HERA MINE

Rehabilitation Management Plan for Large Mines

Prepared for:

Hera Resources Pty Ltd

SLR Ref: 630.30265.00000-R01
Version No: -v1.0
July 2021

PREPARED BY

SLR Consulting Australia Pty Ltd
ABN 29 001 584 612
10 Kings Road
New Lambton NSW 2305 Australia
(PO Box 447 New Lambton NSW 2305)
T: +61 2 4037 3200
E: newcastleau@slrconsulting.com www.slrconsulting.com

BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Hera Resources Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
630.30265.00000-R01-v1.0	8 July 2021	Breah Heinrich	Stephen Shoesmith	Stephen Shoesmith

SUMMARY TABLE

Summary Table	
Name of Mine	Hera Mine
Rehabilitation Management Plan Commencement Date	July 2022
Mining Authorisations (Lease / Licence No.)	Mining Lease (ML) 1686 Expiry date 16 May 2034, Mining Lease (ML) 1746 Expiry date 7 December 2037
Name of Authorisation holder(s)	Hera Resources Pty Ltd
Name of Mine Operator (if different)	Hera Resources Pty Ltd
Date	August 2022
Version	Version 1

CONTENTS

CONTENTS

CONTENTS

DOCUMENT REFERENCES

TABLES

FIGURES

APPENDICES

1 Introduction to Mining Project

Hera Mine is an underground metalliferous mine owned by Hera Resources Pty Ltd (Hera Resources), a wholly owned subsidiary of Aurelia Metals Limited (Aurelia). The mine is located approximately 100km southeast of Cobar and approximately 4km south of Nymagee in the central west of New South Wales (NSW) (see **Figure 1**). The site consists of an underground mine, a run-of-mine (ROM) pad, temporary waste rock emplacement (WRE), processing plant, tailings storage facility (TSF), and associated infrastructure and ancillary activities (see **Figure 2**).

This Rehabilitation Management Plan (RMP, the Plan) has been prepared in accordance with the Mining Exploration and Geoscience – Resources Regulator's (RR) *Form and Way: Rehabilitation Management Plan for Large Mines* (RR, 2021) and associated guidelines (refer **Section 1.3**). The Plan has also been prepared to satisfy Condition 46 of PA 10_0191 which requires Hera Resources to prepare and implement a Rehabilitation Management Plan in accordance with the conditions imposed on mining leases associated with the mine under the *Mining Act 1992*.

1.1 History of Operations

Hera Resources commenced site earthworks in December 2011, including clearing of vegetation, construction of offices and workshops and development of a box cut to allow establishment of a portal and decline. These activities were approved as part of a Category 3 exploration activity assessed under Part 5 of the NSW *Environment Planning and Assessment Act 1979* (EP&A Act) in 2007.

The mine received Project Approval (PA) 10_0191 on 31 July 2012 by the Department of Planning, Industry and Environment (DPIE) under Part 3A of the EP&A Act. ML 1686 was issued under the Mining Act on 16 May 2013 and ML 1746 was subsequently issued on 7 December 2016.

Completion of the site access road in December 2011 triggered key construction and operational milestones for the site. In 2013, this included the development of the Hera decline, waste rock emplacement area and processing plant. Activities carried out between January to September 2014 period saw the construction of the TSF and power plant and firing of the first stope. The production of the first zinc-concentrate and pouring of gold occurred in August and September 2014, with the processing plant officially accepted on 22 September 2014.

The original Mine Operations Plan (MOP), commenced 16 May 2013, covered the first 4 years of the mining between 16 May 2013 to 26 February 2017. Superseded, the MOP was extended on 27 February 2017 to 31 December 2022 and then for an additional 2 years commencing between 1 January 2020 to 31 December 2022. Further amendments to this current MOP have been finalised.

PA 10_0191 has since been modified six times since Hera began their operations. On the 11 July 2013, a modification (MOD 1) was granted for the extension of on-site powerlines from the surface ventilation fan to the mine camp. A subsequent modification (MOD 2) was approved on 21 November 2014 for a haulage route along Nymagee-Hermidale Road.

A third modification (MOD3) was lodged on 25 February 2016 due to an increasing ore production rate and construction of supporting infrastructure.

Extension to the approved project boundary to extract and process an additional 62,000 t of gold-zinc-lead ore led the fourth modification (MOD 4) granted on the 21 September 2016. A further modification (MOD 5) was then approved on 3 December 2019 due to an increasing transportation rate of concentrate and water management storage.

On 18 June 2021, the most recent modification (MOD 6) was approved. This was following an increase in the transportation rate and the establishment of surface extraction area and relocation of the existing magazine. Amendments to the Weak Acid Dissociable cyanide limit were also outlined. extension of Mine life to December 2025, extension of the project approval boundary, and relinquishment of Northern Waste Rock Emplacement were required.

Historic rehabilitation at Hera is limited. Surface disturbance is generally limited to Life on Mine Infrastructure.

In is noted that Aurelia has submitted the Federation Project for assessment. Mining at Hera Mine is currently approved for operations until December 2025. If approved, mining of the Federation deposit will allow for a transition of mining operations from Hera Mine to Federation, as ore from the Federation deposit replaces ore from the Hera Mine.

AURELIA METALS REHABILITATION MANAGEMENT

HERA MINE

REGIONAL LOCALITY

Project Approval Boundary

ML1686

PRIORY TANK ROAD

WYMAGEE STATION ROAD

WHITBARROW WAY

GLENWOOD ROAD

BURTHONG ROAD

BALOWRA ROAD

CUMBINE S.F.

BALOWRA State Conservation Area

© Department of Customer Service 2020

0 1 2 km

Coordinate System:	GDA 1994 MGA Zone 55
Scale:	1:100,000 at A3
Project Number:	630.30329
Date:	28-Jul-2022
Drawn by:	PM

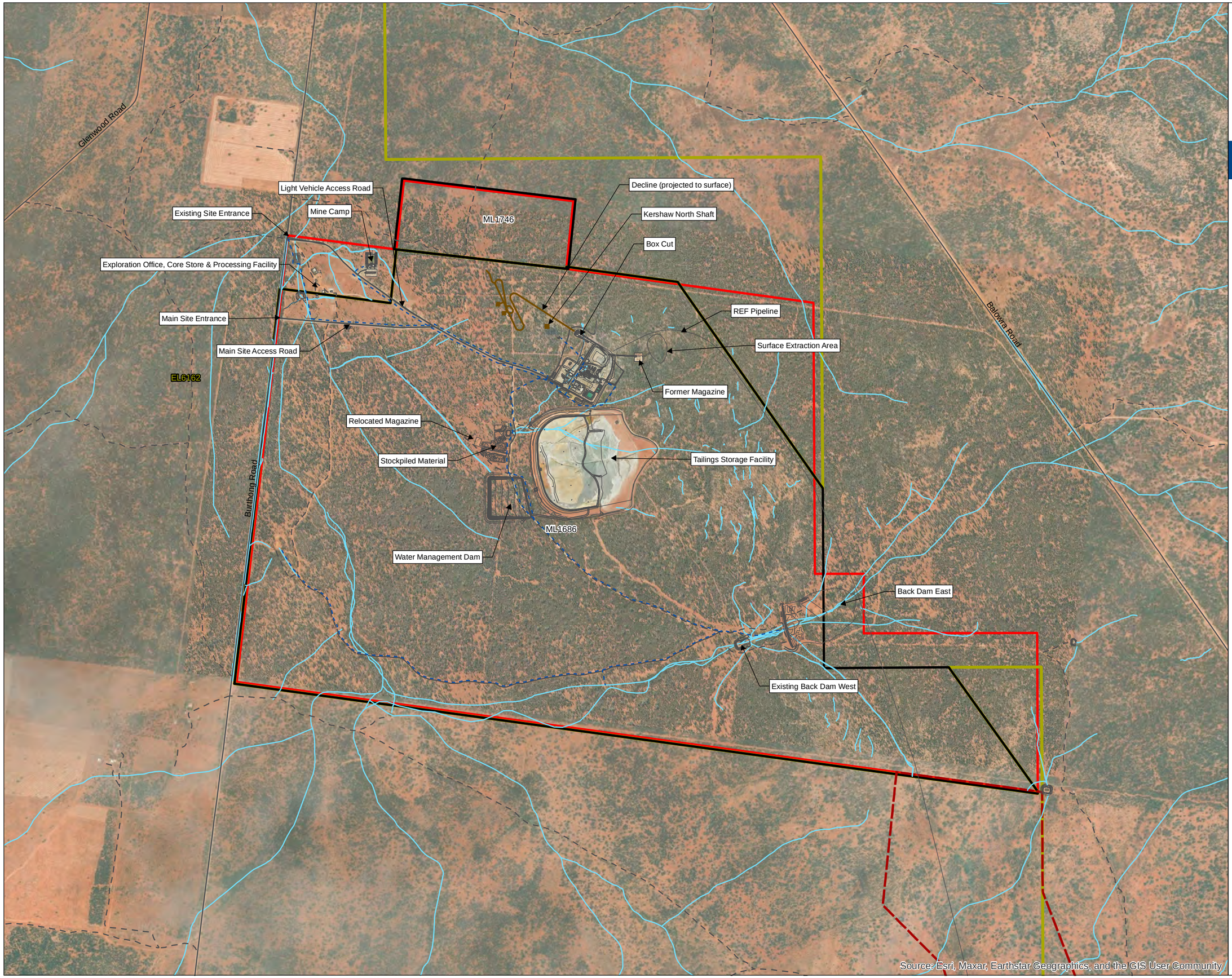
aurelia METALS Ltd.

H:\Projects-SLR\630-SrvNTL\630-NTL\630.30329.00000 Hera Gold Mine RMP Package\06 SLR Data\01 CADGIS\GIS\SLR63030329_F01_RegionalLocality_01.mxd

AURELIA METALS REHABILITATION MANAGEMENT

HERA MINE

SITE LAYOUT



- Pipeline
- Underground mining area
- Site infrastructure
- Road
- Track
- Creek
- Project Approval Boundary
- Mining Lease
- Exploration Licence
- Extended Mine Site

Data Source: Basedata NSW SS, 2021
Aerial imagery supplied by © Department of Customer Service 2020 & Aerometrex Pty Ltd, 2019

0 0.5 1 Kilometers

Coordinate System:	GDA 1994 MGA Zone 55
Scale:	1:25,000 at A3
Project Number:	630.30329
Date:	18-Jul-2022
Drawn by:	PM

aurelia METALS Ltd.

H:\Projects-SLR\630-SrvNTL\630-NTL\630.30329.00000 Hera Gold Mine RMP Package\06 SLR Data\01 CADGIS\GIS\SLR63030329_F02_SiteOverview_01.mxd

1.2 Current Development Consents, Leases and Licences

1.2.1 Development Consents

Table 1 below shows Development Consents held in relation to the mine.

Table 1 Development Consents

Issuing / Responsible Authority	Development Consent	Details	Date of Issue	Expiry
Cobar Shire Council	2012/LD-00004	Construction and use of a mine camp, including accommodation facilities, ablution facilities, a water treatment facility, communal facilities and a communal car park.	14 March 2012	N/A
	2019/LD-00027	Construction of the Nymagee pipeline. The Nymagee pipeline is connected to the historic Nymagee Copper Mine and water is transferred to Hera for use in operations.	13 December 2019	N/A
Department of Planning and Environment (DPE)	PA 10_0191	Project Approval for Hera Gold Mine	31 July 2012	31 December 2020
	PA 10_0191 (MOD1)	Extension of on-site powerlines from the surface ventilation fan to the mine camp	11 July 2013	
	PA 10_0191 (MOD2)	Modification to the approved haulage route along Nymagee-Hermidale Road	21 November 2014	
	PA 10_0191 (MOD3)	Increase to the ore production rate and construction of supporting infrastructure	25 February 2016	31 December 2022
	PA 10_0191 (MOD4)	Extension to the approved project boundary to extract and process an additional 62,000 t of gold-zinc-lead ore	21 September 2016	
	PA 10_0191 (MOD5)	Increasing transportation rate of concentrate and water management storage	3 December 2019	
	PA 10_0191 (MOD6)	Increasing transportation rate, establishment of surface extraction area and relocation of the existing magazine, amendment of Weak Acid Dissociable cyanide limit, extension of Mine life to December 2025, extension of the project approval boundary, and relinquishment of Northern Waste Rock Emplacement	18 June 2021	31 December 2025

1.2.2 Authorisations

Hera currently holds ML 1686 and ML 1746 as well as Mining Exploration Licence (EL) 6162 and EL 7447. Hera also holds Western Lands Leases (WLL) 2455 and WLL 5379. These authorisations are outlined in **Table 2**.

Table 2 Authorisations

Issuing / Responsible Authority	Licence	Grant Date	Expiry Date	Status
RR	EL 6162	26 November 2003	26 November 2024	Current
RR	EL 7447	2 February 2010	2 February 2026	Current
RR	ML 1686	16 May 2013	16 May 2034	Current
RR	ML 1746	7 Dec 2016	7 Dec 2037	Current
Crown Lands, within DPE	WLL 2455	April 1911	Perpetual	Current
Crown Lands, within DPE	WLL 5379	8 November 1943	Perpetual	Current

1.2.3 Licences

A summary of all licences held by Hera for the mining operations are included in **Table 3**.

Table 3 Licences Held by HGM

Issuing/ Responsible Authority	Licence	Licence Type	Grant Date	Expiry date
Environment Protection Authority (EPA)	EPL 20179	Environment Protection Licence	18 March 2013	Anniversary date 18 March
Department of Planning and Environment - Water	WAL 43173	Water Access Licence	6 March 2020	N/A

1.3 Applicable Guidelines

In addition to the regulatory requirements identified above, this Plan has been prepared with consideration for the following guidelines, standards and policies:

- *Form and way: Rehabilitation Management Plan (large mines)*;
- *Form and way: Rehabilitation objectives, rehabilitation completion criteria and final landform and rehabilitation plan for large mines*;
- *Guideline: Rehabilitation risk assessment*;
- *Guideline: Rehabilitation objectives and rehabilitation completion criteria*;
- *Planning for Integrated Mine Closure Toolkit* (ICMM, 2008);
- *Mining Amendment (Standard Condition of Mining Leases – Rehabilitation) Regulation 2021*;
- *Strategic Framework for Mine Closure* (ANZMEC 2000);
- *Leading Practice Sustainable Development Program for the Mining Industry – Mine Closure and Completion, Mine Rehabilitation (Commonwealth Department of Industry, Tourism and Resources)*;
- Best Practice Environmental Management in the Mining Industry Series;

- Enduring Value (Mineral Council of Australia 2015);
- *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007* (Mining SEPP);

1.4 Land Ownership and Land Use

1.4.1 Land Ownership

The Mine Site is located on Lot 664, DP761702 and Lot 1730 DP763521, held by Hera Resources under WLL2455, granted under the Western Lands Act 1901 and managed by Crown Lands, with DPE (Crown Lands). The eastern section of WLL2455 is the subject of Travelling Stock Reserve TSR8792.

The land ownership and closest residences surrounding the mine site are presented on **Figure 3**. Surrounding land ownership is predominantly Crown Land, with some freehold land and land held by the State of NSW. **Appendix A** details land ownership and property descriptions within and surrounding Hera.

1.4.2 Historical and Current Land Use

The mine site was historically used for agricultural activities, predominantly sheep grazing. No significant historical mining activities have been undertaken within the site, however, the Kershaw North Shaft on the property is listed as having been worked from 1903 to 1906 (Suppel and Gilligan, 1993) although no production was recorded from this site. In addition, several large quartz veins exposed at the surface have been the subject of prospecting activities through extraction of shallow pits.

Other notable current or previous land uses within or immediately surrounding the Mine are as follows (refer to **Figure 4**):

- Agriculture – principally grazing of sheep. Agricultural activities are generally undertaken in cleared areas on undulating hills;
- Nature conservation and forestry – these land uses are mostly restricted to areas of steeper slopes and areas unsuitable for other land uses. The Balowra State Conservation Area is located approximately 9km south of the mine site;
- Residential and rural residential – The township of Nymagee, located approximately 4km north of Mine Site, and surrounding areas include areas of rural residential and residential land use; and
- Mineral exploration and mining – Sections of the mine site have been the subject of historic and more recent mineral exploration and mining activities. Copper mining at the former Nymagee Copper Mine (1881 – 1917) was undertaken 4.5km north of the mine site.

AURELIA METALS REHABILITATION MANAGEMENT

HERA MINE

LAND OWNERSHIP

- Residence (Project-related)
- Residence (Non Project-related)
- Road
- Track
- Cadastre
- Travelling Stock Route
- Extended Mine Site
- Mining Lease
- Exploration Licence
- Project Approval

Land Ownership

- Crown Land
- Private Land
- NSW Government Land

Data Source: Basedata NSW SS, 2021

0 0.5 1 Kilometers

Coordinate System:	GDA 1994 MGA Zone 56
Scale:	1:25,000 at A3
Project Number:	630.30329
Date:	28-Jul-2022
Drawn by:	PM

aurelia METALS Ltd.

H:\Projects-SLR\630-SrvNTL\630-NTL\630.30329.00000 Hera Gold Mine RMP Package\06 SLR Data\01 CADGIS\GIS\SLR63030329_F03_LandOwnership_01.mxd

AURELIA METALS REHABILITATION MANAGEMENT

HERA MINE

LAND USE AND CONTOURS

Glenwood Road

Burthong Road

Balowra Road

- Contours (5m)
- Road
- Project Approval Boundary

Land Use (NSW Government)

- 1.3.0 Other minimal use
- 2.1.0 Grazing native vegetation
- 3.2.0 Grazing modified pastures
- 3.3.0 Cropping
- 5.4.0 Residential and farm infrastructure
- 5.5.0 Services
- 5.7.0 Transport and communication
- 5.8.0 Mining
- 6.2.0 Reservoir/dam

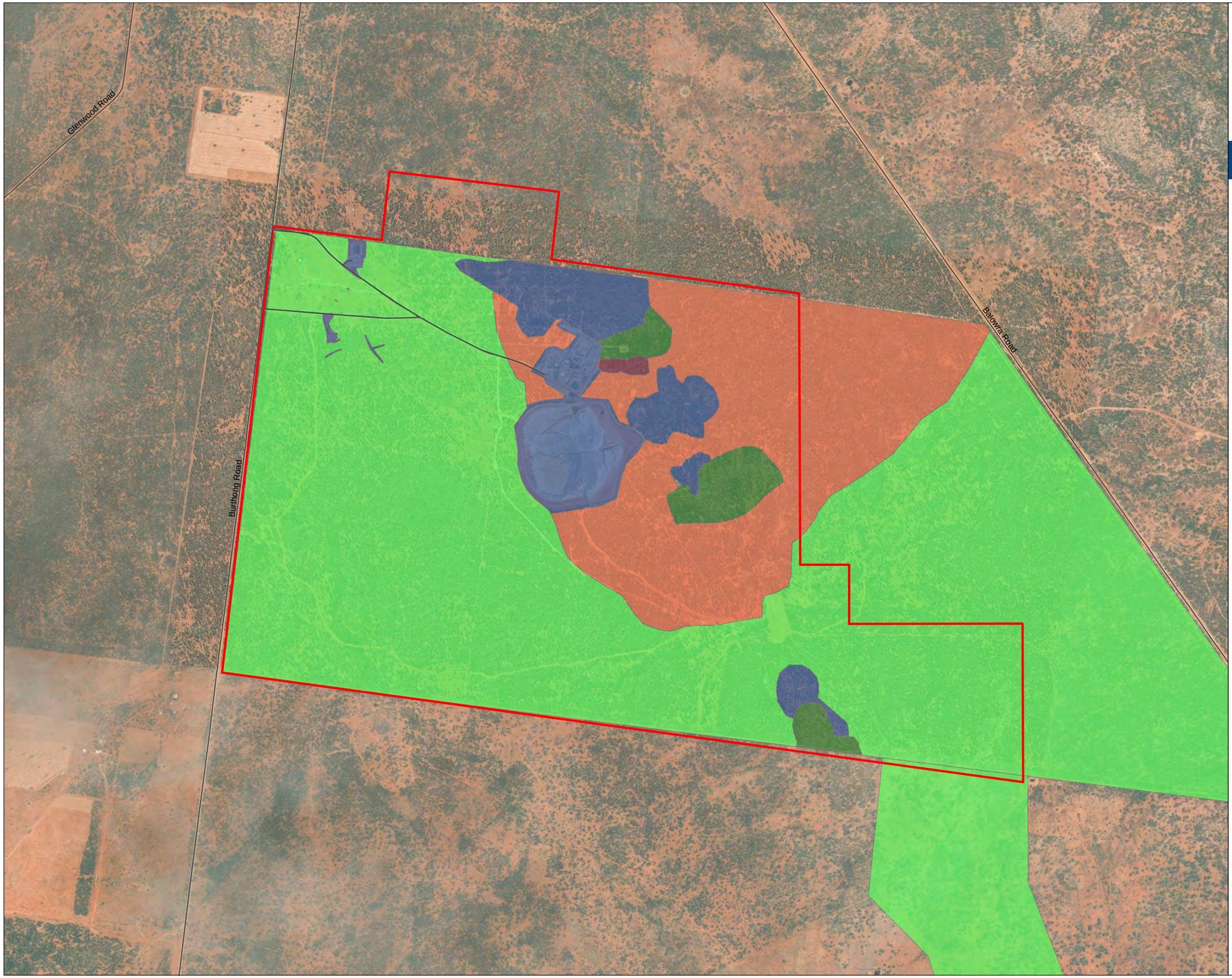
Data Source: Basedata NSW SS, 2021

0 0.5 1 Kilometers

Coordinate System:	GDA 1994 MGA Zone 55
Scale:	1:25,000 at A3
Project Number:	630.30329
Date:	18-Jul-2022
Drawn by:	PM

aurelia METALS Ltd.

H:\Projects-SLR\630-SrvNTL\630-NTL\630.30329.00000 Hera Gold Mine RMP Package\06 SLR Data\01 CADGIS\GIS\SLR63030329_F04_LandUseandContours_01.mxd



AURELIA METALS REHABILITATION MANAGEMENT

HERA MINE

VEGETATION

- Road
- Project Approval Boundary

Ground Truthed PCTs

- 103, Poplar Box - Gum Coolabah - White Cypress Pine shrubby woodland mainly in the Cobar Peneplain Bioregion
- 104, Gum Coolabah woodland on sedimentary substrates mainly in the Cobar Peneplain Bioregion
- 184, Dwyers Red Gum - White Cypress Pine - Currawang low shrub-grass woodland of the Cobar Peneplain Bioregion
- 258, Gum Coolabah - Mugga Ironbark - White Cypress Pine woodland on granite low hills in the eastern Cobar Peneplain Bioregion and central NSW South Western Slopes Bioregion
- Disturbed or Cleared

Data Source: Basedata NSW SS, 2021
Aerial imagery supplied by © Department of Customer Service 2020 & Aerometrex Pty Ltd, 2019

N

0 0.5 1 Kilometers

Coordinate System:	GDA 1994 MGA Zone 55
Scale:	1:25,000 at A3
Project Number:	630.30329
Date:	18-Jul-2022
Drawn by:	PM

aurelia METALS Ltd.

H:\Projects-SLR\630-SrvNTL\630-NTL\630.30329.00000 Hera Gold Mine RMP Package\06 SLR Data\01 CADGIS\GIS\SLR63030329_F05_Vegetation_01.mxd

1.4.3 Future Land Use

The proposed post-mining landform will involve a combination of pasture and native vegetation as well as retained infrastructure. In summary, Hera Resources will ensure that the final landform comprised the following.

- A bunded and fenced box cut with the portal sealed and backfilled in a manner that will allow re-opening, in the event that mining operations re-commence in the future. The slopes of the walls of the box cut will be reduced to approximately 1:3 (V:H) through backfilling of the box cut or blast profiling of the walls. The surface of the void will be covered with a suitable growth medium and seeded with native grasses, shrubs and trees consistent with the surrounding vegetation;
- A bunded Surface Extraction Area with reprofiled and reshaped floor draining to a sump covered with suitable growth medium and revegetated (potential for scaled slopes where suitable material is available);
- One sealed ventilation rise and a sealed escape-way. The ventilation rise and escape-way will be capped with a suitably designed and engineered cap that will permit reopening of the shaft at a later time if required;
- An appropriately covered and dome-shaped, free draining TSF and embankment slopes of approximately 1:3 (V:H) or less to native grassland;
- The Water Management Dam will be rehabilitated to native woodland;
- A shaped, covered and revegetated SFA and relocated magazine with all infrastructure removed including the pipeline to Federation Exploration Decline area; and
- All stockpile areas will be shaped and revegetated. Some areas will be revegetated to grassland, while other areas will be revegetated to native woodland.

All other infrastructure, including the existing house, exploration office, core store and processing facility, and the existing internal roads, including the access roads, will be retained. The access roads will be reduced in width through ripping, spreading of soil and revegetation to a width suitable for the end land use of agriculture and nature conservation. Where a track will not be required for the end land use, it will be removed completely and rehabilitated in a similar manner.

Water Management structures that will remain in the final landform include Back Dam East, Back Dam, Pete's Dam, House Dam, and Three Gates Dam. The water management structures up slope of the TSF will also remain following mine closure. These structures will deflect upslope water away from the former TSF and have been designed to be stable in a 1 in 100-year Average Recurrence Interval (ARI) storm event.

2 Final Land Use

2.1 Regulatory Requirements for Rehabilitation

The regulatory requirements specific to post mining land use, rehabilitation, and closure at Hera are summarised in **Table 4** and **Table 5**.

Table 4 Regulatory Requirements Rehabilitation

<table>
<tr><th>Condition</th><th>Requirement</th><th>Domain</th><th>Timing</th><th>Section Addressed</th></tr>
<tr><td colspan="5">PA10_0191</td></tr>
<tr><td>PA10_0191
Schedule 2
Condition 9</td><td>Demolition
9. The Proponent shall ensure that all demolition work is carried out in accordance with Australian Standard AS 2601-2001: The Demolition of Structures, or its latest version.</td><td>Infrastructure Area, TSF, Water Management Area</td><td>Decommissioning</td><td>6.3.2</td></tr>
<tr><td>PA10_0191
Schedule 3
Condition 44</td><td>REHABILITATION
Rehabilitation Objectives
44. The Proponent shall rehabilitate the site to the satisfaction of the RR. This rehabilitation must be generally consistent with the proposed rehabilitation strategy described in the EA and comply with the objectives in Table 7:

Table 7: Rehabilitation Objectives
<table>
<tr><th>Feature</th><th>Objective</th></tr>
<tr><td>Mine site (as a whole)</td><td>• Safe, stable and non-polluting
• Final land use compatible with surrounding land uses.
• Final landforms designed to incorporate micro-relief, natural drainage lines and minimize visual prominence by integration with the surrounding landscape.
• Restore self-sustaining ecosystems, including establishing local native plant species.
• Minimise visual impact of final landforms as far as is reasonable and feasible.</td></tr>
<tr><td>Surface infrastructure</td><td>To be decommissioned and removed, unless the RR agrees otherwise</td></tr>
<tr><td>Other land</td><td>Establish the ‘Chelsea’ site as a biodiversity offset.</td></tr>
<tr><td>Community</td><td>Minimise the adverse socio-economic effects associated with mine closure</td></tr>
</table></td><td>All domains</td><td>Ongoing</td><td>Section 4 and 6

Section 6.3.2

Biodiversity Management Plan</td></tr>
</table>

Condition	Requirement	Domain	Timing	Section Addressed
PA10_0191 Schedule 3 Condition 45	**Progressive Rehabilitation** 45. The Proponent shall carry out rehabilitation of the site progressively, that is, as soon as reasonably practicable after disturbance. All reasonable and feasible measures must be taken to minimise the total area exposed for dust generation at any time. Interim rehabilitation strategies shall be employed when areas prone to dust generation cannot yet be permanently rehabilitated. Note: It is accepted that some parts of the site that are progressively rehabilitated to enable temporary stabilisation, may be subject to further disturbance at some later stage of the project.	All domains	Ongoing	Section 4 and 6
PA10_0191 Schedule 3 Condition 46	**Rehabilitation Management Plan** 46. The Proponent shall prepare and implement a Rehabilitation Management Plan for the project to the satisfaction of the RR. This plan must: (a) be prepared in consultation with the Department, BCD, DRG, DPIE Water and CSC;	All domains	Ongoing	This document Section 4.4
	(b) be submitted to the RR for approval prior to carrying out development on the site under this approval;			N/A
	(c) be prepared in accordance with any relevant RR guideline;			Section 1.3
	(d) outline the procedures to be implemented to achieve the rehabilitation objectives in condition 44;			Section 4
	(e) describe how the rehabilitation of the site will be integrated with the implementation of the biodiversity offset strategy;			Section 6.3.1 and 8.2
	(f) include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, and triggering remedial action (if necessary);			Section 4 and 10
	(g) describe the measures that will be implemented to ensure compliance with the relevant conditions of this approval, and address all aspects of rehabilitation including mine closure, final landform, and final land use;			Section 6
	(h) include interim rehabilitation where necessary to minimise the area exposed for dust generation;			Section 4.3
	(i) include a program to monitor, independently audit and report on the effectiveness of the measures, and progress against the detailed performance and completion criteria; and			Section 8

Condition	Requirement	Domain	Timing	Section Addressed
	(j) build, to the maximum extent practicable, on the other management plans required under this approval.			This RMP
Condition 14	**14. Previous Licence** The licence holder must rehabilitate to the satisfaction of the Department any areas disturbed by operations carried out under Exploration Licence No. 5591 and must lodge any reports required in connection with that licence.	All domains	Ongoing	Section 6.3.1
Hera Mine EA Statement of Commitments				
Condition 4 Ecology	4.17 Undertake monitoring of the ongoing rehabilitation activities within the Project Site to ensure native vegetation regeneration is successful and to control weed invasion	All domains	Ongoing	Sections 8.3, 8.4 and 10
	4.20 Monitor the rehabilitation activities within the Project Site to ensure native vegetation regeneration is successful and to control weed invasion.	All domains	Ongoing	Section 8
	4.21 Implement the industry best practice land management measures e.g., implementation of a weed and feral animal control program as part of a post-project Land Management Plan.	All domains	Ongoing	Sections 6.3.5 and 7
	4.23 Continue with the annual formal surveys of the Kultarr to establish a population census and compile information for use in the management of this species following rehabilitation activities and to allow year to year comparisons of any changes in habitat usage and population trends.	N/A	N/A	Biodiversity Management Plan
Condition 6 Surface Water	6.18 Develop a Soil and Water Management Plan to accompany the capping works, including the exact nature of the capping procedure, at the former Tailings Storage Facility	Tailings Storage Facility	Ongoing	Section 6.3.3
	6.19 Shape the decommissioned Tailings Storage Facility into a raised plateau with a shallow dome profile so that water would be shed from its surface as sheet flow without concentration	Tailings Storage Facility	Ongoing	Sections 4.3, 6.3.3 and 9.1
Condition 10 Air Quality and Energy	10.7 Cap or otherwise treat the Tailings Storage Facility during rehabilitation activities following completion of operations.	Tailings Storage Facility	Ongoing	Sections 4.3, 6.3.3 and 9.1
	10.17 Reshape, topsoil and rehabilitate completed Waste Rock Emplacement areas as soon as practicable after they are no longer required for mining-related purposes.	Other (Waste Rock Emplacement Area)	Ongoing	Sections 4 and 6.3.3
Condition 12 Soils and Land Capability	12.12 Ensure slopes less than 2% are rehabilitated with Red Earths with due regard to the following precautionary measures: no furrowing would be used; maintain the length of exposed slopes to less than 80m; use windrows of mulch placed along the contours and ensuring these would not act as drains themselves.	All domains	Ongoing	Sections 6.3.1 and 6.3.4
	12.17 Use organic material in preference to fertilizers during rehabilitation.	All domains	Ongoing	Section 6.3.4

Condition	Requirement	Domain	Timing	Section Addressed
Condition 13 Visual Amenity	13.2 Progressively rehabilitate disturbed sections of the Project Site no longer required for the Project and re-vegetate areas that are bare or only have remnant vegetation.	All domains	Ongoing	Section 4 and 6.3.5
Condition 16 Socio Economic	Rehabilitated Lands 16.15 Ensure that the land capability of those sections of the final landform to be used for grazing is similar to the current land capability	All domains	Ongoing	Sections 1.4.2 and 1.4.3
	16.16 Ensure the final landform is free flowing and geotechnically stable	All domains	Ongoing	Sections 6.3.1 and 10

Table 5 Regulatory Requirements Relating to Authorisations (2022 Amendments)

Condition	Requirement	Domain	Timing	Section Addressed
Mining Amendment (Standard Conditions of Mining Leases – Rehabilitation) Regulation 2021 – Part 2 (refer to Appendix B)				
Part 2 Standard Conditions Division 1 Condition 4	Prevent or minimise harm to the environment.	All	Ongoing	Section 3
Part 2 Standard Conditions Division 1 Condition 5	Rehabilitate land and water as soon as reasonably practicable after disturbance occurs.	All	Ongoing	Section 6.1
Part 2 Standard Conditions Division 1 Condition 6	Achieve the approved final land use for the mining area as set out in the: rehabilitation objectives statement; rehabilitation completion criteria statement; and final landform and rehabilitation spatial plan (large mines only).	All	Prior to relinquishment	Section 2.3
Part 2 Standard Conditions Division 2 Condition 7	Undertake a rehabilitation risk assessment and implement measures to eliminate, minimise or mitigate risks to achieving the final land use.	All	Complete/ Ongoing	Section 3
Part 2 Standard Conditions Division 3 Condition 10	Prepare and implement a rehabilitation management plan (large mines only).	All	Complete	This document
Part 2 Standard Conditions Division 3 Condition 13	Prepare an annual rehabilitation report which describes the progress of rehabilitation over the annual reporting period.	All	Ongoing	Section 6
Part 2 Standard Conditions Division 3 Condition 13	Prepare a forward program which includes the schedule of mining and rehabilitation activities for the next three years demonstrating how rehabilitation will occur as soon as reasonably practicable after disturbance.	All	Ongoing	Section 6

2.2 Final Land Use Options Assessment

This section is not applicable to the Hera Mines RMP as the final land use is specified under Project Approval PA 10_0191 (refer to **Section 2.1**).

2.3 Final Land Use Statement

The approved final land use is a combination of agriculture and native vegetation conservation. The majority of disturbance areas will be rehabilitated to native woodland vegetation. The TSF will be rehabilitated to a grassland final landform. The remainder of the site, comprising the western and southern sections, will be able to continue to be able to be used for agricultural activities.

In summary, the nominated post-mining land use goals for the Mine Site are:

- To implement successful design and rehabilitation of landforms to ensure structural stability, revegetation success and free drainage of water;
- To ensure rehabilitation and revegetation is self-sustaining, blends with the surrounding landscape, as far as practicable, and follows the principles of sustainable development; and
- To retain areas of the Hera Mine (not subject to disturbance) amenable to future agricultural activities.

2.4 Final Land Use and Mining Domains

2.4.1 Final Land Use Domains

Final land use domains are defined as land management units characterised by similar final land use objectives. Each final land use domain will require specific rehabilitation methods.

The final land use domains for this Plan are presented in **Table 6** and shown on the Final Landform and Rehabilitation Plan (refer **Figure 7**).

Table 6 Final Land Use Domains

Code	Final Land Use Domain	Description
A	Native Ecosystem	Native woodland vegetation with local species commensurate with Mallee – Smooth - Barked Coolibah and Poplar Box – Gum Barked Coolibah. Relates to all other rehabilitation other than the TSF, i.e., infrastructure area, and dams that will be rehabilitated, waste rock emplacement area, stockpiles and void.
B	Agricultural - Grazing	Grassland rehabilitation comprising a cover crop which includes native grassland species. Relates to the TSF.
F	Water Management Areas	Includes the water management structures that will remain the final landform.
G	Water Storage	Includes the dams and water storage structures that will remain in the final landform (Pete's Dam, Three Gates Dam, Back Dam, Back Dam East)
I	Infrastructure	Includes all infrastructure that will remain on the site at mine closure, including access tracks and roads, pre-existing infrastructure, including houses and sheds, as well as selected sheds and transportable buildings that could reasonably be required for agricultural and/or nature conservation purposes.

2.4.2 Mining Domains

Mining domains identify the footprint of areas disturbed for mining related activities. For the purpose of this Plan, mining domains have been defined as the set of discrete areas that have a particular operational or functional purpose, therefore having similar geophysical and geochemical characteristics that will have similar rehabilitation requirements.

Mining domains are presented in **Table 7**.

Table 7 Mining Domains

Code	Mining Domain	Description
1	Infrastructure Area	This domain Includes: • all existing built infrastructure and facilities (other than water management structures). Includes ROM Pad, processing plant and associated infrastructure, buildings including administration, mine camp, workshops and amenities, roads (including access roads and haul roads), hardstand areas and car park, the relocated magazine, ventilation shafts and associated infrastructure • areas used for stockpiling of topsoil and subsoil material including from Surface Extraction Area (excludes stockpiled waste rock or ore). • the Box cut and Portal providing entrance to the underground mine workings and Surface Extraction Area.
2	Tailings Storage Facility	This domain includes the TSF, including all embankments.
3	Water Management Area	Includes clean and dirty water diversion structures and sediment basins.
8	Other (Waste Rock Emplacement Area)	The footprint of the southern waste rock emplacement.

3 Rehabilitation Risk Assessment

3.1 Summary of Risk Assessments

Multiple risk assessments have been completed historically for the closure works associated with Hera. **Table 8** summarises the completed rehabilitation risk assessments.

Table 8 Summary of Risk Assessments

Date	Risk Assessment	Details
Can site provide risk assessments completed prior to 2019		
21 February 2013	MOP Risk Assessment	A risk assessment was undertaken during the preparation of the MOP, dated 16 May 2013 to address risks to rehabilitation and closure at Hera Mine.
10 May 2019	MOP Risk Assessment	A risk assessment was undertaken during the preparation of the MOP, dated 27 February 2017 to address risks to rehabilitation and closure at Hera Mine.
26 May 2022	RMP Risk Assessment	A risk assessment was conducted to identify the key issues that presented a risk to achieving satisfactory rehabilitation at Hera and inform the preparation of the RMP. This risk assessment was conducted in accordance with Resources Regulator's Guideline: Rehabilitation Risk Assessment to satisfy the standard rehabilitation conditions introduced on Mining Leases in July 2021.

3.2 Rehabilitation Risk Assessment

Conditions of a mining lease granted under the *Mining Act 1992* require the lease holder to conduct a rehabilitation risk assessment and implement measures to eliminate, minimise or mitigate the risks in accordance with the Resources Regulator's *Guideline: Rehabilitation risk assessment.*

A risk assessment workshop was undertaken on 26 May 2022. The workshop was used to identify the key issues that presented a risk to achieving satisfactory rehabilitation at Hera.

The risk assessment included key Aurelia and SLR personnel and was undertaken in accordance with AS/NZS ISO 31000:2018 Risk Management – Guidelines and the Risk Management Handbook for the Mining Industry (MDG1010). Aurelia's Risk Matrix was used to calculate the consequence and likelihood of an event and to evaluate the subsequent risk level (risk rank).

The risk assessment has been used to inform the preparation of this Plan. The objectives of the risk assessment were to:

- Identify the risks associated with rehabilitation and closure of Hera to achieve the approved post mining land uses;
- Identify knowledge gaps in Aurelia's current understanding of the risks to rehabilitation;

- Identify the investigations/controls/action plans necessary to effectively mitigate risks and/or realise opportunities and to close any identified knowledge gaps;
- Inform the development of this RMP, to provide a basis to determine additional investigations and/or project works to be undertaken; and
- Provide the framework to satisfy relevant internal and government guidelines, requiring implementation of a risk-based approach to closure.

The risk workshop assessed a total of 68 key rehabilitation risks, which are summarised as:

- 13 risks were ranked as not applicable;
- 19 risks were ranked as low;
- 36 risks were ranked as moderate;
- 0 risks were ranked as high; and
- 0 risks were ranked as extreme.

Rehabilitation risks, controls and proposed controls will regularly be reviewed and revised (as required)

3.2.1 Specific Risks relating to Rehabilitation

The key risks (summarised as moderate risks with additional controls required, high and extreme risks) to successful rehabilitation and associated risk controls identified within the May 2022 workshop have been summarised in **Table 9**. The outcomes of the risk assessment workshop have been used to inform the preparation of this Plan.

Table 9 Key Rehabilitation Risks and Identified Controls

Risk Rating	Key Risk	Key Existing Controls	Sections Addressed
Moderate	Poor tailings management over LoM.	Engineering design of TSF	Section 6.3.1
		Defined protocols, procedures and plans	Site Safety Management System
		Trained and competent personnel	
		Annual surveillance report by engineer	
		Vibration monitoring	
		QA during construction process	
		Daily and Weekly Inspections	
		3rd Party Audits - TSF	
		Seepage Monitoring	
Moderate	Inadequate volume of suitable materials for capping TSF	Materials balance (2021)	Section 6.3.1
		Engineering design for TSF capping	6.1.3
		Provisions in RCE	Hera Mine Rehabilitation Cost Estimate
		Column trials for TSF to determine cap thickness	Section 9 .1

3.2.2 Further Studies / Action Plan

A number of proposed controls and further studies were identified during the risk assessment workshop. **Table 10** presents an action plan for implementation of the additional risk controls (including moderate, high and extreme risks).

Table 10 Further Studies / Action Plan

Risk Rating	Risk	Proposed Control / Study	Timeframe
Moderate	Poor tailings management over LoM.	DSC Training - Key Personnel	2022
		New Water Management Dam	2023
Moderate	Inadequate volume of suitable materials for capping TSF	Investigate options for capping material alternatives	2023

4 Rehabilitation Objectives and Rehabilitation Completion Criteria

4.1 PA 10_0191 Requirements

In accordance with Condition 44, Schedule 3 of PA 10_0191 Hera will undertake rehabilitation:

- in accordance with the conditions imposed on the mining lease(s) associated with the development under the Mining Act 1992.
- generally consistent with the proposed rehabilitation strategy described in the EA;
- progressively, that is, as soon as reasonably practicable following disturbance; and
- to comply with the rehabilitation objectives in **Table 11**.

Table 11 Rehabilitation Objectives

Feature	Objective
Mine site (as a whole)	• Safe, stable and non-polluting • Final land use compatible with surrounding land uses. • Final landforms designed to incorporate micro-relief, natural drainage lines and minimize visual prominence by integration with the surrounding landscape. • Restore self-sustaining ecosystems, including establishing local native plant species. • Minimise visual impact of final landforms as far as is reasonable and feasible.
Surface infrastructure	• To be decommissioned and removed, unless the Executive Director Mineral Resources agrees otherwise
Community	• Minimise the adverse socio-economic effects associated with mine closure

4.2 Domain Rehabilitation Objectives

In order to achieve the broad rehabilitation objectives presented in PA 10_0191, the following specific rehabilitation objectives have been adopted at Hera Mine.

The key rehabilitation objectives for each of the domains identified in **Section 2.4** are defined in **Table 12**.

Table 12 Domain Rehabilitation Objectives

Mining Domain	Final Land Use Domain	Rehabilitation Objectives
Infrastructure Area	Infrastructure	All roads and hardstand areas to be retained for a lawful final land use reduced in width or size to that suitable for final land use. Domain safe and free from hazardous materials and contaminants. Free draining, stable and permanent landform established.
	Native Ecosystem	All infrastructure and services not suitable for a lawful final land use to be removed. Domain safe and free from hazardous materials and contaminants. Free draining, stable and permanent landform established. Establish a soil profile capable of sustaining the specified end land use. Establish vegetation with a similar species composition to the Poplar Box – Gum – Barked Coolibah vegetation community. Free draining, stable and permanent landform established for the box cut and internally draining to a sump for the Surface Extraction Area. Establish vegetation with a similar species composition to the Mallee – Smooth-barked Coolibah vegetation community.
Tailings Storage Facility	Agricultural - Grazing	Infrastructure removed and domain made safe. Free draining, stable and permanent landform established. Limit opportunities for pollution of the surrounding landscape. Establish a soil profile capable of sustaining the specified end land use. Establish predominantly native grass cover. Grassland ecosystem is established with maintenance needs no greater than those of surrounding, undisturbed land. Vegetation dominated by shallow rooted native grassland species.
Water Management Area	Water Management Areas Water Storage	Domain safe and free from hazardous materials and contaminants. Retained water management structures are stable and permanent overflow drainage is constructed. Domain stable and non-polluting.
	Native Ecosystem	All infrastructure not suitable for a lawful final land use to be removed. Domain safe and free from hazardous materials and contaminants. Free draining, stable and permanent landform established. Establish a soil profile capable of sustaining the specified end land use. Establish vegetation with a similar species composition to the Poplar Box – Gum – Barked Coolibah vegetation community.
Other (Waste Rock Emplacement Area)	Native Ecosystem	Domain safe and free from hazardous materials and contaminants. Waste rock not required for rehabilitation activities is removed from domain. Free draining, stable and permanent landform established. Establish a soil profile capable of sustaining the specified end land use. Establish vegetation with a similar species composition to the Poplar Box – Gum – Barked Coolibah vegetation community.

4.3 Rehabilitation Completion Criteria

Completion criteria are objective target levels or values assigned to a variety of indicators (e.g., slope, species diversity, percent groundcover), which can be measured to demonstrate progress and ultimate success of rehabilitation. As such, they provide a defined end point, at which point in time rehabilitation can be deemed successful and the lease relinquishment process can proceed. The draft rehabilitation completion criteria for all areas at Hera Mine are listed in **Table 13**.

These completion criteria will be utilised to demonstrate achievement of rehabilitation objectives. It is noted that the completion criteria may be subject to refinement as rehabilitation progresses, including as a result of ongoing consultation with the relevant stakeholders, studies yet to be completed and continuous improvement process informed by rehabilitation monitoring results. The achievement (or otherwise) of the completion criteria will be monitored and reported as required.

Closure criteria have been informed by the following information:

- Relevant conditions of Project Approval 10_0191;
- The Department of Regional NSW – Mining, Exploration & Geosciences (DRNSW – MEG) rehabilitation guideline documents including:
  - *Form and way: Rehabilitation objectives, rehabilitation completion criteria and final landform and rehabilitation plan for large mines;*
  - *Guideline: Rehabilitation objectives and rehabilitation completion criteria;*
- Completion criteria from the previously approved Hera Mine MOP;
- Similar rehabilitation projects; and
- Specific information collected to date during detailed planning investigations.

It is noted that the rehabilitation completion criteria for Hera will remain in Draft until approved by the RR.

Table 13 Draft Rehabilitation Completion Criteria for Hera Mine

Final Land Use Domain	Mining Domain	Rehabilitation Objective *(describe the desired feature and/or characteristics of the final land use domain)*	Indicator *(specific attribute associated with the objective)*	Rehabilitation Completion Criteria *(benchmark for the indicator, based on analogue data where appropriate)*	Example Justification Validation Method *(evidence that the benchmark has been achieved)*
Decommissioning					
All Mining Domains					
All final land use domains	Infrastructure Area	There is no residual soil contamination on site that is incompatible with the final land use or that poses a threat of environmental harm.	Waste material and/or visible contamination areas on site surface.	There are no visible signs of contamination following the removal of plant, equipment and materials. All rubbish/ waste materials removed from site.	Statement provided and before/after photos.
			Soil testing for contaminants of concern as listed by Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999) applicable to land use type.	Contamination will be appropriately remediated so that appropriate guidelines for land use are met, e.g. Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999). Excess sludge/material has been removed from surface water dams.	Contamination Remediation Report prepared by Land Contamination Consulta Site Contamination Audit Report and Site Audit Statement prepared by EPA Accredited Auditor (where required).
		All infrastructure that is to remain as part of the final land use is safe and does not pose any hazard to the community	Potential hazards (e.g. electrical, mechanical) have been effectively isolated and secured.	Hazards isolated and secured.	Statement provided by suitably qualified engineer.
			Damage to access tracks and haul roads has been repaired and stabilised.	Repairs complete	As-constructed final landform plan, photos etc.
			Where applicable, necessary approvals are in place (e.g. development consent under the Environmental Planning and Assessment Act 1979) where buildings and infrastructure are to be retained as part of final land use.	Permits and approval documents issued; archival reports (where required) complete and submitted.	Copy of any relevant approvals.

Final Land Use Domain	Mining Domain	Rehabilitation Objective *(describe the desired feature and/or characteristics of the final land use domain)*	Indicator *(specific attribute associated with the objective)*	Rehabilitation Completion Criteria *(benchmark for the indicator, based on analogue data where appropriate)*	Example Justification Validation Method *(evidence that the benchmark has been achieved)*
			Heritage obligations as required under the Environmental Planning and Assessment Act 1979, Heritage Act 1977, etc. have been met (e.g. archival recording, building retention and restoration).	Permits and approval documents issued; archival reports (where required) complete and submitted.	Copy of any relevant approvals.
			The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment
All final land use domains	Infrastructure Area	All infrastructure that is not to be used as part of the final land use is removed to ensure the site is safe and free of hazardous materials.	Removal of all services (power, water, communications) that have been connected on the site as part of the operation.	All utility infrastructure removed.	Statement provided, utility service disconnection record / notification
			Roads not required for final land use are removed.	Roads removed unless permitted for agricultural or other approved activity.	Plan showing redundant structures Photos.
			Infrastructure not required for final land use removed.	Relevant infrastructure removed.	Plan showing redundant structures Photos.
			Ventilation rises capped.	Ventilation rises capped (in consultation with Resources Regulator).	Relinquishment inspection and report, including photographs, prepared by a qualified person.
		Domain safe and free from hazardous materials and contaminants	Contaminated land identified and remediated. Any contaminated material placed within TSF.	Contaminated land assessment confirms soils meet relevant criteria and indicates no contamination risk in final landform.	Contamination report prepared by qualified person.
		Free-draining, stable and permanent landform established.	Fencing of box cut, sealing of portal.	Fence erected around Box Cut. Portal sealed (in consultation with Resources Regulator).	Relinquishment inspection and report, including photographs, prepared by a qualified person.
		Internally draining, stable and permanent landform established.	Bunding of Surface Extraction Area.	Bund constructed around Surface Extraction Area.	Relinquishment inspection and report, including photographs, prepared by a qualified person.
Tailings Storage Facility					

Final Land Use Domain	Mining Domain	Rehabilitation Objective *(describe the desired feature and/or characteristics of the final land use domain)*	Indicator *(specific attribute associated with the objective)*	Rehabilitation Completion Criteria *(benchmark for the indicator, based on analogue data where appropriate)*	Example Justification Validation Method *(evidence that the benchmark has been achieved)*
Agricultural – Grazing	Tailings Storage Facility	Infrastructure removed and domain made safe.	Pipework, decant and associated ancillary infrastructure removed.	Pipework, decant and associated ancillary infrastructure removed.	Relinquishment inspection and report, including photographs.
			TSF structurally sound.	Technical report confirms that TSF is structurally sound, report is accepted by Dam Safety Committee of NSW, and notification of successful decommissioning received.	Independent engineers report to Dam Safety Committee of NSW. Correspondence with Dam Safety Committee of NSW.
			TSF non-polluting.	Surface water and groundwater monitoring indicates that surface flow/leachate complies with trigger values noted in the Water Management Plan.	Water quality testing as per the approved Water Management Plan
		Risk of acid rock drainage is minimised	Acid Forming Potential	Rehabilitation areas not affected by AMD.	AMD Studies Runoff / Downstream Sampling Results
				Reject Emplacement Areas have been capped.	AMD Studies Runoff / Downstream Sampling Results
Water Management Areas					
All final land use domains	Water Management Area	Domain safe and free from hazardous materials and contaminants	Contaminated land identified and remediated.	Surface water and groundwater monitoring indicates that surface water complies with trigger values determined in the Water Management Plan.	Water quality testing as per the approved Water Management Plan.
		All water management structures approved to remain in the final landform (Back Dam East, Back Dam West, Pete's Dam, House Dam, Three Gates Dam, and clean water diversions) are made safe.	Remaining water management structures are safe.	All remaining water management structures made safe.	Relinquishment inspection and report, including photographs.
Native Ecosystem	Water Management Area	All infrastructure not suitable for approved final land use to be removed	Water management structures not required for the final land use removed.	Redundant water management structures identified and removed.	Plan showing redundant structures. Photographs
Other (Waste Rock Emplacement Area)					
Native Ecosystem	Other (Waste Rock Emplacement Area)	Domain safe and free from hazardous materials and contaminants	No hazardous materials remain.	• All PAF material is preferentially placed underground. • All NAF material not required for rehabilitation activities is removed. • Relevant areas are reduced to a profile consistent with adjacent areas.	Relinquishment inspection and report, including photographs.
		Waste rock not required for rehabilitation activities is removed from domain.			
Landform Establishment					

Final Land Use Domain	Mining Domain	Rehabilitation Objective *(describe the desired feature and/or characteristics of the final land use domain)*	Indicator *(specific attribute associated with the objective)*	Rehabilitation Completion Criteria *(benchmark for the indicator, based on analogue data where appropriate)*	Example Justification Validation Method *(evidence that the benchmark has been achieved)*
Infrastructure Areas					
All final land use domains	Infrastructure Area	Free draining, stable and permanent landform established that incorporates micro-relief, natural drainage lines and minimises visual impacts	Presence of erosion / sedimentation, landform and monitored water quality.	Water quality within sediment basins complies with the relevant trigger values identified in the Water Management Plan.	Water quality testing in accordance with the Water Management Plan. Monitoring reported annually through the Annual Review.
				The number of visible gullies or rills that are greater than 0.3m in width or depth is limited or improving.	Visual inspection and monitoring reports, including photographs.
				All slopes in final landform <18º or 1:3 (V:H).	As constructed survey plans.
				Longitudinal grade of contour drains 2%	
			Landform suitable for growth media establishment	All slopes <18º or 1:3 (V:H).	As constructed survey plans.
			Bunding around box cut.	Bund constructed around Box Cut.	Relinquishment inspection and report, including photographs, prepared by a qualified person.
			Walls of box cut reduced to approximately 1:3(V:H).	All slopes <18º or 1:3 (V:H).	As constructed survey plans.
Native Ecosystem	Infrastructure Area	Internally draining, stable and permanent landform established.	Bunding around Surface Extraction Area.	Bund constructed around and Surface Extraction Area.	Relinquishment inspection and report, including photographs, prepared by a qualified person.
			Walls of Surface Extraction Area at 65° maximum slope.	All slopes at 65° maximum.	As constructed survey plans.
Tailings Storage Facility					
Agricultural - Grazing	Tailings Storage Facility	Free draining, stable and permanent landform established.	Tailings fully settled.	Monitoring indicates that tailings settling / dewatering is complete/reduced to an acceptable level.	Visual surveys of tailings surface by site personnel.

Final Land Use Domain	Mining Domain	Rehabilitation Objective *(describe the desired feature and/or characteristics of the final land use domain)*	Indicator *(specific attribute associated with the objective)*	Rehabilitation Completion Criteria *(benchmark for the indicator, based on analogue data where appropriate)*	Example Justification Validation Method *(evidence that the benchmark has been achieved)*
			Tailings are appropriately capped and have an appropriate store and release function for management of rainfall infiltration.	The final closure strategy for the TSF will be subject to results of rehabilitation trails on the appropriate capping depth and compositions. Until such time, an interim approach to rehabilitation has been developed based on the cover depth assessment completed by EMM (2016): • Embankments will be stabilised with NAF waste rock, where necessary. • A 0.8m covering of NAF waste rock or other suitable material will be applied to the surface to provide a store-release cover for management of rainfall infiltration. • The final landform in this domain will be constructed to be free draining.	Inspection and testing report, including photographs, prepared by a suitably qualified person. Relinquishment inspection and report, including photographs.
			Landform suitable for growth media establishment.	All downstream slopes <18º or 1:3 (V:H).	As constructed survey plans.
			Facility profiled to be free draining.	Mapping confirms that the landform is free draining. Embankment height of 9m above original surface. Slope of outer embankment 1:3 (V:H). No pooling of water on upper surface of the facility is observed.	As constructed survey plans. Relinquishment inspection and report, including photographs.
			Suitable drop structures installed and capable of transferring water from the facility without eroding.	Drop structures constructed as per Landcom (2004). The number of visible gullies or rills that are greater than 0.3m in width or depth is limited or improving.	As constructed survey plans. Visual inspection and monitoring reports, including photographs
		Limit opportunities for pollution of the surrounding landscape.	Leachate (if present) of acceptable quality.	Water quality complies with the relevant trigger values identified in the *Water Management Plan*	Water quality testing in accordance with the Water Management Plan. Monitoring reported annually through the Annual Review.

Final Land Use Domain	Mining Domain	Rehabilitation Objective *(describe the desired feature and/or characteristics of the final land use domain)*	Indicator *(specific attribute associated with the objective)*	Rehabilitation Completion Criteria *(benchmark for the indicator, based on analogue data where appropriate)*	Example Justification Validation Method *(evidence that the benchmark has been achieved)*
			Suitable surface water controls installed and operating effectively.	Water quality complies with the relevant trigger values identified in the Water Management Plan. The number of visible gullies or rills that are greater than 0.3m in width or depth is limited or improving.	Water quality testing in accordance with the Water Management Plan. Visual inspection and monitoring reports, including photographs.
Water Management Areas					
Water Management Areas Water Storage	Water Management Area	Retained water management structures are stable and permanent overflow drainage is constructed	Sediment basins are stable and contain a suitably designed spill way for overflow of water to surrounding drainage lines.	• Basin walls and spillways are assessed to be stable. • The number of visible gullies or rills that are greater than 0.3m in width or depth is limited or improving.	Relinquishment inspection and report, including photographs, prepared by a qualified person.
		Domain stable and non-polluting	Landform and retained water management structures are non-polluting.	Water monitoring indicates that water quality complies with the trigger values in the Water Management Plan or is consistent with ambient water quality and satisfies Section 120 of the POEO Act.	Water quality testing as per the Water Management Plan.
Native Ecosystem	Water Management Area	Free draining, stable and permanent landform established	Landform suitable for growth media establishment.	Decommissioned dams have been backfilled and landform constructed to blend with surrounding topography.	Relinquishment inspection and report, including photographs, prepared by a qualified person.
Other (Waste Rock Emplacement Area)					
Native Ecosystem	Other (Waste Rock Emplacement Area)	Free-draining, stable and permanent landform established.	Landform suitable for growth media establishment.	All slopes <18º or 1:3 (V:H).	As constructed survey plans.
			Suitable surface water controls installed and operating effectively.	Water quality complies with the relevant trigger values identified in the Water Management Plan. The number of visible gullies or rills that are greater than 0.3m in width or depth is limited or improving.	• Water quality testing in accordance with the Water Management Plan. • Visual inspection and monitoring reports, including photographs.
Growth Medium Development					
Native Ecosystem					
Native Ecosystem	All mining domains	Establish a soil profile capable of sustaining the specified end land use.	Growth medium spread on final landform except slopes of Surface Extraction Area.	Indicative topsoil depth between 200mm to 300mm.	Relinquishment inspection and report, including photographs, prepared by a qualified person.

Final Land Use Domain	Mining Domain	Rehabilitation Objective *(describe the desired feature and/or characteristics of the final land use domain)*	Indicator *(specific attribute associated with the objective)*	Rehabilitation Completion Criteria *(benchmark for the indicator, based on analogue data where appropriate)*	Example Justification Validation Method *(evidence that the benchmark has been achieved)*
			Key soil characteristics generally within the range of soil characteristics identified at analogue sites.	Analysis of representative soil samples record parameters within 10% of analogue sites.	Soil analysis within rehabilitation monitoring report.
			Amelioration	Rehabilitation records verify that appropriate soil ameliorants (eg gypsum, fertilisers, mulch) have been applied (where required) in accordance with specifications	Soil monitoring report outlining the results of physical and laboratory soil tests
Note: Stockpiling areas will not require growth medium development as suitable material will remain in situ.					
Agricultural - Grazing					
Agricultural - Grazing	Tailings Storage Facility	Establish a soil profile capable of sustaining the specified end land use.	Growth medium spread on final landform except slopes of Surface Extraction Area.	Indicative topsoil depth between 200mm to 300mm.	Relinquishment inspection and report, including photographs, prepared by a qualified person.
			Key soil characteristics generally within the range of soil characteristics identified at analogue sites.	Analysis of representative soil samples record parameters within 10% of analogue sites.	Soil analysis within rehabilitation monitoring report.
			Amelioration	Rehabilitation records verify that appropriate soil ameliorants (eg gypsum, fertilisers, mulch) have been applied (where required) in accordance with specifications	Soil monitoring report outlining the results of physical and laboratory soil tests
Ecosystem and Land Use Establishment					
All Final Land Use Domains					
All Domains	All Domains	Weeds and feral animal species do not present a risk to rehabilitation.	Weed presence	Monitoring verifies there are no significant weed infestations and weeds do not comprise a significant proportion of the species in any stratum.	Rehabilitation monitoring reports
				Records indicate that noxious weeds are controlled.	
			Feral animal density	Records indicate that feral animal pests are controlled.	
		Erosion does not present a safety hazard or compromise the post mining land capability	Erosion and Settlement Control	Visual monitoring indicates that there is no significant erosion present that constitutes a safety hazard or compromises the intended final land use.	Water quality testing as per the approved Water Management Plan Photographs

Final Land Use Domain	Mining Domain	Rehabilitation Objective *(describe the desired feature and/or characteristics of the final land use domain)*	Indicator *(specific attribute associated with the objective)*	Rehabilitation Completion Criteria *(benchmark for the indicator, based on analogue data where appropriate)*	Example Justification Validation Method *(evidence that the benchmark has been achieved)*
		Soil fertility and soil structure is comparable between rehabilitation areas and reference sites	Soil Quality	Testing verifies that soil characteristics (pH, EC and Exchangeable Sodium Percentage (ESP), nitrogen and phosphorus) are within 20% of analogue sites	Soil Sampling, testing and analyses of other contributing factors by a qualified soil scientist or agronomist
		Fauna habitat available	Presence of a range of fauna habitats	Fauna habitat is available.	Rehabilitation Records
Water Management Area					
Water Management Areas Water Storage	Water Management Area	Domain stable and non-polluting.	Water management structures stabilised and capable of retaining and conveying water without causing pollution.	Design in accordance with Landcom (2004) and DECC (2008). The number of visible gullies or rills that are greater than 0.3m in width or depth is limited or improving	Visual inspection and monitoring reports, including photographs.
			Water discharged from site within relevant criteria.	Monitoring of water discharged from the Mine Site complies with EPL limits and relevant trigger values identified in the *Water Management Plan.*	• Water quality testing in accordance with the *Water Management Plan*. • Photographs.
Agricultural - Grazing					
Agricultural - Grazing	Tailings Storage Facility	Agricultural Revegetation: Revegetation is sustainable for the long-term and only requires maintenance that is consistent with the intended final land use.	Species composition	The diversity of species within the rehabilitated pastures is representative of the specified species mix and comparable to that of the analogue sites.	Monitoring Photos Assessment report prepared by suitably qualified person
			Ground Cover	Ground cover percentage is comparable to that of the analogue sites	
			Surface Cover	Rehabilitation monitoring verifies that ground cover (vegetation, leaf litter, mulch) is greater than 70%	
		Rehabilitation areas species diversity is comparable to analogue native vegetation community	Vegetation density	The density of shrubs and trees is comparable to that of the analogue sites	
			Species composition	Rehabilitation monitoring verifies species diversity for each stratum (canopy, mid storey and ground cover) is comparable to analogue sites (note: canopy and mid storey species will be limited).	

Final Land Use Domain	Mining Domain	Rehabilitation Objective *(describe the desired feature and/or characteristics of the final land use domain)*	Indicator *(specific attribute associated with the objective)*	Rehabilitation Completion Criteria *(benchmark for the indicator, based on analogue data where appropriate)*	Example Justification Validation Method *(evidence that the benchmark has been achieved)*
			Vegetation health	Rehabilitation monitoring verifies more than 75% of trees are healthy and growing as indicated by rehabilitation monitoring. (note: canopy and mid storey species will be limited).	
			Weeds	Number of weeds species diversity and surface area cover ≤ analogue site	
		Domain supports grazing industry to minimise social impacts of mine closure	Soils capable of supporting pasture	Soil test results comparable to analogue sites	Soil Sampling, testing and analyses of other contributing factors by a qualified soil scientist or agronomist
				Surface rocks >200 mm picked or raked	Rehabilitation monitoring
			Area capable of retaining stock	Adequate fencing	Photographs
				Each paddock has access to a water source	Photographs
			Access made safe for public and livestock	No access to high walls	Photographs
				Access roads suitable for emergency and maintenance vehicles in place	
Native Ecosystem					
Native Ecosystem	Infrastructure Area Water Management Area	Establish self-sustaining ecosystems with similar species composition to the Poplar Box – Gum – Barked Coolibah and/or Mallee Smooth-barked Coolibah vegetation community.	Vegetation density	The density of pasture is comparable to that of the analogue sites.	Monitoring Photographs Assessment report prepared by suitably qualified person
			Species Composition	Rehabilitation monitoring verifies species diversity, richness, abundance, cover of each stratum and structure is 50% of the Analogue Site average.	
			No livestock in domain	Sensitive areas identified, fenced and secure	Photographs
Ecosystems and Land Use Development					
All Domains					
All Final Landuse Domains	All Mining Domains	Bushfire: The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Fuel loads are assessed and managed	Statement provided and before/after photos.

Final Land Use Domain	Mining Domain	Rehabilitation Objective *(describe the desired feature and/or characteristics of the final land use domain)*	Indicator *(specific attribute associated with the objective)*	Rehabilitation Completion Criteria *(benchmark for the indicator, based on analogue data where appropriate)*	Example Justification Validation Method *(evidence that the benchmark has been achieved)*
		Erosion does not present a safety hazard or compromise the post mining land capability	Erosion and sediment control	No significant erosion is present that constitutes a safety hazard or compromises the capability of the supporting the end land use.	Water quality testing as per the approved Water Management Plan Photographs
Water Management Area					
Water Management Areas Water Storage	Water Management Area	Domain stable and non-polluting.	Water management structures stabilised and capable of retaining and conveying water without causing pollution.	• Design in accordance with Landcom (2004) and DECC (2008). • The number of visible gullies or rills that are greater than 0.3m in width or depth is limited or improving.	Visual inspection and monitoring reports, including photographs.
			Water discharged from site within relevant criteria.	Monitoring of water discharged from the Mine Site complies with EPL limits and the relevant trigger values identified in the *Water Management Plan.*	Water quality testing in accordance with the *Water Management Plan*. Photographs
Agricultural - Grazing					
Agricultural - Grazing	Tailings Storage Facility	Grassland ecosystem is established with maintenance needs no greater than those of surrounding, undisturbed land.	Vegetation density	Pasture composition is assessed to consist of grasses representative of the district and suitable for livestock grazing.	Monitoring Photos Assessment report prepared by suitably qualified person
			Species composition		
			Vegetation health		
			Weeds		
Native Ecosystem					
Native Ecosystem	• Infrastructure Area • Water Management Area	Areas revegetated to a Poplar Box – Gum – Barked Coolibah community or Mallee Smooth-barked Coolibah community.	Species Composition	Pasture composition is assessed to consist of grasses representative of the district	• Rehabilitation monitoring reports
			Ecosystem growth and natural recruitment	The vegetation is maturing and/or natural recruitment is occurring at rates similar to those of the local remnant vegetation	
			Ecosystem structure, Tree Diversity, Tree Density, Ecosystem Health	Vegetation stability is comparable to analogue sites.	
			Species Composition	Rehabilitation monitoring verifies species diversity, richness, abundance, cover of each stratum and structure is 80% of the Analogue Site average.	

Final Land Use Domain	Mining Domain	Rehabilitation Objective *(describe the desired feature and/or characteristics of the final land use domain)*	Indicator *(specific attribute associated with the objective)*	Rehabilitation Completion Criteria *(benchmark for the indicator, based on analogue data where appropriate)*	Example Justification Validation Method *(evidence that the benchmark has been achieved)*
			No livestock in domain	Sensitive areas identified, fenced and secure	Photographs

4.4 Rehabilitation Objectives and Rehabilitation Completion Criteria – Stakeholder Consultation

4.4.1 Stakeholder Engagement Plan

HGM has prepared a Stakeholder Engagement Plan (SEP) to facilitate stakeholder consultation for Hera's rehabilitation objectives and completion criteria. This document details Hera's stakeholders and the strategies used to communicate with them and provide the foundation for working with stakeholders prior to and during the closure process. The SEP will be regularly revised to reflect the outcomes of technical investigations, the ongoing development and execution of this RMP and the outcomes of ongoing engagement

Since the commencement of rehabilitation and closure planning for the HGM, Aurelia has consulted with regulatory authorities including RR, the Cobar Shire Council as well as relevant landholders as summarised in **Table 14**.

4.4.1.1 Relevant Statutory Authorities

Aurelia has consulted with and will continue to consult with the following regulatory bodies in relation to the Hera operations and rehabilitation:

- Department of Planning and Environment;
- Environment and Heritage Group is part of the Department of Planning and Environment;
- Department of Planning and Environment – Water;
- NSW Department of Industry;
- Transport for New South Wales;
- Cobar Shire Council;

4.4.1.2 Other Key Stakeholders

HGM has consulted with and will continue to consult with a number of community groups and landholders in relation to the Hera Gold operations and rehabilitation, including:

- Association of Mining Related Council;
- Cobar Landcare Group;
- Cobar Local Aboriginal Lands Council;
- Aboriginal stakeholder groups;
- Local community and affected landowners;
- Community groups; and
- Staff, contractors and unions.

4.4.1.3 Community Consultative Committee

A Community Consultative Committee (CCC) operates in accordance with Schedule 5, Condition 6 of PA 10_0191 with an Independent Chairperson nominated to facilitate the meetings. The Committee meets quarterly and consists of council representatives, community representatives and HGM employees.

4.4.2 Summary of Stakeholder Engagement Completed to Date

Aurelia routinely engages with stakeholders regarding rehabilitation and mine closure.

Various stakeholders, including DPIE (now DPE), RR, EPA, DPI Water (DPE – Water), Office of Environment and Heritage (now Environment and Heritage) and Cobar Shire Council were engaged regarding final land use options and rehabilitation expectations as part developing the former MOPs.

Key issues associated with final land use and rehabilitation addressed in the Hera Mine Approval and Modification Process included:

- The maintenance of the proposed final landform of the modification including what the ongoing maintenance would require, or who would be responsible for this at the cessation of the mining lease.
- How potentially contaminated waste rock and polluted materials would be sealed from groundwater flows within the mine's underground workings after rehabilitation had been completed and the groundwater levels had recovered.
- The material used to construct process water dams may also be contaminated during the mine life and should be considered as part of waste management in the decommissioning of the dam and rehabilitation of the site.

Table 14 presents a high-level summary of the key consultation undertaken for the project to date.

Table 14 Consultation Summary to Date

Stakeholder	Date	Issues Raised - Final Land Use Options and Rehabilitation
RAPs	2011	Consultation with the Aboriginal community was undertaken during preparation of the Environmental Assessment (EA) in 2011. No Aboriginal objects were identified during the associated survey and the Aboriginal representatives consulted stated that the mine site was of little cultural significance. Therefore, no consultation has been carried out with Aboriginal stakeholders during the preparation of MOD 6 or the related MOP.
CCC	August 2018 – November 2019	MOD 5 was formally presented to the CCC at meetings on 2 August 2018, 1 November 2018, 7 February 2019, 2 May 2019, 1 August 2019 and 7 November 2019. The CCC was briefed on the proposed modification and provided with an opportunity to ask questions and present matters of concern. No matters relevant to the proposed modifications were raised and no specific issues to be addressed were identified.

Stakeholder	Date	Issues Raised - Final Land Use Options and Rehabilitation
Government Agencies (DPIE, RR, EPA, DPI Water, OEH and CSC)	23 November 2019	In accordance with ESG3 and PA 10_0191 Condition 46, a copy of the draft MOP was provided for consultation to DPIE, RR, EPA, DPI Water, Office of Environment and Heritage (OEH) and Cobar Shire Council on 23rd November 2019. Recommendations raised during this consultation are summarised below. These recommendations were addressed in the MOP: • The MOP should include a protocol for surveying the ventilation shafts and portals for bats prior to capping and developing appropriate management strategies in response to those survey results. • The MOP should include a map of the intended final land use across the site. • The MOP should include a map detecting: a) The proposed analogue sites for each native vegetation community to be established during rehabilitation. b) The monitoring points corresponding to each of the analogue sites. • Data from analogue sites should be used to refine the performance targets, performance indicators, completion criteria and trigger points for corrective action. • Trigger points with the failure of vegetation establishment and exotic fauna should be more specifically defined.
RR	24 January 2020	Following MOD 5, a final version of the MOP, addressing all relevant feedback was submitted to the Resources Regulator for approval on 24th January 2020. Approval of the MOP and RCE was received on the 28February 2020
CCC	3 September 2020 and 3rd December 2020	Further consultation with the CCC was undertaken for MOD6. The committee was briefed on the proposed modification and were provided with an opportunity, both at the meeting and subsequently, to ask questions and present matters that they would like to see addressed in this document. No matters relevant to the Proposed Modification were raised and no specific issued to be addressed were identified

4.4.3 Proposed Future Consultation

Consultation will continue with stakeholders during the life of mine, in accordance with the SEP. **Table 15** presents a summary of the proposed future consultation activities key stakeholders.

Table 15 Summary of Proposed Future Stakeholder Engagement Activities

Stakeholder	Activities
RR	Ongoing revisions of the RMP Submission of the Annual Review and Annual Rehabilitation Report Detailed Mine Closure Planning
DPIE	Annual Reviews Ongoing revisions of the RMP Submission of the Annual Review and Annual Rehabilitation Report Detailed Mine Closure Planning
CCC	Annual Reviews Ongoing revisions of the RMP Quarterly CCC Meetings Detailed Mine Closure Planning

Stakeholder	Activities
Agencies	Annual Reviews Ongoing revisions of the RMP Submission of the Annual Review and Annual Rehabilitation Report Detailed Mine Closure Planning
Stakeholder and Community Interest Groups	Ongoing revisions of the RMP Detailed Mine Closure Planning
Registered Aboriginal Parties	Detailed Mine Closure Planning

As part of the above-mentioned consultation, Hera will seek feedback on actions which would minimise the socio-economic impacts associated with mine closure.

5 Final Landform and Rehabilitation Plan

5.1 Final Landform and Rehabilitation Plan – Electronic Copy

In accordance with the requirements of the *Form and Way: Rehabilitation Management Plan for Large Mines* (RR, 2021a) a *Final Landform and Rehabilitation Plan* has been prepared to show the proposed final land use and final landform for Hera (refer **Figure 6** and **Figure 7**)

AURELIA METALS
REHABILITATION MANAGEMENT

HERA MINE

FLRP PLAN 1
FINAL LANDFORM FEATURES

- Project Approval Boundary

Final Landuse Domain

- Agricultural – Cropping
- Agricultural – Grazing
- Rehabilitation Biodiversity Offset Area
- Final Void
- Heritage Area
- Industrial
- Infrastructure
- Native Ecosystem
- Water Management Areas
- Water Storage (Excluding Final Void)
- Other

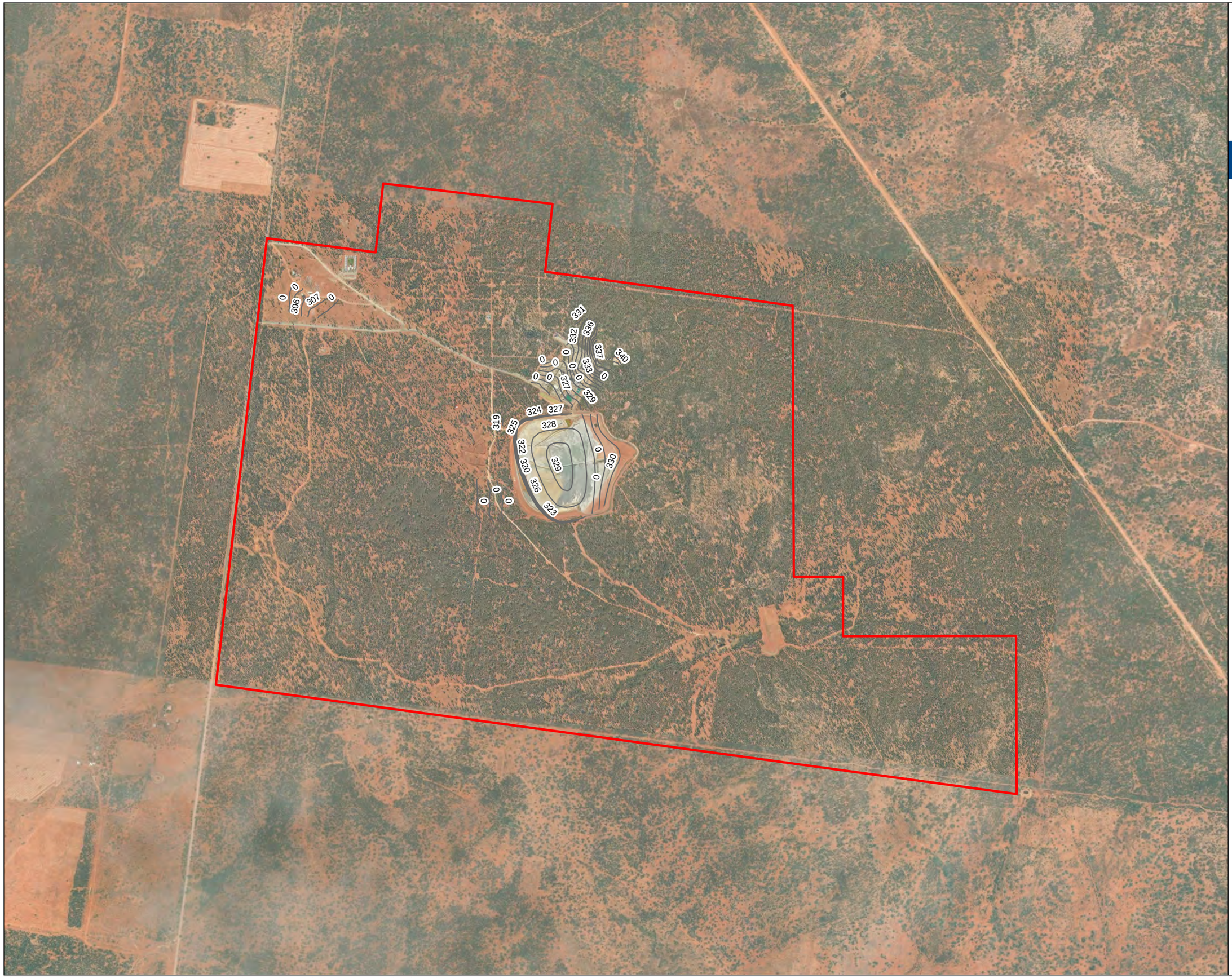
Data Source: Basedata NSW SS, 2021
Aerial imagery supplied by © Department of Customer Service 2020 & Aerometrex Pty Ltd, 2019

0 0.5 1 km

Coordinate System:	GDA 1994 MGA Zone 55
Scale:	1:25,000 at A3
Project Number:	630.30329
Date:	28-Jul-2022
Drawn by:	PM
Annual Reporting Period:	2022

aurelia METALS Ltd.

H:\Projects-SLR\630-SrvNTL\630-NTL\630.30329.00000 Hera Gold Mine RMP Package\06 SLR Data\01 CADGIS\GIS\SLR63030329_FLRP_Plan1_Final_Landform_Features_01.mxd



AURELIA METALS
REHABILITATION MANAGEMENT

HERA MINE

FLRP PLAN 2
FINAL LANDFORM CONTOURS

Contour

Project Approval Boundary

Data Source: Basedata NSW SS, 2021
Aerial imagery supplied by © Department of Customer Service 2020 & Aerometrex Pty Ltd, 2019

0 0.5 1 km

Coordinate System:	GDA 1994 MGA Zone 55
Scale:	1:25,000 at A3
Project Number:	630.30329
Date:	28-Jul-2022
Drawn by:	PM
Annual Reporting Period:	2022

aurelia METALS Ltd.

H:\Projects-SLR\630-SrvNTL\630-NTL\630.30329.00000 Hera Gold Mine RMP Package\06 SLR Data\01 CADGIS\GIS\SLR63030329_FLRP_Plan2_Final_Landform_Contours_01.mxd

6 Rehabilitation Implementation

6.1 Life of Mine Rehabilitation Schedule

6.1.1 Infrastructure

Key infrastructure will be constructed and decommissioned during the Hera Mine LOM. Estimated timing of the construction and decommissioning of key infrastructure is presented in **Table 16** Key Infrastructure Construction and Decommissioning Timing and described further below.

Table 16 Key Infrastructure Construction and Decommissioning Timing

Key Infrastructure	Construction	Decommissioning
Water Management Dam (204 ML)	2023 (If Federation Project is App	Prior to Lease Relinquishment
Surface Extraction Area	2022	Prior to Lease Relinquishment
Hera to Federation Pipeline	2022	Prior to Lease Relinquishment
Magazine Relocation	2022	Prior to Lease Relinquishment
ROM Pad and Car Park Extensions	2023	Prior to Lease Relinquishment
Tailings Storage Facility	N/A	Prior to Lease Relinquishment

Water Management Dam

A Water Management Dam was approved for construction on 3 December 2019 under PA 10_0191 MOD 5. Once constructed the dam will encompass a footprint of 13.7 ha and have a capacity of 204 ML (to crest height) and act as an external decant pond for the existing TSF. The location of the Water Management Dam is shown on **Figure 2**.

The dam has not been constructed to date as it has not been required.

Surface Extraction Area

A Surface Extraction Area was approved in PA 10_0191 MOD 6 to enable the extraction of non-acid forming material suitable for backfilling operations, as well as other on-site uses.

This establishment of the area is expected to occur in FY2022.

6 Rehabilitation Implementation

6.1 Life of Mine Rehabilitation Schedule

6.1.1 Infrastructure

Key infrastructure will be constructed and decommissioned during the Hera Mine LOM. Estimated timing of the construction and decommissioning of key infrastructure is presented in **Table 16** Key Infrastructure Construction and Decommissioning Timing and described further below.

Table 16 Key Infrastructure Construction and Decommissioning Timing

Key Infrastructure	Construction	Decommissioning
Water Management Dam (204 ML)	2023 (If Federation Project is Approved)	Prior to Lease Relinquishment
Surface Extraction Area	2022 (If Federation Project is Approved)	Prior to Lease Relinquishment
Hera to Federation Pipeline	2022 (If Federation Project is Approved)	Prior to Lease Relinquishment
Magazine Relocation	2022 (If Federation Project is Approved)	Prior to Lease Relinquishment
ROM Pad and Car Park Extensions	2023 (If Federation Project is Approved)	Prior to Lease Relinquishment
Tailings Storage Facility	N/A	Prior to Lease Relinquishment

Water Management Dam

A Water Management Dam was approved for construction on 3 December 2019 under PA 10_0191 MOD 5. Once constructed the dam will encompass a footprint of 13.7 ha and have a capacity of 204 ML (to crest height) and act as an external decant pond for the existing TSF. The location of the Water Management Dam is shown on **Figure 2**.

The dam has not been constructed to date as it has not been required.

Surface Extraction Area

A Surface Extraction Area was approved in PA 10_0191 MOD 6 to enable the extraction of non-acid forming material suitable for backfilling operations, as well as other on-site uses.

This establishment of the area is expected to occur in FY2022.

The Surface Extraction Area has the following design criteria.

- Area - approximately 2.1 ha Final floor elevation - approximately 335 m AHD
- Final crest elevation – 346 m AHD
- Internal wall angles - shallower than 65° (may be adjusted based on advice of a geotechnical engineer)
- Contained volume - approximately 307,000 m3
- Contained tonnes - approximately 829,000 t

The Surface Extraction Area would be constructed in four stages. Constructing the Surface Extraction Area in stages minimises the area to be disturbed should other sources of backfill material reduce the volume of material required. The proposed Surface Extraction Area would be accessed via the existing magazine access road, with an approximately 60 m long access road required to be constructed.

Hera to Federation Pipeline

The existing water pipeline network will be extended within the Hera Mine Site to permit importation of water from the Federation Exploration Decline Area, as well as the converted/newly constructed bores within the extended Mine Site project approval boundary.

Construction expected in FY2022.

Magazine Relocation

The explosives magazine was relocated to the south-west of the site within an existing disturbance footprint adjacent to the soil stockpile area.

Tailings Storage Facility

As part of a capacity assessment completed for PA 10_0191 MOD 6, it was found that the approved has sufficient capacity based on the proposed processing schedule and tailings deposition rates. Construction activities are not required.

Additional

The approved construction (under PA 10_0191 MOD 3) for the additional hardstand area, and expansion of the existing ROM Pad and car park is yet to be constructed.

6.1.2 Mining Activities

Mining is currently approved at Hera Mine up until 2025 and incorporates the following key activities:

- Extraction of waste rock and metalliferous ore using underground open stope mining methods and underground load and haul operations until 31 December 2025.
- Backfilling of underground stope voids created during underground mining using potential acid-forming (PAF) waste rock to minimise sulphide oxidation.
- Disposal of tailings underground for stope backfilling operations.

- Transportation of up to 100,000 tpa of ore from the Hera Mine approximately 94 km by road to the Peak Mine, with backloading of a similar amount of waste rock from the Peak Mine to the Hera Mine.
- Use of surface infrastructure required for the underground mine, including a box cut, portal and decline, magazines, fuel store, ventilation rises and power and water store.
- Use of a processing plant, including a run of mine (ROM) pad, waste rock emplacement to a height of 15m above ground level or approximately 350m AHD, crushing, grinding and screening operations, gravity separation and flotation circuits to process up to 505,000 tonnes per annum (tpa) of ore to produce gold and silver ore (unrefined bars) and a zinc/lead concentrate.
- Use of a TSF, including cyanide detoxification of tailings prior to discharge to the TSF.
- Use of a surface extraction area and a stockpile area to store non-acid forming material for use in backfilling operations and associated relocation of the surface magazine.

6.1.3 Mining Operations

Underground Development

Underground decline and development headings will continue to be developed using conventional underground drill and blast techniques.

A jumbo, or an underground drill rig, will drill a pattern of holes, the spacing and length of which will be determined by the blasting engineer or shot firer. Once drilling has been completed, these holes will be loaded with bulk or pre-packaged explosives, boosters and detonators, and the material will be fragmented in situ by the blasting action.

Fragmented material will be extracted using underground loaders and haul trucks.

Mining Operations

Mining will be progressively undertaken using underground mining techniques. The Mine is accessed via the box cut and decline. Extraction of ore will be carried out using a conventional sublevel open stoping mining technique.

Drill and blasting is undertaken to fragment material in situ. Fragmented material is then extracted using underground loaders and haul trucks. Unmined material is left between the vertical stopes and pillars and horizontal sills provide support and prevent ground collapse.

Backfilling of underground stope voids with waste rock will be undertaken to provide for local mine stability and to allow extraction of higher-grade resources in localised areas.

Hera Resources estimates that at least 50% of the stopes created will be backfilled with waste rock, either immediately or following temporary stockpiling of material at the surface. The back- filling will use waste rock material sourced preferentially from concurrent underground development or with additional waste rock PAF material transported from the Southern Waste Rock Emplacement (WRE) on the surface, if required. It is scheduled that all waste rock on the WRE will be backfilled underground before the cessation of mining.

The indicative maximum mining rate will be approximately 505,000 tpa ROM ore. The production rate will vary depending on the number of development headings and stopes available at any one time and is expected to decrease towards the end of the mine life.

6.1.4 Mine Production and Rehabilitation Assumptions

The assumptions and principals that have been used to develop the LOM rehabilitation schedule include:

- Hera Mine is an underground metalliferous mine consists of an underground mine, ROM pad, temporary WRE, processing plant, TSF, and associated infrastructure and ancillary activities;
- Approved calendar year operations include:
  - Processing not more than 505,000 tonnes of ore
  - Transport not more than 60,000 tonnes of concentrate
  - Transport not more than 100,000 tonnes of ore
- Waste rock is stored temporarily on the WRE before being used for backfilling underground stope voids;
- Opportunities for progressive rehabilitation are limited due to the operation of LOM infrastructure.

6.2 LOM Rehabilitation Plans

AURELIA METALS
REHABILITATION MANAGEMENT

HERA MINE

FLRP PLAN 1
FINAL LANDFORM FEATURES

- Project Approval Boundary
- Final Landuse Domain
- Agricultural – Cropping
- Agricultural – Grazing
- Rehabilitation Biodiversity Offset Area
- Final Void
- Heritage Area
- Industrial
- Infrastructure
- Native Ecosystem
- Water Management Areas
- Water Storage (Excluding Final Void)
- Other

Data Source: Basedata NSW SS, 2021
Aerial imagery supplied by © Department of Customer Service 2020 & Aerometrex Pty Ltd, 2019

0 0.5 1 km

Coordinate System:	GDA 1994 MGA Zone 55
Scale:	1:25,000 at A3
Project Number:	630.30329
Date:	28-Jul-2022
Drawn by:	PM
Annual Reporting Period:	2022

aurelia METALS Ltd.

H:\Projects-SLR\630-SrvNTL\630-NTL\630.30329.00000 Hera Gold Mine RMP Package\06 SLR Data\01 CADGIS\GIS\SLR63030329_LOM_Plan_2_01.mxd

6.3 Phases of Rehabilitation and General Methodologies

Achievement of the post mining land use will be reached through a series of conceptual rehabilitation phases. As defined by the *Form and way: Rehabilitation Management Plan (large mines)* the rehabilitation phases are presented in **Table 17**.

Table 17 Rehabilitation Phases

Rehabilitation Phase	Description
Phase 1: Active Mining	This phase is associated with active mining operations across the domains.
Phase 2: Decommissioning	This phase of rehabilitation includes activities associated with the removal of mining infrastructure, unless agreed to be retained, and the removal, remediation or management of contaminated and hazardous materials.
Phase 3: Landform Establishment	This phase of rehabilitation consists of the processes and activities required to construct the approved final landform. In addition to profiling the surface of rehabilitation areas to the approved final landform profile this phase may include works to construct surface water drainage features, encapsulate problematic materials such as tailings, and prepare a substrate with the desired physical and chemical characteristics (that is, rock raking or ameliorating sodic materials).
Phase 4: Growth Medium Development –	This phase of rehabilitation consists of activities required to establish the physical, chemical and biological components of the substrate required to establish the desired vegetation community (including short-lived pioneer species) to ensure achievement of the approved or, if not yet approved, the proposed: - rehabilitation objectives; - rehabilitation completion criteria; and - final landform and rehabilitation plan. This phase may include spreading the prepared landform with topsoil and/or subsoil and/or soil substitutes, applying soil ameliorants to enhance the physical, chemical and biological characteristics of the growth media, and actions to minimise loss of growth media due to erosion.
Phase 5: Ecosystem and Land Use Establishment -	This phase of rehabilitation consists of the processes to establish the final land use following construction of the final landform. For vegetated land uses this rehabilitation phase includes establishing the desired vegetation community and implementing land management activities such as weed control.
Phase 6: Ecosystem and Land Use Development –	This phase of rehabilitation consists of the activities to manage maturing rehabilitation areas on a trajectory to achieving the approved or, if not yet approved, the proposed: - rehabilitation objectives; - rehabilitation completion criteria; and - final landform and rehabilitation plan. For vegetated land uses this phase may include processes to develop characteristics of functional self-sustaining ecosystems, such as nutrient recycling, vegetation flowering and reproduction, and increasing habitat complexity, and development of a productive, self-sustaining soil profile. This phase of rehabilitation may include specific vegetation management strategies and maintenance such as tree thinning, supplementary plantings and weed management.

Rehabilitation Phase	Description
Phase 7: Rehabilitation Completion (sign-off) –	The final phase of rehabilitation when a rehabilitation area has achieved the final land use for the mining area: - as stated in the approved rehabilitation objectives and the approved rehabilitation completion criteria; and - as spatially depicted in the approved final landform and rehabilitation plan. Rehabilitation areas may be classified as complete when the RR has determined in writing that rehabilitation has achieved the final land use following submission of the relevant application by the lease holder.

6.3.1 Active Mining Phase

Appropriate measures and strategies are implemented during the active phase of mining to enhance rehabilitation outcomes. Works in this phase are summarised below.

Soils and Materials

Management protocols for soils and subsoils are implemented to minimise risks and enable soil resources within disturbance areas to be characterised, stripped, stockpiled and re-used appropriately. The management protocols also enable consideration of the main soil types observed within the project disturbance boundary and any specific constraints or management measures to be adopted for each soil type.

Soil Resources

The Agricultural Land Classes applicable to the Mine Site are:

- Class IV for Red Earths; and
- Class V for Lithosols.

Broad-scale land system mapping (RWC 2011) indicates that the Mine Site lies on two land systems as follows.

- The Yackerboon Land System – dominant system and underlies majority of the Mine Site, except the far southwest and southeast sections of the Mine Site. Comprises three soil units (Ridge Crests, Ridge Slopes and Drainage Tracts) consisting of Red Earths with areas of Lithosols and sandy alluvial soil; and
- The Kopyje Land System – underlies the far southwest and southeast sections of the Mine Site. Comprises three soil units (Mallee Crests, Open Crests and Drainage Lines) consisting of Lithosols, Red Earths with some areas of gravel.

Strategic Environmental and Engineering Consulting (SEEC, 2011) prepared a soils assessment for the original development application and recommended the following methods with respect to use of topsoils and subsoils in rehabilitation activities:

- Lithosols should be reused to rehabilitate land with more than 2% slope, but no more than 10% grade. The resultant roughness is expected to be sufficient to ensure moisture is captured without the need for deep furrowing or “moonscaping”. They may be placed directly onto a scarified surface without compaction;
- The Red Earths should be used to rehabilitate land with no more than 2% slope. Topsoil and subsoil must be placed in their correct order and nominally compacted (placed in thick lifts). This soil is erodible and so furrowing is not recommended; and

- Slopes of more than 10% should be protected with rock-pitching.

a. Soil Resources Balance

The approximate volumes of soil estimated to be available for rehabilitation activities, based on survey pick-up are provided in **Table 18**.

Table 18 Soil Inventory

Description	Volume (m^3)	Comments
Processing Area	2,271	DJI Terra mapping software model
Main Site, Light Vehicle and Mine Camp Access Roads	5,217	DJI Terra mapping software model
Soil Stockpiles located approximately 0.25 km west of the TSF	107,461	DJI Terra mapping software model
Soil Stockpiles located approximately 2 km east of the TSF	37,162	DJI Terra mapping software model
Tailings Storage Facility	95,783	DJI Terra mapping software model
MOD 6 Disturbance (Magazine and Surface Extraction Area)	6,300	MOD6 (2.1Ha)
Total	**254,194**	

The soil available onsite for rehabilitation is expected to be sufficient to undertake the remaining rehabilitation. Contingency measures to be implemented should a deficiency in soil volume be identified are described in the TARP (refer to **Table 23**).

Management

Topsoils and subsoils are stripped during disturbance activities. The following soil management measures will be employed at Hera mine to facilitate the reuse of topsoil on rehabilitation:

- Stripping areas will be demarcated;
- Topsoil located will be stripped to a depth of between 20 and 30 centimetres (cm) and stored within soil stockpiles;
- Topsoil will be windrowed by graders or bulldozers for later loading into trucks by front-end loaders to minimise compaction of soil materials;
- Where practical, stripped material will be placed directly onto areas undergoing progressive rehabilitation;
- Stockpile topsoil and subsoil will be stockpiled separately;
- Operation of machinery on soil stockpiles will be minimised as far as practicable to minimise compaction;

- Soil stockpiles will have a maximum height of 3m;
- Stockpiles will be constructed with an even but roughened surface to assist in erosion control and seed germination and emergence; and
- Where topsoil is unavailable or of insufficient quality, subsoil or topsoil may be able to be ameliorated to form a suitable growing media.

b. Flora

Management

Pre-vegetation clearing and vegetation clearing protocols are implemented in accordance with the Biodiversity Management Plan.

Pre-vegetation clearance surveys will be conducted prior to vegetation clearing. The aim of the surveys will be to identify significant ecological features within areas to be cleared and make all reasonable and feasible attempts to minimise the impact of clearing. The preclearing surveys have previously been and will continue to be conducted by a suitably qualified and experienced person.

Prior to vegetation clearing, the location of the identified listed threatened species protected under the BC Act and/or the EPBC Act will be fenced to ensure that no surface disturbance activities occur in this area.

The requirements and procedures for the implementation of all vegetation clearing related to flora are described as follows:

- Prior to any vegetation clearing, the contractors involved will be taken through an induction to ensure they are aware of the vegetation clearing protocols and risks
- The area of vegetation to be cleared will be clearly defined (surveyor will mark area boundary with pegs) ahead of vegetation clearing activities. This designated area will include the area to be cleared for the vegetation windrows and topsoils stockpiling (if topsoils is available for stockpiling).
- All vehicles / equipment will use existing and designated tracks and construction activities will be conducted only within the disturbance footprints nominated.
- Machinery will only be parked within designated areas and/or disturbed areas only.
- Vegetation is to be pushed into windrows at the limit of the disturbance footprint (allowing room for topsoils stockpiles where applicable).
- The native vegetation behind the vegetation windrow is not to be disturbed, hence vegetation is to be pulled back onto the disturbed area – not pushed.

Resources

Seed will we be purchased from a commercial native seed supplier to ensure viability. Seed will be treated or cleaned before use, depending on the species using standard collection and quality assurance methods.

Native seed utilised in rehabilitation is generally supported by seed viability testing and quality control processes to help guide application rates.

Weed management programs implemented prior to disturbance if heavy weed presence is observed.

c. Fauna

Management

Pre-vegetation clearing and vegetation clearing protocols are implemented in accordance with the Biodiversity Management Plan.

Pre-clearance surveys are undertaken to identify fauna or habitat features that require relocation or salvage prior to clearing activities commencing.

They will be undertaken to identify any roosting or nesting fauna that require relocation immediately prior to clearing activities. Safeguards to manage those species that cannot be relocated before clearing commences will be implemented.

During the pre-clearing vegetation survey, a suitably qualified and experienced person will inspect the area to be cleared, paying particular emphasis on habitat with potential to be used by a threatened or hollow dependant species.

The hollow trees and any other trees with the potential to provide habitat will be marked with spray paint and will be left for the second stage of clearing to allow fauna to vacate hollows naturally. During the pre-clearing vegetation survey, the ecologist will record the intended locations and placement of tree hollows. Once the hollows are cleared, they will be transported to the nominated locations. Placement of these resources would not impact existing habitat for threatened species.

If any animals are encountered during the pre-clearing vegetation survey, they will be relocated. If an animal is relocated the location will be marked on a map and NSW BioNet Atlas database would be updated as required.

The requirements and procedures for the implementation of all vegetation clearing related to fauna are described as follows:

- Clearing will be scheduled to avoid spring (the most common breeding period for the regions listed threatened species);
- Hollow trees will be inspected any hollows to ensure fauna have had the opportunity to relocate;
- Animals which require relocation will be relocated to sites that have the same or better habitat resources compared to the area being cleared. Any relocation will be recorded, as well as the location the animal is relocated to, and reported in the Annual Review;
- When a large habitat tree (which may contain hollows) requires clearing it will be gradually nudged at intermittent intervals so that any animals occupying a habitat tree has a chance of vacating the area after the initial disturbance period (tap it with the dozer/excavator, wait five minutes, repeat this another two times);
- Careful inspection will occur to any felled hollow / stag to ensure that fauna has not been affected;

- Vegetation windrows are to be retained until final rehabilitation of the adjacent area of disturbance unless they are a significant resource for feral species i.e., harbouring vegetation for rabbits. Vegetation would be stockpiled downslope (where possible) of cleared areas to act as a silt fence; and
- Once final rehabilitation is required, the vegetation in the windrows is to be pulled back over the area and spread as mulch, habitat and erosion protection.

Resources

Major tree trunks, major limbs and if possible minor branches would be salvaged and used for rehabilitation activities. This activity would create habitat with structural complexity and encourage many species including robins into the rehabilitated areas.

Large hollow trunks will be transported to undisturbed areas of the site to provide additional habitat in undisturbed areas. Woody vegetation which may be utilised for rehabilitation will be transported to the area being rehabilitated or may be stockpiled for future rehabilitation activities.

d. Rock/overburden emplacement

The Southern Waste Rock Emplacement currently is used to emplace both PAF and non-acid forming (NAF) material. Waste rock will be classified as PAF or NAF prior to being extracted. PAF material will be preferentially placed into completed stopes or transported to the Southern Waste Rock Emplacement. NAF material will be preferentially transported to the Southern Waste Rock Emplacement where it will be used for on-site activities, including construction of roads and TSF or returned underground for backfilling of stopes or the box cut.

The Northern Waste Rock Emplacement approval was relinquished as part of MOD6.

Hera has identified a shortfall of waste rock for stope backfilling operations, which commenced in Q4 2020.

Potential sources of backfilling material presented as part of MOD6 and in priority order, include:

- Backloading of waste rock from the Peak Mine.
- Use of tailings for backfilling operations (paste plant and / or direct placement of tailings).
- Use of imported waste rock from the Federation exploration decline (pending approval of that application).
- Use of material from a proposed Surface Extraction Area.

e. Waste Management

All waste materials will be collected and disposed of by a licenced contractor. **Table 19** presents a description of the non-production waste associated with the Mine and briefly describes how each class of waste is stored and subsequently removed from the Mine Site.

Table 19 Waste Management

Waste Type	Storage / Management	Removal / Disposal
General waste (including food scraps)	Covered bins or skips located within lunch rooms, offices, outside workshops and elsewhere as required. Where these bins are located in open areas, they are fitted with animal proof lids.	Collected on a regular basis by a licensed contractor and transported to an appropriately licensed facility for disposal.
Paper and cardboard	Covered bins or skips located within lunch rooms, offices, outside workshops and elsewhere as required. Where these bins are located in open areas, they are fitted with animal proof lids.	Collected on a regular basis by a licensed contractor and transported to an appropriately licensed facility for recycling.
Waste Oils and Greases	Placed within bunded tank(s) within the workshop area. Where required, smaller, temporary storage containers may be positioned close to work areas, with the contents of those containers transferred to a larger storage tank prior to collection.	Collected on a regular basis by a licensed contractor and transported to an appropriately licensed facility for recycling.
Batteries	Placed within a used battery storage area until removed from Mine Site.	Collected on a regular basis by a licensed contractor and transported to an appropriately licensed facility for recycling.
Tyres	Placed within a used tyre storage area until removed from site or used for another purpose.	Tyres removed by tyre contractor when replaced. Limited numbers of tyres are re-used for traffic control purposes.
Scrap Metal	Stored in a specified area as required.	Collected on a regular basis by a scrap metal recycler.
Waste Water	Waste water is treated at the Mine Site waste water treatment system.	Used for irrigation at the Mine Site.

Hazardous materials are managed in accordance with the Hazardous Materials Management Plan. At closure a Phase 1, and if required, a Phase 2 contamination assessment will be completed for the site. Any identified contamination will either be remediated or removed prior to site relinquishment.

f. Geology and geochemistry

The Hera deposit lies within the Mouramba Group of sediments, which dip steeply to the west to west-north-west. The beds are generally disrupted and boudinaged by a strong cleavage. The Hera mineralisation is contained within the strongly cleaved sequence as part of a high strain zone in the hanging wall of the Rookery Fault.

The Hera mineralisation is characterised by several lenses of intense cleavage-parallel, vein- type and breccia style mineralisation grading to massive sulphide in places, comprising pyrrhotite, sphalerite, galena, pyrite and chalcopyrite with local zones of appreciable gold. The host sandstones and siltstones are pervasively silicified, with the zones of silicification extending more than 20m into the hanging wall and footwall. The silicified alteration envelopes also contain varying degrees of dark green chlorite alteration and commonly contain disseminated pyrrhotite, typically aligned parallel to the cleavage. Quartz veining is commonly associated with the main zones of sulphide mineralisation.

Mineralisation associated with the Hera deposit has been classified as follows:

- General narrow lenses with quite variable economic widths within the lens along strike. Main Lens contains the majority of resources with additional mineralisation hosted by Hays South, Hays North and Far West Lenses;
- Sub-vertical dip for both Main Lens and Far West Lens;
- Strike – approximately 340° true;
- Strike length – approximately 600m with potential for extensions along strike to both north and south;
- Depth – 100m to 470m below surface, with potential for deeper extensions; and
- Host rock – Generally homogeneous siltstone/ sandstone with minor dacitic volcaniclastics. Bedding dips to west at 60° to 70° and strikes 340° to 350° true.

g. Material prone to spontaneous combustion

No material within Hera Mine is prone to spontaneous combustion and as such no specific risks to rehabilitation have been considered.

h. Material prone to generating acid mine drainage

Waste rock and tailings have been tested to determine the presence of materials prone to generate acid mine drainage. Testing analysis found that tailings has a low acid forming classification. Testing also found that approximately 30% of waste rock generate by the Mine would be PAF.

In order to mitigate the generation of any acidic leachate from the stockpiled waste rock and to manage any such leachate generated, the following management measures are implemented:

- All waste material is treated as PAF and preferentially placed directly into completed stopes or temporarily stored within the contained catchment of the WRE.
- Prior to any material being used for alternate purposes outside the bounds of the contained catchment of the WRE it is tested to confirmed that it is NAF.

- Waste material brought to the surface is also temporarily stored in the Southern WRE before being returned underground and placed into completed stopes.
- The Southern WRE has been constructed to minimise the discharge of potentially acidic leachate with the following design parameters:
    - The footprint of the emplacement was extracted to bedrock to minimise the potential for seepage of leachate.
    - A bund is constructed around the perimeter of the cell to capture and divert any potentially acidic leachate to the Leachate Management Pond and to divert any other surface water away from the cell. These structures are designed to cater for a 1 in 100-year, 72 hour ARI rainfall event.
    - Any water that collects within the Leachate Management Pond is pumped to the Process water circuit for reuse.
- Once PAF material is placed underground within completed stopes, the potential for further generation of acidic leachate is limited as a result of the limited availability of oxygen for oxidation reactions. PAF waste rock placed on the surface is not encapsulated as it is only temporarily stockpiled on the surface and clay material used for encapsulation will have adverse impacts during stope backfilling operations.
- Water quality monitoring and visual inspections of the Leachate Management Pond are undertaken regularly during the life of the emplacement to identify any issues with the proposed management measures.

Management of waste rock and acid mine drainage at the Mine Site is described in further detail in the Waste Rock Management Plan.

i. Ore Beneficiation Waste Management (Reject and Tailings Disposal)

Tailings are passed through a thickener to remove excess water from the material for reuse within the Processing Plant. The remaining tailings slurry is pumped to the TSF.

The TSF includes a Central Thickened Discharge (CTD) system. Tailings deposition occurs via single point discharge/risers located within the TSF area and has sufficient capacity to cater for all tailings material produced during the proposed life of the Mine.

The TSF is constructed as a geo-technically stable landform with all water draining internally or from the embankments via water management structures towards diversion drainage that diverts water upslope of the TSF around the facility. The embankments of the TSF are profiled so that slopes are 1:3 (V:H) downstream and 1:2 (V:H) upstream.

The TSF footprint will not increase during the remaining LOM. However, there may be a requirement for a wall lift at the TSF.

j. Erosion and Sediment Control

The Water Management Plan includes the Erosion and Sediment Control Plan (ESCP). These plans incorporate specific design, construction and maintenance protocols for erosion and sediment control structures in accordance with the requirements of Landcom (2004) and DECC (2008a and 2008b). Given the plans, risks associated with sediment and erosion control will be managed though the continued implementation of the ESCP.

k. Ongoing Management of Biological Resources for Use in Rehabilitation

Biological resources are managed during the active mining phase in accordance with the Biodiversity Management Plan to ensure viability for use in rehabilitation. Management measures include but are not limited to the management of weeds, effective storage, regular inspections and maintenance programs.

l. Mine Subsidence

Geotechnical assessments completed for the Hera Mine show that mine subsidence is unlikely on the basis that:

- The crown of the ore body is 273 m and 318 m below ground level.
- Workings would be designed to ensure ground stability and to mitigate the risk of subsidence (backfilling of mined stopes with waste rock).
- Hera implements a range of monitoring measures to ensure that the approved mining methods reduce the risk of surface subsidence.

It is noted that Resources Regulator raised no concerns during approval processes and DPE was satisfied that the mine plan and monitoring would ensure long-term stability of the mine.

m. Management of potential cultural and heritage issues

Aboriginal heritage is managed in accordance with the Heritage Management Plan which was developed in consultation with Registered Aboriginal Parties (RAPs) and OEH (now Heritage NSW).

No items of Aboriginal or historical heritage significance have been identified within the Hera Mine or MOD 6 areas, and as such there are minimal heritage-related risks associated with rehabilitation. Notwithstanding, Engagement with Registered Aboriginal Parties (RAPs) and BCD will be undertaken as part of detailed mine closure planning.

n. Exploration activities

Exploration activities will be undertaken within EL 6162, ML1686 and ML1746 (100m surface exclusion) both at the surface and underground and will include the following.

- Geochemical sampling;
- Geological mapping;
- Geophysics; and
- Diamond, Reverse Circulation and percussion drilling.

Exploration activities will be undertaken in accordance with the conditional requirements of PA 10_0191 and the requirements of the Exploration Code of Practice: Rehabilitation. Disturbance from previous exploration activities will be rehabilitated prior to mine closure. All exploration drill holes will be sealed in accordance with relevant RR DRG guidelines at the time.

Additionally, reporting of the environmental performance of the exploration activities will be included within the Hera Annual Review. Technical reporting of exploration activities will be undertaken in accordance with the requirements of Exploration Guideline: Annual Activity Reporting for Prospecting Titles (RR, 2015).

6.3.2 Decommissioning

The Decommissioning and Demolition Phase encompasses all works required to prepare land for rehabilitation including removal of any unnecessary built infrastructure, foundation and hardstand materials, services, equipment and materials including wastes and contamination.

Decommissioning, demolition, and removal of infrastructure from the mine site will generally be undertaken during the mine closure phase. Any infrastructure including dams, roads and buildings which is beneficial for future use by post mining landowners may be left in place subject to relevant landowner agreements and regulatory approvals.

Decommissioning and demolition activities will be appropriately planned and documented to ensure that appropriate approvals are in place for the works.

Further detail regarding demolition activities will be determined as the operation approaches closure. Detail in this regard will be reported in the Forward Program.

a. Site Security

The following measures are implemented for the management of public safety at Hera:

- Perimeter fencing with gated entrances and warning signage has been installed as a barrier to prevent Public access to the Mine;
- Inspection and maintenance of fencing as required;
- Provision of swipe card access for the main entrance to the Mine;
- Induction procedures are required for visitors to site;
- Installation of appropriate signage; and
- Awareness training for site personnel, contractors and neighbours.

Site security measures will be implemented during and following the decommissioning process to prevent access by members of the public and secure rehabilitation areas, including any heritage places or objects and any retained infrastructure items.

b. Infrastructure to be Removed or Demolished

Site features, services and structures to be decommissioned and demolished to achieve the final land use are described in **Table 20.**

Table 20 Infrastructure to be Decommissioned

Code	Mining Domain	Description
1	Infrastructure Area	Roads and tracks Buildings: administration, workshops and amenities within the Surface Facilities Area (SFA). Powerlines, Ventilation shafts and Portal, Boreholes Boxcut
2	TSF	Pipework, decant and associated ancillary infrastructure
3	Water Management Area	Sedimentation ponds, surface water dams, water diversions and buried pipelines.

All demolition work undertaken at closure will be carried out in accordance with Australian Standard AS 2601-2001: The Demolition of Structures, or its latest version.

The Detailed Mine Closure Planning process conducted over the life of mine, in consultation with agencies and the CCC will further identify key actions, assessments, studies, detailed designs, and regulatory approvals required to decommission and/or demolish built infrastructure.

c. Buildings, structures and fixed plant to be retained

Site features, services and structures to be retained for future use as part of the final land use are described in **Table 21**.

Table 21 Infrastructure to be Retained

Code	Mining Domain	Description
1	Infrastructure Area	Existing house, exploration office, core store and processing facility Access roads and hardstands
3	Water Management Area	Back Dam East, Back Dam, Pete's Dam, House Dam, Three Gates Dam, and clean water diversions

The Detailed Mine Closure Planning process conducted over the life of mine, in consultation with DPIE, RR, CSC and CCC will:

- Identify and obtain the relevant decommissioning approvals
- Determine the structural integrity of the building/structure/infrastructure to be retained
- Identify the associated short-term and long-term risks to public safety and the environment from the structures remaining in place, which should identify potential modes of failure
- Address any potential residual risks such as potential for structures to fail
- Engage (where required) a suitably qualified engineer to verify that any risks have been satisfactorily addressed.

d. Management of Carbonaceous/Contaminated Material

Carbonaceous Material

Hera is a metalliferous mine and does not have any carbonaceous material onsite. Subsequently carbonaceous material is not applicable to Hera.

Contaminated Material

Contamination assessments will be completed as part of the detailed mine closure planning and decommissioning processes:

- Hera will engage a suitably experienced and qualified person to conducted contamination and remediation assessments;
- Phase 1 and Phase 2 (where required) assessments will be undertaken for all features, services and structures within the Infrastructure Area domain;
- Subject to the findings and recommendations of the Phase 1 assessment, a targeted Phase 2 assessment will be completed.
- If contamination is identified, a Remedial Action Plan will be developed, detailing remediation strategies for potential contamination.
- Contaminated materials with be managed so that remedial works are completed prior to rehabilitation being completed. No hazardous materials will be stored at the Hera Mine once operations and rehabilitation activities cease.

e. Hazardous Materials Management

During decommissioning, hazardous materials (hydrocarbons and chemicals) will be managed and stored in accordance with the site Hazardous Materials Management Plan. Removal of hazardous materials will be undertaken by a licensed waste disposal contractor and disposed / recycled at a licensed waste facility.

f. Underground Infrastructure

Decommissioning of the underground mining infrastructure will include the following;

- One sealed ventilation rise and a sealed escape-way. The ventilation rise and escape-way will be capped with a suitably designed and engineered cap that will permit reopening of the shaft at a later time if required;
- Exploration boreholes will be appropriately capped. Water supply boreholes will be retained or appropriately sealed. Piezometers and monitoring boreholes will be appropriately sealed.
- The portal will be sealed (in consultation with the Resources Regulator) to restrict unauthorised access to the underground workings;
- A bunded and fenced box cut with the portal sealed and backfilled in a manner that will allow re-opening, in the event that mining operations re-commence in the future. The slopes of the walls of the box cut will be reduced to approximately 1:3 (V:H) through backfilling of the box cut or blast profiling of the walls;
- The box cut final void will be surrounded by bunding and fencing to restrict access.

- Backfilling of underground stope voids with waste rock will be undertaken to provide for local mine stability and to allow extraction of higher-grade resources in localised areas. Hera Resources estimates that at least 50% of the stopes created will be backfilled with waste rock, either immediately or following temporary stockpiling of material at the surface. The back-filling will use waste rock material sourced preferentially from concurrent underground development or with additional waste rock PAF material transported from the Southern Waste Rock Emplacement (WRE) on the surface, if required. It is scheduled that all waste rock on the WRE will be backfilled underground before the cessation of mining.

6.3.3 Landform Establishment

Landform establishment is the process of shaping the final landform to a safe, stable and non-polluting landform that is appropriate for the desired final land use and consistent with the surrounding landscape. The final landform for the Hera Mine is shown on the Final Landform Plan in **Section 5**.

a. Water Management Infrastructure

All infrastructure not required for the final land use will be removed and sediment within structures tested for its acid generating capacity. Dams not required in the final landform will be filled and rehabilitated. Decommissioned dams will be backfilled, and the landform constructed to blend with surrounding topography. Dams to remain in the final landform will have any contaminated sediment removed and made safe.

Water Management structures that will remain in the final landform include Back Dam East, Back Dam, Pete's Dam, House Dam, and Three Gates Dam. All basin walls and spillways will be made stable and contain a suitably designed spill way for overflow of water to surrounding drainage lines.

The water management structures up slope of the TSF will also remain following mine closure. These structures will deflect upslope water away from the former TSF and have been designed to be stable in a 1 in 100-year Average Recurrence Interval (ARI) storm event.

Water management structures that will remain following mine closure is detailed in **Figure 7**.

b. Final landform construction: general requirements

The proposed post-mining landform will involve a combination of pasture and native vegetation. In summary, Hera Resources will ensure that the final landform comprised the following.

- The landform will be constructed so that it is consistent with the surrounding landscape.
- A bunded and fenced box cut with the portal sealed and backfilled in a manner that will allow re-opening in the event that mining operations re-commenced in the future. The slopes of the walls of the box cut will be reduced to approximately 1:3 (V:H) through backfilling of the box cut or blast profiling of the walls.
- The portal would be backfilled and sealed, and ventilation rises would be capped and fenced.
- The final void will have side walls of 65°.
- All stockpile areas will be shaped and revegetated
- A bunded Surface Extraction Area with reprofiled and reshaped floor draining to a sump (potential for scaled slopes where suitable material is available). The walls of the Surface Extraction Area will be at a maximum of 65° slope.

- The Surface Extraction Area would be made safe, including bunding of the perimeter of the Surface Extraction Area, scaling of walls and profiling of the floor of the Surface Extraction Area as required.
- The footprints of the Waste Rock Emplacement would be ripped and re-profiled to create a landform consistent with the completion criteria (refer to **Section 4.3**) All PAF material will be placed underground or within the TSF and NAF material used for rehabilitation activities within the Mine Site.
- Haul roads, access tracks and hardstand areas would be ripped and shaped.

c. Final Landform Construction: Reject Emplacement Areas and Tailings Dams

The final landform characteristics of the TSF at Hera, include:

- An appropriately covered and dome-shaped, free draining TSF and embankment slopes of approximately 1:3 (V:H) or less
- All downstream slopes <18º or 1:3 (V:H).
- An embankment height of 9m above the original surface
- The final landform will be conical shaped with side slopes typically between 2° and 4° degrees
- The TSF would be appropriately covered and dome-shaped with a layer of clay and waste rock material (capping trials have occurred and will continue to determine the most appropriate cap), and appropriate drainage structures installed to create free draining landform with embankment slopes of approximately 1:3 (V:H) or less.

The final closure strategy for the TSF will be subject to results of rehabilitation trials on the appropriate capping depth and compositions. Until such time, an interim approach to rehabilitation has been developed based on the cover depth assessment completed by EMM (2016):

- Embankments will be stabilised with NAF waste rock, where necessary.
- A 0.8m covering of NAF waste rock or other suitable material will be applied to the surface to provide a store-release cover for management of rainfall infiltration.
- The final landform in this domain will be constructed to be free draining

The TSF will have an upper surface that will be domed to allow water to be shed from its surface. A Soil and Water Management Plan will also be developed to accompany the capping works and final closure strategy for the TSF.

Current research and trials on the TSF capping are detailed in **Section 9.1**.

d. Final Landform Construction: Final Voids, Highwalls and Low Walls

Hera is an underground mine, subsequently construction of final voids, highwalls and low walls within the final landform is only applicable to any void remaining from the box cut. The final landform characteristics of the box cut include:

- Material within the ROM pad would be used to backfill the box cut or be transported underground.
- A bunded and fenced box cut with the portal sealed and backfilled in a manner that will allow re-opening if mining operations were re-commenced in the future. The slopes of the walls of the box cut will be reduced to approximately 1:3 (V:H) through backfilling of the box cut or blast profiling of the walls.

e. Construction of Creek/River Diversion Works

The Hera final landform does not include creek or diversion works. Subsequently, construction of creek/river diversion works is not applicable to Hera.

6.3.4 Growth Medium Development

In the context of this RMP, growth medium development encompasses activities to reinstate soils with the initial physical, chemical and biological characteristics required to establish the desired vegetation community.

Characterisation

Sampling will determine if the topsoil and subsoil is suitable for rehabilitation use or if it requires amelioration (e.g., Gypsum) prior to application. Organic material will be used in preference to fertilisers during rehabilitation.

Topsoil Respreading and Amelioration

Topsoils and subsoils stockpiled during site establishment activities would be spread to create growth media on the shaped landform. The subsoils would be placed first followed by topsoil. The thickness of each layer would be determined based on the volume of subsoil and topsoil available. Indicatively, however, Hera Resources anticipates that the recreated soil profile would be broadly similar to the existing soil profile, namely between 200mm and 300mm of topsoil and up to 700m of subsoil.

The following measures will be implemented during the growth medium development phase:

- Establishment of surface water controls during placement of soil material in accordance with the Water Management Plan
- Ensure that slopes less than 2% are rehabilitated with Red Earths. As this soil unit is erodible, furrowing would not be used, and the length of exposed slopes would be kept less than 80m by using windrows of mulch placed along the contour and ensuring that that these would not act as drains themselves.
- Ensure that slopes between 2% and 10% have a concave profile and are covered with Lithosols.
- Ensure that slopes of more than 10% are protected with rock-pitching.
- Add, where appropriate, organic matter comprising composted cleared vegetation.
- Soil preparation may include ameliorant application (e.g., gypsum) and ripping or scarifying the surface. Organic material will be used in preference to fertilisers during rehabilitation
- Refrain from placing soils during wet conditions

Seed Bed Preparation

Thorough seedbed preparation will be undertaken to ensure optimum establishment and growth of vegetation. Hera will ensure that during soil placement operations soil is placed directly onto a scarified surface without compaction and in correct order, namely topsoil overlying subsoil.

6.3.5 Ecosystem and Land Use Establishment

In the context of this RMP, ecosystem establishment includes activities to establish the desired floristic composition (species diversity and density) and habitat features. The phase incorporates management actions such as weed and feral pest control to achieve species establishment and growth to juvenile communities, and habitat augmentation.

Revegetation activities will be planned to occur after the completion of reshaping, topdressing with growth media and construction of drainage structures. A mixture of native and sterile introduced species of grasses and legumes would be used for rapid stabilisation of the growth media.

Rehabilitation of disturbance no longer required for the Project, including relevant areas that are bare or only have remnant vegetation will be undertaken progressively.

Final Land Use Domain – Agricultural - Grazing

The domain will be rehabilitated to grassland vegetation. Initially, the area will be seeded with a sterile, fast growing grass cover to ensure erosion and sediment control are managed. Native grass species will be included in the seed mix to facilitate gradual replacement of the initial cover species. A suitable shallow-rooted vegetation cover will be selected that stabilises the cover material, stabilises sediment and is visually consistent with the surrounding landscape.

Final Land Use Domain – Native Ecosystem

Initial activities for ecosystem and land use establishment of land that will have a final use of native vegetation conservation will focus on establishing a cover of suitable native groundcover (grasses). Revegetation will then comprise seeding / planting of a native species mix containing tree, shrub and grass species representative of the vegetation communities within the Project Site. Following completion and during mining activities these areas will be returned to native vegetation as follows:

- The Box Cut and Portal areas and Surface Extraction Area floor (final void) will be seeded with a Mallee – Smooth - Barked Coolibah seed mix; and
- Rehabilitated infrastructure areas will be seeded with a mix of seed representative of the Poplar Box – Gum – Barked Coolibah vegetation community.

White Cypress Pine will be allowed to regenerate naturally, however, it will be controlled to ensure it does not out-compete other species.

Weed and Vertebrate Pest Control

Ecosystem Establishment includes initial management actions to limit the introduction of weeds and vertebrate pest species in rehabilitation areas. The management of these will be undertaken as outlined in the Biodiversity Management Plan including:

- Any weed species which are identified upon outbreak will be recorded then destroyed by weed spraying.
- Specific focus upon the removal, deterrence of the growth and the transportation of weeds into the Mine Site.
- Vehicles are washed down on a regular basis to prevent weed spread.

- Feral animal management undertaken as required, including goat removal, cat trapping, fox baiting, and rabbit baiting and/or warren ripping;
- Hera is surrounded by a boundary stock fence which will limit access to the Mine Site and grazing by undesired pests such as goats and pigs. The boundary fence will be inspected and maintained, as required.

6.3.6 Ecosystem and Land Use Development

For the purposes of this RMP the ecosystem and land use development phase represents those activities required to develop sustainable ecosystems that have characteristics comparable to similar undisturbed vegetation in the area.

Water Management Area

This phase includes the maintenance and monitoring activities implemented to achieve the relevant performance indicators with respect to the stability and function of the water management structures including:

- Ongoing inspections and monitoring of the structures and related erosion
- Water discharge testing in accordance with the Water Management Plan and regulatory requirements
- Adaptive management and remedial works such as redesign if necessary.

The frequency of monitoring activities would be reduced progressively based on performance.

Native Ecosystem and Agricultural – Grazing Areas

Activities associated with the ecosystem and land use development phase of rehabilitation are generally ongoing maintenance, land management activities and rehabilitation monitoring. Maintenance at rehabilitated areas will include, but not be limited to:

- Ongoing environmental management to minimise risks to rehabilitation;
- Comparing specific ecosystem characteristics such as soil profile development, floristic composition and structure, faunal diversity and abundance with the characteristics of appropriate analogue sites; and
- Undertaking adaptive management and remedial works where characteristics of the rehabilitation are not trending toward desired outcomes.

Rehabilitation monitoring will be undertaken throughout the ecosystem and land use development phase until it can be demonstrated that rehabilitation areas have met completion criteria and all conditions for relinquishment. Rehabilitation maintenance activities will be identified by rehabilitation monitoring and ongoing requirements will be reported annually in the Annual Rehabilitation Report and Forward Program.

6.3.7 Rehabilitation Completion (Sign-Off)

Rehabilitated areas will be progressively signed-off by the Resources Regulator as they meet the rehabilitation criteria outlined in **Section 4**, in accordance with the *Guideline: Achieving Rehabilitation Completion (Sign-off).*

6.4 Rehabilitation of Areas Affected by Subsidence

Mine subsidence is extremely unlikely due to the depth of the orebody below the surface, the high proportion of backfilled voids and the competent nature of the surrounding rock mass. The backfilling of mined stopes with waste rock further reduces the risk of subsidence due to mining.

7 Rehabilitation Quality Assurance Process

A Rehabilitation Quality Assurance Process (RQAP) will be implemented throughout for mine closure activities. This will include details of inspections, monitoring and record keeping which will be required to ensure that:

- Rehabilitation is being implemented in accordance with the nominated methodologies; and
- Identified risks to rehabilitation are being adequately addressed at each phase of rehabilitation.

Aurelia will develop and implement the RQAP through every phase of rehabilitation to confirm that the rehabilitation strategies outlined in this RMP have been completed in accordance with the nominated methodologies (See **Section 6**). The RQAP will also include inspections and documentation to verify that each phase of rehabilitation has been completed and has met the completion criteria detailed in **Section 4**. Documentation to be maintained would include (but not limited to):

- **Phase 1 – Active Mining**
  - Documentation of pre-clearance surveys and Permit to Disturb;
  - Resource salvage records (soil, rocks, habitat trees)
  - Dumping plans and surveys
  - Detailed Landform designs
- **Phase 2 – Decommissioning**
  - Documentation of boreholes sealing and sign off by RR;
  - Inspection and demolition reports to confirm all infrastructure to be demolished has been removed;
  - Documentation to identify the future landowner responsible for the ongoing upkeep and management of retained infrastructure; and
  - Validation testing to ensure any contamination has been appropriately remediated and/or removed.
- **Phase 3 – Landform Establishment**
  - Survey of final constructed slopes, landforms and water drainage structures; and
  - Verification reporting to confirm the specified depth of capping has been implemented (i.e., aerial surveys).
- **Phase 4 – Growth Medium Development**
  - Maintenance of a topsoil inventory to document stockpiled and re-spread resources;
  - Site records of re-spread topsoil, ameliorants, fertiliser etc.; and
  - Soil testing results to confirm appropriate soil geochemical parameters for plant establishment.
- **Phase 5 – Ecosystem and Land Use Establishment**
  - Documentation of reseeding or planting activities undertaken, such as date of planting, weather conditions, seeding rates and/or planting rates; and
  - Site inspections and monitoring of rehabilitated areas to allow early identification of any emerging threats to rehabilitation.

- **Phase 6 – Ecosystem and Land Use Development**
- Inspections of temporary and permanent erosion and sediment controls;
- Inspections to identify potential weed infestations;
- Documentation of Rehabilitation Monitoring; and
- Documentation of weed and feral animal management and eradication programs and follow-up inspections.

Aurelia have developed a Rehabilitation Quality Checklist to be signed off after each phase of rehabilitation prior to proceeding to the next phase (refer **Figure 10**).

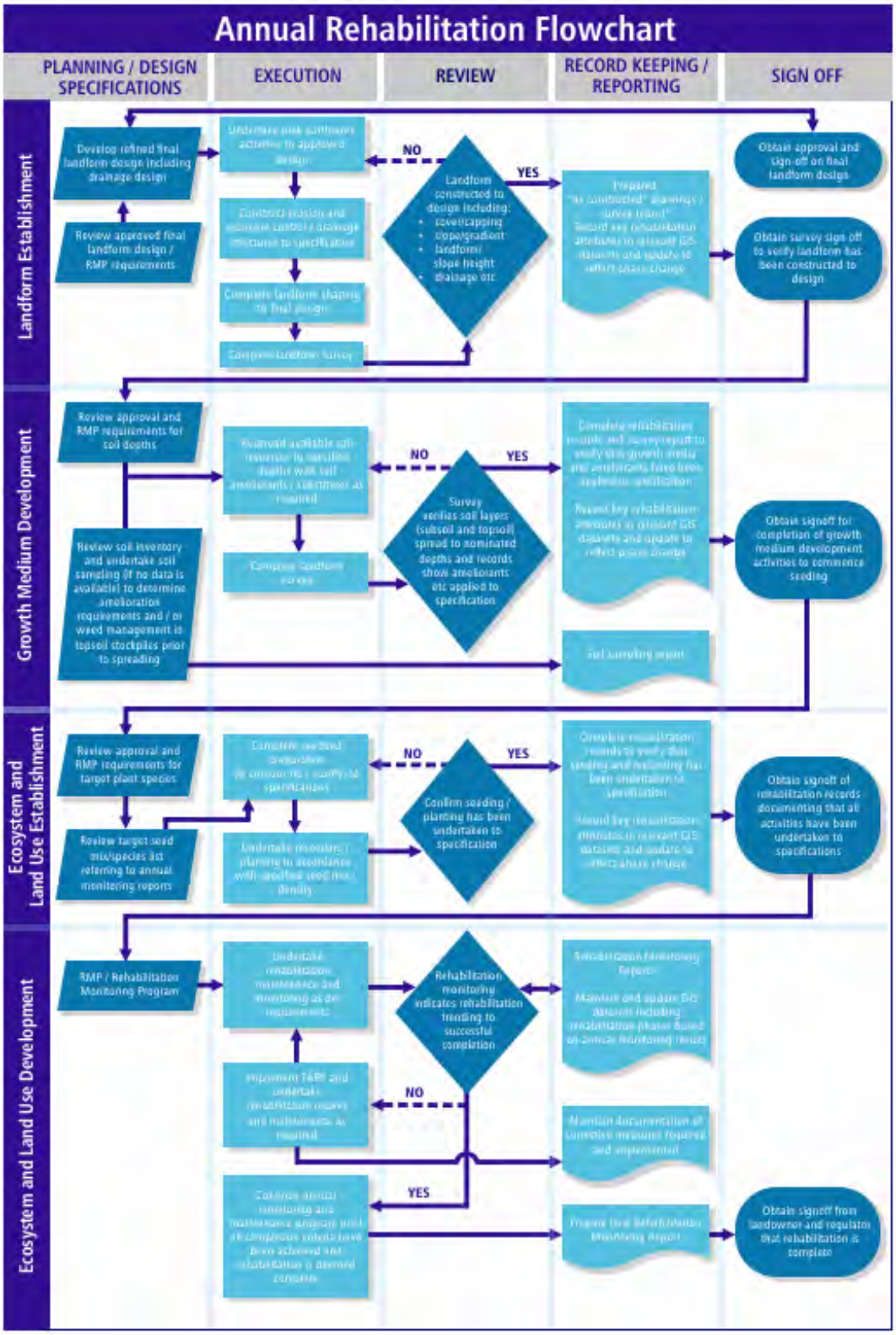


Figure 10 - Rehabilitation Quality Assurance Process

8 Rehabilitation Monitoring Program

Rehabilitation monitoring will be undertaken at Hera when rehabilitation sites are established, to measure and assess rehabilitation performance against the stated rehabilitation and closure criteria outlined in this document. The monitoring results are also used to identify the need for corrective actions for rehabilitation performance. The monitoring program incorporates the most appropriate indicators and methods that:

- Provide a measure of completion criteria to be assessed in accordance with the defined rehabilitation objectives;
- Adequately track changes to rehabilitation phases;
- Are reproducible;
- Utilise recognised scientific techniques; and
- Are cost-effective.

Monitoring is conducted by a suitably skilled and qualified person(s) at locations representative of the range of conditions on the rehabilitating areas and appropriate analogue sites. Monitoring results will inform refinements of rehabilitation methodology as required. Rehabilitation monitoring will be continued until it can be demonstrated that rehabilitation has satisfied all rehabilitation and closure criteria.

8.1.1 Bat Surveys

Bat monitoring is to be undertaken prior to rehabilitation of any open shaft or voids. This monitoring is to occur only where shafts have a tunnel or ledge within 5 m of the entrance.

Monitoring will be undertaken using an Anabat. The Anabat is to be placed in close proximity to the edge of the shaft or the void for seven consecutive days. This allows echolocation calls of bats, if present, to be detected and recorded. Once the monitoring has concluded, the data is to be analysed by a specialist consultant to identify the presence of bats, along with the species that occupies the shaft or void.

If bat presence is determined, an appropriate method for managing and filling these shafts and voids will be developed in consultation with specialised consultants and relevant regulatory bodies.

8.2 Analogue Site Baseline Monitoring

Monitoring of vegetation plots entails comparison with control analogue sites as a benchmark and to ensure ecological sustainability is achieved. The analogue sites will be established to represent native woodland vegetation consistent with the surrounding landscape. There is no requirement to rehabilitate to specific native vegetation communities (PCTs), but all rehabilitation will use suitable species.

A series of 13 vegetation monitoring plots have been established within the Hera Mine and a further seven vegetation monitoring plots have been establishing within the ‘Chelsea’ property which is designated as a future Stewardship Site. The existing condition and ongoing monitoring of these plots is described in the Biodiversity Management Plan. It is anticipated that these plots will provide suitable analogues for eventual revegetation of disturbed areas within the Hera Mine. Monitoring of landscape function and vegetation condition within these plots will provide the most effective ecosystem establishment and development strategies for each vegetation community type.

Table 22 Monitoring and Frequency

Location	Type of Monitoring	Frequency	By Whom
Hera Mine			
MPP1 to MPP13	BioMetric Vegetation Conditions Benchmark. BAM 2017 plots as of 2020	Annual	Ecologist
MPP4, MPP5 and MPP13	Landscape Function Analysis	After significant rainfall or management actions implemented that would impact landscape function	Ecologist
Chelsea Site			
MPC1 to MPC7	Plot BioMetric Vegetation Condition Benchmark. BAM 2017 Plots as of 2020	Annual	Ecologist
MPC1, MPC2 and MPC3	Landscape Function Analysis	After significant rainfall or management actions implemented that would impact landscape function	Ecologist

Ongoing management of biodiversity values within the Hera Mine and Chelsea Property incorporates an adaptive management approach to mitigating impacts to biodiversity values in these areas. As measures are implemented or as management continues, information drawn from these activities will also inform activities to be implemented for final rehabilitation of the Hera Mine.

8.3 Rehabilitation Establishment Monitoring

Monitoring of revegetation success will involve a combination of visual and technical assessments of groundcover, biomass and Landscape Function Analysis. A minimum of two monitoring points in each treatment area will be established. A monitoring report will be prepared by a suitably qualified and experienced person. The report will include a summary of performance of the treatment area(s) against representative analogue monitoring points and photographs.

The monitoring will include quarterly visual inspections by site personnel and annual inspections and monitoring report preparation by a suitably experienced person post closure.

Rehabilitation monitoring results will link with the TARP management system in **Section 10** if issues are identified during the monitoring period.

The data yielded from the monitoring program allows an adaptive management approach by providing information to inform the type and implementation of management activities and determining the status of rehabilitation performance in relation to completion criteria. This facilitates the continual improvement and refinement of rehabilitation techniques.

8.4 Measuring Performance against Rehabilitation Objectives and Rehabilitation Completion Criteria

Rehabilitation monitoring will focus upon determining whether progress towards achieving the relevant performance indicators and completion and relinquishment criteria presented in **Section 4** is being achieved.

Rehabilitation areas will be subject to regular inspections, during which the following will be noted:

- Evidence of any erosion or sedimentation from areas with establishing vegetation cover;
- Success of initial cover crop or grass cover establishment;
- Success of tree and shrub plantings;
- Natural regeneration of native species;
- Adequacy of drainage controls; and
- General stability of the rehabilitated areas.

Photo points have been established for each vegetation monitoring plots for analogue sites at Chelsea and Hera Mine. Photo points will also be established for rehabilitation areas. Photographs will be taken at the same direction, location, height and time of day (during daylight hours) at commencement and annually thereafter. All photographs will be dated, stating the direction in which they were taken and identified with their locations.

Hera Resources will prepare an Annual Review for each reporting period. The Annual Review will include a summary of all environmental monitoring relevant to the reporting period. This will include details of rehabilitation monitoring compared against the performance measures and criteria established in this RMP.

8.4.1 Rehabilitation Performance

Hera Resources will commission an annual Rehabilitation Monitoring Report when rehabilitation sites are established to report on rehabilitation performance. Actions to address any maintenance requirements are raised in the Hera action management system to ensure maintenance requirements are addressed.

9 Rehabilitation Research, Modelling and Trials

9.1 Current Rehabilitation Research, Modelling and Trials

Hera Resources wishes to manage the TSF potential risk to the receiving environment by capping the TSF at final closure with a store and release cover that will mimic a natural soil profile. The purpose of the cover is to:

- Limit rainfall infiltration into the tailings to prevent seepage, and mobilisation of oxidation products from the PAF tailings that may form Acid Rock Drainage (ARD);
- Provide an environment favourable to the growth of vegetation in the cover; and
- Stop capillary rise of constituents from ARD migrating upwards from the tailings into the cover and potentially leaking onto the natural environment.

During the 2021 reporting period Hera decommissioned TSF column trials and completed a capillary rise assessment with the expert assistance of SGM Environmental. The column trials were being undertaken to determine the most appropriate cap thickness on the TSF upon mine closure. Trial simulated rainfall was applied until the trials reached saturation point. Each trial contained tailings and a different thickness cap (0.2m, 0.4m, 0.6m and 0.8m). The 0.8m trial was constructed outside. The intermediate bulk container (IBC) was placed on stacked pallets which were slightly graded so that seepage flows toward a drainage tap at the base of the trial. The column was ~1 m tall and had a surface area of ~1.17 m^2 .

The trials indicated that the 0.6 m cap was most suitable for rehabilitation purposes. During the previous reporting period it was found that increasing the cover thickness from 0.6 m to 0.8 m is likely to improve seepage from less than 1% to near 0%. The sensitivity analysis showed that cover performance is unlikely to improve beyond 0.8 m, and may start to decline at cover thicknesses equal to or greater than 1 m. The optimum cover thickness is therefore between 0.6-0.8 m. At this stage, the recommended cover thickness is 0.6 m (SGM, 2019).

During decommissioning of the IBC cover trials, sampling for capillary rise was undertaken. There was evidence of capillary rise of salts, acidity and some metals/metalloids in both the 0.4 and 0.6m covers. The 0.4m cover is considered likely to fail because capillarity will limit plant growth. Noting that the 0.4m cover has been disbanded as a preferred cover based on its performance in the IBC trials and was not recommissioned in the steel column trials. EC was elevated at the base of the 0.6m cover making 0.4m available to support plant growth. Notwithstanding, the need for a capillary break layer in the cover is inconclusive at this stage.

9.2 Future Rehabilitation Research, Modelling and Trials

Hera Resources identifies the following research, modelling and trials that are proposed in the future;

- The capillary rise assessment recommended that Hera monitors the 0.6 and 0.8m covers in the steel column trials for capillary rise of salts, acidity, metals and metalloids.
- Erosion Modelling utilised geo chemistry assessment and Siberia software will be carried out during the 23FY to assess the suitability of the TSF capping.

10 Intervention and Adaptive Management

Where rehabilitation performance is not trending toward the nominated completion criteria this may indicate that there is a potential threat to long term rehabilitation success. Threats to rehabilitation may include events such as extended periods of drought, bushfire events, or pressures from weeds and feral/pest animals.

A Rehabilitation and Closure Trigger Action Response Plan (TARP) has been developed to provide a framework to manage potential key risks to rehabilitation. The Rehabilitation and Closure TARP includes:

- Identification of the principal contributing factors and impacts for each major risk to rehabilitation;
- Identification of upper limits (trigger values) for causes and impacts that are considered to represent an unacceptable level of risk; and
- Identification of appropriate responses to mitigate or remediate the causes and impacts, including a notification protocol.

The Rehabilitation and Closure TARP provides management responses for lower (first tier) and upper (second tier) trigger values. First tier trigger values identify opportunities for closer monitoring or early intervention that may mitigate potential impacts before notable impact to rehabilitation occurs. Second tier trigger values identify when indicators have reached a threshold that requires more substantive or widespread remedial actions to remediate or mitigate rehabilitation failure.

Should any trigger conditions be met resulting in the requirement for intervention or adaptive management, actions will be reported in the Annual Rehabilitation Report. Aurelia will notify the Resource Regulator and other relevant stakeholders of any incident (such as bushfire or disease) that results in major impacts to rehabilitation that are likely to significantly impact the potential to achieve rehabilitation success.

The Rehabilitation and Closure TARP is provided in **Table 23**, and will be revised as conditions at Hera change or new risks to rehabilitation are identified.

Table 23 Trigger Action Response Plan

Rehabilitation Threat	Potential Adverse Outcome	Trigger/ Response	1st Level Trigger/Response	2nd Level Trigger/Response
Failure to address contamination.	Contaminated land present	Trigger	Sampling and monitoring or contamination assessment identifies contaminated land present within Mine Site.	Contamination continues to be identified following recommendations from the contamination assessment being implemented.
		Response	Recommendations of contamination assessment implemented.	Verification monitoring / testing undertaken to confirm contamination has been completely removed.
	Contaminated groundwater present	Trigger	Water monitoring or contamination assessment identifies contamination within groundwater setting as a result of mining activities.	Contamination continues to be identified following recommendations from the contamination assessment being implemented.
		Response	Recommendations of contamination assessment implemented.	Verification monitoring / testing undertaken to confirm contamination has been completely removed.
	Contaminated surface water present.	Trigger	Water monitoring or contamination assessment identifies contamination within water management structures present within the Mine Site.	Contamination continues to be identified following recommendations from the contamination assessment being implemented.
		Response	Recommendations of contamination assessment implemented.	Verification monitoring / testing undertaken to confirm contamination has been completely removed.
Final landform does not conform to approved final landform.	Final slopes of surface/ embankments are too steep to be revegetated as planned or achieve landform design.	Trigger	Survey plan prepared by surveyor indicates that final slopes less than or equal to approved final landform (i.e., slopes >18º and/or longitudinal grade of contour drains > 2%, or 65° for the Surface Extraction Area)	Monitoring identifies failures/deficiencies in final landform design that require external reporting
		Response	Re-profile areas to meet the approved final landform.	Review undertaken by geotechnical expert to confirm stability and vegetation establishment Findings to be reported to Agencies
	Landform is not free draining/water is pooling above reprofiled and sump areas for Surface Extraction Area.	Trigger	Visual inspections identify pooling water / poorly drained areas on free-draining landforms or water pooling outside of reprofiled and sump areas on internally draining landforms.	Review of the landform design identifies the landform is not stable or free draining.
		Response	Undertake a review of the landform design to assess risks to stability and free draining design.	Re-profile slopes or install drainage to provide a stable free- draining landform or reduce slopes and profile for maximum water levels.
Final landform not safe, stable and secure.	Geotechnical instability of Final Landform	Trigger	Monitoring or final closure geotechnical assessment identifies instability / unacceptable movement (actual or potential) in final landform	Suitably qualified geotechnical engineer engaged to assess the instability and provide a range of recommendations to remediate the instability.
		Response	Continue monitoring for trends Undertake geotechnical assessments when triggered by risk assessments	Suitably qualified geotechnical engineer engaged to assess the instability and provide a range of recommendations to remediate the instability Recommendations to be implemented in consultation with Agencies
Respread growth medium does not conform to completion criteria	Insufficient soil available for rehabilitation.	Trigger	Soil inventory indicates a deficit of soil material.	Soil inventory indicates a deficiency of growth medium following assessment of alternative materials.
		Response	Undertake review of alternative growth medium in accordance with trial recommendations.	Suitable source of additional soil material / growth medium to be identified, including the need for importation of material from off site. Investigation into measures that may be implemented to ameliorate other materials to make them suitable for use as a growth medium.
	Inadequate soil thickness applied to final landform.	Trigger	Test pitting following placement of soil material identifies placed soil thickness not consistent with final approved soil thickness (i.e., <200mm)	Sufficient suitable topsoil cannot be identified for reinstatement at the minimum specified depth for the proposed final land.

Rehabilitation Threat	Potential Adverse Outcome	Trigger/ Response	1st Level Trigger/Response	2nd Level Trigger/Response
		Response	Spread additional topsoil to achieve required depth.	Engage a consultant to recommend appropriate soil/spoil amelioration. Undertake amelioration and re-vegetation in accordance with the consultant recommendations.
	Soil not capable of sustaining vegetation community.	Trigger	Soil parameters not within 10% of analogue sites.	Suitably qualified agronomist or soil scientist engaged to prepare a report including a range of recommendation to ensure that the identified criteria are achieved / soil is suitable for sustaining the vegetation community.
		Response	Engage a consultant to recommend appropriate soil/spoil amelioration. Undertake amelioration and re-vegetation in accordance with the consultant recommendations.	Implement report recommendations
Sediment and erosion control structures inadequate or fail.	Final landform is a source of pollution.	Trigger	Surface water monitoring or visual inspection indicates that final landform is eroding or is a source of unacceptable levels of sedimentation	Initial erosion works are unsuccessful
		Response	Remediate eroding area through additional earthworks, soil works, revegetation or other stabilisation works.	Engage a suitably qualified professional in sediment and erosion control to prepare an assessment report and recommendations. Implement recommendations of the assessment report in consultation with the Resources Regulator.
TSF capping is unsuccessful / inadequate.	Inadequate capping of the TSF is resulting in contamination.	Trigger	Surface water or groundwater monitoring identifies that leachate is present and does not comply with trigger values for ambient water quality. Visual inspection of landform indicates failure of the lining or capping materials.	Leachate continues to be identified through monitoring.
		Response	Undertake minor remediation works	Undertake an assessment of the TSF to determine the source of leachate. Commission a suitably qualified expert to assess the lining or capping and identify measures to remediate the failure. Implement recommendations of the assessment in consultation with Agencies.
Failure of vegetation establishment operations.	Vegetation does not become established on final landform.	Trigger	Rehabilitation monitoring identifies failure or partial failure of vegetation establishment on final landform.	Continued failure of vegetation establishment on final landform
		Response	Revegetate areas where vegetation has failed with the suitable seed mix or tube stock.	Suitably qualified ecologist or revegetation expert engaged to assess reasons for failure of revegetation and recommend actions to ensure that the final vegetation community corresponds as closely as possible to analogue sites. Data obtained from the analogue sites will be reviewed and utilised to refine the performance indicators, completion criteria and trigger points for corrective action. Implement above recommendations in consultation with Agencies
Weed or pest management fails	Weeds and pests become established and require significant	Trigger	Monitoring identifies significant weed infestations and weeds comprise a significant proportion of the species in any stratum. Monitoring identifies exotic fauna, such that vegetation establishment and growth is threatened.	Weed or pest management is not successful following immediate program of weed or pest control.

Rehabilitation Threat	Potential Adverse Outcome	Trigger/ Response	1st Level Trigger/Response	2nd Level Trigger/Response
	resources to manage	Response	Undertake a targeted program of weed or pest control consistent with current management practices.	Engage a suitably qualified ecologist to assess reasons for failure of management measures and develop a Weed and/or Pest Species Management Plan. Implement management plan in consultation with Agencies
Vegetation community is not self- sustaining.	Final landform requires significantly more management than analogue sites.	Trigger	Visual assessment of groundcover, biomass or Landscape Function Analysis identify that relevant indices are not trending towards the analogue sites.	Rehabilitation monitoring identifies an ongoing trend of the relevant indices away from analogue sites
		Response	The success of the above indices will be tracked through the rehabilitation monitoring program.	Suitably qualified ecologist or revegetation expert engaged to assess reasons for additional management requirements and recommend actions to align management required with that of the analogue sites. Implement above recommendations in consultation with Agencies
Final agricultural productivity is inadequate.	Agricultural productivity significantly less than analogue sites.	Trigger	Measured agricultural productivity of the final landform is significantly less than that of an analogue site	Suitably qualified agronomist engaged to assess reasons for lower productivity and recommend actions to sustainably improve productivity. Implement above recommendations in consultation with the RR.
		Response	The success of measured agricultural productivity will be tracked through the rehabilitation monitoring program.	Rehabilitation monitoring identifies an ongoing trend of the measured agricultural productivity away from analogue sites.
Failure of final landform	Final landform fails during major storm/rainfall event.	Trigger	Minor erosion up to 0.3 m	Erosion greater than 0.3 m
		Response	An inspection of the site will be undertaken by a suitably trained person. Investigate opportunities to install water management infrastructure to address erosion. Remediate as appropriate.	Carry out earthworks to repair and/or alter the drainage structures. Assess growth medium status and repair any areas damaged. Install diversion bunds and drains upstream.

11 Review, Revision and Implementation

11.1 Review and Revision of the Plan

The Plan will be reviewed and if required revised in the event of the following:

- An amendment to the rehabilitation objectives, completion criteria or proposed final land use;
- Changes to risks, risk control measures or rehabilitation strategies being identified during the completion of rehabilitation risk assessment or additional investigations;
- When directed to by the RR Secretary; and
- When triggered by consent conditions (Annual Reviews, Independent Environmental Audits, Incident Reports, Modifications).

11.2 Implementation

The process for ensuring that mining and rehabilitation are conducted in accordance with the RMP is the preparation and implementation of an Annual Rehabilitation Plan. The Annual Rehabilitation Plan is prepared and managed by the Rehabilitation and Closed Mine Manager and approved by the Mine Manager.

APPENDIX A

Land Ownership

Tenure	Lot Number	Deposited Plan Number
Aurelia (Western Lands Lease No. WLL2455, granted under the Western Lands Act 1901)	664	761702

APPENDIX B

Standard Mining Lease Conditions

Refer to website: https://legislation.nsw.gov.au/view/pdf/asmade/sl-2021-360

ASIA PACIFIC OFFICES

ADELAIDE
60 Halifax Street
Adelaide SA 5000
Australia
T: +61 431 516 449

BRISBANE
Level 16, 175 Eagle Street
Brisbane QLD 4000
Australia
T: +61 7 3858 4800
F: +61 7 3858 4801

CANBERRA
GPO 410
Canberra ACT 2600
Australia
T: +61 2 6287 0800
F: +61 2 9427 8200

DARWIN
Unit 5, 21 Parap Road
Parap NT 0820
Australia
T: +61 8 8998 0100
F: +61 8 9370 0101

GOLD COAST
Level 2, 194 Varsity Parade
Varsity Lakes QLD 4227
Australia
M: +61 438 763 516

MACKAY
21 River Street
Mackay QLD 4740
Australia
T: +61 7 3181 3300

MELBOURNE
Level 11, 176 Wellington Parade
East Melbourne VIC 3002
Australia
T: +61 3 9249 9400
F: +61 3 9249 9499

NEWCASTLE CBD
Suite 2B, 125 Bull Street
Newcastle West NSW 2302
Australia
T: +61 2 4940 0442

NEWCASTLE
10 Kings Road
New Lambton NSW 2305
Australia
T: +61 2 4037 3200
F: +61 2 4037 3201

PERTH
Grd Floor, 503 Murray Street
Perth WA 6000
Australia
T: +61 8 9422 5900
F: +61 8 9422 5901

SYDNEY
Tenancy 202 Submarine School
Sub Base Platypus
120 High Street
North Sydney NSW 2060
Australia
T: +61 2 9427 8100
F: +61 2 9427 8200

TOWNSVILLE
12 Cannan Street
South Townsville QLD 4810
Australia
T: +61 7 4722 8000
F: +61 7 4722 8001

WOLLONGONG
Level 1, The Central Building
UoW Innovation Campus
North Wollongong NSW 2500
Australia
T: +61 2 4249 1000

AUCKLAND
Level 4, 12 O'Connell Street
Auckland 1010
New Zealand
T: 0800 757 695

NELSON
6/A Cambridge Street
Richmond, Nelson 7020
New Zealand
T: +64 274 898 628

WELLINGTON
12A Waterloo Quay
Wellington 6011
New Zealand
T: +64 2181 7186

SINGAPORE
39b Craig Road
Singapore 089677
T: +65 6822 2203