprised of seven mining tenements: GL3255, GL5836, GL5848, GL5898, ML311, MPL240 and ML1681 (see **Table 1**). **Figure 2** shows these tenements held by Mt Boppy Resources (MBR) wholly owned subsidiary of Manuka Resources along with the general layout of the mining area.

**Table 1-A: Mt Boppy Gold Mine tenements.**

LEASE	AREA (HA)	GRANT DATE	STATUS	EXPIRY	REGISTERED HOLDER
GL <sup>1</sup> 3255	8.281	20 May 1926	Granted	20 May 2033	MBR
GL 5836	6.045	15 June 1965	Granted	15 June 2033	MBR
GL 5848	8.625	15 February 1968	Granted	15 June 2033	MBR
GL 5898	7.512	21 June 1972	Granted	12 December 2033	MBR
ML <sup>2</sup> 311	10.117	8 December 1976	Granted	12 December 2033	MBR
MPL <sup>3</sup> 240	17.8	17 January 1986	Granted	12 December 2033	MBR
ML 1681	188.1	12 December 2012	Granted	12 December 2033	MBR

In accordance with the *Mining Act 1992*, each mine operator in NSW is currently required to develop and implement a Mining Operations Plan (MOP). The MOP documents the site activities, with reference to best mining practices and the holder’s progress towards the required environment and rehabilitation outcomes. The current MOP for the Mine addresses the activities for the operational mine phase for the period 31 October 2021 to 2 July 2022.

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<sup>1</sup> Gold Lease  
<sup>2</sup> Mining Lease  
<sup>3</sup> Mining Purposes Lease

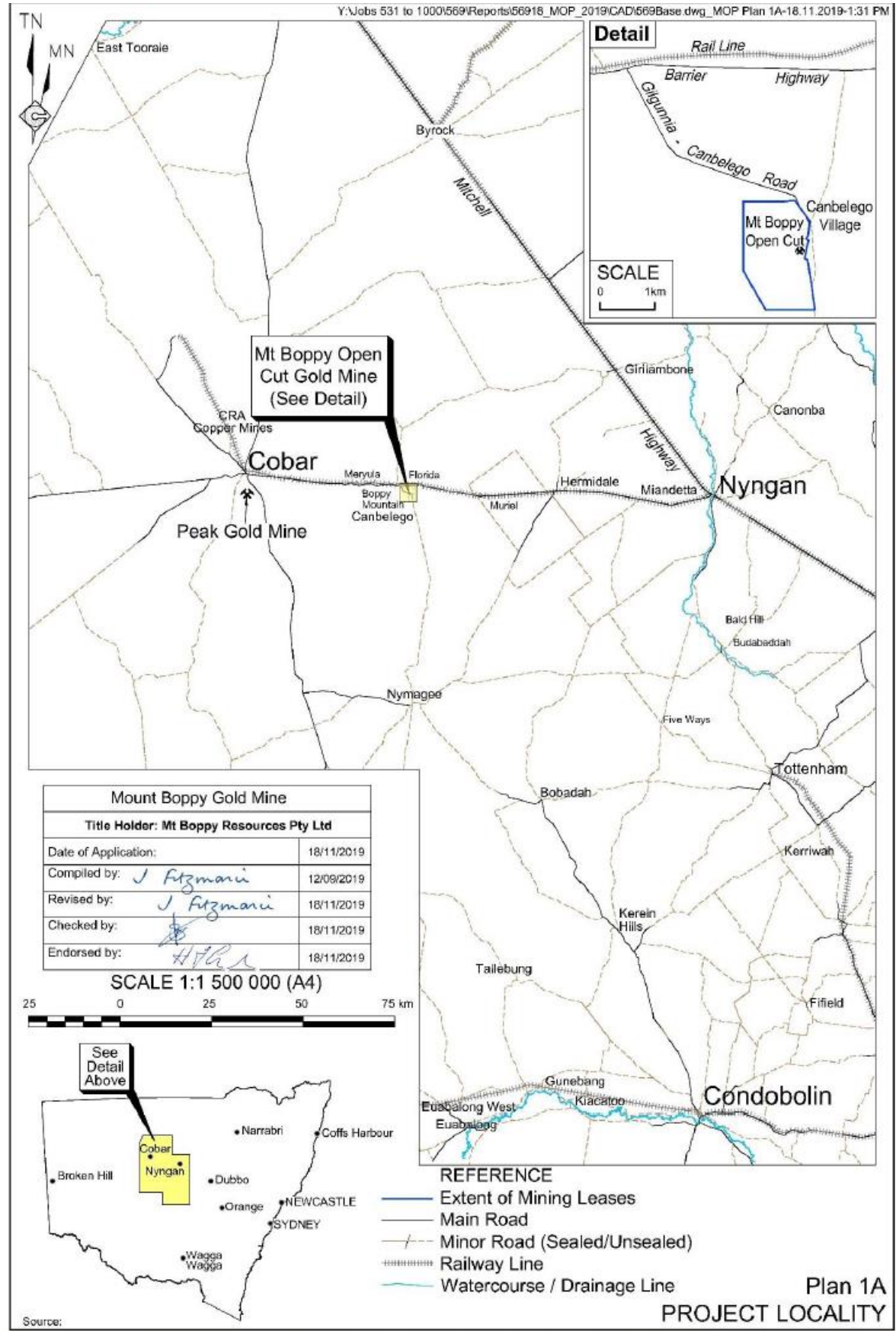


Figure 1 - Mt Boppy Gold Mine Locality Plan

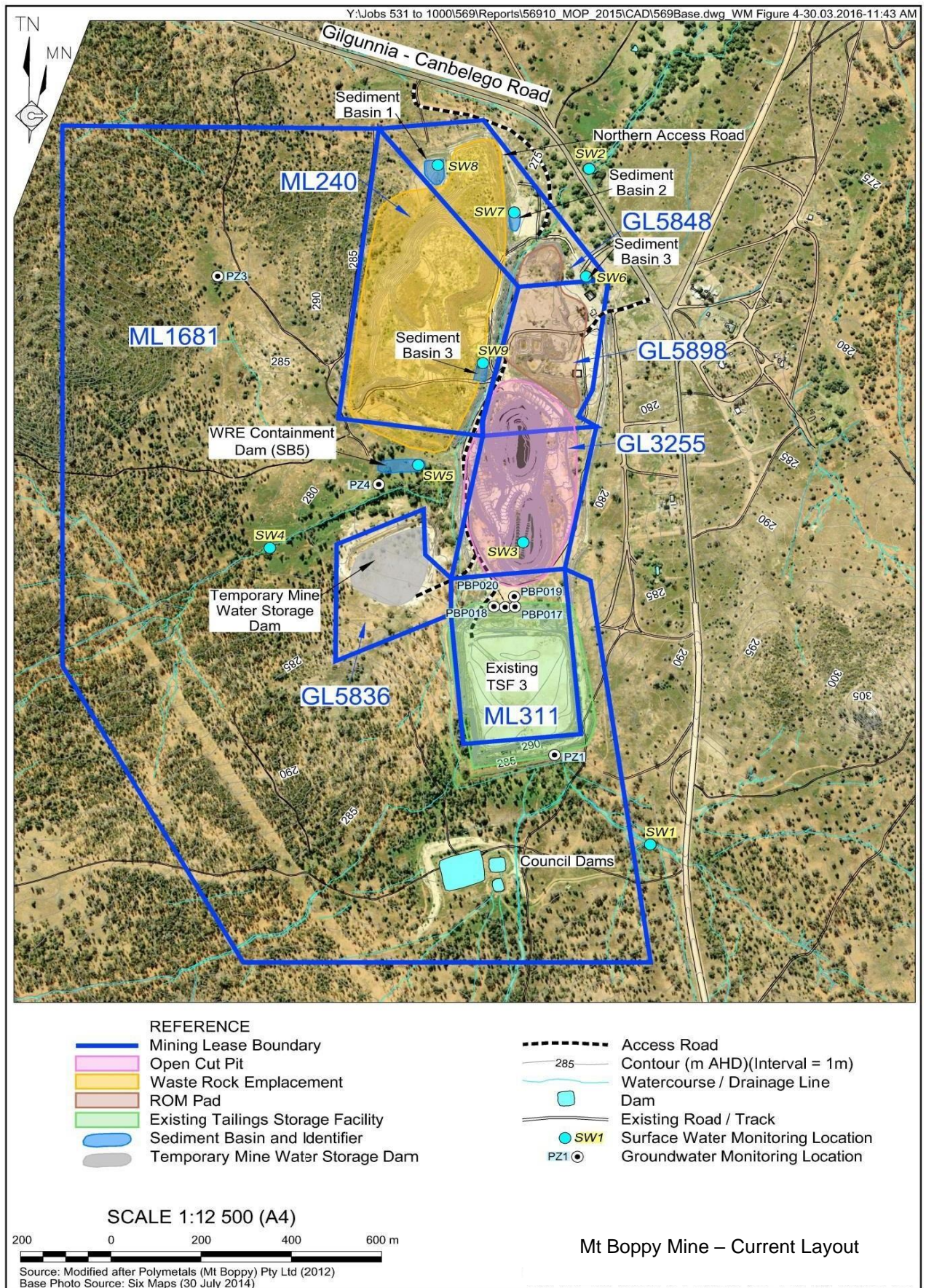


Figure 2: Mt Boppy Gold Mine Current Site Layout

Document is UNCONTROLLED when printed					
Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	12 of 51

In November 2020, new conditions of the proposed Mining Amendment (Standard Conditions of Mining Leases - Rehabilitation) Regulation 2020 under the Mining Act 1992 finished its public consultation process. The proposed Amendment Regulation stipulates new conditions that will require Mining Lease

Holders to develop clear and enforceable progressive rehabilitation outcomes. The proposed amendment includes replacing the current MOP requirement with the *Form and Way Rehabilitation Management Plan* guidelines.

The next Mt Boppy MOP (which will be developed in line with the new Form and Way Guidelines (once released) is due by July 2022.

## 1.2.2 Development Consent

DA 2011/LD-00070REV1 was granted by Cobar Shire Council on 27 July 2015. This consent is for the extension and operation of the mine including mining of approximately 630,000 t of ore, the management of potentially acid forming waste rock, the transportation of ore to the Manuka Mine, the construction of temporary mine water storage dams, and the 24 hours 7 days per week operations.

DA 2012/LD-00034 was granted by Cobar Shire Council on 22 November 2012. This consent is for the expansion of the off-lease mining camp.

## 1.2.3 Environmental Protection Licence (EPL) 20192

Issued by the NSW Environment Protection Authority (EPA) under the *Protection of the Environment Operations Act 1997* (POEO Act), the current version of EPL 20192 is dated 20 February 2019.

The fee-based scheduled activities under this EPL remain unchanged:

- Crushing, grinding, or separating (>100,000 – 500,000 T annual processing capacity),
- General chemical storage (0 - 5,000 kL storage capacity),
- Mineral processing (>100,000 – 500,000 T annual processing capacity), and
- Mining for minerals (>100,000 – 500,000 T annual production capacity).

## 1.2.4 Water Access Licences

Extraction of groundwater at Mt Boppy Mine is carried out in accordance with two Groundwater Licence conditions:

- Work Approval Number 85WA75612: Issued by the (then) NSW Office of Water (NOW) for the water supply works associated with three water supply bores within Lot 7301 DP 1170536.
- Work Approval Number 85WA753524: Issued by the (then) NOW for the water supply works associated with excavation of the open cut pit.

## 1.3 MINE CONTACTS

Mr Haydn Lynch is the appointed Chief Operating Officer of Manuka Resources and is responsible for the overall environmental and operational performance of the mine during its ownership by Manuka Resources.

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Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	13 of 51

Mr Drew R Manley is the appointed Mt Boppy Quarry Manager responsible for the everyday activities on the mine site, and achievement of the nominated and conditioned operational and environmental goals for the Mine.

The contact details for the Mine are as follows:

Postal Address:	Manuka Resources Ltd P.O. Box 273 Cobar NSW 2835	Physical Address:	Mt Boppy Mine Canbelego, NSW 2835
Phone:	0421 370 902		
Email:	hlynch@manukaresources.com.au		

## 1.4 LAND OWNERSHIP AND LANDUSE

There are no current changes to land ownership and land use related to the land during the reporting period.

## 1.5 STAKEHOLDER CONSULTATION

Below is a summary table on all rehabilitation-related stakeholder consultation undertaken during the reporting period:

**Table 1-B: Rehabilitation-Related Stakeholder Consultation during the 2021-2022 Reporting Period**

Date	Stakeholder	Consultation Activity	Subject Matters to Consultation	Actions taken in response to matters raised by Stakeholder
Aug-21	Landloch	Soil Classification and erosion	Soil Classification and erosion	Stockpiled and segregated material
Sep-21	RW Corkery	Landform design scope	Landform design scope	Design work and waste tip designs
Dec-21	AREA Environmental & Heritage	Biodiversity Monitoring	State of biodiversity onsite	Continuation of irrigation and use of bore pump due to native frog populations.
Nov-21	Pells Sullivan Meynink	End of pit design stability	End of pit design stability	Bunding and pit closure

## 1.6 ACTIONS REQUIRED FOLLOWING INSPECTIONS FROM NSW STATE & LOCAL GOVERNMENT REGULATORS

The previous Mt Boppy Annual Rehabilitation Report (ARR) was lodged by Manuka Resources on 28<sup>th</sup> February 2021. Resident complained about water seepage from a water pipe, inspection by Mt Boppy and the council determined seepage to be a council issue, council and local resident agree to allow us to repair pipe on the councils behalf.

## 2. OPERATIONS DURING THE 2021 - 2022 REPORTING PERIOD

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This section outlines the operations that have occurred at the mine within the 2021-2022 reporting period.

### 2.1 EXPLORATION

The following exploration activities were undertaken during the reporting period:

- RC drilling collared from surface for 16 holes over 2,979m.
- Diamond Drill for core drilling has been wedged off some of these RC holes due to difficult drilling and for structural information around ore zones

The RC and diamond drilling is targeting high-grade gold mineralisation below the current pit design. The recent drilling results have been used in the construction of a 3D geological model of the Mt Boppy gold deposit that is providing guidance for future brownfields exploration and mining.

Below is a summary table of the completed exploration drilling on ML 1681 during the reporting period.

**Table 2-A: Exploration drilling completed on ML1681 for the 2021-2022 reporting period.**

Exploration drilling on ML1681	Holes (un)	meters	Assays (un)
RC drilling	16	2,979	1,732
Diamond drilling	3	60	22

A resource update was completed on 30 June 2021 showing an increase of measured and indicated resources of 110% compared to June 2020. The updated 2021 Mineral Resources at the Mine is reported in the Table below.

Below is a summary table of the completed exploration drilling on ML 1681 during the reporting period.

**Table 2-B: Calculated of mineral resources for the Mt Boppy Gold Mine on 30 June 2021.**

Resource Category	Material (Mt)	Au (g/t)	Au (oz)
Measured	159,470	4.64	23,800
Indicated	175,700	4.44	25,100
Inferred	4,000	5.70	1,000
<b>Total</b>	<b>339,170</b>	<b>4.58</b>	<b>49,900</b>

## 2.2 LAND PREPARATION

Ongoing monitoring and maintenance of drainage works have occurred on existing disturbed areas only. Construction

There were several minor constructions carried out during the reporting period.

- Construction to repair/recommission diversion drains around waste rock emplacement.
- Grading of existing areas.
- Application of bunding at various locations around site.
- Construction of contractor workshop

All construction activities occurred on previously disturbed areas.

## 2.3 MINING

Mining activities were conducted during the reporting period to extract remaining ore from the Mt Boppy Open Pit. Mining Operations recommenced in June 2020 and were initially projected to be completed before the end of the reporting period. Due to delays associated with dewatering the pit to start mining activities, the discovery of further resource within the pit, and COVID lockdowns throughout the year, mining activities are only finished in late January 2022. Post completion of mining, bunds were created at the top of the pit access ramp to prevent water ingress.

Key operational activities onsite involve mining of minerals from the open pit, crushing of ROM ore through a mobile plant, transportation of ROM ore from the ROM pad to the Manuka Resources' processing plant at Wonawinta, and ongoing stockpiling of waste rock material.

## 2.4 MINERAL PROCESSING

During the reporting period, an onsite mobile crushing plant was used to crush ore stockpiles from the Mt Boppy Open Pit. This crushed material was then hauled to Manuka Resources' Wonawinta Mine site.

ROM ore continued to be crushed on-site until the early part of the next reporting period, with processing and liberation of gold to continue being undertaken off site at the Wonawinta site. Following the open cut works, Mt Boppy Gold Mine will suspend mining operations, extraction, crushing and hauling of ore. Mt

Boppy will then be going on a care and maintenance cycle including demobilisation and surface rehabilitation of appropriate infrastructure until the results of current extension drilling under the pit floor have been fully analysed to determine the next phase of mining operations.

No mineral processing is undertaken onsite; therefore, no process residues or tailings are generated.

The existing TSF 3 will continue to be utilised as storage of ‘increased risk’ PAF material (>1% S) prior to capping with NAF material. As TSF 3 has been constructed for the management of PAF tailings material, the placement of ‘increased risk’ PAF waste rock within the existing TSF 3 will consolidate all ‘increased risk’ materials in one location.

The existing tailings will also restrict the passage of oxygen to the base of the PAF material, which will be lime-treated at the highly conservative rate of 30t/ha and subsequently clay capped, covered with NAF material, and rehabilitated similarly to the PAF encapsulation area within the WRE.

## 2.5 WASTE MANAGEMENT

Waste generated at the Mt Boppy Gold Mine falls within two defined categories: *non-Production* waste and *Production* waste. Both waste streams are consistent with the details provided in the current MOP.

### 2.5.1 Non-Production Waste

Waste management processes have continued to improve during the reporting period with ongoing onsite activities.

Non-production waste generated during this reporting period was collected at the Mine and removed for disposal or recycling by a suitable qualified contractor.

**Table 2-C: Non-Production Waste** Management presents the non-production waste and describes how each class of waste was stored and subsequently removed from the Mine.

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Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	17 of 51



**Table 2-C: Non-Production Waste Management**

WASTE TYPE	STORAGE / MANAGEMENT	REMOVAL / DISPOSAL
<b>General waste (including food scraps)</b>	Covered bins or skips are located at lunch areas, offices, outside workshops and elsewhere as required. Where these bins are in open areas, they are fitted with animal proof lids.	Collected on a regular basis by a licensed contractor and transported to the Cobar Waste Disposal Facility for disposal.
<b>General Recyclables</b>	Covered bins or skips are located at lunch areas, offices, outside workshops and elsewhere as required. Where these bins are in open areas, they are fitted with animal proof lids.	Collected on a regular basis by a licensed contractor and transported to a licensed recycling facility in Dubbo.
<b>Waste Oils and Greases</b>	Placed within the bunded tank within the workshop area. Where required, smaller, temporary storage containers are positioned in work areas, with the contents of those containers then transferred to the large storage tank.	Collected on an as needs basis by a licensed contractor and transported to an appropriately licensed facility for recycling.
<b>Batteries</b>	Placed within a covered and marked used battery storage area until removed from the Mine.	Collected on an as needs basis by a licensed contractor and transported to an appropriately licensed facility for recycling.
<b>Tyres</b>	Placed within a marked used tyre storage area until removed from site.	Tyres is disposed of at a licensed waste management facility or removed by a third part approved to recycle tyres.
<b>Scrap Metal</b>	Stored in a specified area within the workshop area, or elsewhere, as required.	Collected on an as needs basis by a scrap metal recycler.
<b>Wastewater</b>	Treated in the on-site Sewage Treatment Plant.	The on-site system is pumped out by a licensed contractor on an as needs basis.

## 2.5.2 Production Waste

Approximately 62,560 t of waste rock was mined during the reporting period. **Table 2-D: Production and waste flow volume** summarises the production and mine waste quantities during the reporting period and expected volumes during the new reporting period.

**Table 2-D: Production and waste flow volume summary**

	START OF REPORTING PERIOD 1 FEBRUARY 2021	END OF REPORTING PERIOD 31 JANUARY 2022	PREDICTED FOR END OF NEXT REPORTING PERIOD 31 JANUARY 2023
Topsoil Stockpiled (t)	9,900	9,900	9,900
Topsoil Used/Spread (t)	2,200	0	0
Waste Rock (t)	3,006,674 (t)	3,069,234 (t)	3,069,234 (t)
Ore (t) mined	218,196 (t)	334,386 (t)	0 (t)
Ore (t) stockpiled	15,511 (t)	7,720 (t)	0 (t)
PAF waste (t) stockpiled	100,840 (t)	166,440 (t)	166,440 (t)

Waste characterisation testing completed to date confirms that a proportion of the waste rock is classified as PAF. PAF material was encountered once mining reached depths of approximately 195 m RL. **Table 2-E Waste Rock Volumes per Sulphur Percentage and Characterisation** presents the results of a block model used to predict the volume of waste rock at varying sulphur percentages, the characterisation of that material and where it will be placed.

**Table 2-E Waste Rock Volumes per Sulphur Percentage and Characterisation**

S%	VOLUME (BCM)	TONNES	CHARACTERISATION	PLACEMENT
0 to 0.1	7,907	19,477		
0.1 to 0.2	8,259	21,040	NAF	WRE
0.2 to 0.3	46,406	90,886	NAF	WRE
0.3 to 0.4	10,541	27,654	PAF – moderate risk	WRE – encapsulated
0.4 to 0.5	11,957	31,267	PAF – moderate risk	WRE – encapsulated
0.5 to 1	126,599	338,242	PAF – moderate risk	WRE – encapsulated
>1	97,175	200,445	PAF – increased risk	TSF 3
<b>Total</b>	<b>308,844</b>	<b>729,011</b>		

Waste rock material with total sulphur content greater than 1% (~51 000 BCM - down to 165 mRL) is considered as ‘increased risk’ material and will be placed within the existing TSF 3 structure prior to capping. The remaining ‘moderate risk’ PAF material with total sulphur content between 0.3% and 1% (~149,000 BCM) will be placed within specially designed sections of the WRE. Waste rock will be placed in lifts onto the WRE and shaped by bulldozer to the design slopes. The remaining ~28,000 BCM of waste rock is considered non-acid forming (NAF), as shown in **Table 2-E Waste Rock Volumes per Sulphur Percentage and Characterisation** above.

## 2.6 ORE AND PRODUCT STOCKPILES

Mining occurred during the reporting period and existing ore stockpiles were used.

The crushing of existing ore stockpiles was re-established as well as mined ore, with the introduction of a mobile crushing plant. This crushed material was then hauled to Manuka’s Wonawinta mine site for processing using the Wonawinta mill. Approximately 343,409 tonnes of crushed ore was mined from the open pit during the reporting period.

There is currently no stockpiled ore or crushed ore product at Mount Boppy. Only crushed product left on site is 800 t of road base and stemming.

## 2.7 WATER MANAGEMENT

The objectives for the management of surface water, erosion, sedimentation, and pollution at the Mt Boppy Gold Mine are as follows.

- To ensure the segregation of “dirty” and “contaminated” water from “clean” water, with dirty and contaminated water directed to and detained in the appropriate water management structures.
- To maximise the use of dirty water for dust suppression in order to minimise the need for discharge.
- To prevent discharge of contaminated water, other than by controlled irrigation to appropriately contained catchments to increase evaporative losses and eliminate the need for treatment and discharge.
- To monitor the effectiveness of surface water controls and ensure all relevant water quality criteria are met.

Water management over the reporting period involved the dewatering activities of the Open Pit, and the consequent storage in the Water Storage Dam. **Table 2-F** provides a summary of volumes of water stored at the start and end of the reporting period as well as the total storage capacity.

Document is UNCONTROLLED when printed					
Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	20 of 51

**Table 2-F: Existing stored water quantities**

	Volumes Held (ML)		
	Start of Reporting Period	End of Reporting Period	Storage Capacity
Temporary Mine Water Storage Dam	30 ML	40 ML	51.5 ML
Open Cut Pit	0 ML	103 ML	~ 700+ ML (Unknown quantity)

All dewatering activities will be carried out in accordance with the Soil and Water Management Plan.

## 2.8 HAZARDOUS MATERIAL MANAGEMENT

The mine fleet is small in number and therefore only a small quantity of engine oil is kept on site in a self-bunded oil storage container at the mine workshop. Waste oil is kept in an approved waste oil storage container and emptied by an approved waste oil disposal company.

Diesel is currently stored in a 70,000 L capacity self-bunded container tank adjacent to the mine workshop and used for refuelling MBR. NMC maintains records of diesel deliveries and usage. A small amount of diesel (10,000L) is kept in a separate self-bunded tank to power a bore pump.

There are no processing reagents, laboratory chemicals or other hazardous materials stored on site. Reagents, alkalis, and acids used during on-site processing between 2002 and 2005 have previously been removed from site.

The mining related activities the during the reporting period did not require any significant volume of hazardous materials. An inventory of the hazardous materials stored onsite for records keeping.

## 2.9 OTHER INFRASTRUCTURE MANAGEMENT

Offices, a standard septic, and leach drain (capped), and Mine workshops are located onsite. Power if used, is supplied by diesel generators located at the workshop. Grid power continues to be maintained to the site and powers the camp but no upgrades to mine site supply have occurred during the reporting period.

No other infrastructure onsite has been decommissioned or required maintenance during the reporting period.

### 3. ENVIRONMENTAL MANAGEMENT AND PERFORMANCE

The Mine began operational activities in May 2020 and commenced hauling stockpiled ore in June 2020. Over the 2021/2022 reporting period mining works included blasting and mining minerals from the pit, crushing of ROM ore, transportation of crushed ROM ore to processing plant at Wonawinta and stockpiling of waste rock.

The following subsections provide a summary of applicable environmental management measures to update progress against the MOP and any updates or changes.

#### 3.1 METEOROLOGICAL MONITORING

Table 3-A provides monthly rainfall figures from 2011 to the end of this reporting period (31 January 2022) are provided below.

**Table 3-A Rainfall (mm) Total 2011 to 2022 Mt Boppy Gold Mine**

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
January	19	111.6	0.6	5	N/A	26.6	32.6	28.5	15	24	89	29.5
February	32.6	49.4	12.2	73.8	N/A	4.4	0.0	5.0	17	91.5	63	
March	24.8	86.6	55.6	55.6	N/A	28.8	53.6	0	27	81	78	
April	16.6	0.2	0	29.8	N/A	79.6	7.4	2.5	21	157	0	
May	43.2	12	23.8	16.4	N/A	68.2	59.0	3.0	9.5	14	23	
June	2.2	33.2	81	41.2	N/A	107	7.0	7.5	7	9	105	
July	13.6	28	42.8	1.2	36.6	52.2	3.4	10.0	10	14	15	
August	16.8	0.6	0.2	34	17.2	59	16.0	26.0	2	91	1	
September	28.2	17.4	19.4	16.4	7.6	101	1.4	0	2	55	41	
October	23	2.4	8	0.4	31	22.4	59.8	68.0	0	13	12	
November	52.2	31.4	1.2	3.2	87.6	14.2	44.0	54.0	33	0	242	
December	37.8	6	35	34.2	23	35.6	64.2	3.0	0	39	25	
<b>Annual Total</b>	<b>310.0</b>	<b>378.8</b>	<b>279.8</b>	<b>311.2</b>	<b>203.0</b>	<b>599.0</b>	<b>348.4</b>	<b>207.5</b>	<b>143.5</b>	<b>588.5</b>	<b>694</b>	
<b>Reporting period Total</b>												<b>634.5</b>

The 2021-2022 reporting period has been one of the wettest years of the past decade (see Table 3-A above) with a total of 48 rainy days, nine of which were single heavy rainfall events (>25mm/24hr). Recent Report<sup>4</sup> published by the Bureau of Meteorology (BOM) noted that the extreme multi-day heavy rainfall and significant flooding affected many parts of eastern and central Australia including much of inland NSW and the Upper Western NSW Region from 17 to 26 March 2021. March 2021 however only ranks as the third highest rainfall month for the Mine during the reporting period.

<sup>4</sup> *Special Climate Statement 74 – extreme rainfall and flooding in eastern and central Australia in March 2021 Report*

Two of the heaviest single rainfall events occurred with less than 7 days apart: on 26 November 2021 with 58 mm of rain, and on 30 November 2021 with 84 mm of rain. The total rainfall recorded at the Mine for this reporting period was 634.5 mm, with 38% of which occurred in November 2021 alone. The second and third highest rainfall months were June 2021 and March 2021, accounting for 16.5% and 12.3% respectively, of the total rainfall during the reporting period.

### 3.1.1 Further Improvements

All efforts will be focused on improving landform stability and reducing erosion during the 2022-2023 reporting period. The heavy nature of the rainfall events has posed challenges to the stability of the various landforms around site, especially those which are yet to be profiled to a final slope angle and are being addressed where possible to in the current (2022/23) reporting period. The wetter conditions have provided the catalyst for a return of much of the groundcover. This has led to a new focus on utilising the increased water supply to maintain and grow groundcover to help stabilise and prepare the various landforms for mine closure towards the end of the reporting period.

## 3.2 AIR POLLUTION

### 3.2.1 Environmental Management

The Canbelego residents are the sensitive receptors to dust emissions from the Mine. Potential sources of dust during the reporting period included light and heavy vehicle movements on site, periodic in-pit blasting activities, earth moving machinery for the materials handling associated with crushing and haulage of stockpiles, and the use of the mobile crushing plant.

Due to the prevailing semi-arid environment, dust levels may also be elevated during certain climatic conditions. The main sources of dust associated with rehabilitation activities are wind erosion of exposed surfaces including stockpiled soil and areas of the WRE not yet rehabilitated.

Industry practice recommends dust deposition do not exceed 2 g/m<sup>2</sup>/month above background levels, resulting in a maximum allowable quantity of 4 g/m<sup>2</sup>/month. While the Mine does not have specific dust deposition limits, recommended EPA compliance for dust deposition have been adopted at the Mt Boppy as part of Manuka Resources' environmental due diligence.

### 3.2.2 Environmental Performance

The dust levels had been intermittently collected at all three monitoring locations due to covid restrictions and lockdowns. While the delays in sampling bottle collection only provided 6 out of 12 monthly monitoring analyses, the dust results can be considered reasonably acceptable and consistent with ongoing activities onsite during the reporting period.

Document is UNCONTROLLED when printed					
Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	23 of 51

**Table 3-B: Dust monitoring of results for the 2021-2022 reporting period**

Monthly Total Insoluble Matter (TIM) in g/m <sup>2</sup> .month												
Dust gauge	Feb-2021	Mar-2021	Apr-2021	May-2021	Jun-2021	Jul-2021	Aug-2021	Sep-2021	Oct-2021	Nov-2021	Dec-2021	Jan-2022
D1			1.4	4.0	2.9		2.1		3.5		1.7	
D2			1.2	0.4	1.2		1.2		1.5		7	
D3			0.6	0.5	0.5		0.6		1.0		0.9	

The maximum total insoluble matter (TIM) was recorded in December 2021 being 7.0 g/m<sup>2</sup>.month at dust gauge D2, whereas the minimum TIM recorded was 0.5 g/m<sup>2</sup>/month at point D3 for both May and June 2021. Elevated dust generated at D2 towards the end of the reporting period was due to ongoing drill exploration program within the vicinity of the dust gauge. In contrast dust gauge D1, located at the nearest sensitive receiver, is below the recommended dust deposition background level. While dust emissions at D2 is localised, efforts to suppress dust have clearly been successful as no air pollution complaints were received, and no human health related impacts have been reported or known to have occurred in December 2021.

Given there will be no material movements on this site for the near term whilst future development plans are assessed no dust suppression on stockpiles will be required.

### 3.2.3 Reportable Incidents

There were no reportable incidents and no complaints relating to air pollution during the reporting period.

### 3.2.4 Further Improvements

Monthly dust deposition monitoring at the three designated monitoring sites will continue during the next reporting period, ensuring compliance with relevant designated criterion of <4 g/m<sup>2</sup>/month (cumulative dust deposition). Management strategies proposed during mining activities include:

- Ongoing rehabilitation and revegetation of previously disturbed areas that will not be affected by future mining activity.
- Wetting of road surfaces and stockpiles when appropriate.
- Blast Management procedures to minimise dust from blasts in the open pit.
- Restrictions on off-road vehicle movements; and
- Imposing appropriate speed limits on site.

### 3.3 EROSION AND SEDIMENTATION

#### 3.3.1 Environmental Management

Efforts for the current reporting period were focused on monitoring and maintenance of all disturbed surfaces, and for the early detection and amelioration of erosion and sedimentation. Due to the heavy rainfall over the reporting period, erosion and sedimentation management became a key focus of Manuka Resources. The increased rainfall led to an increase in groundcover vegetation which has stabilised much of the surrounding landforms however, efforts to detect and rectify erosion and sedimentation are ongoing.

#### 3.3.2 Environmental Performance

**Figures 4 and 5** show current site conditions. The reporting period over 2021 was uncharacteristically wet and provided a catalyst for continued groundcover vegetation to grow. The growth has occurred on slopes that are steeper than the planned slope aimed to achieve at final landform. This is a good indication that a good groundcover will be achievable when final landform is achieved.

**Figure 3** shows the eastern bank of the waste rock emplacement with good vegetative cover returning over the reporting period with the consistent rainfall in the region. Photos presented demonstrate progress of groundcover growth between December 2020 and February 2022.

**Figure 4** shows a section of the western embankment of the TSF which has achieved ground cover levels consistent with natural surrounds. The comparative photos of December 2020 and February 2022 demonstrate the progressive groundcover growth on the western side of the TSF and resisted erosion despite the heavy rainfall the Upper Western Region has experienced between 2020 and early 2022. Inspections have discovered minimal erosion and continued flora growth providing a good indication that a sustainable stable landform will be achieved when the embankment is profiled to meet slope angles consistent with the final landform designs.

Document is UNCONTROLLED when printed					
Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	25 of 51





**Figure 3: Comparative photos of the Eastern bank of the waste rock emplacement showing progress of groundcover species growth and minimal erosion.**

Document is UNCONTROLLED when printed					
Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	26 of 51



Photo taken December 2020



Photo taken February 2022

**Figure 4: Western side of the TSF embankment with established groundcover.**

Increased rainfall in 2021 (on top of a wet 2020) has resulted in a rapid increase in groundcover vegetation. This has stabilised much of the former disturbed areas of the site reducing erosion and sedimentation. The continued flora growth through the reporting period provides a positive indication that stabilisation of disturbed areas can be achieved through reprofiling and seeding of disturbance areas. Planting methods will be employed by Manuka Resources when final landforms are completed which should result in stabilisation of disturbed areas.

### 3.3.3 Reportable Incidents

No incidents of excessive erosion or sedimentation have been noted or observed during the reporting period.

Document is UNCONTROLLED when printed					
Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	27 of 51

### 3.3.4 Further Improvements

Monitoring and maintenance of drainage remediation works, and sediment controls will be ongoing for the next reporting period. Final land shaping will occur where possible, topsoil spreading and seeding with native plant species. Success criteria in terms of rehabilitation standard have been determined and are presented in the current MOP.

There will be potential for erosion and sediment during the next reporting period from rehabilitated areas prior to the successful establishment of vegetation. When we start to handle soil and prepare for rehabilitation works, the following strategies will be employed:

- Soil stripping areas will be clearly defined and marked prior to commencement.
- Soil will not be stripped in wet conditions and the grass and shrub layer will be stripped with the soil. If very dry, soils will be lightly watered to reduce the potential for wind erosion but not so as to be wet and thereby increasing compaction.
- The topsoil will be preferentially transferred directly to rehabilitation areas or placed in designated temporary stockpile areas located in consideration of local flow paths / drainage lines.
- Before soil respreading, the ground surface will be scarified or ripped along the line of the contour to break any compacted and smooth surfaces and assist in keying the respread soil.
- The respread soils will be left with a roughened surface and sown with a groundcover mix as soon as possible to stabilise the soils.

## 3.4 SURFACE WATER POLLUTION

### 3.4.1 Environmental Management

The Soil and Water Management Plan was updated in August 2016 and details a comprehensive stormwater management plan to ensure diversion of clean water around existing disturbed areas and direction of “dirty water” into sediment basins. In summary, the following principal surface water management measures have (and will continue to be) implemented:

- Maintenance of the completed clean and dirty water drains.
- Maintenance and operation of the sediment basins, in accordance with, as a minimum, the ‘Blue Book’ standards, and direction of stormwater runoff from the waste rock emplacement to these basins.
- Maintenance of the containment dams to provide a minimum freeboard for a 1 in 100-year ARI 72hr rainfall event.
- Installation of additional temporary erosion and sediment control devices (including sediment fencing, hay bales, jute mesh etc.) as required.
- Irrigation of areas to assist with establishing ground cover.

Document is UNCONTROLLED when printed					
Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	28 of 51

### 3.4.2 Environmental Performance

The mine has operated as a nil discharge site during the reporting period. Multiple rainfall events of >25mm/24hr was recorded during the reporting period but due to the generally hot and dry conditions and high evaporation rate for the area, no discharge events were recorded.

Increased rainfall during 2021 allowed for more surface water samples to be collected for analysis, compared to the previous reporting period over the severe drought. Sample availability was still inconsistent with some dry periods but as the rainfall has become more consistent, our ability to sample has improved from those locations that have the ability to hold water temporarily.

Run-off points still presented a challenge to sampling. The Mine’s EPL monitoring conditions require monthly water sampling at 4 monitoring locations when water is present. Ephemeral watercourses SW1 (EPL monitoring point 3, upstream) and SW4 (EPL monitoring point 6, upslope of TSF and WRE) were either damp or dry when water sampling was attempted each month.

Six monthly water samples were collected at SW2 (EPL monitoring point 4, downstream) during the reporting period and all monthly analysis results were within normal limits. Five monthly samples were collected from SW5 (EPL Monitoring point 10, discharge from WRE) and monthly analysis results were all within normal limits except total dissolved solids (TSS) on occasions, and pH on one occasion where the values were just outside the EPL condition limits.

### 3.4.3 Reportable Incidents

There was no reportable incident during the reporting period.

### 3.4.4 Further Improvements

Surface water sampling and analysis will continue over the next reporting period in accordance with the Soil and Water Management Plan. In addition, the sampling standard operating procedure will be updated to ensure sampling and sample handling is consistent with best practices across site. Efforts will be made to attend monitoring points that are usually dry directly after rainfall events to improve the sample capture rates for these points.

The Water Management Plan was updated during the reporting period to restructure and update the management plan’s branding to “Manuka Resources”. Following the expiry of the current MOP and activation of the new Rehabilitation Management Plan (RMP) (on 2 July 2022) the Water Management Plan, where required, will be updated to align with the revised rehabilitation objectives and rehabilitation completion criteria not previously included within the plan.

## 3.5 GROUNDWATER POLLUTION

### 3.5.1 Environmental Management

The Mine is not located in an area with a significant groundwater resource, with water contained mainly within fracture zones. The extraction of groundwater will have no effect on any regional aquifer and there will be no effect on other licensed groundwater users (the nearest licensed bore to the site is located over 20km away). Furthermore, there are no groundwater dependent ecosystems (GDEs) in proximity to the Mine Site.

Document is UNCONTROLLED when printed					
Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	29 of 51

Local groundwater levels are expected to return to existing levels as is currently reflected in the open water body in the existing pit. Impacts on the local and regional groundwater regime are therefore expected to be minimal. The majority of water in the pit is rainwater from a storm which occurred at the cessation of mining.

### 3.5.2 Environmental Performance

Ground water samples were collected for analysis during the reporting period in accordance with EPL 20192. Samples from seven ground water monitoring locations (PZ1, PZ3, PZ4, PBP17, PBP18, PBP19 and PBP20) are to be taken yearly where groundwater is present. The samples this reporting year were taken in December 2021 and groundwater was present at 5 monitoring locations.

It is noted that one minor change to the method of monitoring, relevant to the measurement of standing water levels within the production bore (as required by Water Licence 85BL256088), has been made. As there is a pump within the bore, installing a data logger in the production bore (PBP017) was decided not to be the preferred monitoring option. The Company has instead continued to rely upon manual water level measurements to monitor standing water levels.

### 3.5.3 Reportable Incidents

There were no complaints or incidents relating to groundwater during the reporting period.

### 3.5.4 Further Improvements

The standard operating procedure for ground water sampling will be updated during the next reporting period to ensure sampling and sample handling is consistent with best practices across site.

## 3.6 CONTAMINATED AND/OR POLLUTED LAND

### 3.6.1 Environmental Management

No contaminated land is known to be present within the Mine Site with an historic overflow from the TSF (resulting from human error by the previous operator) having been remediated to the satisfaction of NSW EPA.

The risks of contaminating the receiving environment are very low. There are no chemical reagents stored or utilised on the site as only mechanical processing activities i.e., ore crushing, is conducted onsite. Chemical processing of ore is conducted at Wonawinta Silver Project therefore, no generation of tailings material or other processing wastes is generated at Mt Boppy Gold Mine.

TSF 3 (to the south of the open cut - see **Figure 2**) is regarded as a potentially contaminated site. Water quality monitoring results obtained in December 2010 indicated that there are no significant levels of contaminants contained in the surface waters (ephemeral ponding) in the tailings material. The TSF was used as an area to encapsulate Potentially Acid-Forming (PAF) material by Black Oak Minerals and continues to be used by Mt Boppy Resources for the same purpose. The PAF and underlying tailings is scheduled to be fully capped (currently partially capped) by an impermeable layer as outlined in the MOP.

Document is UNCONTROLLED when printed					
Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	30 of 51

### 3.6.2 Reportable Incidents

There were no reportable incidents for this period.

### 3.6.3 Further Improvements

No further improvements are proposed at this time.

Document is UNCONTROLLED when printed					
Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	31 of 51

### 3.7 THREATENED FLORA AND FAUNA

#### 3.7.1 Environmental Management

The mine site is highly disturbed from over a century of mining activities. There is very little remaining native vegetation on the site with the original vegetation being either cleared or infested with weeds. Previously completed field surveys indicate that there are no species of threatened flora on the mine site and that remnant vegetation communities were highly disturbed and degraded and of limited ecological value.

No clearing of native vegetation has occurred during this reporting period. Monitoring of rehabilitation trial works from previous reporting periods was undertaken by visual survey by the former residential site caretaker and current Manuka Resources employee. Monitoring outcomes include:

- Response to above average rainfalls in this reporting period includes substantial growth rates of established seedlings, however competition from exotic species has also increased during this wet season.
- Grazing pressure from kangaroos, feral goats and wild rabbits is the dominant wildlife threat to groundcover re-establishment.
- The recommended method of revegetation is via broadcast seeding (Landloch Pty Ltd, 2021).

The boundary of the mine disturbance area is enclosed by a barbed wire fence which serves to reduce access by herbivores (kangaroos, goats, stray stock) and reduce grazing pressure on rehabilitation areas. This fence is monitored and maintained by the residential caretaker and damage repaired as required. While effective, the fence does not provide total exclusion and some evidence of kangaroo/goat access is still evident. The need for improved fencing around specific rehabilitation sites is an item of consideration when planning future rehabilitation works, particularly during the early vegetation establishment phase.

#### 3.7.2 Environmental Performance

The residential caretaker has continued to collect seeds from native trees, shrubs, and grasses on an opportunistic basis around the mine holding and surrounding township areas. These have been potted out and will be redistributed on rehabilitation areas as seasonal conditions become favourable.

#### 3.7.3 Reportable Incidents

No reportable incidents occurred during the reporting period relating to flora or fauna.

#### 3.7.4 Further Improvements

Revegetation works are to continue based on seasonal opportunities and rainfall. There is no plan to disturb or clear any new ground within the lease area. Weed control and maintenance of boundary fences is proposed to continue with the aim of increasing flora and fauna values, especially in the areas under rehabilitation. Focus will be placed on promoting native groundcover species on the Waste Rock Emplacement (WRE).

Native seed collection program will continue in the next reporting period. Mice-proof containers will be used to prevent vermin from accessing the collected seeds.

Document is UNCONTROLLED when printed					
Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	32 of 51

### 3.8 WEEDS

#### 3.8.1 Environmental Management

Mt Boppy Resources aims to control weed infestation by reducing the existing weed stock and maintaining revegetated areas until native systems are established. The target weed species include Blue Heliotrope, African Boxthorn, Prickly Bush, Peppercorn, Noogoora Burr *Xanthium occidentale*, and Wild Tobacco *Nicotiana glauca*, and Common Prickly Pear *Opuntia stricta*.

Weed control has previously been undertaken onsite by the Cobar Shire Council as part of Council's shire-wide control program, as well as specific works (spot spraying) by Manuka Resources.

#### 3.8.2 Environmental Performance and Further Improvements

African boxthorn, wild tree tobacco and prickly pear have been persistent in some of the disturbed areas on site and have continued to be addressed by spot spraying during this reporting period. The weed control program have found success in reducing these target weeds despite the increased rainfall in 2021.

While the mine determines the next phase of mining operations, the surface rehabilitation program during next reporting period's care and maintenance cycle will include weed and vertebrate pest control plans.

#### 3.8.3 Reportable Incidents

No reportable incidents have occurred during the reporting period.

### 3.9 BLASTING

#### 3.9.1 Environmental Management

Potential environmental impacts resulting from air blast or vibration (caused by blasting activities) were assessed for every blast.

- The burden distance and stemming length is carefully selected and then implemented precisely to ensure that explosion gases are almost completely without energy by the time they emerge into the atmosphere. (3x3 square pattern tightened up wo a 2.3x2 around void). Timing as standard for heave fragmentation rather than throw (17-23ms down echelons – 42-64 down rows).
- Charges are set in carefully designed sequences and with inter-row delays so as to consistently detonate and provide good progressive release of burden.
- Appropriate materials are used for stemming (12-14mm stemming at 2.2m).
- The maximum weight of explosive detonated in a given delay period (the maximum instantaneous charge (MIC)) is limited to conservative and proven levels. MIC is limited to 4 holes or 80kgs MIC.

All blasts are monitored, and the blast design progressively optimised to minimise adverse impacts.

Document is UNCONTROLLED when printed					
Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	33 of 51



### 3.9.2 Environmental Performance

There were 9 blasting activities that took place during the 2021-2022 reporting period. There were no exceedances in ppv, or overpressure recorded by the monitoring station for the reporting period, nor any incidence of NOx gas recorded by the gas detectors used by the shotfirer. **Table 3-C** below presents the data collected during the blasting activities of this reporting period.

**Table 3-C: Blast monitoring activities during the 2021-2022 reporting period.**

Blast Date	Time	PF	MIC	Holes	Bench	#1 PPV	#1 dB	#2 PPV	#2 dB
13/01/2021	9:27	0.52	35	555	195_01	0.86	103.5	0.8	100
11/02/2021	9:14	0.6	35	456	195_02	0.65	101.9	NIL	NIL
22/04/2021	16:50	0.69	35	216	190_01	NIL	NIL	NIL	NIL
29/04/2021	9:00	0.67	40	344	190_02	NIL	NIL	NIL	NIL
4/06/2021	9:13	0.67	35	335	185_01	NIL	NIL	NIL	NIL
22/07/2021	14:57	0.64	80	206	185_02	NIL	NIL	NIL	NIL
24/08/2021	9:00	0.63	35	385	180	0.64	112.3	114	2.66
14/10/2021	16:31	0.7	35	325	175	0.68	106	NIL	NIL
18/11/2021	15:18	0.6	35	250	170	0.57	114	NIL	NIL

### 3.9.3 Reportable Incidents

No reportable incidents have occurred during the reporting period.

## 3.10 OPERATIONAL NOISE

No excessive operational noise was generated during the reporting period, with the forecast recommencement of mining operations deferred, the absence of heavy plant and equipment was not an issue. The re-introduction of a mobile crushing plant was managed appropriately with regards to usage times and location on site. There were no noise mitigation or monitoring works required during the reporting period.

In case of any future instances where noise levels may exceed relevant noise criteria at nearby non-Company owned residences, negotiated agreements have been reached with the residents of the privately owned residences within the potential impacted area.

In any event, noise management measures that will be implemented include the following:

- All equipment used on site will be regularly serviced to ensure the sound power levels remain as low as practicable.
- Frequency modulated reversing alarms will be fitted to all earthmoving equipment to further reduce sound power levels of that equipment.
- The on-site haul and access roads will be well maintained to limit body noise from empty trucks.
- Off-site transport of ore will be undertaken through the northern access road, located away from the Canbelego Township.

### 3.11 VISUAL AMENITY AND STRAY LIGHT

The Canbelego area is not located on any frequented tourist routes and the Mine is not visible from the Barrier Highway approximately 2.5 km to the north due to intervening vegetation and generally low height of the mining landform.

Existing waste emplacements are approximately 12 m above the surrounding landscape. The planned future maximum height of the waste emplacements (up to 20m high) will similarly not be visible from the Barrier Highway. Whilst the components of the Mine will be visible from some residences in Canbelego, given that the Mine has been a prominent visual feature of the local Canbelego area for over a century, the approved activities are not expected to be a significant visual issue. The planned rehabilitation of the WRE and TSF 3 will also act to ameliorate visual impacts in the longer term.

Any artificial lighting required will be positioned and directed to minimise emissions and used only when required.

### 3.12 ABORIGINAL AND NATURAL HERITAGE

As there were no mining or construction activities conducted onsite during the reporting period. The likelihood of disturbance of natural or Aboriginal heritage items is considered negligible for planned operational activities and rehabilitation in the next reporting period. We do however recognise the importance of the risks and acknowledge the following key areas of importance within our Mine site:

- Two Aboriginal heritage items (scarred trees) have been previously identified. Neither of these trees will be disturbed by the planned operations. In any event, all site employees will be made aware of their obligations under the National Parks and Wildlife Act 1974.
- Should any relic be uncovered during future activities, work in the area surrounding the relic would cease and the Heritage NSW, formerly the *NSW Office of Environment & Heritage* and Ngiyampaa people would be informed of the find. Work would not recommence in the area immediately surrounding the find until the area has been inspected and permission has been given to proceed.

Document is UNCONTROLLED when printed					
Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	35 of 51

- A total of 24 European heritage items have previously been identified within the Mine Site, including:
  - Site of former blacksmith shop: Area is highly disturbed; little remains but some scrap metal and bricks. No foundation or postholes present to determine dimensions of original footprint.
  - Concrete and brick foundations believed to be for a winder frame: Two sections of the foundation with dimensions 14m x 3.5m x 1m and 3.5m x 3.5m x 1m. The foundation is largely destroyed, and little remains from the original structure.
  - Historic Rubbish/Ash Piles: Multiple piles containing scrap metal and locally produced bricks, cans, broken pottery, cupels, crucibles, glass bottles and bricks within areas of approximately 30m x 35m.
  - Mine Shafts: Two open mine shafts (approximately 40m deep) from early 1901–1928 mining phase with timber lined walls for support. Rectangular in shape with one north to south orientation, and the other with east to west orientation lengthwise approximately 12m. Shafts remain intact with little to no apparent damage to its original fabric.

### 3.13 SPONTANEOUS COMBUSTION

As no material on site is prone to spontaneous combustion no specific management measures are necessary.

### 3.14 BUSHFIRE

While high levels of previous disturbance at the Mine Site combined with low vegetation cover result in minimal bushfire risk, the Mine initiated a firebreak risk assessment in August 2021. In any event, the Mine will maintain contact with the local RFS and adopt the following controls and safeguards:

- Firebreaks are maintained around the Mine Site.
- All equipment on site is equipped with adequate and fully operational fire suppression equipment, in accordance with AS 1841 and AS 1851.
- On-site employees are trained on the proper use of the firefighting equipment held on site.
- Employees/contractors are instructed not to throw cigarette butts from any vehicle or item of equipment on site.
- The water truck will be used for firefighting assistance and all reasonable support will be given to the local RFS in the event of a bushfire within or near the Mine.

With the increased rainfall events since last reporting period, regrowth of native grasses i.e., spear grasses *Austrostipa sp.* and *Paspalidium sp.*, was unsurprisingly observed to have grown at alarming rates around the mining lease during the reporting period as this phenomenon was previously experienced by past owners of the Mine (Alpine Mining Company Pty Ltd, 1987). The same can be said in many areas of the Western NSW Region since grasses and forbs are known to be the first colonisers following rains (AREA, 2021). A firebreak risk assessment is therefore planned between the end of August to early September in the next reporting period while the Mine is undergoing its interim care and maintenance cycle.

Document is UNCONTROLLED when printed					
Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	36 of 51

### 3.15 MINE SUBSIDENCE

Whilst underground mining has historically been undertaken within the area, the majority occurs within the footprint of the open cut. Therefore, the planned open cut mining will not result in any subsidence. Furthermore, as blasting will be designed to minimise amenity impacts, the potential for blasting to result in the collapse of any underground workings, not contained within the immediate blast zone, is considered to be non-existent.

### 3.16 HYDROCARBON CONTAMINATION

#### 3.16.1 Environmental Management

Limited amounts of diesel are delivered to the mine site by a licenced bulk transporter who adopts industry best practices to prevent any spillage during the transfer of diesel from the road tanker to the onsite containerised diesel tank. Diesel and oils are stored according to Australian Standard 1940-2017. This includes provisions for fire prevention, barriers and bunds, ventilation considerations and appropriate signage. Transfer is always undertaken by appropriately trained site personnel. Spill kits are available at various locations around the site and staff and contractors are trained in the use of such kits during site inductions. Up to date SDS's are maintained at both the storage locations of each contaminant and in the main office. A site manifest of all chemicals stored on site is also stored at the front gate and at the main office.

#### 3.16.2 Environmental Performance

Diesel is stored in a 10,000L capacity self-bunded container tank, south of the pit, to service the submersible pump generator. The container tank is padlocked and access to diesel is limited to employees who have completed the mine induction. The site is regularly inspected for evidence of spill or leakage. The contractor 70,000l tank is still currently used for storage.

#### 3.16.3 Reportable Incidents

No reportable incidents relating to hydrocarbon spills occurred during the reporting period.

#### 3.16.4 Further Improvements

A management and spill plan for hydrocarbons has been re-implemented. Management practices will continue to include:

- Use of bunded oil storage container for storage of all oil drums.
- Maintenance of all valves and piping systems.
- Frequent removal of used oil by a licenced waste oil contractor; and
- Use of oil-capturing systems in vehicle service areas.

All fuels and oils will be stored in accordance with AS1940-2017 Australian Standard for Storage and Handling of Flammable and Combustible Liquids.

Document is UNCONTROLLED when printed					
Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	37 of 51

### 3.17 METHANE DRAINAGE / VENTILATION

Ventilation and methane drainage is assessed as not applicable as MBR is an open cut mine with no methane-generating geology identified.

### 3.18 PUBLIC SAFETY

Access to the Mine is restricted by rural fencing and bunding. Additional bunding is also in place around the existing open cut. Fencing is inspected on a regular basis and access of public to the site restricted. All site visitors are required to report to the caretaker prior to entry. Site safety inductions are conducted at the site, with all authorised visitors accompanied by a company representative. Considering the isolated nature of the site and restricted access there will be minimal risk to public safety.

There were no reportable incidents relating to public safety during the reporting period.

### 3.19 OTHER ISSUES AND RISKS

No further environmental issues or risks were identified.

Document is UNCONTROLLED when printed					
Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	38 of 51

## 4. COMMUNITY RELATIONS

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### 4.1 ENVIRONMENTAL COMPLAINTS

A complaint was made to the EPA by a Canbelego resident regarding improper discharge of dirty water. This issue was assessed and determined to be a leak from a council-maintained pipeline. The issue was referred to the Cobar Shire Council who agreed to allow an employee of Manuka Resources to rectify the issue. The pipe has since been repaired and the leak stopped.

### 4.2 COMMUNITY LIAISON

A Manuka Resources employee, who was also previously the site caretaker during the Care and Maintenance period, resides in Canbelego and regularly liaises with other residents in the town on an informal basis.

No structured consultation has been undertaken with residents regarding mine status, but they are spoken to regularly by the general manager of the Wonawinta project to see if residents have any concerns. Given the absence of potentially impacting activities during the reporting period, formal consultation did not take place.

With the increased native grasses around Canbelego, the Mine is prepared to provide firefighting assistance to the community where possible. All reasonable support will be given to the local RFS and firefighting assistance including offering our Water Truck in the event of a bushfire within the Mine or the Canbelego community.

Document is UNCONTROLLED when printed					
Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	39 of 51

## 5. REHABILITATION

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Our rehabilitation objectives for the Mine Site can be defined in the short term and long term.

Short term objectives are to stabilise all earthworks, drainage lines and disturbed areas no longer required for mine-related activities in order to minimise erosion and the generation of sediment-laden water, and to reduce the visibility of the activities from adjacent properties and the local road network. Erosion control would be achieved by the early establishment of a groundcover while appropriately positioned tree lot plantings would assist in creating a visual screen to adjacent properties.

In the longer term, and in order to achieve the nominated post mining land use goals, the rehabilitation objectives are as follows.

- Provide for the removal of all mining-related infrastructure not required for the agreed end land use.
- Create a low maintenance, geotechnically stable and safe landform that is secure and non-polluting.
- Construct above ground landforms which are commensurate with the surrounding land fabric as far as practicable.
- Provide for a sustainable growth medium suitable for the establishment and retention of the nominated vegetation communities.
- Revegetate with native tree, shrub, and grass species comparable with, and with maintenance requirements no greater than, the surrounding vegetation communities.
- Assessment of long-term stability of erosion.

### 5.1 LANDFORM DESIGN, MATERIAL CHARACTERISATION AND REHABILITATION

During the reporting period, work was undertaken to develop a Materials Characterisation and Rehabilitation Assessment Program (Landloch Pty Ltd, 2021) to assist in the development and success of the site rehabilitation plan. Manuka Resources engaged with soils and landform design consultants Landloch Pty Ltd (“Landloch”) to provide technical support in the design of a stable waste rock emplacement (WRE) and tailings facility that can support vegetation and grazing post mining.

With the assistance of Landloch, the following were completed during the reporting period:

- Historic data review – a full review of historical soils and lands assessments conducted by the previous Mine owners and consultants was carried out.
- A site Sampling and Analysis Plan (SAP) developed to assist Manuka Resources in collection of soil samples for analysis and characterisation.

Document is UNCONTROLLED when printed					
Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	40 of 51

- Landloch site inspection and test sample collection at the Mt Boppy Mine. Stockpile materials were inspected and sampled from test pits including the currently rehabilitated areas, topsoil, subsoil, and waste rock stockpiles, and analogue locations. Soil samples collected were sent to the laboratory for analysis to obtain a baseline, to identify stockpile materials that may require further testing, and confirm the suitability of available materials for the final land rehabilitation (agronomic properties). Results from this study has been included as part of the Mine’s final landform and rehabilitation management program.
- Material Characterisation – Detailed Erodibility Characterisation and Simulation. In early January 2021 Manuka Resources sent bulk samples (900 - 1,000 L) to Landloch containing two types of capping material. Landloch used these bulk samples for use in erosion modelling. Results from this study has been included as part of the Mine’s final landform and rehabilitation management program.
- Digital Elevation Modelling (DEM) and concept landform drawings have been developed by Manuka Resources and provided to Landloch for further assessment of long-term stability to erosion.

Results of Landloch’s Final Report has assisted the Mine with leading soil management practices and further guidance on remediation of eroded land, soil amelioration and vegetation establishment during the early phases of rehabilitation (decommissioning, landform establishment, and growth medium development phases)<sup>5</sup>.

## 5.2 BUILDINGS

Buildings and infrastructure areas include the site office, workshops, access and haul roads and the hardstand areas adjacent to the open cut and WRE. No permanent buildings were renovated or removed during the reporting period.

## 5.3 REHABILITATION OF DISTURBED LAND

Within each mining domain, the status of existing disturbance and rehabilitation at the Mine is described as follows and shown in **Figure 5**.

### 5.3.1 Mining Domain 1 – Infrastructure Area

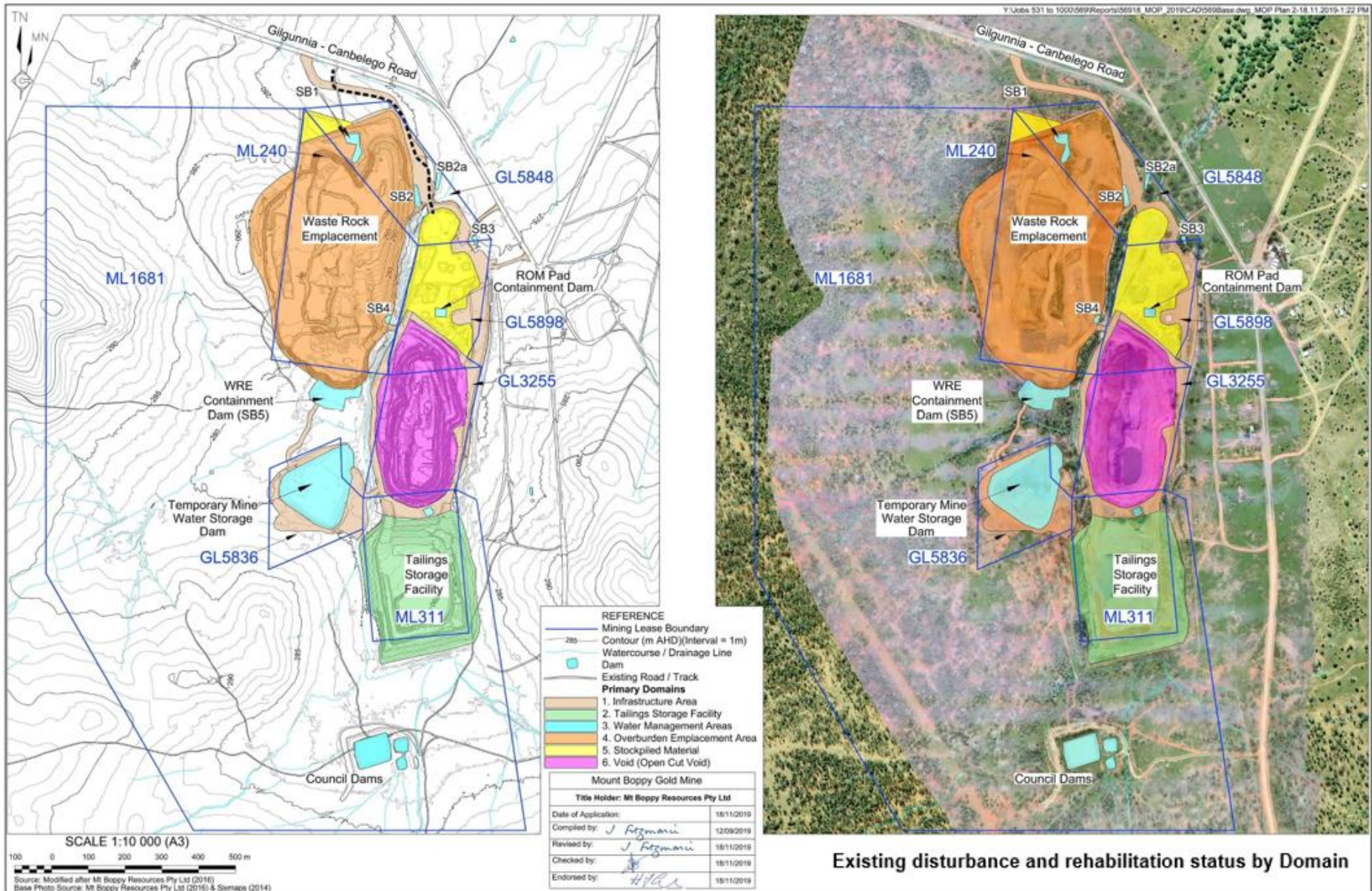
This domain includes a demountable site office and a heavy vehicle workshop, which have been established to the east and south respectively of the former mill and process area. These areas remained active during the majority of this reporting period.

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<sup>5</sup> As defined by the *Form & Way: Rehabilitation Management Plan for Large Mines* published on 02 July 2021 by the NSW Resources Regulator.

Document is UNCONTROLLED when printed					
Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-RPT-002-2022.002	1	Mt Boppy Gold Mine Annual Rehabilitation Report 2021	1 Feb 2021 – 31 Jan 2022	04-Mar-2022	41 of 51





**Figure 5: Mt Boppy Domains, existing disturbance, and rehabilitation status**

### 5.3.2 Mining Domain 2 – Tailings Storage Facility

This mining domain includes the TSF 3. There are no external inflows and bunding is intact and stable on this facility. No rehabilitation took place at the TSF 3 during the reporting period. Key rehabilitation milestones (i.e., progressive rehab) completed to date are:

- 1) Between August and September 2016, the TSF wall was profiled to 3:1 batter ratio on the western side.
- 2) Completed design of final landform
- 3) In August 2020 minor earthworks were carried out to provide drainage that creates a water shedding landform.
- 4) Completed Gantt chart of proposed dates for earthworks required to shape TSF to final landform design.

### 5.3.3 Mining Domain 3 – Water Management Area

This domain includes the site of the former historic tailings placement area (within GL 5836). All tailings from this site have previously been removed and there is no contamination evident. A temporary mine water storage dam has been constructed within this area. Whilst soil testing has previously been undertaken (2010), further testing will be undertaken at mine closure to demonstrate that no contamination is present.

Also included in this domain is a man-made ephemeral watercourse (Alpine Mining Company Pty Ltd, 1987)<sup>6</sup> originally flowing through the area where the open pit is now situated. The artificial drainage line was constructed by the early miners in the 1900's to divert away the original ephemeral stream from the mine workings (Polymetals (Mt Boppy) Pty Ltd, 2011).

The Artificial diversion line has not been modified by MBR or its predecessor companies and it is currently stable with no specific rehabilitation requirements known and no specific rehabilitation works planned. The Mine broadly intends to rehabilitate the eroded artificial watercourse.

### 5.3.4 Mining Domain 4 – Overburden Emplacement Areas

This domain includes the existing Waste Rock Emplacement / Capped TSF Areas. The former TSFs were capped by Polymetals and utilised for placement of waste rock. These areas received waste rock during the reporting period. Ongoing placement of waste rock during the next reporting period will form this area into the approved WRE.

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<sup>6</sup> The 1987 EIS of previous owner Alpine Mining Co is a public document accessible via the internet at [https://s3-ap-southeast-2.amazonaws.com/eis-pdf-records/EIS%20373\\_AA054581.pdf](https://s3-ap-southeast-2.amazonaws.com/eis-pdf-records/EIS%20373_AA054581.pdf) Specific write-up on the man-made watercourse can be read on from the second paragraph on page 24 of the document.

**Document is UNCONTROLLED when printed**

Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-PRS-002	1	Annual Rehabilitation Report 2021	19 Jan 2020 – 18 Jan 2021	04-Mar-2022	43 of 51

To date, key rehabilitation works undertaken by Manuka Resources are as follows.

- 1) Excess overburden was excavated from the south-eastern corner of the WRE, and the final toe shaped to a 3:1 batter slope. This work was completed in September 2016.
- 2) At the commencement of the 2019/2021 RMP term, a total of approximately 1,380,000 BCM of waste rock have been extracted together with approximately 10,600 loose cubic metres (LCM) of soil material. The waste rock has been placed within the WRE, used in the formation of the ROM pad, or placed on the perimeter of TSF 3 in readiness for capping of PAF material.
- 3) Approximately 10,200 LCM of weathered overburden material has also been stockpiled on the WRE and will be recovered to supplement the soil material as a growth medium.
- 4) Completed design of the final landform

At mine closure these areas will be inspected and, if necessary, completed to demonstrate that these former TSFs remain adequately capped and that contamination is not present.

### 5.3.5 Mining Domain 8 – Other: Stockpiled Material

The former mill, process area, raw water pond, process pond and pollution control pond (removed in previous decade) are all included in this domain. To date, key rehabilitation works undertaken by Manuka Resources are as follows:

- 1) All former plant has been decommissioned and some of the reusable plant is still stored on site for subsequent removal if of no value.
- 2) Plant and concrete foundations have been broken and removed from site.
- 3) The raw and process ponds have had the liners removed and the ponds have been backfilled. The area has now been incorporated into the ROM pad area.

### 5.3.6 Mining Domain 6 – Active Mining Area: Open Cut Void

This domain incorporates the open cut void and adjacent safety bund. The open cut pit has been closed post inrush event in late November 2021. Bunding has been put in place and is considered fully extracted at this point.

To date, key rehabilitation works undertaken by Manuka Resources at Mining Domain 6 include Weed control program being undertaken around the void to assist in the suppression and eradication of pest weeds and Weeds of National Significance (WoNS).

Summary provides a summary of the rehabilitation efforts at the Mt Boppy Gold Mine to date. No final rehabilitation works were conducted in the reporting period.

**Document is UNCONTROLLED when printed**

Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-PRS-002	1	Annual Rehabilitation Report 2021	19 Jan 2020 – 18 Jan 2021	04-Mar-2022	44 of 51

**Table 5-A: Rehabilitation Summary**

	<b>Total Area, start of Reporting Period (ha)</b>	<b>Total Area, end of Reporting Period (ha)</b>	<b>Area Estimated end of next Reporting Period (ha)</b>
<b>A: MINE LEASE(S) AREA</b>			
A1 Mine lease(s) area	246.48	246.48	246.48
<b>B: DISTURBED AREAS</b>			
B1: Infrastructure area (other disturbed areas to be rehabilitated at closure including facilities, roads)	16.4	16.4	12.0
B2: Active mining area (excluding items B3-5 below)	9.5	9.5	0
B3: Waste emplacements (active, unshaped, in/out of pit)	16.2	16.2	8
B4: Tailings emplacements (active, unshaped, uncapped)	5.1	5.1	2.5
B5: Shaped waste emplacement (awaits final vegetation)	5.5	5.5	11.7
<b>TOTAL ALL DISTURBED AREAS</b>	<b>52.7</b>	<b>52.7</b>	<b>34.2</b>
<b>C: REHABILITATION</b>			
C1: Total rehabilitated area (except for maintenance)	0	0	18.5
<b>D: REHABILITATION ON SLOPES</b>			
D1: 10 to 18 degrees	0	0	9.6
D2: Greater than 18 degrees	6.7	6.7	3.2
D3: Less than 10 degrees	0	0	10.8
E1: Pasture and grasses	0	0	0
E2: Native forests/ecosystems	0	0	0
E3: Plantations and crops	0	0	0
E4: Other (include non-vegetative outcomes)	0	0	9.6

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**Table 5-B** below provides a summary of maintenance activities undertaken on rehabilitated land during the reporting period.

**Table 5-B: Maintenance Activities on Rehabilitated Land**

Nature of Treatment	Area Treated (ha)		Comment / Control Strategies / Treatment Detail
	This ARR Period (20201-2022)	Next ARR Period (2022-2023)	
Additional erosion control works (drains re-contouring, rock protection)	2	2	Ongoing monitoring and maintenance of surface drainage works. Further works ongoing in 2021.
Re-covering (detail – further topsoil, subsoil sealing, etc.)	~40,000	0	
Soil treatment (detail - fertiliser, lime, gypsum.)	0	0	
Treatment/Management (detail - grazing, cropping, slashing, etc.)	0	0	
Re-seeding/Replanting (detail - species density, season, etc.)	0	1.5	Reseeding on western TSF bank if favourable seasonal conditions occur.
Adversely Affected by Weeds (detail - type and treatment)	5	25	Wild Tobacco bush spraying during next period.
Feral animal control (detail - additional fencing, trapping, baiting, etc.)	20	40	Monitoring and maintenance of fences.

## 5.4 REHABILITATION TRIALS AND RESEARCH

The Mine's resident caretaker has continued harvesting seeds of local species since the last reporting period. These have predominately been Native Blackthorn and Warrior Bush.

Several previous rehabilitation trials have been undertaken at the Mine Site. The most recent trial work occurred between 2007 and 2015 and covered an area of 1 ha and included four photo monitoring points and seven transect lines. Monitoring was undertaken on an annual basis and included measurement of number of seedlings, assessment of grazing pressure, presence of weed species and groundcover (e.g., bare soil, vegetation, litter, rock etc.). The results of this monitoring were presented within the respective AEMRs by previous operators.

Four analogue sites were also established in 2011 and were also monitored in the same manner to provide comparative data. The results of this monitoring was also presented within the respective AEMRs.

Whilst the rehabilitation trial areas are now incorporated into the modified WRE and monitoring of the analogue sites is not active, one of the sites that has pest exclusion fencing provides a good control site for observation of the impact of feral goats and their impact on natural revegetation in the area after rainfall.

Research trials recommended by soil specialists Landloch (Landloch Pty Ltd, 2021) and ecologists AREA consultants (AREA, 2021) will be reviewed in the next reporting period to determine its feasibility options

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while the Mine will be on care and maintenance cycle. Rehabilitation research trials to develop various growth media soils and revegetation techniques are planned to be conducted on the western side of the TSF and WRE (two proposed test site areas).

## 5.5 FURTHER DEVELOPMENT OF THE FINAL REHABILITATION PLAN

Rehabilitation planning and monitoring will focus on determining whether progress towards achieving the relevant performance indicators, and rehabilitation completion and relinquishment criteria presented in the current MOP and Draft RMP are being achieved.

The rehabilitation planning will be very focused on maximising the use of heavy equipment and people on site during this last year of active operations and material placement is maintained as a priority while the resources are readily available to achieve the planned outcomes.

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**Document is UNCONTROLLED when printed**

Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-PRS-002	1	Annual Rehabilitation Report 2021	19 Jan 2020 – 18 Jan 2021	04-Mar-2022	47 of 51

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## 6. ACTIVITIES FOR NEXT REPORTING PERIOD

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### 6.1 PROPOSED ACTIVITIES

The proposed activities for the new reporting period are consistent with the approved operations under DA 2011/LD-00070-Rev1. The Mine will continue with implementing landform designs, dewatering, and maintenance Site activities planned for the 2022-2023 reporting period will be undertaken in accordance with the current MOP, and in accordance with the new RMP from 02 July 2022 onwards.

### 6.2 EXPLORATION

Current exploration plans for the Mt Boppy mining lease during the 2022-2023 reporting period include the following activities

- continuation of drilling beneath the floor of the pit to test for economic mineralisation
- modelling of new resources when all assay data has been received

### 6.3 CONSTRUCTION

No construction is forecast to occur in the new reporting period.

### 6.4 MINING

The Active Mining Phase at Mt Boppy is considered to have been completed with stockpiles and current pit depleted. Final Landform Mine design criteria will continue to be reviewed in the next reporting period to ensure the next phases of rehabilitation is developed to provide a safe and stable landform.

### 6.5 REHABILITATION

The completion of the Mount Boppy Closure Landform Design, Material Characterisation and Rehabilitation Assessment Report (Landloch Pty Ltd, 2021) during this reporting period will continue over the course of the next reporting period commencing with the growth media research trials to assist with the development of the Mine's rehabilitation management program. The possibility of additional mining operations in the pit will be considered as to potential impacts on this closure planning and whether certain activities should be deferred until all economic information is assessed.

To meet the following key targets and objectives for the 2022-2023 reporting period, the program will include (but not limited to):

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**Document is UNCONTROLLED when printed**

Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-PRS-002	1	Annual Rehabilitation Report 2021	19 Jan 2020 – 18 Jan 2021	04-Mar-2022	48 of 51

---

- Use water and landform erosion and runoff prediction modelling to consider a wide range of slope profile and surface treatment/revegetation options for outer batter slopes, and to develop critical relationships to underpin the landform design. This approach will assist in predicting areas where elevated rates of erosion and deposition will occur and identify areas that may require modification or armouring, to provide confidence 'as best as currently possible' that the landform will be stable in the long-term.
- Determine the soil capping options available for the WRE and tailings facility that favour the post mining vegetation communities for rehabilitation and comply with the MOP commitments and regulatory requirements. This will also determine what actions will be taken with regards to soil preparation and amelioration requirements to establish target vegetation communities.

These below sections provide a general overview of the rehabilitation activities proposed to be implemented at the following Mining Domains as per the current MOP and revegetation procedures and draft the Rehabilitation Management Plan (RMP) for the site.

### 6.5.1 Mining Domain 1 – Infrastructure Area

Following the completion of mining early 2022, hardstand areas around the open cut pit and WRE will be trimmed / profiled (if required), deep cross-ripped, with a 50 mm cover of oxide and soil material where appropriate as access to areas will have to remain and revegetated. Sections of access road that are required for ongoing care and maintenance activities and long-term access will also be retained.

Following the completion of ore transportation, the remaining infrastructure area east of the ROM pad, containing the office and workshops, will also be put on a care and maintenance basis in readiness for potential future activation. This will involve the following activities:

- Recovery and removal of all consumables and equipment, including the redundant plant and equipment in various storage areas. Any waste material will either be taken to a licenced facility or collected by a licenced waste contractor.
- Excavation and on-site treatment of any known hydrocarbon contaminated material.
- Dismantling of the heavy vehicle workshop and transportation off site.
- Completion of a contamination assessment and removal and treatment / disposal of any remaining contamination (if identified).
- Trimming / profiling of the area to provide a free-draining landform.
- Deep ripping and, if soil material are available following rehabilitation of the WRE and TSF 3, spreading to a depth of 50 mm.
- Revegetation, where applicable, in accordance with the species and revegetation process by the RMP recommended by the successful results from rehabilitation research trials, and..

### 6.5.2 Domain 2 – Tailings Storage Facility

During this reporting period, the existing 'increased risk' PAF material that is currently stockpiled at the TSF in piles approximately 3m high, will be pushed out by a bulldozer to compact and pushed into the tailings surface and lime added at a conservative rate of 30t/ha. A clay liner will then be compacted over

**Document is UNCONTROLLED when printed**

Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-PRS-002	1	Annual Rehabilitation Report 2021	19 Jan 2020 – 18 Jan 2021	04-Mar-2022	49 of 51



the PAF material to a minimum depth of 0.9m and with a permeability of  $1 \times 10^{-9}$ m/s. NAF material will then be paddock dumped and dozer profiled to create a minimum 2m thick store and release cover. The profiled surface will be free draining with appropriate water management structures.

If sufficient soil material is available, this will be spread to a depth of approximately 50mm across the flatter areas. Alternatively, weathered / clayey overburden material will be preferentially placed across the top of the NAF material to provide a growth medium. The areas will then be seeded with groundcover and shrub species.

The placement of PAF, formation of a clay liner and placement of a NAF cover will occur after the completion of mining at Mt Boppy. It is expected that this process will be completed approximately 2 to 3 months following the completion of mining.

### 6.5.3 Domain 3 – Water Management Area

The Water Management areas will remain active throughout the next reporting period. The Mine will maintain the sediment retention basins to ensure that they retain sufficient capacity and are appropriately managed to avoid discharges to surface water or that discharges meet the applicable guidelines and approval requirements.

Following the completion of mining, remaining water within the temporary mine water storage dams will be used to assist with the rehabilitation process and then left for evaporation. If water remains in the dam at the time that rehabilitation of the dam area commences, the remaining water will be pumped into the final open cut void. Following this, all pumps and pipelines will be recovered. The material excavated to create the dams will then be pushed back into the dams and profiled using a bulldozer to create a free draining landform. Soil material recovered during the construction of the dams will be respread and the area revegetated.

The sediment basins will be retained for long-term water management from the rehabilitated WRE. Any sediment build-up within the basins will be removed and buried within the WRE. The spillways of the basins will also be inspected and, if required, additional stabilisation undertaken (such as rock armouring) to ensure long-term integrity.

The existing creek diversion and Council water storage dams will be retained in their current form with no rehabilitation activities applicable.

### 6.5.4 Mining Domain 4 – Overburden Emplacement Area (WRE)

Rehabilitation planning for areas within the waste rock emplacements will commence sometime during the new reporting period.

The WRE final landform shape will be progressively constructed through paddock dumping of NAF material and profiling using a bulldozer. The PAF encapsulation area within the WRE will be similarly formed through paddock dumping of a base layer of NAF material to a minimum thickness of 3 m. The NAF material will be selected to provide good drainage beneath the WRE such that the PAF material is not subject to wetting and drying cycles. PAF material will be built up in lifts to a maximum of approximately 15m thickness with NAF material used to form the batters of the WRE.

The areas of PAF encapsulation will limed, clay capped and covered with NAF as per TSF 3. Similarly, if sufficient soil material is available, this will be spread to a depth of approximately 50mm across the flatter

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Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-PRS-002	1	Annual Rehabilitation Report 2021	19 Jan 2020 – 18 Jan 2021	04-Mar-2022	50 of 51

areas. Alternatively, weathered / clayey overburden material will be preferentially placed across the top of the NAF material to provide a growth medium. The areas will then be seeded with groundcover and shrub species. Pending suitability of water quality, water from the open cut may be utilised to irrigate the WRE to assist with vegetation establishment.

### **6.5.5 Domain 5 – Stockpiled Material**

This area incorporates the existing ROM pad. This area will remain active during the reporting period. Following the completion of ore transportation, all ore will have been removed from the ROM pad area. The ROM pad will then be profiled using a bulldozer to provide a free-draining landform deep ripped and, if available, soil material or suitably weathered overburden spread to a thickness of approximately 50 mm. The area will then be revegetated. As for the WRE, pending suitability of water quality, water from the open cut may be utilised to irrigate the rehabilitated areas to assist with vegetation establishment.

### **6.5.6 Domain 6 – Open Cut Voids**

At the completion of mining, all mobile equipment, pumps, and piping will be removed from the open cut pit. Appropriate safety bunding and signage will be retained around the perimeter of the open cut pit. The final location of the bund will be such that it is at a sufficient distance from the pit edge so that any potential for pit wall failure will not intercept the bund.

The closure bund will typically be a minimum of 2m high with 2.5V:1H batters. The bund where the haul road enters the pit will be increased in height to further prevent stock and vehicular access.

Appropriate warning signs will be installed at regular intervals around the outside of the bund.

### **6.5.7 General Site and Revegetation**

Rehabilitation trials and monitoring completed to date indicates that planting of tube stock at the Mine only has limited success. Therefore, revegetation will be undertaken by either direct (broadcast) or mechanical seeding. Seeding will be completed as soon as practicable after placement of soil material / growth medium and before the surface forms a crust so as to achieve an optimal surface microhabitat.

Direct seeding lines for tree species will be spaced a minimum of 6 m apart on flat areas and 8 m on slopes to provide sufficient space for establishment and maintenance of groundcover species. Seeding rates will need to be high due to potential impact of grazing animals and will be approximately 1.5 kg per kilometre.

In regard to grazing pressure management during the rehabilitation phase and the need to prevent access to rehabilitating areas by kangaroos and feral goats, we propose the erection of a large herbivore exclusion fence around disturbance areas within the Mine Site to eliminate on-site feral goat populations from disturbed and rehabilitating areas. The fence will be a small hinge joint netting fence with additional salvage wires, resulting in a fence approximately 1200 mm high. This fence is low maintenance and will discourage kangaroo movement and stop re-population by feral goats, with negligible impact on small mammalian and reptile movement.

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Doc Code	Ver.	Title	Reporting Period	Print Date	Page
MRL-ENV-PRS-002	1	Annual Rehabilitation Report 2021	19 Jan 2020 – 18 Jan 2021	04-Mar-2022	51 of 51

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