Rehabilitation Management Plan

Cowal Gold Operations

Version	Date	Description	Prepared By	Approved By	Position
1.0	08/2022	First Issue	S. Coates	J. Penhall	General Manager
2.0	15/08/2023	Revision	T. Rawson	J. Mammen	General Manager

SUMMARY TABLE

Table 1: Summary table required for the Rehabilitation Management Plan

Requirement	Response
Name of mine	Cowal Gold Mine (Referred to as Cowal Gold Operations throughout)
Rehabilitation management plan commencement date	1 August 2022
Rehabilitation management plan revision dates and version numbers	V2: August 2023 Previous versions developed and approved in accordance with the conditions of DA 14/98
Mining leases (lease number(s)) and expiry date(s)	ML 1535: 12 June 2024 ML 1791: 20 Jun 2040
Name of lease holder(s)	EVOLUTION MINING (COWAL) PTY LIMITED
Date of submission	August 2023

CONTENTS

PURPOSE

This document sets out the Rehabilitation Management Plan (RMP) for the Cowal Gold Operations (CGO), in accordance with Clauses 9 of Schedule 8A to the Mining Regulation 2016. This document also satisfies the requirements set out in DA 14/98 condition 2.4 (c) and SSD 10367 condition B24 Rehabilitation Management Plan.

1 PART 1 – INTRODUCTION TO MINING PROJECT

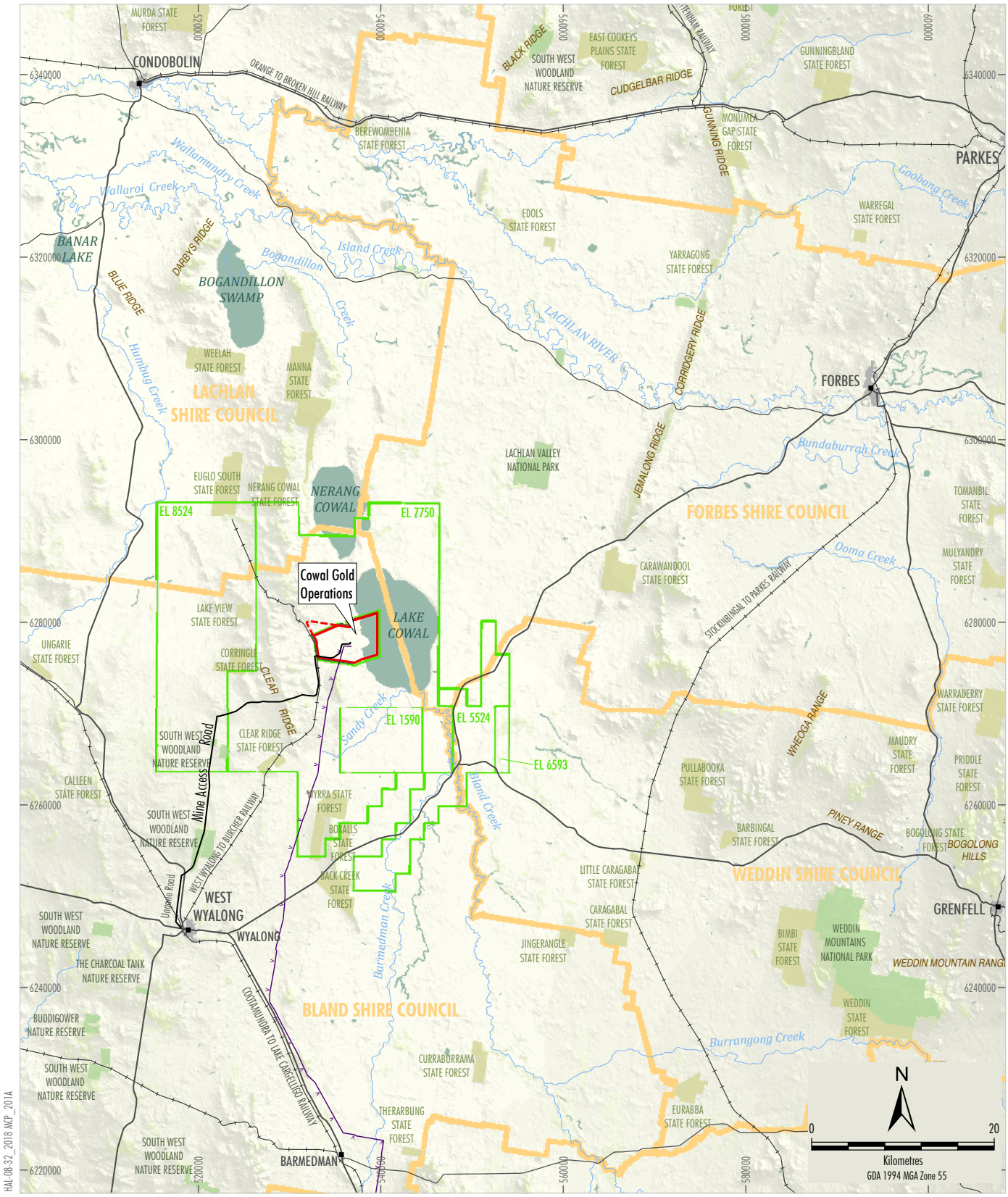
1.1 History of Operations

The Cowal Gold Operations (CGO) is an open cut and underground gold mining operation located approximately 38 kilometres (km) north-east of West Wyalong in New South Wales (Figure 1). Evolution Mining (Cowal) Pty Limited (Evolution) is the owner and operator of the CGO. Mining operations for the CGO are conducted within ML 1535, while additional ancillary mining operations are conducted within ML 1791. Mining within the E42 open pit is planned to occur to approximately FY2026. Ore processing and underground mining are proposed to be undertaken until approximately 2040. The outcome of the feasibility study, EIS and approvals process for the proposed Open Pit Continuation project will inform future updates to the detailed mining and rehabilitation schedule for the remaining Life of Mine. Mining of the open pit will continue using existing drill, blast, load, and haul mining methods, 24 hours per day, seven days per week. Major components of the approved CGO are included in Figure 2 and outlined below:

- an open pit (E42);
- an underground mine (in development);
- an operational paste plant for producing paste to backfill underground stopes;
- a perimeter waste rock emplacement surrounding the eastern boundary of the open pit;
- northern, southern and central tailings storage facilities (TSFs), encompassed by an Integrated Waste Landform (IWL)
- a lake isolation system, including a temporary isolation bund (TIB) and a lake protection bund (LPB);
- a processing plant;
- a mineralised waste stockpile;
- low grade ore stockpiles;
- hard and soft oxide ore stockpiles;
- run-of-mine (ROM) pads;
- soil (including clay) stockpiles;
- an Internal Catchment Drainage System (ICDS) (including contained water storages);
- an up-catchment Diversion System (UCDS);
- buried water supply pipelines and associated borefields and pump stations; and
- an electricity transmission line (ETL).

Evolution recently received approval for proposed underground mining via State-significant Development application No. 10367 and a related modification to Development Consent 14/98 (DA 14/98) for the Cowal Gold Operations Underground Development Project Modification No.16 (herein referred to as Mod 16). Approval for SSD 10367 and Mod 16 was granted on 30 September 2021. Collectively, these applications related to the surface (Mod 16) and underground (SSD 10367) components of the Underground Development Project. Copies of the relevant approvals (as modified on 30 September 2021) are available on Evolution's website (https://evolutionmining.com.au/cowal/). The underground mine is currently in development and is expected to progress into operation once all statutory approval conditions are met. Conventional underground development drill and blast methods will continue to be used to develop the lateral development. Vertical development is

anticipated to be undertaken using drill and blast or mechanical excavation methods such as raisebore drilling and reaming. Production will be conducted through long hole open stoping with paste backfill.



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LEGEND

- Mining Lease Boundary (ML 1535)
- Exploration Licence (EL)
- National Park & Nature Reserve
- State Forest
- Local Government Area Boundary
- Electricity Transmission Line
- Railway
- Mining Lease Boundary (ML 1791)

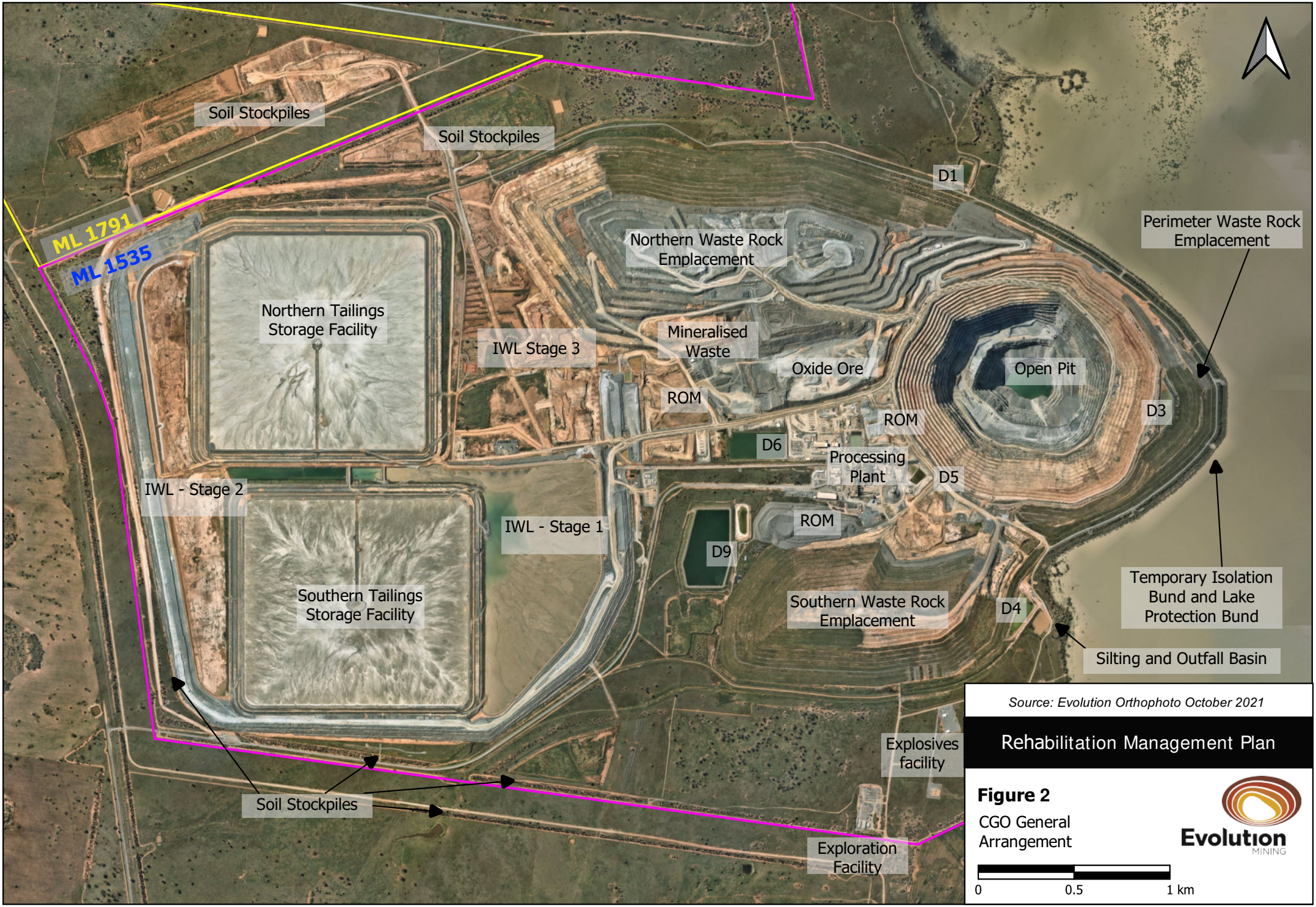
Source: © NSW Department of Finance, Services & Innovation (2017); Office of Environment & Heritage NSW (2017)

Rehabilitation Management Plan

Figure 1

CGO Locality

Evolution MINING


Soil Stockpiles
Soil Stockpiles
ML 1791
ML 1535
Northern Tailings Storage Facility
IWL Stage 3
Northern Waste Rock Emplacement
D1
Perimeter Waste Rock Emplacement
Mineralised Waste
Oxide Ore
Open Pit
ROM
ROM
D3
D6
Processing Plant
D5
IWL - Stage 2
IWL - Stage 1
ROM
D9
Southern Tailings Storage Facility
Southern Waste Rock Emplacement
D4
Temporary Isolation Bund and Lake Protection Bund
Silting and Outfall Basin
Explosives facility
Soil Stockpiles
Exploration Facility
Source: Evolution Orthophoto October 2021
Rehabilitation Management Plan
Figure 2
CGO General Arrangement
Evolution MINING
0
0.5
1 km

The CGO implements a range of environmental management practices in accordance with the Development Consent Conditions and approved rehabilitation strategy, including:

- The protection and ongoing management and maintenance of the natural resources within and surrounding the Mining Lease and Evolution owned property;
- The progressive rehabilitation of mining disturbed areas to establish sustainable endemic vegetation communities appropriate for the topography and slope of the rehabilitated landforms;
- Undertaking revegetation trials to determine the optimum revegetation techniques**;**
- The development of an annual rehabilitation monitoring program in 2010, which incorporated the use of reference sites as benchmarks for rehabilitation objectives and developed a set of completion criteria for CGO.

Rehabilitation undertaken since the commencement of mining operations includes portions of the Northern, Southern and Perimeter Waste Rock Emplacements (NWRE, SWRE and PWRE, respectively), Northern and Southern Tailings Storage Facilities (NTSF and STSF) and the New Lake Cowal Foreshore and other water infrastructure areas such as outer walls of dams. Historic rehabilitation of the lower NTSF and STSF batters has since been inundated through the commissioning of the Integrated Waste Landform (IWL). Existing rehabilitation has been mapped through the NSW Mine Rehabilitation Portal (Submission ID: 2347).

Revegetation of the waste rock emplacements aims to re-establish endemic woodland, shrub and grassland communities similar to those on similar landforms in the regional landscape (e.g. Wamboyne Mountain, Fellman's Hill and Billy's Lookout). Suitability of revegetation species includes consideration of the physiographic and hydrological features of the landform and performance relative to both stability and surface cover materials. Rehabilitation trials testing different cover systems have been undertaken on both the SWRE and NWRE.

The New Lake Foreshore comprises the Temporary Isolation Bund, Lake Protection Bund and the first batter of the Perimeter Waste Rock Emplacement. Construction of the lake isolation embankments has been completed and the Temporary Isolation Bund and the Lake Protection Bund have been topsoiled and revegetated with native and grass and tree species, including scattered aquatic species such as Lignum, Rush sp., River Cooba and River Red Gums.

1.2 Current development consents, leases and licences

Table 2: Current development consents, leases and licences, with respect to the mining area at CGO

Instrument	Relevant Authority	Date of Grant	Duration of Approval
Environment Protection and Biodiversity Conservation Act 1999 (EPBC) Approval - 2017/7989	DAWE	25/01/2019	This approval is in effect until 31/12/2032.
Development Consent (DA 14/98	DPE	26/02/1999	Mining operations may take place until 31 December 2040. “Mining operations” includes the removal and emplacement of waste rock; the processing, handling and storage of ore on site; and the transport of ore concentrate offsite. The development consent then continues to be in force until Evolution rehabilitates the site in accordance with the conditions of the development consent.
SSD 10367	DPE	30/09/2021	Underground mining and related infrastructure to 2040.
Development Consent (DA 2011/0064)	Forbes Shire Council	20/12/2010	Valid for the operation of the eastern saline borefield.
ML 1535	DRG	13/06/2003	21 years (i.e. 13 June 2024)
ML 1791	DRG	20/06/2019	Expires 20 June 2040
EPL No. 11912	EPA	23/12/2003	Until the licence is surrendered, suspended or revoked. The licence is subject to review every three years.
Permit #1361 under section 87(1)of the National Parks and Wildlife Act 1974 (NPW Act)	OEH	23/05/2002	Valid for period of exploration drilling on the lots covered by the permit.
Permit #1468 under section 87(1) of the NPW Act	OEH	27/10/2003	31 December 2040.
Consent #1680 under section 90 of the NPW Act	OEH	28/07/2003	31 December 2040
Permit #1681 under section 87(1)of the NPW Act	OEH	28/07/2003	31 December 2040. (Issued in conjunction with consent #1680)

AHIP C0004570	OEH	27/06/2019	Approved for a period of 14 years from grant, that is, until 27 June 2033.
Care Agreement C0004976	OEH	27/06/2019	Approved for a period of 14 years from grant. 31 December 2032.
Water Supply Works Approval 614805	DPE-Water	12/01/2010	13 September 2025. Approval for TIB, LPB and buried Lake Cowal pipeline structures.
Production bore licence (Bland Creek Palaeochannel Borefield) WAL 31864	DPE-Water	14/09/2012	13 September 2025.
Production bore licences (Eastern Saline Borefield) WAL 36569	DPE-Water	14/09/2014	9 June 2026.
Production bore licences (saline groundwater supply borefield within ML 1535) and pit dewatering (including pit inflows)	DPE-Water	21/03/2014	13 September 2025.
Pit dewatering licence WAL 36617	DPE Water	21/03/2014	13 September 2025.
Monitoring and test bore licences	DI-Lands and Water	Various	Various.
High Security WAL 13749	DPE Water	21/12/2006	Title for allocation from Regulated River Source.
High Security WAL 14981	DPE Water	15/09/2011	Title for allocation from Lachlan Regulated River Source – Water Sharing Plan.
General Security WAL 13748	DPE Water	21/12/2006	Title for allocation from Regulated River Source.
Supply Work Approval 70WA614805	DPE Water	12/01/2010	13 September 2025. Surface licence for TIB-LPB and buried borefield pipeline under Lake Cowal.

1.3 Land ownership and land use

The ML areas and the Company-owned rural land holdings in the Lake Cowal area total approximately 14,174 hectares (ha). The eastern boundary of Company-owned land is located along the approximate north/south centreline of Lake Cowal. The western boundary primarily follows the West Wyalong Burcher Railway with the boundary in the south-west crossing over the railway. An overview

of land tenure for lots within and adjacent to mining leases, a schedule of land ownership, occupancy, and leases over the mining lease area is provided in Table 3 and Figure 3..

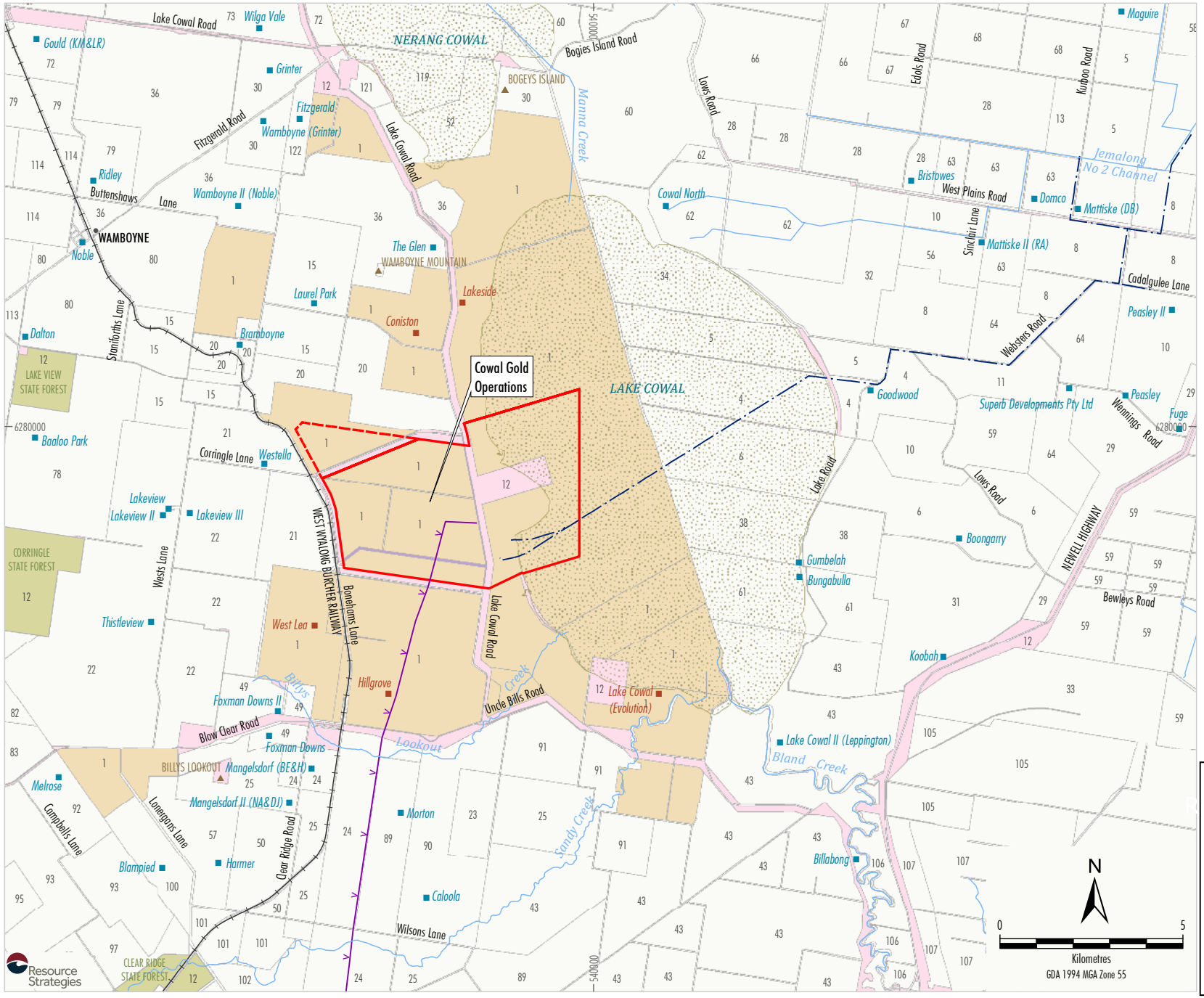
Since European settlement, the extent, structure and management of native vegetation in the region has undergone extensive modification. Clearing is the most noticeable of these changes, however several other processes have changed the original characteristics of the CGO area, including grazing of native vegetation and pastures, weed/pest incursion, possible alterations to fire regimes, modifications to waterways, and isolation of remnant vegetation. Therefore, the majority of Evolution-owned land comprise cleared, grazing and cropping lands, which are currently licensed to local landholders engaged in primary production. Notwithstanding, patches of remnant vegetation occur on Evolution-owned lands. In addition, areas of Evolution-owned lands will be conserved as part of the CGO's biodiversity offset strategy, including the Northern and Southern Offset Areas.

ML 1535 occupies an area of 2,636 ha, while ML 1791 is 250.4 ha. The dominant land uses surrounding CGO are grazing and cropping, while the lakebed of Lake Cowal (immediately to the east of CGO) under ownership of Evolution is no longer farmed or grazed. When dry the lake is managed in accordance with CGO Land Management Plan (LMP) which includes weed/pest management and fire prevention maintenance measures. When inundated lake water monitoring is conducted to inform water quality and the ML remains restricted access via floating bouy's and signage. The remainder of the lake continues to be farmed periodically by the respective landowners as conditions allow. Portions of Company-owned land are presently leased to other parties for agricultural purposes.

Table 3: Overview of land tenure in proximity to the CGO, as per Figure 3

Ref.	Landholder	Ref	Landholder
1	Evolution Mining (Cowal) Pty Limited	71	LM & TJ Mackay and LJ & RP Grayson
2	Bland Shire Council	72	KM & LR Gould
3	Graincorp Operations Limited	73	CI Ridley
4	BE Mattiske	74	HM Corliss and JA & FG Ridley
5	DB Mattiske	75	The Grain Handling Authority Of New South
6	IW Low	77	Wales
8	PG Hammond	78	Country Rail Infrastructure Authority
10	SL Peasley	79	CF Fuller
11	RG Hammond	80	IO Ridley
12	The State of New South Wales	81	TG & JM Dalton
13	West Plains (Forbes) Pty Limited	82	West Wyalong Local Aboriginal Land Council
15	HJ & WJ Buttenshaw	83	LJ Doecke
20	WJ Buttenshaw	85	RJ Moore
21	AJ McClintock	89	JM Ridley
22	The West Pastoral Company Pty Limited	90	GM & BM Morton
23	EA & M Mangelsdorf	91	Boltefam Pty Ltd
24	BE & H Mangelsdorf	92	Zillo Investments Pty Ltd
25	NA & DJ Mangelsdorf	93	KA Lindner & GP Lindner
27	State Rail Authority of New South Wales	95	EJ McCarthy
28	Bristowes Pastoral Pty Ltd	96	JD & VH Boneham
29	NJ Fuge	97	BY & IG Boyd
30	SK & RC Grinter	98	Clevedon Properties Pty Ltd
31	JA Duff	100	MM Rees
32	HE & AJ Duff	101	AJ & LF Blampied
33	AJ Duff	102	MM & MD Carnegie
34	HE Duff	103	W Goodwin
36	Corrie Vale Pastoral Company Pty Limited	104	LR Martin
38	BR Dent	105	MM & MD Carnegie
42	GJ Davies	106	MK & RT Coles
43	Leppington Pastoral Co Pty Limited	107	FR Maslin
44	MH Duff	109	Marsden Minoru Pty Limited
49	CL Lee	113	EH & JW Maslin
50	GF Carnegie	114	BC & DW Rogers
51	HC & GK West	116	WJ Worner

52	HJ Buttenshaw	118	IJ Ridley
56	RA Mattiske	119	AB & KM Maslin
57	RF Harmer	120	ML & CI Ridley
58	Twynam Pastoral Co Pty Limited	121	Forbes Shire Council
59	Wyalong Rural Investments Pty Limited	122	BJ & RK Gould
60	SJ & EP Mickan	123	DG Fitzgerald
61	ML Dent	124	Telstra Corporation Limited
62	WR Low	126	AGL Pipelines (NSW) Pty Limited
63	Domco Trading Pty Limited	130	D Williams
64	Superb Developments Pty Ltd	131	N.S.W. Grain Corporation Limited
66	BV Tooth	132	IH Shephard
67	HWR McDonald	133	CR & RD McManus
68	AJR McDonald	134	MA Squier JT Gray
69	GLR McDonald	135	NA Wilson
70	KA Maguire		



LEGEND

- Mining Lease Boundary (ML 1535)
- Mining Lease Application (MLA 1)
- Evolution Mining (Cowal) Pty Limited
- Crown Land
- Local Government
- Private Landholder
- State Forest
- Company-owned Dwelling
- Privately-owned Dwelling
- Railway
- Electricity Transmission Line
- Pipeline

Refer to Table 2 for Landholder Key

Source: Evolution (2018); © NSW Department of Finance, Services and Innovation (2017)

Rehabilitation Management Plan

Figure 3
Land Tenure

Evolution MINING

2 PART 2 – FINAL LAND USE

2.1 Regulatory requirements for rehabilitation

The statutory requirements relevant to this RMP are contained in:

- the conditions of Development Consent (DA 14/98);
- the conditions of State Significant Development (SSD 10367); and
- the Conditions of Authority for ML 1535 and ML 1791.

Table 4: Regulatory requirements relevant to this RMP

<table>
<tr><th>Instrument</th><th>Ref.</th><th>Requirement</th></tr>
<tr><td>DA 14/98</td><td>2.4(a)</td><td>Rehabilitation Objectives

The Applicant must rehabilitate the site in accordance with the conditions imposed on the mining leases(s) associated with the development under the Mining Act 1992. The rehabilitation must be generally consistent with the proposed rehabilitation objectives described in the EIS (and shown conceptually in the figure in Appendix 3), as amended by the approved rehabilitation strategy (see condition 3.8) and must comply with the objectives in Table 1.
<table>
<tr><th>Feature</th><th>Objectives</th></tr>
<tr><td>Mine site (as a whole)</td><td>• Safe, stable and non-polluting
• Final landforms designed to incorporate micro-relief and integrate with surrounding natural landforms
• Constructed landforms are to generally drain to the final void
• Minimise long term groundwater seepage zones
• Minimise visual impact of final landforms as far as is reasonable and feasible</td></tr>
<tr><td>Final void</td><td>• Minimise to the greatest extent practicable:
• the size and depth of final void
• the drainage catchment of final void
• risk of flood interaction for all flood events up to and including the Probable Maximum Flood
• To be permanently separated from Lake Cowal by the Lake Protection Bund
• Highwall to be long-term stable
• Minimise the ongoing runoff from clean areas into the final void</td></tr>
<tr><td>Surface infrastructure</td><td>• To be decommissioned and removed, unless Resources Regulator agrees otherwise</td></tr>
<tr><td>Agriculture</td><td>• Restore or maintain land capability generally as described in the EIS</td></tr>
<tr><td>Rehabilitation areas and other vegetated land</td><td>• Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems</td></tr>
<tr><td>Community</td><td>• Ensure public safety
• Minimise adverse socio-economic effects associated with mine closure</td></tr>
</table></td></tr>
</table>

DA 14/98	2.4(b)	Progressive Rehabilitation The Applicant shall rehabilitate the site progressively as soon as reasonably practicable following disturbance. All reasonable and feasible measures must be taken to minimise the total area exposed for dust generation at any time. Interim stabilization and rehabilitation strategies shall be employed when areas prone to dust generation cannot be permanently rehabilitated. *Note: It is accepted that some parts of the site that are progressively rehabilitated may be subject to further disturbance at some later stage of the development.*
DA 14/98	2.4(c)	Rehabilitation Management Plan The Applicant must prepare and implement a Rehabilitation Management Plan in accordance with the conditions imposed on the mining lease(s) associated with the development under *the Mining Act 1992*. The plan must: (i) describe how the rehabilitation of the site would be integrated with the biodiversity offset strategy for the development; (ii) include geotechnical analysis and review of ongoing open pit development, the management of the integrated waste and continued monitoring of the lake protection bund; (iii) include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, and triggering remedial action (if necessary); (iv) describe the measures that would be implemented to ensure compliance with the relevant conditions of this consent, and address all aspects of rehabilitation including mine closure, final landform (including final voids) and final land use; (v) include a program to monitor, and report on the effectiveness of the measures, and progress against the detailed performance and completion criteria; and (vi) build to the maximum extent practicable on the other management plans required under this consent. *Note: The Rehabilitation Management Plan may be combined with a Mining Operations Plan, or similar plan, required under the mining lease granted for the development.*
DA 14/98	2.5	Security Deposits and Bonds Security deposits and bonds will be paid as required by Resources Regulator under mining lease approval conditions.
DA 14/98	3.8	Rehabilitation Strategy The Applicant shall develop a strategy for the long term land use of the site on decommissioning of the mine site. The strategy shall include, but not be limited to: appropriate landuses within the site, which may include areas for conservation, agriculture or recreation, long term management of the area, environmental impacts of any uses and maintenance of necessary drainage

		characteristics and other features provided on the site. The strategy for long term land use of the site shall be submitted by Year 7 of mining operations or five years before mine closure, whichever is the sooner, in consultation with Resources Regulator, DPI Agriculture, DPIE Water, BCS, BSC, CEMCC, and to the satisfaction of the Planning Secretary.
DA 14/98	4.1	Water Supply (a) The Applicant must ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of the development to match its available water supply. (b) The Applicant must report on water extracted from the Cowal Gold Operations each year (direct and indirect) in the Annual Review, including water taken under each water licence. *Note: Under the Water Act 1912 and/or the Water Management Act 2000, the Applicant is required to obtain all necessary water licences for the development, including during rehabilitation and post mine closure.*
DA 14/98	6.5(a)	Additional Visual Impact Mitigation Upon receiving a written request from the owner of any residence on privately-owned land which has, or would have, significant direct views of the mining operations and infrastructure on-site during the development, the Applicant shall implement additional visual impact mitigation measures (such as landscaping treatments or vegetation screens) to reduce the visibility of the mining operations and infrastructure from the residences on the privately-owned land. These mitigation measures must be reasonable and feasible, and must be implemented within a reasonable timeframe. If the owner of the residence and the Applicant cannot agree whether there are significant direct views from the residence, then either party may refer the matter to the Planning Secretary for resolution. If within 3 months of receiving this request, the Applicant and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Planning Secretary for resolution. *Notes:* *• The additional visual impact mitigation measures must be aimed at reducing the visibility of the mining operations on site from affected residences, and do not require measures to reduce the visibility of the mining operations from other locations on the affected properties.* *• The additional visual impact mitigation measures do not necessarily have to include the implementation of measures on the affected property itself (i.e. the additional measures could involve the implementation of measures outside the affected property boundary that provide an effective reduction in visual impacts)*
SSD 10367	B23	Rehabilitation Objectives The Applicant must rehabilitate the site in accordance with the conditions imposed on the mining leases(s) associated with the development under the *Mining Act 1992*. The rehabilitation must be generally consistent with the proposed rehabilitation objectives described in the documents listed in

<table>
<tr><td></td><td></td><td>condition A2(c) (and shown conceptually in Figure 1 in Appendix 3), and must comply with the objectives in Table 2.
<table>
<tr><th>Feature</th><th>Objectives</th></tr>
<tr><td>Stopes</td><td>• Backfilled with paste fill material
• Safe and stable
• Negligible surface subsidence in the long term</td></tr>
<tr><td>Box Cut</td><td>• Backfilled and rehabilitated</td></tr>
<tr><td>Surface infrastructure</td><td>• To be decommissioned and removed, unless Resources Regulator agrees otherwise</td></tr>
<tr><td>Community</td><td>• Ensure public safety
• Minimise adverse socio-economic effects associated with mine closure</td></tr>
</table></td></tr>
<tr><td>SSD 10367</td><td>B24</td><td><u>Rehabilitation Management Plan</u>

The Applicant must prepare and implement a Rehabilitation Management Plan in accordance with the conditions imposed on the mining lease(s) associated with the development under the Mining Act 1992. The plan must:

(a) include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, and triggering remedial action (if necessary);

(b) describe the measures that would be implemented to ensure compliance with the relevant conditions of this consent, and address all aspects of rehabilitation including mine closure, final landform (including final voids) and final land use; and

(c) include a program to monitor and report on the effectiveness of the measures, and progress against the detailed performance and completion criteria.

Note: The Rehabilitation Management Plan may be combined with a Mining Operations Plan, or similar plan, required under the mining lease granted for the development</td></tr>
<tr><td>SSD 10367</td><td>C9</td><td><u>Annual Review</u>

By the end of March each year after the date of commencement of development under this consent, or other timeframe agreed by the Planning Secretary, a report must be submitted to the Department reviewing the environmental performance of the Cowal Gold Operations, to the satisfaction of the Planning Secretary. This review must:

(a) describe the development (including any rehabilitation) that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year</td></tr>
<tr><td>ML 1535</td><td>12</td><td>a) Land disturbed must be rehabilitated to a stable and permanent form suitable for a subsequent land use acceptable to the Director-General and in accordance with the Mining Operations Plan so that:-</td></tr>
</table>

		- there is no adverse environmental effect outside the disturbed area and that the land is properly drained and protected from soil erosion. - the state of the land is compatible with the surrounding land and land use requirements. - the landforms, soils, hydrology and flora require no greater maintenance than that in the surrounding land. - in cases where revegetation is required and native vegetation has been removed or damaged, the original species must be re-established with close reference to the flora survey included in the Mining Operations Plan. If the original vegetation was not native, any re-established vegetation must be appropriate to the area and at an acceptable density. - the land does not pose a threat to public safety. (b) Any topsoil that is removed must be stored and maintained in a manner acceptable to the Director-General.
ML 1535	13	The lease holder must comply with any direction given by the Director-General regarding the stabilisation and revegetation of any mine residues, tailings or overburden dumps situated on the lease area.
ML 1535	14	<u>Prevention of Soil Erosion and Pollution</u> Operations must be carried out in a manner that does not cause or aggravate air pollution, water pollution (including sedimentation) or soil contamination or erosion, unless otherwise authorised by a relevant approval, and in accordance with an accepted Mining Operations Plan. For the purpose of this condition, water shall be taken to include any watercourse, waterbody or groundwaters. The lease holder must observe and perform any instructions given by the Director-General in this regard.
ML 1535	18	<u>Roads</u> Access tracks must be kept to a minimum and positioned so that they do not cause any unnecessary damage to the land. Temporary access tracks must be ripped, topsoiled and revegetated as soon as possible after they are no longer required for mining operations. The design and construction of the access tracks must be in accordance with specifications fixed by the Department of Land and Water Conservation.
ML 1797	2	<u>Rehabilitation</u> Any disturbance resulting from the activities carried out under this mining lease must be rehabilitated to the satisfaction of the Minister.
NSW Wetlands Policy, 2010		The NSW Wetlands Policy, 2010 aims to provide for the protection, ecologically sustainable use and management of NSW wetlands (Department of Environment, Climate Change and Water [DECCW], 2010). The policy provides a set of guiding principles that all government agencies

		will adopt, and all stakeholders can refer to when making decisions on wetland management and conservation. The principles relevant to this RMP include: where possible natural wetlands should not be destroyed or degraded; degraded wetlands and their habitats should be restored and their ecological processes improved as far as is practicable; and the conservation and management of wetlands are most appropriately considered at the catchment scale. This RMP describes the rehabilitation concepts for the New Lake Foreshore. In particular, the objectives of the rehabilitation programme include the expansion of habitat opportunities for wetland and terrestrial fauna species. This includes the design and implementation of rehabilitation works at the New Lake Foreshore in a manner consistent with the NSW Wetlands Policy, 2010.
Policy and Guidelines for Fish Habitat Conservation and Management (Update 2013)		The DPI's (2013) Policy and Guidelines for Fish Habitat Conservation Management outlines the policies and guidelines aimed at maintaining and enhancing fish habitat for the benefit of native fish species, including threatened species, in marine, estuarine and freshwater environments. In relation to this RMP, the policy outlines key concepts for habitat rehabilitation. As described above, this RMP describes the rehabilitation concepts for the New Lake Foreshore identifies that a key objective of the CGO rehabilitation programme is the expansion of habitat opportunities for wetland (and terrestrial) fauna species.
Plans/Strategies (Various)		Evolution is required to take into consideration the latest versions of the Jemalong Land and Water Management Plan, the Lake Cowal Land and Water Management Plan, the Mid Lachlan Regional Vegetation Management Plan, and any future catchment/land and water management plans that may become relevant to the area in accordance with the requirements of DA 14/98. However, the Mid Lachlan Regional Vegetation Management Plan, referred to in Condition 4.6, was repealed with effect from 1 December 2005. The Mid Lachlan Regional Vegetation Management Plan was however considered during the development of the Lachlan Catchment Action Plan (Lachlan Catchment Management Authority, 2006). The Lachlan Catchment Action Plan and the Jemalong Land and Water Management Plan and Lake Cowal Land and Water Management Plan are described further below.
Jemalong Land and Water Management Plan		The Jemalong Land and Water Management Plan (Jemalong Land and Water Management Plan Steering Plan Committee [JLWMPSPC], 2000) provides for the alleviation of land and water degradation, improvement of natural resource management and sustainability of agriculture and the environment in the Jemalong Irrigation District. The Plan recommends the remediation of any degraded lands and the reduction of water erosion and sedimentation to reduce salinisation of land and waterbodies (JLWMPSPC, 2000). This RMP details the measures relevant to rehabilitation of disturbed land within the operational area and specifically the management of water erosion and sedimentation.
Lake Cowal Land and Water		The Lake Cowal Land and Water Management Plan (Australian Water Technologies Pty Ltd, 1999) aims include maintaining vegetation cover and maintaining soil structure of Lake Cowal's ecosystem. Measures that will be

Management Plan		implemented to revegetate/regenerate the New Lake Foreshore within ML 1535 are detailed in this RMP. This RMP also describes measures that will be implemented to manage and ameliorate the CGO's stockpiled soil resources.
Lachlan Catchment Action Plan		The Lachlan Catchment Action Plan provides a framework for the investment in works, projects, planning and research that are considered necessary to achieve sustainable and productive landscapes in the catchment (Lachlan Catchment Management Authority, 2006). Consistent with the Natural Resources Commission Standards, the Lachlan Catchment Action Plan provides specific catchment and management targets, which reflect broader state-based targets (Lachlan Catchment Management Authority, 2006). An updated Lachlan Catchment Action Plan was submitted to the Minister for Primary Industries on 1 February 2013. The themes underpinning Lachlan Catchment Action Plan management targets relevant to the RMP include biodiversity and native vegetation, water and aquatic ecosystems and land management. The rehabilitation concepts and measures outlined in this RMP are considered to address these themes.

2.2 Final land use options assessment

Not applicable, as the final land use has been approved for the CGO.

2.3 Final land use statement

A conceptual final land use has been included in DA 14/98 for the approved CGO, which will be:

- designed wherever possible to be compatible with regional landscape features;
- progressively constructed as a ROM operation wherever possible and left with untrimmed surface roughness to lower runoff coefficients and promote water absorption and storage; and
- revegetated with native and/or endemic vegetation communities, selected specifically for their suitability to the created elevation, aspect, substrate conditions and the overriding objective of re-establishing a greater extent of endemic vegetation within ML 1535 and ML 1971.

As described in the CGO's Flora and Fauna Management Plan (FFMP) and consistent with the CGO's rehabilitation objectives, rehabilitation of ML 1535 and ML1971 disturbance areas will aim to enhance and expand wildlife habitat values within and around Lake Cowal. Final land uses within the mining lease area will include fenced rehabilitation areas with grazing excluded. Evolution-owned land outside the mining lease (except for the Compensatory Wetland and offset areas) would continue to be used for farming/agricultural production by Evolution and/or licensees that sign agreements to conduct agricultural activities on Evolution-owned land. It is anticipated that areas of lakebed country would be available for commercial and recreational fishing when inundated and may be used for cropping and/or managed livestock grazing when dry, consistent with existing and historical uses of Lake Cowal.

Consistent with Development Consent Conditions and the CGO's Biodiversity Offset Management Plan (BOMP), long-term protection of the CGO Offset Areas would be provided by a Voluntary Planning Agreement or Biodiversity Stewardship Agreements registered on the title of the offset lands. Consistent with the CGO's Land Management Plan (LMP), the Remnant Vegetation Enhancement

Programme (RVEP) Areas would continue to be maintained for the term of Evolution's tenure of the land.

Key features of the final landform within the mining leases have been outlined in the final landform and rehabilitation plan (Figure 4) and will include:

- a final void;
- rehabilitated waste rock emplacements surrounding the final void to the north, east and south;
- a rehabilitated IWL located west of the waste rock emplacements;
- areas surrounding the rehabilitated waste rock emplacements and IWL associated with rehabilitated site infrastructure areas (i.e. the former process plant area and former soil stockpile areas);
- permanent water management features including the UCDS and low mounds associated with the Internal Catchment Drainage System (ICDS); and
- permanent lake isolation embankments to hydrologically separate the open pit development area and Lake Cowal during mining and post-mining.

The approved CGO includes the processing of mineralised material and would therefore remove the mineralised material stockpile as a component of the northern waste rock emplacement landform (dependent on market conditions).

2.4 Final land use and mining domains

2.4.1 Final land use domains

Consistent with contemporary rehabilitation guidelines and rehabilitation planning best practice, the following conceptual rehabilitation domains have been developed to guide the CGO rehabilitation programme and are shown on Figure 4:

- Domain A1: Native Ecosystem – Grassland/Scattered Eucalypt Woodland
- Domain A2: Native Ecosystem – Eucalypt Woodland
- Domain A3: Native Ecosystem – Grassland/Scattered Eucalypt Woodland and Riverine Woodland/Freshwater Communities
- Domain A4: Native Ecosystem – Eucalypt Woodland
- Domain F3: Water Management Area
- Domain J5: Final Void

2.4.2 Mining domains

Identified mining domain(s) for all operational/disturbance areas within the CGO are outlined below:

- Infrastructure Area (e.g. administration facilities, workshops, access roads, material stockpile areas)
- Tailings Storage Facility (Integrated Waste Landform)
- Water Management Area (includes any operational sediment dams, diversions and other significant constructed drainage features)
- Overburden Emplacement Area (NWRE, SWRE and PWRE)
- Active Mining Area (Open cut void)

Table 5: Spatial Reference codes for mining and final land use domains

FINAL LAND USE DOMAIN	CODE	MINING DOMAIN	CODE
Native Ecosystem	**A**	**Infrastructure Area**	**1**
Agricultural – Grazing	B	**Tailings Storage Facility**	**2**
Agricultural – Cropping	C	**Water Management Area**	**3**
Rehabilitation Biodiversity Offset Area	D	**Overburden Emplacement Area**	**4**
Industrial	E	**Active Mining Area (Open cut void)**	**5**
Water Management Areas	**F**	Underground Mining Area (SMP)	6
Water Storage (Excluding Final Void)	G	Beneficiation Facility	7
Heritage Area	H	Other	8
Infrastructure	I		
Final Void	**J**		
Other	K		

*Note: Relevant mining and final land use domains are highlighted in **bold face***

UCD North
D1
Lake Protection Bund
NWRE - 308 mAHD
Stock Exclusion Fence
Water Level
D3
PWRE - 233 mAHD
UCDS
IWL - 246 mAHD
D2
D6
D5
Safety Bund
Stock Exclusion Fence
D9
SWRE - 283 mAHD
D4
UCD South
Stock Exclusion Fence
UCDS

COWAL GOLD OPERATIONS

FLRP Plan 1:
Final Landform Features

25/07/2023

Final Landuse
A1
A2
A3
A4
A8
F3
J5

Current Authorisations
ML1535
ML1791

Project Approval Boundary
Final Landform Features

0 0.5 1 km

Evolution MINING

COWAL GOLD OPERATIONS

FLRP Plan 2:
Final Landform Contours

25/07/2023

Current Authorisations
- ML1535
- ML1791

- Project Approval Boundary
- Final Landform Contours (5m)

0 0.5 1 km

Evolution MINING

3 PART 3 – REHABILITATION RISK ASSESSMENT

Table 6 includes a summary of rehabilitation risk assessments conducted by the CGO. The risk assessment was reviewed and updated in 2023 to reflect current operations and practices, in accordance with Clause 7 of Schedule 8A, to the Mining Regulation 2016. The risk assessment was originally conducted in 2014 in consultation with the relevant parties below:

- CGO Environmental Manager
- CGO Environmental Superintendent
- CGO General Manager
- CGO Mining Manager
- CGO Community Relations Manager
- Australian National University
- McKenzie Soil Management Pty Ltd.
- DnA Environmental Pty Ltd.
- ATC Williams Pty Ltd
- Gilberts and Associates Pty Ltd.

Table 6: Summary of Rehabilitation Risk Assessment (2022)

DOMAIN	COMPONENT	POTENTIAL OUTCOME	EXISTING CONTROLS
Waste Rock Emplacements	Geotechnical Stability	Geotechnical instability of waste rock emplacement batters, results in **global slope failure** (including Perimeter Waste Rock Emplacement failure resulting in connection with lake).	Construct batter slopes to design, as approved by relevant regulatory agencies. Final landform designed to maximise stability and reduce erosion potential. Deep rip waste rock emplacement to minimise erosion and backfill affected area with waste rock (if necessary). Construct/apply batter cover system as per concept design (including cross-ripping). No oxide material to be placed on the outer batters of the final landform design. Geotechnical inspections and monitoring, including piezometers, seismic activity and InSAR satellite monitoring. Erosion and Sediment Control Management Plan and site Water Management Plan.
Waste Rock Emplacements	Landform Design and Water Management	Reverse grade Berms, Depth of rock mulch on batter slopes and deep-ripping along the contour fails to reduce surface water runoff velocity during high rainfall events resulting in **erosion downslope**.	Erosion modelling conducted to inform optimal depth of rock mulch. Outcome of Northern Waste Rock Emplacement D1 trial confirmed effectiveness of 300mm depth of rock mulch and optimal configuration of rock mulch, topsoil, hay and vegetation cover system. During revegetation, adjust seed and planting densities to ensure suitable ground cover is established and minimise the occurrence of high-density tree and shrubs which may limit ground cover and result in instability in the longer-term. Backsloping berms and ripping to slow water velocity. Geotechnical inspections of water ponded conducted as required. Post rainfall inspections and annual review of rehabilitation progress completed via third party. Erosion and

			Sediment Control Management Plan and site Water Management Plan.
Waste Rock Emplacements	Landform Design and Water Management	Reverse graded berms on waste rock emplacements, Depth of rock mulch on batter slopes and deep-ripping along the contour fails to reduce surface water runoff velocity during high rainfall events resulting in significant **tunnel erosion** on berm at base of batter resulting in localised failure of berm.	Rock mulch berm (and upper batter slope), cover with gypsum treated soil and establish cover crop to stabilise the area. Long-term Treatment Measure - reshape target areas to remove erosion features, apply gypsum to berms comprised of oxide waste rock (prior to application of cover system) to minimise dispersive nature of oxide waste rock, reapply rock mulch and cover system. Regrade to reinstate backslope on berms as required. Monitor frequency and/or re-occurrence of unwanted event and if likelihood of event is intolerable, assess feasibility and long term risks of modifying berm design. Erosion and Sediment Control Management Plan and site Water Management Plan.
Waste Rock Emplacements	Landform Design and Water Management	Berms of waste rock emplacements **positively graded** resulting in increased velocity of surface water runoff downslope resulting in **gully erosion** on batter slope.	Rehabilitation constructed as per design to include backslope. Rock armour batters and cross-rip along the contour to reduce erosion potential. Revegetate batters as soon as possible to assist in stabilising the slope. Trained, competent and supervised operators. Erosion and Sediment Control Management Plan and site Water Management Plan.
Waste Rock Emplacements	Geochemical Stability	**Geochemical instability** and localised seepage of waste rock emplacement batters adversely affects revegetation. Highly saline substrate materials (e.g. underlying waste rock, high sulphur primary rock armour/mulch or soil) impedes vegetation establishment and growth on waste rock emplacement batters.	Waste rock geochemistry investigations have classified oxide waste rock as saline but NAF; and primary waste rock will typically be non-saline and NAF; however, sulphate salts may be generated if exposed to surficial weathering processes. Waste rock emplacements have been constructed to direct any permeating waters towards the open pit. Pockets of elevated sulphur within waste rock (faults, etc.) are segregated to prevent use for rock armouring. Soil stocks identified by McKenzie Soil Management (2013) as highly saline are excluded. Substrate trial to assess performance of species in various depths of saline soil. Use salt tolerant tree, shrub and native grass species for revegetation of waste rock emplacements based on results of NWRE D1 trial and further informed by future trials. Annual review of rehabilitation progress via third party. Soil and trend analysis results to assist in determining acceptable level of salinity in soil suitable for use in rehabilitation programme. Annual review of rehabilitation progress completed via third party, including soil sampling and geochemical analysis.
Waste Rock Emplacements	Geochemical Stability	Geochemical instability and localised seepage of waste rock emplacements leading to the	As above. Waste rock emplacements have been designed to meet the long-term goal of directing potential seepage generated from waste rock emplacement areas during operation and post-closure toward the open pit. This has involved construction of a low

		development of **saline or acid mine drainage**.	permeability basal layer for the waste rock emplacements, which slopes towards the open pit and would provide drainage control (i.e. the base drainage control zone). Waters permeating through the waste rock emplacements would be intercepted by this low permeability layer and ultimately flow to the open pit. Waste generated by CGO has generally been determined to be NAF.
Waste Rock Emplacements	Revegetation	**Unsuitable species selection** for rehabilitation, leading to a failure to achieve rehabilitation outcomes.	Revegetation of the waste rock emplacements aims to re-establish endemic woodland, shrub and grassland communities similar to those on similar landforms in the regional landscape. Revegetation species lists considered suitable for woodlands on low ridges and hills in the local landscape have been developed by DnA Environmental (2016a) with assistance from Diversity Native Seeds (a local seed supplier). A selection of the nominated trials have been used in rehabilitation trials to date.
Tailings Storage Facilities / Integrated Waste Landform	Landform Design and Water Management	**Geotechnical instability** of IWL batters results in local or global slope failure.	Design and constructed following the ANCOLD guideline July 2019 by the same engineering company and Engineer of Record for LOM. Engineer/construct embankments in accordance with design, as approved by relevant regulatory agencies. Final landform design for stabilisation of batters. Geotech investigation of IWL footprint completed prior to construction. Internal clay liner and under drainage as per design specification. Rock wall IWL constructed to EoR specifications extremely robust structures. Permeability testing, triaxial testing, Atterberg limits, tillage and compacting of basal layer to achieve required permeability, peer reviewed design. Probabilistic Seismic Hazard Assessment. IWL designed for earthquake risk. Construction report completed and authorised prior to deposition. Mode and Effects Analysis completed by GHD (2019). Operate IWL in accordance with water management design principles. Monthly Tailings Safety Committee meeting, including representatives from construction, operation, environment, governance and EoR. Deposition management plan, monthly drone photos, beach surveys. Spigot maintenance and design. Vibrating wire piezometer monitoring, Cone Penetration Testing and Shear Vein testing. Seismic activity and InSAR satellite monitoring.
Tailings Storage Facilities / Integrated Waste Landform	Landform Design and Water Management	Saline seepage or groundwater mounding **day-lighting at toe** of IWLs results in salt scald and adversely affects vegetation at toe of IWL.	Optimise IWL water management practices to minimise availability of water reporting as seepage. Legacy seepage drainage system (as described in URS [2013] Cowal North IWL Stage 4 Raise Detailed Design) to minimise seepage from external batters of IWLs. Transition from upstream IWL to downstream style IWL design, increasing the width of the outer IWL wall and increasing stability. Improved drainage systems and sump design to allow for directed flow of seepage into designated sumps for pumping and recovery. Ongoing environmental and geotechnical monitoring until

			completion criteria are reached and certification is obtained.
Tailings Storage Facilities / Integrated Waste Landform	Landform Design and Water Management	Final landform design for IWL constructed at angle of repose resulting in long-term slope instability, **erosion**, failure of revegetation and inability to meet completion criteria.	Construction of IWL involves placement of an interim rock buttress cover on the outer slope of the embankment to enhance stability during operation. Outer IWL landform design to be consistent with approved design concepts (i.e. overall slope angle of 1:4) and avoid use of angle of repose. Outer batters to be designed with a 5% backsloping berm to slow surface water runoff. Ongoing environmental and geotechnical monitoring until completion criteria are reached and certification is obtained.
Tailings Storage Facilities / Integrated Waste Landform	Landform Design, Water Management and Revegetation	Post-closure - final landform design results in **long-term ponding** of stormwater runoff causing connection with underlying tailings material due to saturation of capillary break layer which subsequently adversely affects revegetation in the long-term.	Implement current rehabilitation concepts for IWL top surface. Water management measures to include use of shallow swales and controlled placement of cover materials to control surface runoff and minimise long-term ponding. Revegetation to include salt tolerant species (including sedges and rushes) in and surrounding areas where ponding is likely to occur. Prior to mine closure, develop detailed design for rehabilitation of IWL top surfaces, based on MOD14 concepts and results of water balance modelling (likely quantity and quality of surface water ponding and expected duration of ponding). Ongoing environmental and geotechnical monitoring until completion criteria are reached and certification is obtained.
Tailings Storage Facilities / Integrated Waste Landform	Landform Design and Water Management	Long-term **consolidation/ settlement of tailings** negatively affects the stability of the final landform	Consideration of long term stability is captured in design specifications, including the assumption of an Extreme consequence category for post closure, as per Global Industry Standard and in the ANCOLD Guideline. Recent Cowal NTSF and STSF Stage 6 - Geotechnical Stability Review (2021) and IWL Stage 1 Design Report (2021) conducted by AECOM (EoR). Storage capacity is maximised within the TSF by allowing maximum drying/consolidation time before the subsequent tailings lifts are placed. Tailings Liquefaction Assessment also completed by AECOM, focusing on potential settlement rates following earthquake scenarios of various magnitudes. Changes to construction process (waste rock lift height) through MOD16 and IWL design reduces the potential for long term settlement. Ongoing environmental and geotechnical monitoring until completion criteria are reached and certification is obtained.
Tailings Storage Facilities / Integrated Waste Landform	Growth Media	Insufficient suitable soils and material stocks resulting in **limited vegetation establishment** and risks completion criteria not being met.	Rehabilitation trials conducted on rock buttressed slopes of IWLs using modified cover system to assess performance. Modified rehabilitation concepts and modified rehabilitation completion criteria developed, incorporating rock buttress and soils based on trial results. Proposed cover system for outer batters includes rock buttressing to a 1:4 slope, covered by 300 mm topsoil ripped to a depth of 400 mm, seeded with approved species list. Ongoing environmental and geotechnical

			monitoring until completion criteria are reached and certification is obtained.
Tailings Storage Facilities / Integrated Waste Landform	Growth Media	Current prescription for depth of primary rock capillary break layer on top surface of IWL (i.e. 500 mm) is insufficient to minimise the **rise of interstitial salts**, resulting in revegetation failure on IWL top surfaces.	Prescribed capillary break approved through MOD14 (500 mm) aligned with the typical industry standard for depth of capillary break layer (i.e. 450 mm). If results of materials balance (refer below) indicates that insufficient volume of benign primary waste rock is available to accommodate for depth of capillary break rock that effectively minimises salt rise, investigate alternative design concepts for cover system of IWL top surfaces. Ongoing environmental and geotechnical monitoring until completion criteria are reached and certification is obtained.
Tailings Storage Facilities / Integrated Waste Landform	Species selection	Prescribed native woodland species' established **root systems penetrate clay liner**, potentially causing seeping and failure through long-term piping erosion.	MOD14 Final Landform Design Concept for IWL currently approved as native woodland.
Tailings Storage Facilities / Integrated Waste Landform	Geochemical Stability	Geochemical instability and localised seepage of pore water leading to the development of **saline or acid mine drainage**.	Waste rock and tailings geochemistry investigations have previously classified wastes as Non-Acid Forming, with some potential for saline drainage. Geotech investigation of IWL footprint completed prior to construction. Internal clay liner and under drainage as per design specification. Permeability testing, triaxial testing, Atterberg limits, tillage and compacting of basal layer to achieve required permeability, peer reviewed design. Ongoing environmental and geotechnical monitoring until completion criteria are reached and certification is obtained.
Waste Rock Emplacements & Tailings Storage Facilities / Integrated Waste Landform	Water Management	Improper water management strategies, resulting in **seepage from IWL and WRE** landforms negatively affecting rehabilitation outcomes.	As per controls listed above for Geochemical Stability. Environmental Monitoring Program for IWL and WRE seepage outlined in Water Management Plan and Surface Water, Groundwater, Meteorological and Biological Monitoring Program. Weekly geotechnical inspections and reports completed by Geotechnical department, including current status of seepage areas around the IWL. Seepage monitoring TARP in place for escalation as required.
Infrastructure Areas	Decommissioning	Failure to properly consider all requirements for major infrastructure areas (workshops, processing plant, etc.), leading to **potential contamination** and failure to achieve rehabilitation outcomes	Decontamination and decommissioning strategy, including stock reduction, pre-closure tank clean-out, detox/disposal of sludge, removal of decontaminated infrastructure, concrete slab break-up and disposal, contaminated soil testing/remediation prior to rehabilitation. Select infrastructure may be retained upon agreement with the post-mining landholder.

Final Void	Landform Design and Water Management	Final landform design results in a final void that is **unsafe, unstable** and unsuitable for waterbird habitat.	A fence and/or bund will be constructed around the perimeter of the final void, which will be planted with an initial cover crop and will be seeded with native and/or endemic Eucalypt woodland species. Geochemical studies have concluded that the void water quality would not be acidic due to the characteristics of the void wall rock and would be dominated by the overriding influence of saline groundwater to the void. Underground portal to be sealed and associated infrastructure removed. Longterm pit water level modelling updated through underground EIS. E42 Open Pit Design.
Final Void	Landform Design and Water Management	**Spill from final void** into Lake Cowal.	Modelling indicates that the approved final void would reach an estimated equilibrium water level below 130 m AHD (approximately 80 m below spill level). The void water is not predicted to spill and would be hydrogeologically isolated from and lower than water in Lake Cowal. Lake protection bund maintained post-closure.
Permanent water management infrastructure	Water Management	Insufficient water management leading to **surface water contamination** post-closure.	The UCDS will remain to facilitate permanent drainage of adjacent areas upslope of the site to Lake Cowal and the low mounds associated with the ICDS permanent catchment divide will remain to contain runoff generated within the site catchment. Site runoff will be directed to the open pit. The Lake Isolation System (including the Temporary Isolation Bund, Lake Protection Bund and Perimeter Waste Rock Emplacement) has also been constructed to hydrologically isolate the open pit and Lake Cowal during mining and post-mining.
New Lake Foreshore	Landform Design and Revegetation	High winds results in wave action **erosion on outer slope** of Lake Protection Bund (affecting integrity of the bund) and damages New Lake Foreshore revegetation.	Retention of the Temporary Isolation Bund provides additional protection against wave action. Rock armour outer batter slope of Temporary Isolation Bund and Lake Protection Bund to stabilise and maintain integrity of bund in the long-term. Rehabilitation design and implementation at the New Lake Foreshore in a manner consistent with the NSW Wetlands Policy. Annual rehabilitation monitoring and fish surveys conducted within the Compensatory Wetland, New Lake Foreshore and remaining wetland areas within ML 1535. Survey assessments would be undertaken annually to determine and quantify any movement of the lake protection bund until permanent stability is demonstrated (i.e. until the lake protection bund can be demonstrated to be geotechnically stable and presents an acceptably low risk of environmental harm).
New Lake Foreshore	Species selection	Improper species selection for riparian and waterlogged areas, leading to **unsuccessful revegetation** and long-term instability.	Final Landform Design Concept approved for different mining domains (including lake foreshore), which specifies appropriate species selection to support biodiversity post mine land-use with the establishment of riverine woodland and freshwater communities. Approved Rehabilitation Strategy and Compensatory Wetland Management Plan.

All landforms and domains	Growth Media	**Insufficient suitable soil stocks** are available to achieve proposed revegetation objectives for all CGO final landforms (including waste rock emplacements, IWL, New Lake Foreshore and infrastructure areas).	Outcome of Northern Waste Rock Emplacement D1 trial to help inform suitable depth of soil cover on waste rock emplacement, IWL and New Lake Foreshore batters. Evolution developed a revised soil stockpile management strategy, including a soil requirement schedule, to determine when (and how much) soil is required for proposed short-term and long-term rehabilitation activities. Ongoing options analysis of options, including stripping soil to a depth to achieve a soil surplus, treating soil stockpiles in-situ and implementation of small scale soil amelioration farm to determine preferred approach for minimising the potential of a soil deficit occurring or a delay to availability of suitable soil stocks. Soil Stripping and Stockpile Management Plan and Rehabilitation Management Plan. Trained and competent operators during stripping, stockpiling and application applications.
All landforms and domains	Revegetation	**Insufficient rock mulch stocks** are available to achieve proposed revegetation objectives for all CGO final landforms (including waste rock emplacements, IWL, New Lake Foreshore and infrastructure areas).	Blasting schedule to inform availability of blasting material ex-pit. Evaluation of rock mulch materials to confirm suitability from a sizing and materials characteristics perspective. Outcome of Northern Waste Rock Emplacement D1 trial to also inform cover system suited to substrate materials. Approved rehabilitation design for landforms specified through DA14/98 and subsequent modification applications.
All landforms and domains	Revegetation	Insufficient or **unavailable suitable seed stock and tubestock** for revegetation of CGO rehabilitation areas.	Final landform domains identified and scheduled for rehabilitation activities in subsequent years. Confirmed seed mix, tubestock species lists and planting rate requirements with external consultants. Develop progressive seed supply strategy with multiple suppliers. Seed supply strategy can involve collecting local endemic species relevant to the CGO's final landforms (e.g. lake foreshore, undulating low slopes, ridges/hills and grassland areas). Strategy to determine seed and tubestock quantities which will satisfy rehabilitation demands. Broader provenance supply chains available if required.
All landforms and domains	Revegetation	Dominance of **exotic species and/or weed invasion** limits development of the desired ecological communities for the waste rock emplacements, IWLs and New Lake Foreshore.	CGO weed strategy and annual weed monitoring conducted. Monitor impact of weeds on revegetation and control using approved herbicide as required. Increase native seed application rate and increase replant rate of tubestock to increase competition levels with exotic ground cover species. Apply seed bearing native pasture hay upon completion of rehabilitation earthworks to improve likelihood of native species germination and to minimise re-establishment of exotic or weed species. Management of soil stockpiles to minimise weed ingress and contamination of seed banks.

All landforms and domains	Revegetation	Severe or **prolonged drought** leads to widespread failure of revegetation resulting in completion criteria not being met.	Establishment of best performing substrate profile and use of best performing species from rehabilitation trials in revegetation programme. Delay planting until suitable rainfall has been received and conditions are favourable. Schedule seed and tube stock planting activities according to favourable seasonal conditions. Apply mulch to rehabilitation areas to assist in retaining moisture within rehabilitation materials, initiate microbial processes and topsoil development. Install tree guards as required to protect tubestock and improve moisture retention. Implement pest control measures in accordance with CGO Rehabilitation and Offset Management Plan and CGO Land Management Plan. Prepare plan and budget for watering tubestock and replanting if required.
All landforms and domains	Revegetation	**Bushfire** event results in global failure of revegetation on waste rock emplacements, IWLs and New Lake Foreshore.	Bush Fire Management strategy, outlined in the Land Management Plan. Dedicated training area, fire suppression equipment available. Fire break maintenance and inspections. Weekly boundary Inspections. ERT vehicles and trained response team. Emergency Preparedness and response plan(EPRP) – Surface. Slashing and fire break maintenance

4 PART 4 – REHABILITATION OBJECTIVES AND REHABILITATION COMPLETION CRITERIA

4.1 Rehabilitation objectives and rehabilitation completion criteria

4.1.1 Development

The long-term rehabilitation objectives of mining disturbed areas at the CGO are generally consistent with the establishment and/or maintenance of sustainable endemic woodland, shrub and grassland communities similar to those remnants in the regional landscape, whilst recognising the relationship of each vegetation community with topography and elevation.

Subsequently, four primary topographic habitats or vegetation communities were identified as being fundamental to the rehabilitation program and the determination of completion criteria and these essentially remain consistent with the proposed revegetation strategies originally described in the EIS. These vegetation communities are also broadly consistent with those mapped by AMBS and revised by EMM in the BOMP. The following four broad vegetation community types were identified as being representative of the various CGO final landforms:

- **Lake:** woodlands occurring within the lake and lake foreshores
    - Relevant to the New Lake Foreshore (A3)
- **Slopes**: woodlands occurring on flat to gently undulating slopes
    - Relevant to lower slopes of the WREs (A4) and select enhancement and offset areas
- **Hills:** woodlands occurring on low ridges, hills and elevated land
    - Relevant to upper slopes and top surfaces of the WREs (A5) and select enhancement and offset areas
- **Grasslands**: cleared native grasslands, occurring on flat to gently undulating slopes
    - Relevant to infrastructure areas (A1) and slopes of the IWL (A2)

The annual rehabilitation monitoring program was established for the CGO by DnA Environmental in 2010 which incorporated the use of reference sites as benchmarks for revegetation objectives. The monitoring project developed a set of completion criteria for the CGO that complies and is consistent with conditions specified within a range of approval documents and associated Management Plans.

At CGO, a range of Key Performance Indicators (KPI's) have been determined and are quantified by data obtained from replicated reference sites which are representative of the agreed final land use. All ecological performance indicators are quantified by range values measured annually from these reference sites which form upper and lower KPI targets. The same ecological performance indicators are measured in the rehabilitation sites, and these should equal or exceed these values or demonstrate an increasing trend.

These Key Performance Indicators are then further separated into "Primary performance indicators" and "Secondary performance indicators". Primary performance indicators are those chosen as essential completion criteria targets and have been identified as those that will satisfy requirements specifically identified within the EIS and relevant Management Plans. Secondary performance indicators are those that would be desirable to achieve but will not necessarily have an influence on relinquishment requirements. Therefore, please note that not all Performance Indicators are set as primary completion criteria targets. The relationship between approved rehabilitation objectives and proposed completion criteria is summarised in Table 7.

4.1.2 Annual Rehabilitation Monitoring Program

The objective of the annual rehabilitation monitoring program is to evaluate the progress of rehabilitation sites towards fulfilling long-term land use objectives by comparing a selection of ecological targets or completion criteria against non-mining areas of remnant vegetation (reference sites) that are representative of the final land use, landform and vegetation assemblage as previously described.

The monitoring methods adopted to obtain these targets included a combination of Landscape Function Analyses (LFA), accredited soil analyses and an assessment of ecosystem diversity and habitat values using an adaptation of methodologies derived from the Biometric Methodology.

The monitoring methodology has been consistent in all monitoring years and is typically undertaken during spring. Typically, field work and associated reports have been undertaken by Dr Donna Johnston and Andrew Johnston from DnA Environmental. In 2020 - 2022 field surveys were undertaken by Andrew Johnston (DnA Environmental) and Ray Mjadwesch (Mjadwesch Environmental Service Support) and Dr Donna Johnston fulfilled reporting component.

Table 7: Summary of rehabilitation objectives and rehabilitation completion criteria

Spatial Ref.	Final Land Use Domain	Mine Domain	Notes	Vegetation Community	Approved Rehabilitation Objectives	Proposed Completion Criteria	Proposed Indicator(s)	Validation method
A1	Native Ecosystem	Infrastructure Area	All areas not specified below	Grassland/ Scattered Eucalypt Woodland	**Mine site** (as a whole) - Safe, stable and non-polluting. Final landforms designed to incorporate micro-relief and integrate with surrounding natural landforms. Constructed landforms are to generally drain to the final void. Minimise long term groundwater seepage zones. Minimise visual impact of final landforms as far as is reasonable and feasible. **Surface infrastructure** - to be decommissioned and removed, unless Resources Regulator agrees otherwise. Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems. Restore or maintain land capability generally as described in the EIS. **Stopes** - Backfilled with paste fill material. Safe and stable. Negligible surface subsidence in the long term. **Box Cut** - Backfilled and rehabilitated **Community** - Ensure public safety. Minimise adverse socio-economic effects associated with mine closure.	Landform suitable for final land use and generally compatible with surrounding topography.	Slope gradient	Annual third-party monitoring against specific performanc e indicators.
						Areas of active erosion are limited.	No. Rills/Gullies. Cross-sectional area of rills.	
						Soil properties are suitable for the establishment and maintenance of selected vegetation species.	pH EC Organic Matter Phosphorous Nitrate CEC ESP	
						Landform is stable and performing as it was designed to do.	LFA Stability. LFA Landscape organisation	
						Vegetation contains a diversity of species comparable to that of the local remnant vegetation.	Diversity of shrubs and juvenile trees. Total species richness. Native species richness. Exotic species richness.	
						Vegetation contains a density of species comparable to that of the local remnant vegetation	Density of shrubs and juvenile trees.	
						The vegetation is comprised by a range of growth forms comparable to that of the local remnant vegetation.	No./area of trees, shrubs, sub-shrubs, herbs, grasses, reeds, ferns, aquatic, vine, and parasite.	
						Landform is ecologically functional and performing as it was designed to do.	LFA Infiltration. LFA Nutrient recycling.	
						Ground layer contains protective ground cover and habitat structure comparable with the local remnant vegetation.	Litter cover. Annual plants. Crytogram cover. Log. Bare ground. Perrenial plant cover	

							(<0.5m). Total Ground Cover.	
						Vegetation contains a diversity of species per square meter comparable to that of the local remnant vegetation.	Native understorey abundance. Exotic understorey abundance.	
						Native ground cover abundance is comparable to that of the local remnant vegetation.	Percent ground cover provided by native vegetation <0.5m tall.	
						The vegetation is maturing and/or natural recruitment is occurring at rates similar to those of the local remnant vegetation.	Shrubs and juvenile trees 0 - 0.5m in height. Shrubs and juvenile trees 0.5 - 1m in height. Shrubs and juvenile trees 1 - 1.5m in height. Shrubs and juvenile trees 1.5 - 2m in height. Shrubs and juvenile trees >2m in height.	
						The vegetation is developing in structure and complexity comparable to that of the local remnant vegetation.	Foliage cover 0.5 - 2 m. Foliage cover 2 - 4 m. Foliage cover 4 - 6 m. Foliage cover >6m.	
						Vegetation contains a diversity of maturing tree and shrubs species comparable to that of the local remnant vegetation.	Tree diversity.	
						Vegetation contains a density of maturing tree and shrubs species comparable to that of the local remnant vegetation.	Tree density. Average dbh.	
						The vegetation is in a condition comparable to that of the local remnant vegetation.	Live trees. Healthy trees. Medium health. Advanced dieback. Dead trees. Mistletoe. Flowers/fruit Trees. Hollow trees.	
A2	Native Ecosystem	Tailings Storage Facility	IWL	Eucalypt Woodland	Safe, stable and non-polluting. Final landforms designed to incorporate micro-relief and integrate with surrounding natural landforms.	As above.	As above.	As above.

					Constructed landforms are to generally drain to the final void. Minimise long term groundwater seepage zones. Minimise visual impact of final landforms as far as is reasonable and feasible. Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems. Restore or maintain land capability generally as described in the EIS. Ensure public safety. Minimise adverse socio-economic effects associated with mine closure.			
A3	Native Ecosystem	Water Management Area	Dams	Grassland/ Scattered Eucalypt Woodland	Safe, stable and non-polluting. Final landforms designed to incorporate micro-relief and integrate with surrounding natural landforms. Constructed landforms are to generally drain to the final void. Minimise long term groundwater seepage zones. Minimise visual impact of final landforms as far as is reasonable and feasible. Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems. Restore or maintain land capability generally as described in the EIS. Ensure public safety. Minimise adverse socio-economic effects associated with mine closure.	As above.	As above.	As above.
A3	Native Ecosystem	Water Management Area	New Lake Foreshore	Riverine Woodland/ Freshwater Communities	Safe, stable and non-polluting. Final landforms designed to incorporate micro-relief and integrate with surrounding natural landforms. Constructed landforms are to generally drain to the final void. Minimise long term groundwater seepage zones. Minimise visual impact of final landforms as far as is reasonable and feasible. Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems. Restore or maintain land capability generally as described in the EIS. Ensure public safety. Minimise adverse socio-economic effects associated with mine closure.	As above.	As above.	As above.
A4	Native Ecosystem	Overburden Emplacement Area	NWRE, SWRE, PWRE	Eucalypt Woodland	Safe, stable and non-polluting. Final landforms designed to incorporate micro-relief and integrate with surrounding natural landforms.	As above.	As above.	As above.

					Constructed landforms are to generally drain to the final void. Minimise long term groundwater seepage zones. Minimise visual impact of final landforms as far as is reasonable and feasible. Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems. Restore or maintain land capability generally as described in the EIS. Ensure public safety. Minimise adverse socio-economic effects associated with mine closure.			
F3	Water Management Areas	Water Management Area	UCDS and sediment dams	NA	Safe, stable and non-polluting. Final landforms designed to incorporate micro-relief and integrate with surrounding natural landforms. Constructed landforms are to generally drain to the final void. Minimise long term groundwater seepage zones. Minimise visual impact of final landforms as far as is reasonable and feasible. Restore or maintain land capability generally as described in the EIS. Ensure public safety. Minimise adverse socio-economic effects associated with mine closure.	Solid foundations which are stable with extensive ground cover and free from Erosion/Wash outs	TBD	TBD
J5	Final Void	Active Mining Area (Open cut void)	E42 Pit	NA	**Final Void** - Minimise, to the greatest extent practicable, the size and depth of final void, the drainage catchment of final void, the risk of flood interaction for all flood events up to and including the Probable Maximum Flood. To be permanently separated from Lake Cowal by the Lake Protection Bund. Highwall to be long-term stable. Minimise the ongoing runoff from clean areas into the final void. Ensure public safety. Minimise adverse socio-economic effects associated with mine closure.	TBD	TBD	TBD

4.2 Rehabilitation objectives and rehabilitation completion criteria – stakeholder consultation

Rehabilitation objectives and completion criteria have been developed for each domain based on the relevant Development Consent, ML conditions and the rehabilitation objectives presented in the initial EIS and subsequent modifications developed for the CGO. A summary of relevant historical stakeholder engagement is available at https://evolutionmining.com.au/cowal/.

The rehabilitation objectives and completion criteria will ultimately be subject to further consultation with relevant regulatory authorities and key stakeholders, including surrounding landholders and the Community Environmental Monitoring and Consultative Committee (CEMCC). As required by SSD 10367 condition A11 and DA 14/98 Condition 9.1(d)(i), the CEMCC comprises an independent chair, one representative of each of the BSC, Forbes Shire Council and Lachlan Shire Council, a representative of the Wiradjuri Condobolin Corporation, a representative of the Lake Cowal Foundation, two Evolution representatives and four community representatives including one from the Lake Cowal Landholders Association.

The CEMCC will continue to provide opportunities for members of the community to attend CEMCC meetings to discuss specific issues relevant to them (including rehabilitation related issues). This will be achieved by landholders making a request to the CEMCC regarding a particular issue, or by the landowner registering a complaint in the complaints register. Landowners who register complaints will be invited to join in discussion of the issue at the next CEMCC meeting. Items of discussion at these meetings will include (but not be limited to) mine progress, rehabilitation activities, environmental monitoring reporting, complaints, and any environmental assessments undertaken.

Targeted stakeholder engagement activities been included in V1 of the Forward Program (FY23-FY25), including extensive review and planning for future projects. Relevant stakeholder groups are summarised in Table 8.

Table 8: Summary of relevant stakeholder groups

Stakeholder	Type of Consultation	Relevant Matters
NSW Resources Regulator	Targeted	Rehabilitation regulation
NSW Department of Planning and Environment	Targeted	DA 14/98 SSD 10367
NSW Environment Protection Authority	Targeted	EPL 11912
Heritage NSW in the Department of Premier and Cabinet	Targeted	Heritage management
Water Division within the Department (DPI Water)	Targeted	Water management
NSW Biodiversity, Conservation and Science Directorate within the Department (BCS)	Targeted	Biodiversity management
NSW Department of Primary Industries Fisheries (DPI Fisheries)	Targeted	Aquatic ecology and regional commercial fishing interests
NSW Department of Primary Industries – Agriculture (DPI Agriculture)	Targeted	Regional agricultural interests
Commonwealth Department for Agriculture, Water and Environment	Targeted	Matters of National Environmental Significance
Local landholders	Targeted	Local interest and post-mining land-use

CEMCC	Targeted	All matters relating to community and environmental interests
Federal Minister	Targeted	Matters relevant to the Division of Riverina
State Minister	Targeted	Matters relevant to the Cootamundra Electorate
Other relevant local MPs	Targeted	Matters of regional interest
Bland Shire Council	Targeted	Matters of regional interest
Lachlan Shire Council	Targeted	Matters of regional interest
Forbes Shire Council	Targeted	Matters of regional interest
Lake Cowal Foundation	Targeted	All matters relating to community and environmental interests
Wiradjuri Condobolin Corporation	Targeted	Heritage management
West Wyalong Local Aboriginal Land Council	Targeted	Heritage management
General community members and groups	General	Matters of local and regional interest

5 PART 5 – FINAL LANDFORM AND REHABILITATION PLAN

5.1 Final landform and rehabilitation plan – electronic copy

Refer to **Figure 4**.

6 PART 6 – REHABILITATION IMPLEMENTATION

6.1 Life of mine rehabilitation schedule

The current approved Life of Mine (LOM) rehabilitation schedule for FY24-FY25 has been outlined in V1 of the Forward Program. Remaining surface facilities are currently required for the remaining operational life of the mine. The outcome of the feasibility study for the proposed Open Pit Continuation project will inform the development of a detailed schedule for the LOM. Salvaging and maintenance activities for rehabilitation resources (e.g. topsoil and capping materials), further technical studies and design modifications will continue to be conducted throughout the LOM.

6.2 Phases of rehabilitation and general methodologies

The sequence of actions required to rehabilitate disturbed areas to achieve the final land use at the CGO have been classified into conceptual stages referred to as phases of rehabilitation. These phases are:

- active mining
- decommissioning
- landform establishment
- growth medium development
- ecosystem and land use establishment
- ecosystem and land use development
- rehabilitation completion (sign-off).

6.2.1 Active mining phase

In accordance with Development Consent Condition 2.4(b), rehabilitation of final landforms or disturbed areas will be undertaken progressively as soon as reasonably practicable following disturbance. Progressive rehabilitation will aim to minimise erosion and sedimentation potential and to minimise visual impacts of CGO landforms.

Details of progressive rehabilitation works are detailed in the CGO Rehabilitation Reform Forward Program in accordance with the requirements of NSW Rehabilitation Reform Guidelines (Section 2.4) and the Conditions of Authority for ML 1535 (Section 2.2). The status of progressive rehabilitation works will be reported annually within the CGO's Annual Review (Section 9.2).

Interim rehabilitation measures that will be implemented to minimise the area exposed for dust generation will include the topsoiling and establishment of a cover crop on landforms/areas and on long-term soil stockpiles to minimise area exposed for dust generation. Rock mulch will also be applied as soon as practicable following the completion of landform shaping to minimise the potential for windblown dust from the surface waste rock and to reduce the potential for soil erosion from rainfall. Furthermore, following re-profiling works and rock mulch and topsoil application, area's will be deep ripped and native pasture hay (or clean wheaten hay) may be applied on areas where the initial cover crop has not yet established to assist with stabilising and minimising the loss of topsoil resources.

In addition to these measures, the safeguards and dust mitigation controls described in the CGO's Air Quality Management Plan will be implemented to minimise dust generated from exposed areas and from general mining activities.

a. Soils and materials

The protocols, strategies and objectives for management of the soil resources are detailed in the Soil Stripping Management Plan (SSMP). Key protocols include:

- characterisation of the suitability of material for rehabilitation works prior to stripping;
- stripping and storing soil resources selectively according to their suitability for rehabilitation purposes;
- providing sufficient subsoil and topsoil resources for rehabilitation purposes;
- progressively rehabilitating final landforms as soon as practical once constructed to final landform design; and
- stripping and storing soil resources in such a manner that their long-term viability is maintained.

Rehabilitation materials (e.g. rock mulch and topsoil) on the existing tailings storage facility embankments may be stripped prior to buttressing of the embankments if integrity of walls is not compromised by seepage. The stripped rehabilitation materials would then be either directly transferred to a new rehabilitation area or stockpiled proximal to the tailings storage facilities for use during final rehabilitation activities.

The currently approved general protocol for management of stockpiled soils includes soil handling measures that optimise the retention of soil characteristics (in terms of nutrients and micro-organisms) favourable to plant growth. The SSMP protocol includes:

- leaving the surface of the completed soil stockpiles in a “rough” condition to help promote water infiltration and minimise erosion prior to vegetation establishment;
- deep ripping soil stockpiles and seeding (if necessary) to maintain soil organic matter levels, soil structure and microbial activity; Cowal Gold Operations – Rehabilitation Management Plan 870437 42 Evolution Mining (Cowal) Pty Limited
- treating soil stockpiles with gypsum to reduce dispersiveness during stockpiling;
- installing signposts for all soil stockpiles with the date of construction and type of soil; and
- recording details of all soil stockpiles on a site database which includes the location and volume of each stockpile and the stockpile maintenance records (e.g. ameliorative treatment, weed control, seeding).

Where practicable, soil will be stripped from one area and immediately transferred to an active rehabilitation area for direct placement. Long-term topsoil stockpiles will be constructed up to 3 m in height with slopes at a maximum acceptable angle to resist erosion. Subsoil stockpiles vary in height as determined by storage volumes and available space within approved disturbance areas.

Following construction and if adequate unassisted revegetation has not occurred, soil stockpiles will be sown with suitable annual or select grass and legume species to maintain soil condition for future revegetation/rehabilitation works, minimise erosion and discourage opportunistic weed growth.

Soil stockpiles will be inspected by the Sustainability Manager or their delegate on an annual basis, with regard to vegetation cover, weed and erosion and sedimentation issues. The following soil stockpile maintenance procedures identified in the SSMP will be conducted where ongoing monitoring indicates the need:

- fertiliser or gypsum application;
- additional erosion control and stabilisation;
- re-sowing of seed mix; and
- weed control as necessary.

Further details of soil stockpile management and soil replacement during rehabilitation are provided in the SSMP. The strategies and measures described above and in the SSMP are considered generally in accordance with the erosion and sediment control strategies and techniques in the Department of Environment and Climate Change (DECC) (2008) guideline Managing Urban Stormwater – Soils and Construction Volume 2E Mines and quarries.

A soil inventory will be maintained to track soil resource stocks available for rehabilitation. Details of estimated soil resource accounting (availability and requirements for rehabilitation) would continue to be detailed in the CGO rehabilitation framework.

b. Flora

Numerous flora surveys and studies have been conducted within the project area and the broader Lake Cowal catchment prior to, and since, construction of the CGO.

Australian Museum Business Services (AMBS) (2012) conducted a large flora study covering ML 1535, surrounding Evolution-owned land and local Crown reserves (consolidating the results from all past flora surveys) within the Cowal Gold Mine and Surrounds Flora Survey report (AMBS, 2012).

AMBS (2012) identified the following nine native vegetation communities in the ML area and surrounds and two other relevant vegetation mapping units:

- Community 1: Weeping Myall – Belah – Poplar Box Shrubland and Woodland;
- Community 2: Spear Grass – Windmill Grass Grassland and Low Open Grassy Woodland;
- Community 3: Inland Grey Box – Belah – Poplar Box Woodland;
- Community 4: Mugga Ironbark – Dwyer's Red Gum – White Cypress Pine Woodland;
- Community 5: Wallaby Grass – Spear Grass - Windmill Grass Grassland;
- Community 6: Coolah Grass – Blue Grass Grassland;
- Community 7: Sedgeland/Herb field;
- Community 8: River Red Gum Woodland and Forest ;
- Community 9: Dwyer's Red Gum – Black Cypress Pine Woodland;
- Community 10: Cultivated Land; and
- Community 11: Plantings.

One threatened flora species has been recorded in the ML area. Pilularia novae-hollandiae (Austral Pillwort) has been recorded from gilgai areas within ML 1535, to the north and south of ML 1535 and in the region external of the ML (Bower, 2003; DnA Environmental,2022; EMM,2023). Known and potential habitat resources for P. novae-hollandiae exist in gilgai areas and along the lake shore within the CGO area and immediate surrounds.

No threatened flora species were found during field surveys conducted by AMBS (AMBS, 2012).

A Vegetation Clearance Protocol (VCP) has been developed for the CGO, and is outlined in the Flora and Fauna Management Plan (FFMP). The VCP includes a preliminary habitat assessment that involves the inspection of all trees and potential habitat features located within proposed disturbance areas for features with the potential to provide roosting and/or nesting resources for birds, bats and arboreal mammals (e.g. hollows, openings, cracks and/or loose bark).

In the event that any threatened species are observed during the preliminary or secondary habitat assessments, the Threatened Species Management Protocol (TSMP) will be initiated. The TSMP (and associated Threatened Species Management Strategies) are described in detail in the FFMP.

Where practicable, vegetation clearance operations will be managed to maximise the re-use of cleared vegetative material and habitat resources/features. Habitat resources/features such as logs and hollows will be clearly marked (with flagging tape or similar) for salvage/relocation in the CGO's rehabilitation programme (or for use within the CGO's Rehabilitation, off0set enhancement areas or RVEP areas). Vegetative material unsuitable for the rehabilitation programme or for habitat enhancement may be mulched and stockpiled.

Controlling Weeds

Weeds will be managed at the CGO in accordance with measures described in Section 6 of the LMP (and Section 9.8 of the FFMP and Section 4.3.5 of the BOMP). The weed management programme is aimed at minimising the possibility of new weed incursion and controlling the spread of any existing noxious weeds on-site and on all Evolution-owned land.

The weed management programme described in the LMP includes the following measures:

- identification of weeds by annual site inspections and recording weed presence in an annual weed survey report;
- communication with other landholders/leaseholders and regulatory authorities to keep weed management practices in line with regional weed control activities;
- mechanical removal of identified noxious weeds and/or the application of approved herbicides in authorised areas (herbicide use in wetland areas will be strictly controlled);
- implementing follow-up site inspections to determine the effectiveness of the weed control measures; and
- where practicable, prevention of the establishment of new weeds on Evolution-owned land by minimising seed transport of weed species (measures may include the use of a vehicle hygiene/wash down procedures).

The CGO's rehabilitation monitoring programme includes monitoring and recording weed presence within the rehabilitation areas. Rehabilitation monitoring results will be detailed in an annual rehabilitation monitoring report, and any weed control measures conducted will be reported in the Annual Review. Contingency measures or remedial works such as supplementary seeding or planting will be implemented where rehabilitation monitoring indicates significant revegetation damage or failure due to weed infestation.

Rehabilitation monitoring at the approved CGO also evaluates floristic diversity and documents the presence of exotic plant species in the rehabilitation areas. If present, weed incursion is recorded and control measures implemented where necessary.

In addition, an annual weed survey is also conducted across ML 1535 and all Evolution-owned lands which includes a detailed description of any weeds present, its location (including a photographic record) and recommended management/control measures. The weed survey includes inspections of the CGO's soil stockpiles. Should any significant weed infestations of soil stockpiles be identified, appropriate maintenance/control measures will be undertaken (e.g. spraying or manual removal). Any maintenance measures conducted will be recorded in the CGO soil stockpile register.

As described in Section 7.2 of the CWMP, the use of herbicides in the Compensatory Wetland will be strictly controlled. Within these areas, physical removal methods will be employed, where practicable. Where physical control methods are not suitable, a herbicide registered for use in aquatic situations by the Australian Pesticides and Veterinary Medicines Authority will be utilised.

c. Fauna

CGO is located in the central north-west of the NSW South Western Slopes Bioregion and also within the Eyrean zoogeographic region.

Fauna Surveys and Studies

Fauna in ML 1535 and the broader Lake Cowal catchment has also been well documented as described in the Cowal Gold Mine Extension Modification Environmental Assessment (Barrick, 2013). Thirteen fauna surveys undertaken in ML 1535 and the broader Lake Cowal catchment prior to commencement of the CGO (i.e. between 1969 and 2004). During the operation of the CGO, fauna species have been recorded during the following activities:

- waterbird monitoring (1989 – present);
- fauna species recorded within ML 1535 during operations (2005 – present);
- pre-clearance fauna surveys within ML 1535 (between 2005 and 2017); and
- monitoring of daily and seasonal fauna usage of the TSFs within ML 1535 (2006 and 2017).
- Pre Modification approval EIS studies.

Waterbird monitoring has been undertaken at Lake Cowal three times a year since 1989. This monitoring is undertaken by Professor Peter Gell (Federation University) and the substantial dataset has been consolidated by the AMBS (2018). Fish and aquatic habitat surveys when Lake Cowal is inundated, have been undertaken in Lake Cowal by frc environmental (2011, 2012, 2016 and 2017,).

Fauna Habitat

Four broad habitat types occur within the CGO region, as shown in Table 9.

Table 9: Broad Fauna Habitat Type (Kerle, 2013)

Broad Fauna Habitat Type	Description	Related Native Vegetation Community
Western Slopes Grasslands Habitat	This habitat type is widespread and is a result of past land clearance. The native grasslands and scattered trees provide some fauna habitat resources.	Spear Grass – Windmill Grass Grassland
Riverine Plain Woodlands Habitat	This habitat type is isolated within the landscape.	Weeping Myall – Belah – Poplar Box Shrubland and Woodland
Inland Floodplain Swamps Habitat	This habitat type is present in localised drainage lines through the derived native grassland.	Sedgeland/Herbfield
Cultivated Land	Cultivated land provides minimal habitat as it consists of a groundcover which is predominantly introduced flora species.	

Threatened Fauna Species

The Threatened Species Assessment undertaken for the Cowal Gold Mine Extension Modification (Kerle, 2013) listed fourteen threatened fauna species that have been recorded within or near ML 1535 (Table 10). It should be noted that such observations were made during past surveys, under conditions which are now very different from that existing in the developed mining site in 2013 (Barrick, 2013).

The Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*) is the only threatened fauna species to have been recorded within the CGO area during surveys undertaken for the Cowal Gold Mine Extension Modification (Barrick, 2013) (Table 10). This species is relatively

common in the landscape (Kerle, 2013). Targeted surveys for the Grey-crowned Babbler (eastern subspecies) have shown that the population extends into habitat in the wider area (outside of ML 1535) (Barrick, 2013).

The potential habitat present in the CGO area for waterbirds (Magpie Goose, Freckled Duck, Bluebilled Duck and Curlew Sandpiper) is very marginal (such as mature trees for some species and low-lying areas that have the potential to become inundated following heavy rainfall) (Barrick, 2013). Similarly, low-lying areas may occasionally provide potential habitat for the Sloane's Froglet. However, the Sloane's Froglet has not been found in the past 19 years despite surveys including targeted searches in 2011 by Cenwest Environmental Services (2011), in 2012 by Kerle (2013) (Barrick, 2013) and surveys conducted by AMBS post 2013.

With the exception of the Grey-crowned Babbler (discussed above), the other woodland birds (Major Mitchell's Cockatoo, Bush Stone-curlew and Superb Parrot) have only been occasionally recorded at the CGO (one or two occasions since 2003) (Barrick, 2013). The potential habitat in the CGO area is considered to contain sub-optimal habitat resources for these species compared to more suitable habitat resources located outside of the CGO area (Barrick, 2013).

The potential habitat present in the CGO area for birds of prey (Square-tailed Kite and Little Eagle) is very limited compared to the larger areas of potential habitat in the surrounding locality (Barrick, 2013)

Table 10: Threatened Fauna Species

Scientific Name	Common Name	Conservation Status	
		Former TSC Act	EPBC Act
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	V	-
Crinia sloanei	Sloane's Froglet	V	-
Anseranas semipalmata	Magpie Goose	V	-
Stictonetta naevosa	Freckled Duck	V	-
Oxyura australis	Blue-billed Duck	V	-
Calidris ferruginea	Curlew Sandpiper	E	-
Lophoictinia isura	Square-tailed Kite	V	-
Hieraaetus morphnoides	Little Eagle	V	-
Lophochroa leadbeateri	Major Mitchell's Cockatoo*	V	-
Burhinus grallarius	Bush Stone-curlew	E	-
Polytelis swainsonii	Superb Parrot	V	V
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat		
Nyctophilus corbeni	Corben's Long-eared Bat		
Chalinolobus picatus	Little Pied Bat		
Vespadelus baverstocki	Inland Forest Bat		

Critical Habitat

No critical flora or fauna habitat occurs within the vicinity of the Cowal Gold Mine Extension Modification area or eastern pump station as designated by the Register of Critical Habitat held by the Director-General of the OEH (2013), the Register of Critical Habitat held by the Director-General of the DPI (Fishing and Aquaculture) (2013) or identified within the Bland LEP 2011.

Introduced Flora and Fauna Species

Two noxious weeds listed under the NSW Noxious Weeds Act, 1993 for the Bland LGA have been previously observed in the Modification area or similar adjacent habitat, namely, the African Boxthorn and the Bathurst Burr (Cowal Gold Mine Extension Modification Threatened Species Assessment

[Barrick, 2013]. A total of eight introduced fauna species have been recorded within ML 1535 since 2005. These species include the Common Starling, European Red Fox, European Rabbit, Feral Cat, Brown Hare, House Mouse, European Cattle and Sheep. European Cattle and Sheep are now excluded from ML 1535.

d. Rock/overburden emplacement

Northern and Southern Waste Rock Emplacements

The northern waste rock emplacement has been designed to contain the majority of the waste rock generated from the CGO. The northern waste rock emplacement and the southern waste rock emplacement are located to the north-west and south-west of the open pit, respectively (Figure 2). The approved maximum height of the northern waste rock emplacement is 308 m AHD, and the approved maximum height of the southern waste rock emplacement is 283 m AHD. The outer batters of the northern and southern waste rock emplacements are designed to have a final profile with an overall 1 vertical (V):5 horizontal (H) slope.

The mine waste rock emplacements have been designed to meet the long-term goal of directing potential seepage generated from waste rock emplacement areas during operation and post-closure toward the open pit. This has involved construction of a low permeability basal layer for the waste rock emplacements, which slopes towards the open pit and would provide drainage control (i.e. the base drainage control zone). Waters permeating through the waste rock emplacements would be intercepted by this low permeability layer and ultimately flow to the open pit.

In accordance with EPL 11912 for the CGO, the waste rock emplacement base drainage control zones have been designed with a minimum slope towards the open pit of 1(V):200(H). The northern waste rock emplacement also contains segregated mineralised material and temporary ROM pad areas.

Perimeter Waste Rock Emplacement

The perimeter waste rock emplacement has been constructed to surround the open pit to the north, east and south (Figure 2). The perimeter waste rock emplacement forms part of the series of embankments (i.e. TIB and LPB) between the open pit and Lake Cowal. The perimeter waste rock emplacement is located behind the LPB and has been constructed from mined oxide waste rock. The approved maximum height of the perimeter waste rock emplacement is 223 m AHD. Evolution regularly reviews the factors of safety appropriate for the long-term stability of the perimeter waste rock emplacement. These factors are incorporated into the design and development of the perimeter waste rock emplacement as appropriate.

e. Waste management

Waste management practices are carried out in accordance of the Hazardous Material Management Plan (HMMP) and in line with state regulations considering the following:

- potential statutory considerations and Australian Standards;
- dangerous goods, hazardous wastes and chemicals;
- potential impacts from dangerous goods, hazardous waste or chemicals during transport, storage, use and disposal;
- appropriate transport, storage, handling, disposal and recycling for wastes generated at the CGO site;
- appropriate emergency response procedures in the event of spillages;

- contingency plans for transporting accidents on route to the CGO area as negotiated with the transport or supplying company; and
- regular maintenance of both a hazardous substances and fuel and oil register.

In accordance with best practice environmental management and the Hazardous Materials Management Plan (HMMP), all raw materials/consumables brought on-site for use at the CGO are recorded in an Inventory Register (the Chemalert system). Safety Data Sheets (SDSs) for all chemicals are included in the Chemalert system.

Recyclable Domestic Waste

Recyclable domestic waste from office buildings and workforce areas (e.g. clean office paper, cardboard, aluminium cans, etc.) is separated and collected regularly and managed by waste disposal contractors. Where recycling is not practicable, these wastes are disposed of off-site at the West Wyalong landfill facility.

Putrescible and Non-Putrescible Waste

General solid (putrescible) waste and general solid (non-putrescible) waste as defined in the Waste Classification Guidelines Part 1: Classifying Waste (EPA, 2014) [the Waste Guidelines]) are disposed of off-site at the West Wyalong landfill facility.

The Waste Guidelines (EPA, 2014) provide the assessment and classification procedure for special, liquid, hazardous, restricted solid, general solid (putrescible) and general solid (non-putrescible) wastes. Guidance is provided in Part 1: Classifying Waste of the Waste Guidelines (EPA, 2014) on the waste classification process, including the chemical assessment of waste to determine its classification, where required.

The Waste Guidelines assist those involved in the management, treatment and disposal of waste to ensure the environmental and human health risks associated with the waste are managed appropriately in accordance with the POEO Act and its associated regulations (EPA, 2014).

Bioremediation Waste

Site-generated hydrocarbon-impacted material (general solid [putrescible] waste) may be treated in the on-site Bioremediation Facility prior to being stockpiled (depending on hydrocarbon content). Results of Bioremediaton trials and EPA approval, allows treated soils (provided test results fall below recommended hydrocarbon limits) to be disposed in the waste emplacements where they will be covered by waste rock away from outer batters to prevent any potential seepage risk.

Waste Tyres

Used Large truck tyres (special waste) generated on-site may be disposed of in the waste rock emplacements. Interstate disposal of used tyres are treated as an EPA-tracked waste. Generally, tyres are re-used around site for demarcation or to create barriers.

Sewage Treatment and Effluent Disposal

Sewage is treated in the on-site sewage treatment plant and is disposed of in a manner to the satisfaction of the Bland Shire Council (BSC) and the EPA, and in accordance with the requirements of the NSW Ministry of Health.

f. Geology and geochemistry

Waste Rock

Waste rock geochemistry investigations have been conducted for the waste rock mined at the CGO, which have classified waste rock as NAF.

As the waste rock is typically NAF, no specific acid rock drainage management measures have been required at the CGO. However, due to the potential for saline seepage occurring from the waste rock emplacements, the waste rock emplacements have been constructed to direct any permeating waters towards the open pit.

A Rock Armour Suitability Geochemical Assessment for the Cowal Gold Mine was conducted by GEM in 2008, 2016 and 2020 to assess the suitability of the CGO's oxide and primary waste rock for use as rock armouring on CGO landform slopes.

The main findings of the assessment indicated (GEM, 2008b):

- The oxidised waste rock typically contains low sulphur and low acid neutralising capacity (ANC) and in terms of acid generation these materials are likely to be benign. However, a large proportion of the oxidised waste (70 %) is likely to be saline.
- All of the primary waste rock types are typically non-saline.
- The primary waste rock contains reactive sulphides; due to their moderate to high Acid Neutralising Capacity, all of the primary waste rock types are expected to be NAF.

The majority of the waste rock samples assayed were found to be enriched in arsenic, and some of the samples were found to be enriched in cadmium, lead, antimony and zinc. However, water extract testing showed that under the prevailing near-neutral pH condition these elements are not soluble and, provided these pH conditions are maintained, element solubility and release from these materials is not expected to be a concern.

Based on these findings the following recommendations were made (GEM, 2008b):

- Due to the expected salinity of the oxidised waste rock, this material is not suitable for armouring the batter slopes of the waste rock emplacements and tailings storage facilities.
- The primary waste rock is typically non-saline and NAF and the majority of this material is expected to be suitable rock armour material. However, materials with higher reactive sulphide contents (greater than 0.5% sulphur) are likely to present a risk of developing saline conditions when oxidised and these materials should either be excluded from use as rock armour or blended with the lower sulphur material in order to dilute the reactive sulphides.

Conclusions from the Cowal Gold Operations Mine Life Modification Environmental Geochemistry Assessment of Waste Rock and Tailings (GEM, 2016) confirm that the waste rock from the approved pit is geochemically comparable to previous assessment results indicating that management strategies currently in place would not need to be modified. These controls include the exclusion of materials with higher reactive sulphide contents for use on the waste rock emplacements (as rock armouring) to avoid the development of saline conditions (GEM, 2016).

Treatment of Soil Stockpiles

Based on McKenzie Soil Management's recommendations, soil stockpiles will be deep-ripped with gypsum (or lime, or a gypsum-lime blend) and applied at the approximate rates relevant to each soil stockpile (McKenzie Soil Management, 2013).

Based on the results of soil testing, the surface layer of the soil stockpile (up to approximately 1 m deep) will be stripped for rehabilitation use. The new surface of the stockpile will then be deep ripped with gypsum (or other relevant treatment) (at a rate determined from soil testing results). This process will be repeated until all soil within the stockpile has been treated.

Treatment of Soil on Rehabilitation Areas

Gypsum will continue to be applied to soil used on rehabilitation areas. The rate of gypsum application will be based on soil testing results and will consider the prior treatment of the soil (i.e., while stockpiled or if treated within a soil amelioration farm).

Based on McKenzie Soil Management's recommendations, soil re-application activities will include:

- deep-ripping the landform surface to minimise compaction;
- applying coarse grade gypsum at approximately 10 t/ha to rehabilitation areas to provide a prolonged source of electrolyte to minimise dispersion of surface soils for as long as possible and to assist with the revegetation establishment; and
- applying native pasture hay on north and west facing slopes to protect the surface soil and provide slow-release nutrients to encourage native plant growth.

g. Material prone to spontaneous combustion

No materials prone to spontaneous combustion are located within the CGO mine area and therefore there is no risk of any, or previous occurrences of spontaneous combustion. This is referred to in the Hazardous Materials Management Plan. Therefore, there are no key management measures relevant to rehabilitation of areas where there is material prone to spontaneous combustion.

h. Material prone to generating acid mine drainage

The waste rock materials (weathered rock, oxide and primary rock) excavated by CGO activities have been assessed for their geochemical properties and suitability for reclamation purposes. Primary Waste Rock is defined as the unweathered, mined volcanic waste rock from the pit. Oxide Waste Rock is defined as the weathered rock and hard oxidised volcanic/saprolitic material mined from the pit. Following is the current understanding of the characteristics of the waste rock types that occur at the CGO. Results of geochemical testing on waste rock indicate (GEM, 2009; 2013, 2016, 2018):

- the oxide waste rock is generally expected to have a near-neutral pH and to be moderately to highly saline and moderately to highly sodic, and the primary waste rock is generally expected to be slightly alkaline, and non-saline and non-sodic;
- all waste rock types are expected to be non-acid forming (NAF) with the oxide waste rock being geochemically barren (i.e. low sulphur and low acid neutralising capacity [ANC]) and the primary waste rock being slightly more reactive (i.e. elevated sulphur and ANC);
- under the near neutral pH condition of the exposed waste rock, these and any other environmentally important elements will remain insoluble.

Although the waste rock characterisation assessment conducted for the CGO has predicted waste rock will be non-acid forming, the potential for saline seepage occurring was identified. The design and construction of the waste rock emplacements has been conducted to facilitate the direction of any permeating waters towards the open pit or internal drainage system reporting to internal dams.

Specific to rehabilitation, GEM prepared a Rock Armour Suitability Geochemical Assessment for the Cowal Gold Mine (GEM, 2008) to assess the suitability of the CGO's oxide and primary waste rock for use as rock armouring on CGO landform slopes.

The main findings of the assessment indicated (GEM, 2008):

- The oxidised waste rock typically contains low sulphur and low ANC and in terms of acid generation these materials are likely to be benign. However, a large proportion of the oxidised waste (70 %) is likely to be saline.
- All of the primary waste rock types are typically non-saline.
- The primary waste rock contains reactive sulphides, however, due to their moderate to high ANC, all of the primary waste rock types are expected to be NAF.

i. Ore beneficiation waste management (reject and tailings disposal)

Tailings are delivered from the process plant via a pipeline (located within the Service Corridor) to the IWL, located approximately 3 km west of the Lake Cowal shoreline.

The IWL was developed to facilitate the storage of tailings over the life of mine in a landform which encompasses the previous TSFs and integrates with the northern waste rock emplacement. The IWL has been designed to maximise the recovery and re-use of water entrained in tailings, optimise storage capacity by maximising tailings density, increase the efficiency of mine waste rock removal through use as IWL embankment material and meet long term stability requirements.

As the IWL cells are progressively filled, the embankments will be raised using waste rock stockpiled during mining operations. The IWL embankments are constructed using a mix of clay oxide and primary waste rock material. The required free-board is maintained as the storage fills with tailings via the series of embankment lifts.

Following tailings deposition, supernatant water drains to a central pond and decant return. An underdrainage pipe network has also been installed to facilitate drainage of the tailings mass. The bulk of the water from each tailings storage drains from the surface of the tailings and collects in the central decant area/well.

This water, as well as underdrainage water, is reclaimed and used within the process plant. The decant system is progressively raised during development of the TSFs. Decant causeways across the full width of each TSF are approved, but not yet constructed. Construction of the causeways would allow each of the existing storages to be divided into two cells. However, the existing TSFs are currently scheduled to be eventually encompassed by the IWL.

A number of seepage control measures have been incorporated into the TSFs and IWL, including:

- the pre-stripping of surficial soils beneath each storage footprint;
- construction of a moisture-conditioned and compacted-low-permeability storage floor, where necessary, to achieve permeability criteria;
- excavation of a central cut-off trench along the length of the starter embankment to a nominal 2.5 m below surface level or to the depth of a low-permeability clay layer, and backfilled with compacted and moisture-conditioned low permeability clay;
- installation of an underdrainage and decant network; and
- installation of a seepage drainage system, including perimeter collector pipes on the IWL embankments and sumps at select locations around the toes of the TSFs and IWL.

Seepage measures are progressively implemented and informed by investigations such as geophysical test work, piezometer and groundwater bore installation and monitoring and geotechnical drilling.

Geochemical testing conducted for the EIS (North Limited, 1998) and the recent Mine Life Modification Environmental Assessment (Evolution, 2016) has indicated that the combined oxide and primary tailings are NAF (EGi, 1997; 2004 and GEM, 2009; GEM, 2016 and GEM 2020). The recent test work for the Mine Life Modification indicated that the majority of oxide and primary tailings are enriched with arsenic, cadmium, molybdenum, lead, antimony and zinc; however, under the near neutral pH conditions, none of the contained elements were found to be soluble (GEM, 2016).

Progressive rehabilitation of CGO waste rock emplacements and tailings storage facilities will be undertaken in accordance with the concepts and measures in this RMP (once construction is complete and the area is available for rehabilitation) to reduce the contrast between the CGO landforms and the surrounding landscape. This includes progressive rehabilitation with selected grass, shrub and/or tree species.

Vegetation screens have been planted along sections of the western and northern boundaries of ML 1535 to shield continuous views of the CGO from Lake Cowal Road. The vegetation screens include endemic plants that are compatible with the existing surrounding vegetation.

Regular inspections of the screens will be undertaken and maintenance measures (e.g. replacement of plant losses and/or fertilizer application) conducted where necessary. An increase in screening effect over time as plants grow would continue as a result.

The rehabilitation objectives for the tailings storage facilities are to (Evolution, 2016):

- establish permanently stable landforms;
- during operations, stabilise batters so that they provide minimal habitat value for bird life (i.e. rock mulch or pasture cover);
- post-operations, to establish vegetative communities (including Eucalypt and Riverine Woodland species and understorey species such as Rush species and pasture species) which are suited to the hydrological features and substrate materials of the landform; and
- exclude grazing and agricultural production.

Rehabilitation Cover System

Based on the results of rehabilitation investigations and trials conducted to date (Section 8), the rehabilitation cover system for the tailing storage facilities outer batters will include:

- benign (primary) rock mulch;
- low salinity and gypsum-treated topsoil; and
- a patchwork layer or rows of seed bearing native pasture hay (or clean wheaten hay) may be placed on north and west facing slopes (as these aspects are subject to prevailing conditions).

The rock mulch and topsoil layers will be applied with approximately 10 tonnes per hectare (t/ha) gypsum, followed by seeding with an initial sterile cover crop if required (e.g. Rye Grass) and/or direct seeding with select pasture species and/or planting native and/or endemic shallow-rooted species. A layer (approximately 5 centimetres [cm] deep) of locally harvested seed bearing native pasture hay (or clean wheaten hay) may then be spread on north and west facing slopes to assist soil protection and vegetation establishment.

The top surfaces of the tailings storage facilities would form a low, internally draining landform, with drainage affected by controlled placement of cover materials and a number of shallow swales. The tailings storage facility surfaces would form contained catchments to minimise surface water runoff from the top surface down the batters. The rehabilitation cover system materials for the top surfaces may include a capillary break layer of rock to restrict the upwards migration of tailings salts and a thick layer of gypsum-treated soil to provide for moisture/absorption and storage, and a plant rooting medium.

During operations, the tailings storage facility embankments would be constructed so that they provide minimal habitat value for bird life (i.e. rock mulch or pasture cover only).

Revegetation Concepts

Revegetation of the tailings storage facilities will use a combination of native and/or endemic plant species and pasture species to rapidly stabilise landforms in the initial period following construction (Barrick, 2013a).

Similar to the revegetation concepts for the waste rock emplacements, the revegetation concepts for the tailings storage facilities would include selecting species suited to the hydrological features and substrate materials of the landform and would be based on the results of rehabilitation investigations and trials in consultation with regulatory authorities (Evolution, 2016).

The vegetation growth trials undertaken to date indicate that salt tolerant tree species including Belah (Casuarina cristata), Grey Box (Eucalyptus microcarpa), Bimble Box or Poplar Box (Eucalyptus populnea), Mugga Ironbark (Eucalyptus sideroxylon) and Buloke (Allocasuarina luehmannii) and shrub species including Green Wattle (Acacia deanei), Western Golden Wattle (Acacia decora), Weeping Myall (Acacia pendula), Wedge-leaf Hop-bush (Dodonaea viscose ssp. cuneata) and Nitre Goosefoot (Chenopodium nitrariaceum) may be suitable for revegetation of the tailings storage facility top surfaces (Evolution, 2016).

Post-operations, the tailings storage facilities will be revegetated with plant species that may include (Evolution, 2016):

- In the central, occasionally wet area, planting species such as River Red Gum (Eucalyptus camaldulensis) and understorey species such as Rush.
- On the remainder of the covered storage surface, planting salt tolerant Eucalypt and Riverine Woodland species (which may include Belah, Grey Box, Bimble Box, Mugga Ironbark and Buloke and shrub species including Green Wattle, Western Golden Wattle, Weeping Myall, Wedge-leaf Hop-bush and Nitre Goosefoot).
- On the tailings storage facility embankments, planting species suited to the slope and substrate materials of the embankment.

Rehabilitation trials will continue to be undertaken to determine the most suitable revegetation species for the top surfaces of the tailings storage facilities. Revegetation concepts will consider the results of hydrological modelling predictions for the tailings storage facilities (i.e. plant species will be selected that are suited to the hydrological conditions of the storages such as inundated areas, dry areas and swales).

Revegetation methods for the final rock buttress cover of the tailings storage facilities may include:

- on longer slopes, spreading seed laden topsoil down slope using a dozer; and
- on steeper slopes, either pushing seed laden topsoil over the crest of the slope and/or hydromulching the slope, or mixing seed laden topsoil with rock during placement of the outermost rock buttress material.

Mixing seed through topsoil stocks would be undertaken in parallel with soil stockpile management measures and would involve:

- deep-ripping and applying gypsum to soil stockpiles;
- spraying a pre-emergent or post-emergent herbicide treatment to control Wimmera Ryegrass (Lolium rigidum);
- applying select seed mix to the treated soil surface;
- stripping the surface layer of the soil stockpile (up to approximately 1 m deep); and
- applying the seed laden topsoil to the rehabilitation area.

Evolution proposes to conduct research and implement a trial to investigate the most effective methods for revegetating the final tailings storage facility embankments and determine the species most suited to the final slopes and rehabilitation media.

Revegetation methods for the final rock buttress cover would be described in detail in future rehabilitation management plans, which would be prepared in consultation with the Resources Regulator.

j. Erosion and sediment control

An Erosion and Sediment Control Management Plan (ESCMP) has been developed for the CGO in accordance with Condition 3.5(a) of the Development Consent. The ESCMP details the erosion and sediment control systems in place at the CGO and the programme used to monitor and report on the effectiveness of these systems. The CGO's erosion and sediment control systems include:

- Lake Isolation System;
- UCDS;
- ICDS; and
- other structures including sediment control dams.

The objectives of the ESCMP are to:

- control the movement of sediment and salinity from areas disturbed by mining activities; and
- maintain downstream (Lake) water quality.

In addition, the effectiveness of the erosion and sediment control systems and the performance of those systems will be reported against the objectives for erosion and sediment control which include:

- the protection of Lake water quality (via the separation of flows into the ICDS and the UCDS); and
- the prevention of sediment-laden runoff from the mine site.

The programme for reporting on the effectiveness and performance of the erosion and sediment control systems will include:

- Ongoing monitoring and review of water quality results from the Surface Water, Groundwater, Meteorological and Biological Monitoring Programme (i.e. total suspended solids).
- Reporting of site erosion, sediment and salinity database records and water quality monitoring results in the Annual Review.

The CGO rehabilitation monitoring programme also includes monitoring and reporting of erosion incidence on rehabilitation areas (including erosion type and severity).

k. Ongoing management of biological resources for use in rehabilitation

In accordance with DA 14/98 condition 3.5(b)(i), the general protocol for the management of soil stockpiles is provided below. It includes soil handling measures that optimise the retention of soil characteristics (in terms of nutrients and micro-organisms) favourable to plant growth:

- leave the surface of the completed soil stockpiles in a "rough" condition to help promote water infiltration and minimise erosion prior to vegetation establishment;
- deep-rip soil stockpiles and seed (if necessary) to maintain soil organic matter levels, soil structure and microbial activity;
- treat soil stockpiles with gypsum to reduce dispersiveness during stockpiling;
- install signposts for all soil stockpiles with the date of construction and type of soil; and
- record details of all soil stockpiles on a site database which includes the location and volume of each stockpile and the stockpile maintenance records (e.g. ameliorative treatment, weed control, seeding).

Where practicable, soil is stripped from one area and immediately transferred to an active rehabilitation area for direct placement. This reduces the size of soil stockpiles and optimise soil fertility for rehabilitation.

Following construction, and if adequate unassisted revegetation has not occurred, soil stockpiles are sown with suitable annual or select grass and legume species to maintain soil condition for future revegetation/rehabilitation works to minimise erosion and wind-blown dust and discourage opportunistic weed growth. Soil treatment/amelioration methods undertaken as necessary prior to the use of soil for rehabilitation.

l. Mine subsidence

An assessment of surface deformation due to underground mining and continued mining by Beck Engineering (2020) indicates that surface displacement is potentially modelled to be around 10-15 mm of subsidence and around 25 mm of upsidence. U psidence is where the land surface rises slightly due to elastic deformation effects from removing large volumes of material from the pit. The movement is modelled inwards toward the pit and upwards. These potential movements are consistent with natural ranges of shrink and swell during wetting and drying cycles.

The assessment also identified stoping on the upper levels of the underground mine near major faults could result in potential unravelling and chimney type failure to the surface if appropriate controls were not in place. CGO modified the underground mine design to not mine any stopes above 80m AHD. All stopes will be filled with cemented pastes made from CGO tailings, using fully supported overhead drives.

As per the requirements of SSD 10367, a Subsidence Monitoring Program is currently being developed and will be implemented prior to the commencement of production during late FY23. A specialist review of the paste fill material performance is also underway and will be completed prior to the commencement of operations.

m. Management of potential cultural and heritage issues

Aboriginal Cultural Heritage

Archaeological surveys and assessments have been conducted in the vicinity of the CGO at various times since 1989. Preliminary archaeological inspections were made at Lake Cowal in 1989 by Paton (Paton, 1989). In 1995, project feasibility studies were approved and detailed archaeological surveys along the lake shore and in the vicinity of the CGO were conducted by Scott Cane and Roley Williams (Wiradjuri Regional Aboriginal Land Council) (Cane, 1995a). Subsequent development planning led to other archaeological surveys of the mine access road, water pipeline and electricity transmission line corridors for the proposed mine (Huys and Johnston, 1995). A further archaeological investigation was conducted in the area west of the Lake later that year by Scott Cane assisted by Roley Williams (Wiradjuri Regional Aboriginal Land Council) and a member of the West Wyalong Aboriginal community (Cane, 1995b).

In 1995, another archaeological survey was undertaken of new locations, including the TSFs, part of the water pipeline, a small road realignment and a new ETL route to the south of the lake (Nicholson, 1997).

A number of additional surveys, conducted by archaeologists Dr Colin Pardoe, Dr Johan Kamminga, emeritus Professor Jim Allen, emeritus Professor Richard Wright, Dr Peter Hiscock, Dr Sally Brockwell, Mr David Johnston and Mr Francis Shawcross, have been undertaken since 2001 in consultation with Aboriginal representatives.

Dr Colin Pardoe prepared a Research Design and Study Plan describing the archaeological works proposed for the CGO, which was attached to the application for Permit 1468 and Permit 1681 under the NPW Act. This plan identifies the following five zones of management within the vicinity of the CGO:

- lake bed zone;
- beach zone;
- slope zone;
- lake edge ridge zone; and
- back plain zone.

Aboriginal heritage sites which occur within ML 1535 and the surrounding area have been registered with the OEH and include sites P1, P2, LC1-LC4 and exposures A-N. These sites range from open scatters (e.g. site P1) to base camps (e.g. site LC2) to a scarred tree. The recorded artefacts associated with these sites include quartz flakes, backed blades and axes. The majority of registered sites within ML 1535 are open scatters with concentrations of quartz flakes. All collected Aboriginal objects are currently retained in a Keeping Place within ML 1535. Isolated scatters and flakes were also identified within ML1791 and transferred to the Keeping Place. However, no heritage sites have been registered with the OEH for ML 1791.

Summaries of the survey results and the registered Aboriginal sites identified in each management zone, as well as permits and consents under Sections 87 and 90 of the NPW Act, are outlined in the CGO's IACHMP.

Conditions of the Section 87 permits and Section 90 consents which are relevant to closure, include the replacement of some Aboriginal objects as close as possible to their original location.

Non- Aboriginal Culture Heritage

No items of non-Indigenous heritage significance were identified in the EIS (North Limited, 1998). Subsequent to the EIS (North Limited, 1998), five items of non-Indigenous heritage items in the CGO area were listed on the Bland Local Environmental Plan (LEP). These items included the 'Cowal West' Homestead, Quarters, Sheds and Stables, and are discussed in the HMP. In 2006, BSC granted development consent for the demolition of the 'Cowal West' Shearer's Quarters and Kitchen. Demolition was required for the construction of contained water storage D9. Demolition of the remainder of the 'Cowal West Homestead Complex' (CWHC) (i.e. the Homestead; Shearing [Wool] Shed and Hayshed) was approved via the March 2010 modification and undertaken during 2011/2012. Management measures for implementation prior to demolition of the CWHC include:

- retrieval and salvage of items of historic uniqueness from the Shearing (Wool) Shed and Hayshed;
- compilation of a photographic record of the Homestead; and
- storage of the salvaged items at the Lake Cowal Conservation Centre (LCCC).

Additionally, an interpretive display has been established at the LCCC in consultation with the Lake Cowal Foundation (LCF), BSC and Bland District Historical Society. The display includes maps, photographs, narrative, and fragments/elements salvaged from the CWHC to illustrate its history.

n. **Exploration activities**

Drilling from the ground level involves minimal disturbance of the ground surface. Site preparation includes slashing the vegetation to a suitable height before moving the drill rig into place. Above-ground sumps and temporary rig bunds are also utilised, and all holes are fully grouted on completion.

6.2.2 Decommissioning

To decommission the CGO Processing Facilities, an approved demolition contractor, who is appropriately skilled and qualified in decontaminating and dismantling cyanide facilities, will be commissioned.

Immediately following plant closure at CGO, the entire plant will be hosed down and cleaned of mud/dust/salt encrustation as far as reasonably practicable. This activity in the cyanide storage and reticulation facilities will pay particular attention to removal of salt encrustation.

Following this the detoxification of the Cyanide Decontamination Area should be undertaken. This area should be assumed to be of high cyanide concentration and cleaned. Following cleaning, the Cyanide Decontamination Area should be demolished and landfilled. In accordance with the HWCMP, any hydrocarbon-contaminated soil will be removed and disposed of offsite at a certified soil remediation facility.

Decommissioning of the crushing circuit involves the removal of all structures. All concrete formwork, foundations and sumps would be broken and landfilled in an approved manner. Barrick (2013) did not anticipate any contaminated soil at the crushing circuit and this is assumed to be similar for Evolution since there is not modification made to the crushing circuit input. The ROM pad will be analysed for gold content, and treated if economically viable. The ROM pad would then be graded, ripped and rehabilitated.

Decommissioning of the processing facilities site should commence with the processing of material in and around the milling and crushing area, including any spillages of slurry and collected ore fines. Once this processing is complete, all slurry should be emptied from the circuit, and all lines flushed using process water.

Once all tanks and pipework have been drained and cleaned, high value equipment such as control rooms, electrical equipment (motors, cabling) and pumps should be removed for re-sale. Any future use plans for the CGO site will determine the requirements for surface preservation and corrosion protection works. However, for the purposes of the DDP, it is assumed that, during the decommissioning of CGO, Evolution will implement the following disposal methods for the steel:

- Low value steel such as cable trays, grid mesh and cladding can be salvaged or removed for landfilling;
- High value steel such as columns and beams can be preferentially salvaged and stockpiled for removal from site; for recycling; and
- High-volume, low-mass steel such as process tanks can be salvaged for reuse if dismantled correctly.

The required clean-up will be of a sufficient standard that no safety hazard is presented to plant dismantling personnel, community or environment. The foundations and floors would be retained if a suitable alternative use is agreed with the department of Planning and Environment. Alternatively, they would be excavated for disposal at the base of the void or landfilled.

Removal and dismantling of the processing facilities at CGO are planned to occur in accordance with typical current gold industry practice, i.e. valuation of plant and equipment followed by auction of significant items at site and dismantling and demolition of remaining plant to concrete level under contract to realise scrap metal value. Market conditions at the time of closure will determine the likely value of the cyanide circuit facilities and the prevailing value of scrap metal.

Surface infrastructure will mostly be decommissioned, dismantled and removed from site, and either transferred to another Evolution operation or sold. In accordance with Development Consent Condition 4.4(b) a Strategy for Decommissioning of the Cowal Gold Operations Water Management Structures has been developed and is incorporated within the CGO WMP. Some infrastructure may, however, be retained and transferred to regional landholders for use following mine closure (e.g. electricity infrastructure, water storages, pipelines, bores and associated pump stations) if agreed between the DRG and the ultimate landholder. For example, should the CGO's bore field infrastructure be retained for local use, the Lake Cowal pipelines would remain in place.

Alternatively, if the borefield infrastructure is not required for local use, the bores would be plugged, capped and decommissioned in accordance with relevant regulatory guidelines, the pump stations would be removed and the pipelines raised and dismantled for recycling.

6.2.3 Domain Rehabilitation Implementation

Consistent with contemporary rehabilitation guidelines and rehabilitation planning best practice, conceptual rehabilitation domains have been developed to guide the CGO rehabilitation programme. The following section outlines how the CGO will implement the remaining rehabilitation phases.

- Domain A1: *Infrastructure Area - Native Ecosystem* (Grassland/Scattered Eucalypt Woodland)
- Domain A2: *Integrated Waste Landform - Native Ecosystem* (Eucalypt Woodland)
- Domain A3: *Water Management Area - Native Ecosystem* (Grassland/Scattered Eucalypt Woodland and Riverine Woodland/Freshwater Communities)
- Domain A4: *Overburden Emplacement Area - Native Ecosystem* (Eucalypt Woodland)
- Domain F3: Permanent *Water Management Areas*
- Domain J5: *Active Mining Area (Open cut void) - Final Void*

Domain A1: Infrastructure Area - Native Ecosystem

Post-operations, the rehabilitation objectives for the infrastructure areas are to:

- remove all infrastructure to ensure the site is safe and free of hazardous materials (unless an alternative arrangement is agreed between Evolution, the ultimate landholder and relevant regulatory authorities); and
- establish vegetative communities (including scattered Eucalypt Woodland species and native and/or endemic pasture species) that are suitable for managed grazing.

Refer to s. 6.2.2. (Decommissioning) for detailed explanation of proposed arrangements.

Domain A2: Integrated Waste Landform - Native Ecosystem

Prior to commissioning of the IWL for tailings storage, the existing NTSF and STSF will continue to be used to store tailings. These final heights of these facilities will be 245 m AHD for STSF Stage 6 and 240.5m AHD for NTSF Stage 6. The IWL will be constructed to a maximum height of 246 m AHD.

Notwithstanding, the approved rehabilitation objectives for the existing TSFs will be applied to the IWL which are:

- to establish permanently stable landforms;
- during operations, stabilise batters so that they provide minimal habitat value for bird life (i.e. rock mulch or pasture cover);
- post-operations, to establish vegetation communities (including Eucalypt and Riverine Woodland species and understorey species such as Rush sp. and pasture species) which are suited to the hydrological features and substrate materials of the top surface of the landform;
- post-operations, to establish vegetation communities (including native and/or endemic Eucalypt Woodland, shrubland and grassland species) similar to those remnants in the surrounding landscape which are suited to the substrate materials and slope of the embankments; and
- to exclude grazing and agricultural production.

The currently approved rehabilitation strategy for the existing TSFs at the completion of processing will also be applied to the IWL and will include the following:

- The decant areas will be allowed to dry and the decant towers permanently capped with fill and/or a concrete plug.
- The underdrains will be grouted.
- The tailings discharge pipes and monitoring systems will be dismantled for re-use or disposal with the bulk of CGO infrastructure.
- The IWL will be fenced during operations to prevent access by terrestrial wildlife, and this fence will remain during rehabilitation and post-mining to exclude grazing and agricultural production.

Domain A3: Water Management Area - Native Ecosystem

The rehabilitation objectives for the contained water storages (i.e. D1 to D10) are to either decommission the infrastructure or retain the infrastructure for local landholder use. Decommissioning of the contained water storages will be undertaken to the satisfaction of the RR. Alternatively, the contained water storages may be retained for local landholder use upon agreement by Evolution and in consultation with the regulatory authorities.

The rehabilitation objectives for the Bland Creek Palaeochannel Borefield, Eastern Saline Borefield and associated pump stations and pipelines are to either dismantle and decommission (i.e. plug and cap) the bores and associated pump stations, or agree to an alternative use with local water users.

In consultation with the CEMCC, the rehabilitation objectives for the infrastructure areas (including the Bland Creek Palaeochannel Borefield bores, Eastern Saline Borefield and associated pump stations and pipelines) will be discussed during the life of the CGO and will be specifically reviewed in consultation with the CEMCC at the commencement of the final year of mine operations.

The New Lake Foreshore comprises the Temporary Isolation Bund, Lake Protection Bund and the first batter of the Perimeter Waste Rock Emplacement. Construction of the lake isolation embankments has been completed and the Temporary Isolation Bund and the Lake Protection Bund have been topsoiled and revegetated with native and exotic grass species and scattered aquatic species such as Lignum, Rush sp., River Cooba and River Red Gums. The outer batter slopes of the Lake Protection Bund have been rock armoured to further protect against wave action from lake level rises.

As described in the approved Rehabilitation and Landscape Management Strategy, the Temporary Isolation Bund is a short-term feature and at the completion of operations is proposed to be reworked (breached) by light machinery (i.e. small excavator and bob cat) when the level of the lake is lower than the bund, to create a series of low mounds (Evolution, 2018a). The mounds will comprise a mixture of inert bund rock and lakebed sediments (Evolution, 2018a).

Once the Temporary Isolation Bund has been reworked during the post-closure phase, the New Lake Foreshore will then comprise the Lake Protection Bund and the first batter of the Perimeter Waste Rock Emplacement.

Rehabilitation of the New Lake Foreshore will be an iterative process and revegetation species will continue to be selected in consideration of:

- Lake Cowal's hydrological regime (wetting and drying cycles);

- species occurring in relevant reference sites (including lake and slope woodland communities);
- species performance during revegetation trials; and
- suitability to substrate conditions.

Subject to these parameters, species may be selected from the following vegetative suites:

• fringing lake vegetation on foreshore batters (i.e. Eucalypt dominated woodland including River Red Gum, River Cooba [Acacia stenophylla], Wilga [Geijera parviflora], Kurrajong [Brachychiton populneus], Green Wattle [Acacia deanei] and Grey Box [Eucalyptus microcarpa]); and

• freshwater habitats (i.e. Foxtail [Austrostipa densiflora], Rush, Cane Grass [Eragrostis australasica] and Lignum).

Domain A4 – Overburden Emplacement Area - Native Ecosystem

The approved rehabilitation objectives for the waste rock emplacements are to (Evolution, 2018a):

- stabilise batter slopes with rock armour (primary waste rock mulch) to control surface water runoff downslope and reduce erosion potential in the long term;
- provide a stable plant growth medium able to support long-term vegetation growth including native and/or endemic Eucalypt woodland, shrubland and grassland species suited to slope and elevated positions similar to those remnants in the surrounding landscape; and
- exclude grazing and agricultural production.

The approved final heights of the Northern, Southern and Perimeter Waste Rock Emplacements are 308 m AHD, 283 m AHD and 233 m AHD, respectively. The Processing Rate Modification involved a modification of the Northern Waste Rock Emplacement's footprint to fully integrate with the IWL.

The Modification involved temporarily increasing the height of the existing mineralised material stockpile adjacent to the Northern Waste Rock Emplacement (up to approximately 320 m AHD). Consistent with the approved operations, the Modification involved the processing of this mineralised material. Therefore, the temporary mineralised material stockpile will be progressively removed (dependent on market conditions).

The Minister for Planning granted approval for the *Cowal Gold Operations Underground Development Project as* State-significant Development No. 10367 (SSD 10367) under Section 4.38(2) of the EP&A Act on 30 September 2021 and to modify DA 14/98 through *Modification No.16* (herein referred to as Mod 16) under Section 4.55(2) of the EP&A Act. SSD 10367 was modified on 7 November 2022, to reflect minor changes in the underground mining method, through Mod 1 (Optimisation Modification).

DA 14/98 generally allows:

- Mining operations until 2040.
- Ore processing at a rate of 9.8 Mtpa.
- Tailings and waste rock emplacement on site.
- Operation of a range of ancillary mining infrastructure.

SSD 10367 generally allows:

- Underground stope mining until 2040.
- Backfilling the stopes with cemented paste made from tailings.
- Development of ancillary infrastructure including a box-cut to the underground mine and a paste fill plant, located on the perimeter waste emplacement, which included modification of the existing structure to form level working platform for the facility.

As described in the approved Rehabilitation Strategy, drainage on the top surfaces of the waste rock emplacements will be managed via a series of small shallow basins (depressions), a rehabilitation cover system (including gypsum-treated subsoil and topsoil) that absorbs rainfall and comprises woodland vegetation (Evolution, 2018a). The use of depressions will be aimed at maximising internal drainage without creating permanent ponding during normal and heavy rainfall events.

A layer of gypsum and then primary waste rock may be placed over oxide waste rock areas on the top surface (and batters) of the Southern Waste Rock Emplacement (which has largely been constructed of oxide waste rock material) to assist with stabilising the sodic and dispersive characteristics of the oxide waste rock (Evolution, 2018a). Given the Northern Waste Rock Emplacement is mainly constructed of primary waste rock material, this practice is not required for this emplacement (Evolution, 2018a). This method may be subject to further investigations and/or trials.

A bund around the perimeter of the top surfaces of the waste rock emplacement will also be constructed to provide a contained catchment and minimise surface water runoff from the top surface down the batters.

Rehabilitation Cover System – Batters

The rehabilitation cover system for the waste rock emplacement batters will include:

- benign (primary) rock mulch; and
- low salinity and gypsum-treated topsoil.

The rock mulch and topsoil layers will be cross-ripped along the contours with approximately 10 tonnes per hectare (t/ha) gypsum, followed by seeding with native and/or endemic Eucalypt Woodland and shrub species during suitable seasonal conditions.

To stabilise areas where an adequate vegetation cover has yet not established, a layer of locally harvested seed-bearing native pasture hay (or clean wheaten hay) will be spread to provide soil protection and soil stability for vegetation establishment. Cross-ripping along the contour of the slope is proposed to create ‘troughs and banks’ to minimise the potential for erosion downslope and enhance vegetation establishment within the troughs.

The benign (primary) rock mulch used in the cover system will be sourced from development of the open pit and will include suitable non-saline material. As no change to the open pit is proposed, there will be no change to the waste rock geochemistry of the approved CGO.

Results of rehabilitation investigations and trials will continue to inform and refine CGO rehabilitation concepts including rehabilitation materials and revegetation species. It is expected that the Northern Waste Rock Emplacement rehabilitation trial will continue to inform the most suitable applications of rock mulch and topsoil and plant species suited to the substrate materials.

Revegetation Concepts

The Modification will not change the currently approved revegetation concepts for the waste rock emplacements. Revegetation aims to re-establish native and/or endemic Eucalypt Woodland, shrub and grassland communities similar to those remnants which persist on similar landforms in the regional landscape (e.g. Wamboyne Mountain, Fellmans Hill and Billy's Lookout). Suitability of revegetation species will include consideration of the physiographic and hydrological features of the landform and performance relative to both stability and surface rehabilitation materials (subject to availability).

Results of rehabilitation trials, in particular the trial on the Northern Waste Rock Emplacement, will continue to be used to determine the revegetation species suited to the cover system materials for the waste rock emplacement batters.

Revegetation species considered suitable for revegetation of the CGO waste rock emplacements have been developed by DnA Environmental (2016) with assistance from Diversity Native Seeds (a local native seed supplier). These species are associated with woodlands on low ridges and hills in the local landscape. A selection of these species has been used in the Northern Waste Rock Emplacement rehabilitation trial and will also be used in the large-scale substrate profile trials.

Consistent with the approved Rehabilitation and Landscape Management Strategy, revegetation species lists developed for the waste rock emplacements may be refined based on results of rehabilitation investigations and trials (Evolution, 2018a).

Domain F3 – Permanent Water Management Infrastructure

The rehabilitation objective for the permanent water management structures is to create stable systems (i.e. acceptably low risk of environmental harm to Lake Cowal).

The permanent water management structures for the CGO comprise:

- UCDS (including northern and southern sediment dams)
- ICDS (including the existing low mounds associated with the permanent catchment divide).

The Lake Isolation System (including the Temporary Isolation Bund, Lake Protection Bund and Perimeter Waste Rock Emplacement) has also been constructed to hydrologically isolate the open pit and Lake Cowal during mining and post-mining.

Although some components of the Lake Isolation System are permanent water management features, these areas are described in Domain A3. The remainder of the Perimeter Waste Rock Emplacement (i.e. excluding the first outer batter) will be incorporated within Rehabilitation Domain A4.

Domain J5 – Final Void

The approved rehabilitation objectives for the final void are to (Evolution, 2018a)

- create habitat opportunities for waterbirds at the approximate level at which void water will reach equilibrium, where feasible; and
- leave the void surrounds safe (for humans and stray stock).

At the completion of mining, the final void will be surrounded on three sides by the revegetated mine waste rock emplacements.

The approved surface area of the final void will be approximately 131 ha, and at the end of mining, the void is approved to a maximum depth of approximately -331 m AHD (i.e. approximately 540 m below the natural surface level). The berm widths and slope angles will continue to be reviewed and monitored through ongoing geotechnical studies and data collection during mine development.

Modelling indicates that the approved final void will reach an equilibrium water level between approximately 125 m 135 m AHD (approximately 80 m below spill level) over several hundred years (Hydro Engineering & Consulting Pty Ltd, 2018). Predictions of average void salinity confirm that salt concentrations in void waters will slowly increase towards hyper-salinity (Hydro Engineering & Consulting Pty Ltd, 2018).

A bund will be constructed around the perimeter of the final void which will be planted with an initial cover crop (to assist in stabilising the bund following construction) and native and/or endemic Eucalypt woodland species. The final void will be screened from public views on Lake Cowal Road by the IWL and waste rock emplacements and will be fenced upon completion of mining. Signposted warnings to the public will also be placed along the fence (Evolution, 2018a).

6.3 Rehabilitation of areas affected by subsidence

Not applicable. Further test work underway during FY23-24 to inform monitoring program.

PART 7 – REHABILITATION QUALITY ASSURANCE PROCESS

In accordance with best practice rehabilitation planning methodology, the rehabilitation phase status of each of the CGO rehabilitation domains is provided in current Forward Program. The progress of the domains through each rehabilitation phase will be reported in the Annual Review and updated in the rehabilitation portal as required.

Evolution will continue to engage independent rehabilitation specialists to conduct an annual rehabilitation monitoring programme in accordance with this RMP and to help prepare the annual rehabilitation monitoring report. The annual rehabilitation monitoring report will include (but not be limited to):

- an overview of the rehabilitation monitoring programme methodology;
- a detailed description of the rehabilitation monitoring results for all rehabilitation sites/areas;
- a comparison of the rehabilitation monitoring results against the RMP rehabilitation performance indictors and completion criteria;
- a discussion of any trends in the monitoring data; and
- any recommendations to improve rehabilitation performance and any remedial or contingency measures required.

Evolution's Sustainability Manager will use the rehabilitation monitoring report to:

- track rehabilitation and/or revegetation progress against performance indicators and completion criteria;
- assess the performance of final landform design concepts and rehabilitation concepts;
- evaluate the effectiveness of the CGO's rehabilitation practices and measures; and
- identify the requirement for intervention or contingency measures.

The annual rehabilitation monitoring report will also be used to inform the CGO's external reporting and review requirements including:

- the Annual Review reporting requirements;
- the Independent Environmental Audit process;
- the CEMCC; and
- the requirements of the Rehabilitation Reform.

An Annual Review will be prepared in accordance with the requirements of Consent Condition 9.1 and will be submitted to the Secretary of the DPIE by the end of March each year, or as otherwise agreed with the Secretary. The Annual Review will report on the following aspects relevant to this RMP:

- rehabilitation works conducted during the previous calendar year and the works proposed for the next reporting period;
- results of rehabilitation monitoring and the status of rehabilitation against the performance indicator and completion criteria;
- any maintenance or contingency measures implemented during the previous calendar year to remediate poor rehabilitation performance; and
- any trends occurring in the performance of rehabilitation and the effectiveness of the CGO's rehabilitation concepts, practices and measures.

In accordance with Development Consent Condition 9.4(a)(vii), the Annual Review will be made publicly available on Evolution's website.

Upon the cessation of mining operations, tenure of ML 1535 and ML1791 will be maintained by Evolution until such a time when lease relinquishment criteria have been met and rehabilitation is to the satisfaction of relevant regulatory authorities. It is anticipated that lease relinquishment criteria would include:

- Rehabilitated landforms are stable and consistent with the nominated post-mining land use which has been developed in consultation with relevant regulatory agencies and key stakeholders.
- The water quality of Lake Cowal has not been detrimentally affected by the final landforms.
- Rehabilitated final landforms are indicative of a landscape on a trajectory towards a self-sustaining ecosystem and comprise self-sustaining native and/or endemic species characteristic of remnant vegetation communities in the surrounding landscape.
- All Mining Lease conditions (including public safety considerations) have been satisfied.
- Hard-stand areas and infrastructure have been removed (unless otherwise agreed with the ultimate landholder).

In accordance with Evolution internal requirements and standards, a Mine Closure Plan has been developed for the CGO and has been prepared in consideration of the Strategic Framework for Mine Closure published by the Australian and New Zealand Minerals and Energy Council and Mineral Resources Council of Australia (2000). The CGO's internal Mine Closure Plan will be updated to reflect the approved modified CGO and will include proposed mine closure concepts and decommissioning management measures. Mine closure concepts and management measures will continue to be developed via the Rehab reform guidelines in consultation with relevant regulatory agencies.

PART 8 – REHABILITATION MONITORING PROGRAM

A rehabilitation monitoring methodology has been independently developed to assess the performance of the CGO's rehabilitation areas (and to assess regeneration [and revegetation] performance within the CGO's Offset and RVEP Areas).

The rehabilitation monitoring methodology includes a combination of (DnA Environmental, 2011):

- Landscape Function Analysis (LFA) indicators (which includes measurement of soil erosion type and severity);
- accredited soil analyses indicators; and
- an assessment of ecosystem characteristics using an adaptation of methodologies derived by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Methodology for the Grassy Box Woodlands Benchmarking Project in Southern NSW Murray-Darling Basin (Gibbons, 2002) and the associated Biometric Model Rapidly quantifying reference conditions in modified landscapes (Gibbons et al., 2008).

The methodology includes qualitative performance indicators and completion criteria and quantitative performance indicators and completion criteria developed from relevant reference sites representative of the CGO final landforms and long-term land use strategy.

DnA Environmental has prepared a report Rehabilitation monitoring methodology and determination of completion criteria: ecosystem sustainability for the Cowal Gold Mine January 2011 which provides a detailed description of the methodology.

Aspects of the rehabilitation monitoring methodology will be refined to reflect the CGO Mine Life Modification Rehabilitation Proposal (Evolution, 2016) and to align with the methodology within the DRE's new rehabilitation reform Guidelines (e.g. incorporation of the conceptual rehabilitation domains). Once revision of the methodology is complete, this RMP will be revised to incorporate any changes.

6.4 Analogue site baseline monitoring

The following four broad vegetation community types have been identified by DnA Environmental as representative of the CGO final landforms (DnA Environmental, 2011):

- lake – woodlands occurring within the lake and lake foreshores (relevant to the New Lake Foreshore);
- slopes – woodlands occurring on flat to gently undulating slopes (relevant to lower slopes of the waste rock emplacements);
- hills – woodlands occurring on low ridges, hills and elevated land (relevant to upper slopes and top surfaces of the waste rock emplacements); and
- grasslands – cleared native grasslands, predominantly occurring on flat to gently undulating slopes (relevant to infrastructure areas and slopes of the tailings storage facilities [during operations]).

Reference sites relevant to each of the four broad vegetation communities listed above were established in the landscape surrounding the CGO in 2010 (Figure 5) and include the following:

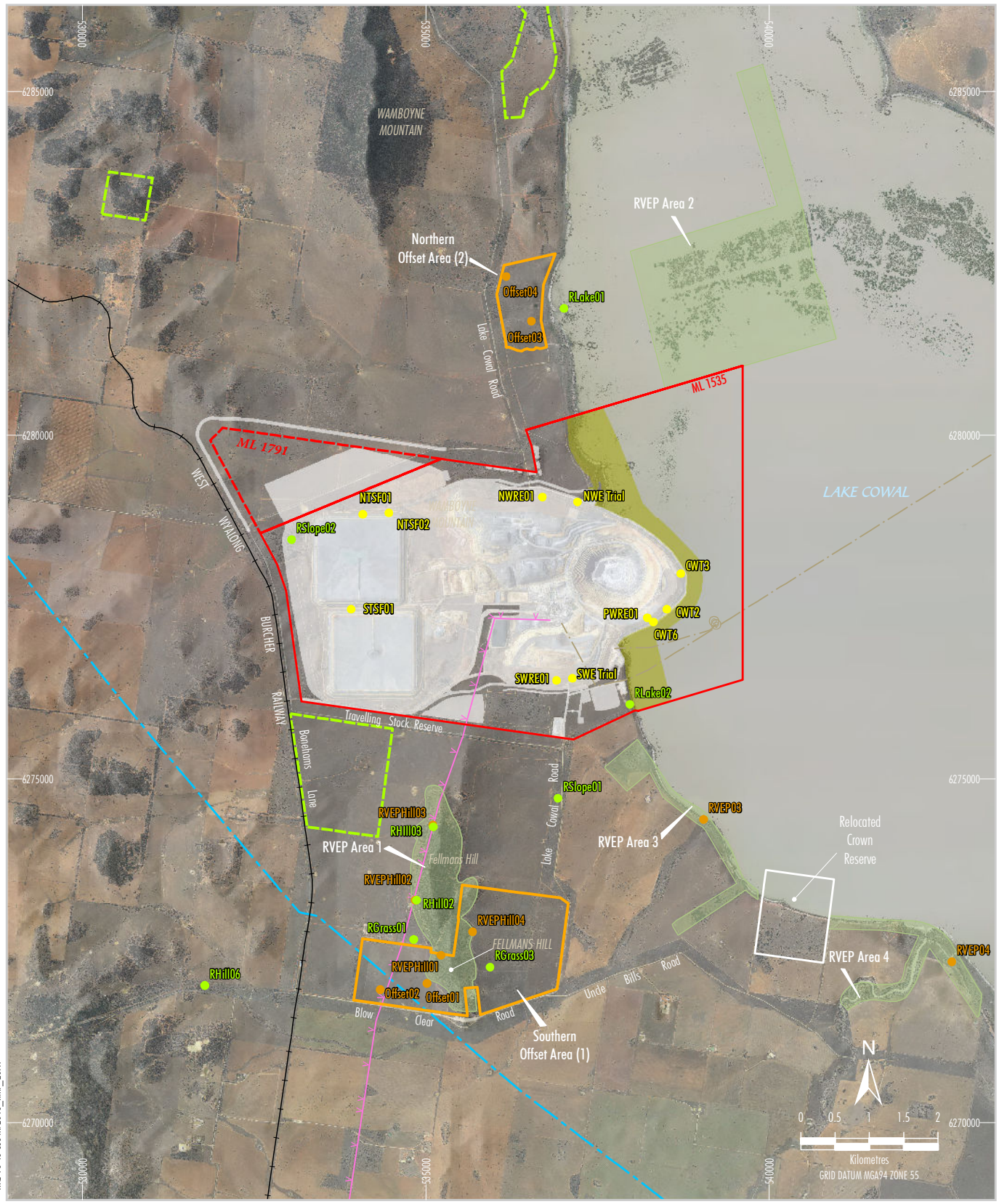
- RLake 01 and RLake 02 – woodlands occurring within the lake and lake foreshores;
- RSlope 01 and RSlope 02 – woodlands occurring on flat to gently undulating slopes;
- RHill 02, RHill 03 and RHill 06 – woodlands occurring on low ridges, hills and elevated land; and

- RGrass 01 and RGrass 03 – cleared native grasslands, predominantly occurring on flat to gently undulating slopes.

Table 11: Description of Reference Sites

Reference Site	Description
RLake 01	This site is situated to the north of ML 1535 east of the Northern Offset Area on the lake foreshore. It contains sparsely scattered old growth Eucalyptus camaldulensis trees with a significant area of E. camaldulensis regeneration occurring in the grassy clearings. There is scattered Lignum and a variety of semi-aquatic plants. There is good ground cover and a high diversity of ground cover species, including numerous annual exotic species and native grasses and E. camaldulensis regeneration.
RLake 02	This site has been established and monitored since 2005 as part of the CGO's Compensatory Wetland monitoring program. This site is located on the western bank of Lake Cowal, near the southern boundary of ML 1535. It has several old growth E. camaldulensis and two mature Acacia stenophylla trees including substantial regeneration of Acacia stenophylla. In 2010, the site had significantly increased in abundance and diversity of live plants, in particular exotic annual species, resulting in an increase in ground cover. In 2011 and 2012, the lower half of the monitoring plot was inundated with water, while the upper half was drier and lower in plant diversity. In 2013 the annual grasses and weeds had colonised the previously inundated areas.
RSlope 01	Regrowth A. pendula woodland situated amongst some gilgais depressions on a section of the Travelling Stock Route south of ML 1535. The understorey is variable with patches of bare compacted soil, and tall scattered tussocks of Austrostipa blackii. Atriplex semibaccata, Enchylaena tomentosa and Einadia nutans were dominant, but Rhodanthe corymbifolia and Ptilotus exaltatus were common. There were stockcamps beneath the trees and the site is grazed intermittently by travelling stock. In 2011 the site was drier and lower in plant diversity. The dry conditions have persisted into 2013 and combined with increased grazing pressure by macropods the site was lower in plant diversity.
RSlope 02	This site is situated within the Wilga Woodland area on ML 1535 and has been fenced off since 2004. The site is open regrowth woodland dominated by various age classes of Casuarina cristata and A. pendula, including one old growth C. cristata tree and some scattered A. pendula regeneration. Water filled gilgais are common and these are dominated by Lachnagrostis filiformis and Eleocharis species. There are bare patches surrounding the A. pendula saplings and various chenopods are beginning to colonise beneath the C. cristata trees. In 2011 the site was drier and lower in plant diversity. The dry conditions have persisted into 2013 and combined with increased grazing pressure by macropods the site was lower in plant diversity.
RHill 02	This site is located on the western side of Fellmans Hill at the transition from bushland to grassland. The site has a small stand of Eucalyptus sideroxylon at one end and with the remainder being open grassland with some scattered shrubs. Austrostipa scabra is dominant within the understorey with some bare crusted soil between the tussocks. The extent of the bare patches is declining and the shrubs have grown as the site recovers from heavy grazing pressure. In 2013 the shrubs have continued to grow and despite the prolonged dry it continued to have a good cover of a diverse range of native grasses and forbs.
RHill 03	This site is located on the north west side of Fellmans Hill north of the Southern Offset Area. It is open woodland dominated by E. dwyeri and Acacia doratoxylon. The understorey is dominated by Austrostipa densiflora and Gonocarpus elatus but in good seasons it may contain a range of native wildflowers. The site has not been grazed since 2004 with scattered grass tussocks and a lot of leaf litter covering the ground but has shown signs of extreme stress as a result of the continuing drought up until 2010. While species diversity improved in 2010, the sites were very dry and low in diversity in 2011 and 2012 but there were some A. doratoxylon seedlings. Kangaroos continued to create a lot of disturbance and combined with the dry conditions species diversity was very low.

RHill 06	This site is located within Grey Box woodland on the Travelling Stock Route along Blow Clear Road, immediately west of Spring Creek and the Clear Ridge Road intersection. First established in 2013 as a reference site, it is open woodland with scattered mature E. microcarpa, Callitris glaucophylla and Geijera parviflora which are in variable health. There is scattered but sparse shrub cover which is dominated by Senna artemisioides along with some Callitris glaucophylla regeneration. The site has an excellent diversity of native grasses with 15 different species identified in 2013. The site is grazed sporadically by travelling stock.
RGrass 01	This derived grassland is situated in an old horse paddock immediately north of the Southern Offset Area northern boundary. It is an un-cropped native grassland dominated by Stipa nodosa but Lolium sp. and Trifolium arvense are also common. There are scattered Maireana microphylla and isolated occurrences of Echium plantagineum. The summer grasses such as Eriochloa pseudoacrotricha are beginning to actively grow. There is minimal bare ground and cryptogams are extensive, indicating positive successional recovery. In 2011 and 2012 the site was drier and lower in plant diversity. In 2013, plant diversity has declined even further but the site maintained relatively good plant cover.
RGrass 03	This site was established in 2013 as it was considered to be more representative of the local grasslands and this was the area in which native grass seed is being harvested which will be used on CGO rehabilitation areas. The site is almost entirely dominated by Austrostipa nodosa and contains the occasional native forb and weed.



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LEGEND

- Mining Lease Boundary (ML 1535)
- Mining Lease Boundary (ML 1791)
- Electricity Transmission Line
- Mooba to Sydney Natural Gas Pipeline
- Approximate Extent of Approved Surface Development
- Offset Areas 1 and 2
- Offset Areas 3 to 6
- Remnant Vegetation Enhancement Programme (RVEP) Area
- Compensatory Wetland
- Reference Site
- Rehabilitation Monitoring Site
- Offset and RVEP Area Monitoring Site

Source: Evolution (2018); © NSW Department of Finance, Services & Innovation (2017)
Orthophoto: Evolution (Oct 2017)

Evolution MINING Cowal

REHABILITATION MANAGEMENT PLAN

Location of Reference Sites and Rehabilitation, Offset and RVEP Monitoring Sites

Figure 5

6.5 Rehabilitation establishment monitoring

As progressive rehabilitation of completed landform features (e.g. batter slopes) occurs, additional rehabilitation monitoring sites will be included in the monitoring programme to assess the performance of the rehabilitation areas. The CGO's rehabilitation programme will be undertaken annually (generally in October/November).

It is expected that rehabilitation monitoring will be undertaken annually during operations and for five years following mine closure. At this time, a review of the monitoring frequency will be undertaken based on the performance of the revegetation and an appropriate monitoring frequency determined. The frequency will be determined by a suitably qualified person(s) and in consultation with the relevant regulatory authorities. A summary of the monitoring methodology components is provided below.

Landscape Function Analysis

LFA is one of three components of the Ecosystem Function Analysis (EFA) tool developed by the CSIRO that aims to measure the progression of revegetation/rehabilitation towards a self-sustaining ecosystem.

LFA indices can be used to demonstrate that an area is on a trajectory towards a self-sustaining landscape, that is, the landscape contains processes operating to maintain the biogeochemical 'engine-room' of a landscape (Tongway and Hindley, 2004). The EFA methodology is described in detail in Assessing Rehabilitation Success Version 1.1 (Tongway, 2001), Landscape Function Analysis: Procedures for Monitoring and Assessing Landscapes with Special Reference to Minesites and Rangelands Version 3.1 (Tongway and Hindley, 2004), and Landscape Function Analysis Field Procedures (Tongway, 2008).

In accordance with the LFA methodology, the LFA monitoring results will be used to assess whether rehabilitation areas are on a trajectory towards a self-sustaining landscape.

Soil Analyses

Soil samples are taken using a core sampler within a monitoring quadrat at each rehabilitation monitoring site. At least 12 cores are taken at each site and soil samples sent to a National Association of Testing Authorities accredited laboratory for analysis.

Soil samples are analysed for the following parameters: pH, electrical conductivity, available calcium, magnesium, potassium, ammonia, sulphur, organic matter, exchangeable sodium, calcium, magnesium, potassium, hydrogen, aluminium, cation exchange capacity, available and extractable phosphorus, micronutrients (zinc, manganese, iron, copper, boron) and total carbon and nitrogen. Exchangeable sodium percentages are also calculated as a measure of sodicity or dispersion.

Ecological Assessment

In addition to LFA, various biodiversity components are assessed to monitor the successional phases/changes of plant development and to identify the requirements for ameliorative measures and guide adaptive management. The rapid ecological assessment provides quantitative data that measures changes in:

- floristic diversity including species area curves and growth forms (using full floristic sampling);
- ground cover diversity and abundance;
- vegetation structure and habitat characteristics (including ground cover, cryptogams, logs, rocks, litter, projected foliage cover at various height increments);
- understorey density and growth (including established shrubs, direct seeding and tubestock plantings and tree regeneration);
- overstorey characteristics including tree density, health and survival; and
- other habitat attributes such as the presence of hollows, mistletoe and the production of buds, flowers and fruit.

Permanent transects and photo-points (as described below) have been established to record changes in these attributes over time.

These ecological assessment components will be described in detail in the annual rehabilitation monitoring report.

The monitoring methodology described above may be revised (in consultation with relevant regulatory authorities) should an alternative method be required to adequately assess rehabilitation performance.

Monitoring Quadrats

The monitoring methodology components described above are undertaken within 20 m x 50 m monitoring quadrats established at each rehabilitation monitoring site and reference site. An LFA transect is established along the 20 m downslope boundary of the quadrat. Vegetation monitoring is undertaken within 1 m x 1 m subquadrats at 5 m intervals along the 50 m transect which runs perpendicular to the LFA transect.

Permanent photopoints have been established at the monitoring quadrats to monitor the changes that occur over time. The methodology for photographic monitoring is consistent with the NSW National Parks and Wildlife Service (2003) Conservation Management Note 9 – Photographic Monitoring. Photos are taken annually during spring and during a similar time of day (for consistence of light conditions).

After each photographic monitoring event, the photographs will be compared to the photographs from the previous monitoring periods. The following elements will be noted:

- plant establishment;
- the status of weeds;
- natural regeneration of species; and
- presence of habitat features (e.g. logs, litter, rocks).

A review of aerial photography may also be used to show enhancement of vegetation connectivity.

6.5.1 Monitoring of current rehabilitation areas

Tailings Storage Facilities and Waste Rock Emplacements

Rehabilitation trial areas have been established on the outer batter slopes of the waste rock emplacements and tailing storage facilities to assess surface cover treatments likely to achieve the rehabilitation objectives and therefore would be suitable for use in final landform rehabilitation.

Rehabilitation trials were established in 2009 on the outer slopes of the tailings storage facilities to assess slope stability and native grassland establishment across a variety of rehabilitation treatments. (Figure 5). However, these locations have been progressively inundated by the construction and deposition of the IWL.

The monitoring site 'SWE Trial' (Figure 5) was established in 2009 in the rehabilitation trial area implemented the southern outer slope of the Southern Waste Rock Emplacement to assess the performance of plots including long continuous slope angles compared to tiered slopes with and without different mulch cover treatments.

A new monitoring site 'NWE Trial' (Figure 5) was established within the rehabilitation trial area on the northern outer slope of the Northern Waste Rock Emplacement to assess the performance of a cover treatment including rock mulch and topsoil (ripped with gypsum) and native pasture hay.

Monitoring of the waste rock emplacements and tailing/IWL storage facilities trial areas will continue to be undertaken to assess the performance of the rehabilitation cover treatments and to assist in determining the materials suitable for use in final landform rehabilitation along with any additional trials that may be undertaken. A detailed description of the rehabilitation trials being undertaken at the CGO is provided in Part 9.

New Lake Foreshore

Six monitoring quadrats (CWT1 to CWT6) were established along the New Lake Foreshore rehabilitation trial areas in 2005. Annual monitoring of the six quadrats between 2005 and 2008 indicated that the sites were characteristically very similar and subsequently three sites were removed.

Monitoring is also conducted at several other locations within the Compensatory Wetland, the Remaining Wetland (i.e. the area east of the Compensatory Wetland up to the ML 1535 boundary and in grazed areas outside of ML 1535) as a part of the Compensatory Wetland monitoring programme (consistent with the CWMP).

Monitoring will continue to be conducted at three monitoring quadrats (CWT2, CWT3 and CWT6) (Figure 5) along the New Lake Foreshore rehabilitation trial areas (and other Compensatory Wetland monitoring programme sites) to assess the performance of revegetation and/or regeneration and to determine the need for any maintenance and/or contingency measures (such as the requirement for supplementary plantings, erosion control or weed and pest control).

The quadrats will be monitored annually (when the area is not inundated) to obtain quantitative data on species diversity and abundance. Visual observations will also be made on a regular basis to assess plant development and health.

Offset Areas and Remnant Vegetation Monitoring Programme Areas

As described in the BOMP, monitoring of the Northern and Southern Offset Areas and RVEP Enhancement areas will be conducted to:

- assess the progress of natural regeneration;
- determine whether vegetation planted within the enhancement areas is establishing; and
- determine the need for maintenance and/or contingency measures (such as the requirement for revegetation, supplementary plantings and weed control).

A number of monitoring quadrats have been established within the offset and RVEP enhancement areas to obtain quantitative data on plant species diversity and abundance. Reference monitoring sites have also been established within these areas against which regeneration and/or revegetation and enhancement measures can be assessed.

The same monitoring methodology applied for the CGO rehabilitation areas will be conducted annually and visual observations will be made on a regular basis to assess regeneration success and to assess the health of the vegetation.

An annual report will be prepared detailing the results of the offset and RVEP monitoring programme. The report will identify any requirements for maintenance and/or contingency measures.

A summary of the results from the offset and RVEP monitoring programmes will be provided annually in the Annual Review.

6.6 Measuring performance against rehabilitation objectives and rehabilitation completion criteria

Specific indicators developed for each rehabilitation objective and completion criteria have been outlined in Part 4 (Table 7). It is important to note that the criteria against which rehabilitation sites are assessed against will be dynamic throughout time, to best represent seasonal and climatic conditions. Rehabilitation performance at the CGO will be considered to be satisfactory when the monitoring data indicates the completion criteria have been met, or when the relevant Minister(s) otherwise accepts the rehabilitation status.

7 PART 9 – REHABILITATION RESEARCH, MODELLING AND TRIALS

Rehabilitation of disturbed lands has been undertaken progressively and successfully at CGO throughout the mine's life. Areas currently or previously under rehabilitation include:

- temporary Isolation Bund (shaped, topsoiled and revegetated with native and exotic grass species including scattered aquatic species such as Lignum [Duma florulenta], Rush [Eleocharis sp.] and River Red Gum [Eucalyptus camaldulensis]);
- Lake Protection Bund (shaped and lower batter rock armoured, topsoiled and revegetated with native and exotic grass species including scattered aquatic species such as Lignum, Rush sp. and River Red Gum);
- components of the ICDS, including: - outer embankments of contained water storages D1 and D4 (shaped and rock armoured); - outer embankments of contained water storage D9 (shaped, rock armoured, topsoiled and revegetated with native and exotic grass species); and - ICDS low mounds (rehabilitated with stabilising cover crop including native and exotic grass species);
- Northern TSF (embankments shaped and rock armoured); Southern TSF (embankments shaped and rock armoured, with lower embankment topsoiled [with gypsum] and revegetated with native and exotic grass species);
    - The Northern TSf and Southern TSF embankments have now been encompassed by the IWL. However, information collected will be used to inform future rehabilitation of the IWL outer embankments.
- Perimeter Waste Rock Emplacement – lower and majority of upper outer batter slopes (shaped, rock armoured and topsoiled [with gypsum] with revegetation including native and exotic grass species establishing across majority of rehabilitation areas);
- Southern Waste Rock Emplacement – lower, mid and upper outer batter slopes of western, southern, east and northern sections (shaped, rock armoured and topsoiled [with gypsum] with revegetation including native and exotic grass, shrub and tree species establishing across rehabilitation areas);
- Northern Waste Rock Emplacement – northern lower, mid and upper outer batter slopes (shaped, rock armoured and topsoiled [with gypsum] with revegetation including native grass, shrub and tree species establishing across north-eastern extent of rehabilitation area and plantings of Eucalypt and Acacia species within the rehabilitation trial areas); and
- Bland Creek Palaeochannel Borefield water supply pipeline (rehabilitated and under maintenance).

7.1 Current rehabilitation research, modelling and trials

Significant rehabilitation trials have been undertaken over the life of the mine to inform and improve rehabilitation practices and outcomes. Key findings of the rehabilitation investigations and trials conducted at the CGO to date include the following (Evolution, 2018a):

- The surface cover treatment/method most likely to stabilise final landform slopes and support long-term vegetation growth includes (DnA Environmental, 2013a, 2013b; 2015):
- rock mulch and gypsum-treated topsoil cross-ripped along the contour of the slope (rock/soil matrix); and
- a light to medium application of native pasture hay or clean wheaten straw hay as an immediate protective soil cover, if vegetation establishment is not adequate.

- The annual exotic grass Lolium rigidum (Wimmera Ryegrass) present in the topsoil seed bank establishes rapidly in high abundance across rehabilitation areas, providing extensive vegetation cover and soil/surface protection, and a mulch/litter cover once it desists. As a result, hay mulch is only considered necessary in areas where Lolium rigidum (Wimmera Ryegrass) has not established.
- Direct seeding onto freshly topsoiled and deep ripped rocky surfaces has resulted in higher seedling densities compared with deep ripped grassland areas (DnA Environmental, 2018a).
- Successful seedling establishment can be obtained in areas where a Wimmera Ryegrass cover crop has established by deep ripping prior to direct seeding (DnA Environmental, 2018a).
- No obvious effects have been observed on the growth rates of the tubestock in the Northern Waste Rock Emplacement trial as a result of the different topsoil depths or mulch treatments (DnA Environmental, 2018b).
- The inclusion of rock mulch in the surface cover placed on CGO landform slopes provides resistance to erosion and reduces surface water flow velocities on landform slopes during high rainfall events (Gilbert and Associates, 2009).
- Primary waste rock is suitable for use as rock armour (or rock mulch) on landform slopes due to the material being typically non-saline and NAF (GEM, 2008; 2013; 2016). However, primary waste rock materials with higher reactive sulphide contents (greater than 0.5% sulphur) are likely to present a risk of developing saline conditions when oxidised and these materials should either be excluded from use as rock armour or blended with the lower sulphur material in order to dilute the reactive sulphides (GEM, 2008; 2013; 2016).
- Due to the expected salinity and sodicity of the oxide waste rock, this material is not suitable for armouring the batter slopes of the WRE or IWL (GEM, 2008; 2013; 2016).
- Due to the sodic and dispersive nature of the oxide waste rock material, gypsum needs to be spread on the surface of oxide waste rock material (i.e. in particular on the Southern Waste Rock Emplacement) prior to the application of the rehabilitation cover materials (e.g. rock mulch and gypsum-treated topsoil) to assist with stabilising the underlying substrate material (GEM, 2008; 2013; 2016; 2020; Barrick, 2014).

The majority of stockpiled soil resources at the CGO are typically sodic and dispersive and therefore require treatment with gypsum to improve the soil structure and suitability for plant growth (some soil stocks however may require treatment with lime or a gypsum-lime blend to reduce the acidity of the soil) (McKenzie Soil Management, 2013).

Various methods for treating or ameliorating soil at the CGO have been recommended by McKenzie Soil Management (2013), including treating soil stockpiles with gypsum (or other relevant treatment material), treating strongly sodic and dispersive soil stocks with gypsum in a dedicated soil amelioration farm, treating soil when re-applied to rehabilitation areas and spreading gypsum on the surface of original soil profiles prior to soil stripping.

Ameliorated soils are anticipated to improve revegetation outcomes for the CGO final landforms (due to improved soil properties for plant growth) and may increase the number and diversity of revegetation species able to be used in the CGO rehabilitation programme (ie additional species could be used that are typically less tolerant to deficient soils) (McKenzie Soil Management, 2013). Soil conditioning (with gypsum) and the application of surface cover treatments improves the effectiveness of revegetation techniques including direct seeding and tubestock planting (DnA Environmental, 2013a).

The results from vegetation growth trials undertaken to date indicate that seedlings of select salt tolerant tree species continued to grow when planted in a substrate including CGO oxide and sulphide tailings (Barrick, 2013b). As a result, it is considered salt tolerant tree species would likely

establish and develop when planted on the top surfaces of the TSFs: - the results from tree root growth assessments of six-year-old trees planted in substrates including topsoil, subsoil and oxide waste rock indicate (DnA Environmental, 2017);

- the root systems of the younger sapling plants preferred to grow laterally on top of dense clay oxide waste rock layers, but were capable of growing down into crumbly oxide waste rock layers;
- as the tree and root system matures, the stronger and larger roots were able to penetrate the dense clay oxide waste rock; and
- the chemical characteristics of the oxide waste rock has not been observed to be a constraint to plant growth.

In accordance with the LFA methodology, the LFA monitoring results are to be used by CGO to assess whether rehabilitation areas are on a trajectory towards a self-sustaining landscape and to guide management intervention in accordance with the trigger, action and response plan in the CGO Rehabilitation Management Plan.

An annual rehabilitation report is prepared by DnA Environmental and the rehabilitation performance is reported to agencies and the public in the Annual Reviews.

Rehabilitation Investigation and Trial Results to Date Rehabilitation will continue to be an iterative process, whereby the results of the revegetation trials and monitoring will be used to provide feedback into the most appropriate species, revegetation and propagation methods, and substrate suitability for the rehabilitation of the CGO components.

7.2 Future rehabilitation research, modelling and trials

Proposed rehabilitation research and trials have been defined in the Forward program. Furthermore, ongoing rehabilitation trials and research will be an extension of the trials that have been undertaken to date and will include:

7.2.1 Rehabilitation Media

Northern Waste Rock Emplacement Trial

A rehabilitation trial area has been established on the northern slopes of the Northern Waste Rock Emplacement to investigate the performance of various applications associated with the rock mulch, topsoil and hay cover materials. The trial includes plots assessing different topsoil depths, applications of seed-bearing native pasture hay compared with clean wheaten straw hay or no hay with select native and/or endemic tubestock planted across all plots.

Results from this trial are anticipated to inform the most effective combination of rock mulch, topsoil and hay cover materials for final landform slopes and inform the suitability of selected Eucalypt and Acacia revegetation species. Erosion incidence will continue to be monitored to confirm the effectiveness of the cover materials in stabilising landform slopes in the long-term.

Substrate Profile Trial

Revegetation trials are proposed to be undertaken to assess the performance of select native and/or endemic tree and shrub species in various CGO substrate materials including tailings and waste rock.

Large-scale substrate profile trials are proposed to expand on the trials that have been conducted to date and will include various topsoil, subsoil and waste rock depths and various tailings types (e.g. oxide tailings and sulphide tailings) compared with a control (topsoil only).

Given the existing TSFs and IWL will continue to be operational and dynamic landforms, the opportunity to implement rehabilitation trials on the top surface of these areas has been unachievable, however once an area on the top surface of the TSFs or IWL becomes available, the trial will be implemented.

The objective of this trial will be similar to the previous vegetation growth trials and will assess the performance of select revegetation species in various material combinations and depths associated with the IWL and waste rock emplacement top surfaces.

The trial will include gypsum-treated soils to confirm that the ameliorated soil is suitable as a plant growth medium.

7.2.2 Revegetation

Wimmera Ryegrass Investigation and Trial

Based on rehabilitation monitoring results to date and the preliminary findings of the Northern Waste Rock Emplacement trial, the annual exotic plant species Wimmera Ryegrass, present in the soil seed bank, rapidly establishes once soil is spread across CGO rehabilitation areas. This cover crop provides rapid soil surface protection and stabilises newly profiled landform slopes. Given DnA Environmental recommends direct seeding as the most effective and cost-efficient revegetation method for the CGO's extensive rehabilitation areas, Evolution has implemented a trial and commenced investigation to determine the most effective methods for direct seeding rehabilitation areas prior to and following the establishment of the Wimmera Ryegrass cover crop. The design of the trial has been developed in consultation with DnA Environmental and the results will continue to be detailed in the Annual Review.

Species Selection

Revegetation trials will continue to be undertaken to assess the performance of select tree and shrub species in various CGO substrate materials including tailings and waste rock. The objective of this trial would be similar to previous vegetation growth trials and would assess the performance of select revegetation species in various materials associated with the tailings storage facility and waste rock emplacement top surfaces. Given the CGO tailings storage facilities and waste rock emplacements will continue to be operational and dynamic landforms, the opportunity to implement rehabilitation trials on the top surfaces of these landforms is currently limited for trials but will be addressed in the forward program and will remain dynamic.

8 PART 10 – INTERVENTION AND ADAPTIVE MANAGEMENT

A Trigger Action Response Plan (TARP) (Table 12) has been developed based on the key outcomes from the rehabilitation risk assessment (Part 3). The TARP identifies key risks or threats to rehabilitation success at the CGO and details the risk treatment measures or contingency measures that will be undertaken to mitigate these risks.

The triggers identified in the TARP will be reviewed and updated (if necessary) following implementation of the rehabilitation monitoring programme and/or evaluation of the rehabilitation monitoring programme results in the Annual Review.

Other general contingency measures that will be implemented where rehabilitation monitoring results identify a requirement for maintenance or remedial works include:

- repair of erosion (i.e. regrading of eroded areas);
- repair of drainage structures and de-silting of sediment control structures;
- supplementary seeding or planting;
- application of fertiliser;
- application of gypsum or lime to control pH and improve soil structure;
- bushfire management activities; and
- implementation of weed and pest control measures.

The effectiveness of the remedial works will be regularly monitored and the results reported in the Annual Review and used to inform and refine the rehabilitation programme.

Table 12: Summary of rehabilitation objectives and rehabilitation completion criteria

Major Threats to Rehabilitation Success		Trigger	Action/Response	Justification for Action/Response	Measures to Mitigate, Remediate and/or Compensate any Identified Impacts	How Impact will be Monitored	Notification Protocol
Landform Design	Reverse graded berms on waste rock emplacements results in significant tunnel erosion on berm at base of batter resulting in localised failure of berm.	Rehabilitation monitoring indicates active tunnel erosion on berms.	• Backfill eroded area with waste rock, apply gypsum to stabilise surface material and apply rock mulch.	Results of rehabilitation trials to date.	Apply gypsum to berms comprised of oxide waste rock (prior to application of cover system) to minimise dispersive nature of oxide waste rock.	Visual inspection of remediated area and ongoing rehabilitation monitoring	Reporting in Annual Review and in annual Rehabilitation Monitoring Report
	Localised seepage from waste rock emplacement (mid slope) resulting in localised slope and berm instability.	Visual inspection identifies seep	• Restrict access. • Rip and re-shape affected area and reapply rock and topsoil and plant salt tolerant species.	Results of rehabilitation trials to date.	Former waste rock emplacement haul roads to be ripped (during re-shaping works) to minimise compaction.	Visual inspection of remediated area and ongoing rehabilitation monitoring.	Reporting in Annual Review and in annual Rehabilitation Monitoring Report.
	Localised saline seepage from tailings storage facility embankment resulting in localised surface water ponding at toe of facility.	Visual inspection identifies seep.	• Restrict access, where necessary. • Conduct pH test • Install drainage system, toe drains and sumps	Actions/management measures implemented to manage embankment seepage and runoff in the short-term.	Conduct drainage works and rehabilitate tailings storage facility embankments as soon as embankment construction works are complete.	Visual inspection of remediated area and ongoing rehabilitation monitoring.	Reporting in Annual Review.
Growth Media	Failure of batter slope stability and failure of revegetation due to unstable (i.e. dispersive) rehabilitation materials	Rehabilitation monitoring indicates active erosion on landform slopes and failure of revegetation in erosion areas.	• Apply 300 mm deep layer of rock mulch Apply a minimum of 10t/ha gypsum to topsoil., then cross rip materials. Then apply hay mulch to further protect topsoil and improve stability if required.	Results of rehabilitation trials to date.	Apply McKenzie Soil Management's (2013) recommended gypsum rates to stockpiles prior to using soil on rehabilitation areas.	Visual inspection of remediated area and ongoing rehabilitation monitoring.	Reporting in Annual Review and in annual Rehabilitation Monitoring Report.

	Soil stocks are sodic and dispersive and without treatment unsuitable as a plant growth medium.	Rehabilitation monitoring indicates active erosion on rehabilitation areas and soil testing results indicate soil sodicity and dispersion.	• Treat soil stocks with gypsum in accordance with McKenzie Soil Management's (2013) recommended gypsum rates.	Reporting in Annual Review and in annual Rehabilitation Monitoring Report.	As per Action/Response.	Ongoing rehabilitation monitoring and testing of soil stockpiles following gypsum application.	Reporting in Annual Review and in annual Rehabilitation Monitoring Report.
	Sediment accumulation on berms on final landform slopes (resulting from upslope erosion) results in surface water runoff and/or active erosion downslope	Rehabilitation monitoring indicates sediment accumulation on berms and active erosion downslope of affected area.	Remediate any active erosion gullies/rills with waste rock and apply gypsum-treated topsoil and rock mulch approximately 300 mm deep along the contour of the slope.	CGO ESCMP and results of rehabilitation trials to date.	• Continue to conduct rehabilitation trial to determine depth of rock mulch likely to stabilise landform slopes during high rainfall events. • Apply McKenzie Soil Management's (2013) recommended gypsum rates to stockpiles prior to using soil on rehabilitation areas.	Visual inspection of remediated area and ongoing rehabilitation monitoring.	Daily visual inspection of remediated area and ongoing rehabilitation monitoring.
Revegetation	Revegetation is not successfully established.	Trigger 1: Monitoring indicates widespread failure (i.e. less than 50% survival) of seed germination and/or plantings (i.e. seed germination or tuubestock survival is less than 50% of planted area).	• Conduct field inspections and implement remediation works which may include additional or ameliorated growth medium, additional plantings or further actions following planting such as application of fertilizer or watering of rehabilitation areas. • Seek specialist advice and liaise with government agencies to determine a remediation plan. • Prepare an appropriate mitigation / remediation plan relating to the particular cause.	Cowal Gold Operations Mining Operations Plan 1 September 2016 – 31 August 2018 (Evolution, 2016).	Review rehabilitation concepts and principles in consultation with appropriate specialist and DRG.	Visual inspections of remediated area and ongoing rehabilitation monitoring.	Notify DRG. Reporting in Annual Review.

Revegetation	Revegetation is not successfully established.	Trigger 2: During ecosystem establishment and development phase, monitoring indicates that species diversity, species density or ecosystem composition in some areas does not correspond with reference site(s) (i.e. monitoring results over 5 consecutive years indicate species density or ecosystem composition values outside the ranges in Appendix C and which are on a downward trend)	• Conduct field inspections and implement remediation works which may include additional plantings or further actions following planting such as application of fertilizer or watering of rehabilitation areas.	Cowal Gold Operations Mining Operations Plan 1 September 2016 – 31 August 2018 (Evolution, 2016).	Evolution and rehabilitation specialist to review revegetation concepts and revegetation methods and revise if necessary in consultation with DRG. Obtain expert opinions if required.	Visual inspections of remediated area and ongoing rehabilitation monitoring.	Reporting in Annual Review.
	Dominance of exotic grass species on rehabilitation areas in limiting development of the desired ecological communities in the rehabilitation areas.	During ecosystem establishment phase, monitoring results over 3 consecutive years indicate low native groundcover diversity and abundance values outside the ranges in Appendix C and high exotic groundcover abundance values outside the ranges in Appendix C	• Removal of some areas of exotic grass and replant/re-seed area with native grass species (if necessary). • Rip and seed soil stockpiles with native grass species. • Only use native pasture hay as cover material for rehabilitation areas and limit/restrict use of wheaten straw hay due to potential for presence of exotic grass species.	CGO RMP	As per Action/Response measures.	Ongoing implementation of rehabilitation monitoring programme.	Reporting in Annual Review.
	Weed invasion limiting development/enhancement of the desired ecological communities	Monitoring indicates high density of weed species when	• Implement weed control. • Re-plant or re-seed areas if necessary.	CGO RMP.	As per Action/Response measures.	Ongoing implementation of CGO weed survey and rehabilitation	Reporting in Annual Review

	in the rehabilitation areas.	compared to reference sites.	• Identify any potential source of exotic weed introduction and implement appropriate treatments/ controls.			monitoring programme.	
Drought	Severe and/or prolonged drought leading to widespread failure of revegetation/rehabilitation.	Monitoring indicates failure or poor vegetation health (e.g. die-back, small plant size and low species diversity and abundance) across more than 50% of the revegetation area.	• Implement remediation measures which may include application of additional native pasture hay to protect growth medium materials, or additional revegetation campaign or watering rehabilitation areas (subject to suitable conditions). • Ongoing monitoring of vegetation health indicators.	CGO RMP	As per Action/Response measures. Review rehabilitation concepts and principles in consultation with appropriate specialist and DRG.	Ongoing implementation of rehabilitation monitoring programme.	Reporting in Annual Review.
High Rainfall Event	High rainfall event results in inundation of Lake Cowal which causes wave action erosion on outer slope of Temporary Isolation Bund and damage to new lake foreshore revegetation.	Visual inspection indicates active erosion on outer slope of Temporary Isolation Bund and widespread damage to new lake foreshore revegetation (i.e. more than 50% of the new lake foreshore revegetation has failed and is unlikely to re-establish following lake waters receding).	Implementation of stabilisation works (e.g. rock armouring TIB).	Cowal Gold Operations Mining Operations Plan 1 September 2016 – 31 August 2018 (Evolution, 2016).	Incorporation of rock armouring materials into rehabilitation design of new lake foreshore, and replanting/reseeding as necessary.	Visual inspections and ongoing implementation of rehabilitation monitoring programme	Reporting in Annual Review.

9 PART 11 – REVIEW, REVISON AND IMPLEMENTATION

9.1 Review Mechanisms

9.1.1 Annual Review

A review of compliance with all conditions of the Development Consent, mining leases and all other approvals and licences is included within each Annual Review. The Annual Review specifically addresses and reports on the following aspects of Condition 9.1(b) that are directly relevant to rehabilitation and environmental performance at the CGO:

- monitoring results and complaints records, including a comparison of these results against:
  - the relevant statutory requirements, limits or performance measures/criteria;
  - the monitoring results of previous years; and
  - the predictions in the EIS.
- any non-compliances over the last year, and what actions were (or are being) taken to ensure compliance;
- any trends in the monitoring data over the life of the development;
- any discrepancies between predicted and actual impacts of the development, and analysis of the potential cause of any significant discrepancies; and
- what measures will be implemented over the next year to improve the environmental performance of the development.

As required by Development Consent Condition 9.4(a)(vii), the last five CGO Annual Reviews are made available on Evolution's website.

9.1.2 Independent Environmental Audits

In addition, the CGO is subject to independent reviews by independent environmental auditors (via the IEA process), the CEMCC as per the requirements of Development Consent Conditions 9.2(a), 9.2(b) and 9.1(d) respectively. The status of action items raised in this feedback has been monitored and reported during each subsequent review as well as in Annual Reviews prepared as a requirement of ML conditions. To date, all action items raised by these parties have either been closed out or are in the process of being addressed.

9.1.3 Other Reporting Requirements

In addition to the above review and reporting processes, Evolution also prepares EPL Annual Returns which regularly report on compliance with the conditions of the CGO's EPL No. 11912.

Further, amendments to the POEO Act that commenced on 31 March 2012 requires licensees to publish pollution monitoring data that has been collected as a result of a licence condition, in accordance with section 66(6) of the POEO Act and written requirements issued by the EPA. In accordance with the above requirements, relevant monitoring data collected in accordance with the conditions of EPL No. 11912 is made publicly available on Evolution's website.

9.1.4 Notification and Reporting of Non-Compliances

Incident Notification and Reporting

A non-compliance is defined within the development consents as:

DA 14/98

An occurrence, set of circumstances, or development, which is a breach of the Development Consent but is not an incident.

SSD 10367

An occurrence set of circumstances or development that is a breach of this consent.

In accordance with these definitions and Condition 9.3 (b) of DA 14/98 and Condition C8 of SSD 10367, Evolution will notify the Planning Secretary in writing via the Major Projects website within seven days after Evolution has become aware of any non-compliance. Evolution will provide in writing to the Planning Secretary a detailed report of the non-compliance which identifies, the development application number for the CGO, the development consent condition of which the CGO is noncompliant, the way in which the CGO does not comply and the reason for the non-compliance. The CGO will also provide details around any actions which have been or will be taken, to address the non-compliance.

Compliance with all approvals, strategies, plans and programs will be the responsibility of all personnel (staff and contractors) employed by, or in association with, the CGO.

Notwithstanding, the Sustainability Manager or delegate, will undertake regular inspections, internal audits and initiate directions identifying any remediation/rectification work required, and areas of actual or potential non-compliance.

As required by development consent conditions, within three months of commissioning the Independent Environmental Audit (or as otherwise agreed by the Secretary), Evolution will submit a copy of the audit report to the Planning Secretary of the DPIE, together with a response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations.

In addition to the above, an Annual Return will also be prepared comprising of a ‘Statement of Compliance’ and a ‘Monitoring and Complaints Summary’ at the end of each annual EPL reporting period, in accordance with Condition R1 of the EPL.

The Annual Review will identify any non-compliance with the conditions of the development consents.

9.1.5 Community Environmental Monitoring and Consultative Committee

Evolution is committed to a policy of regular liaison with the local community and strives to maintain positive relationships with stakeholders.

Dissemination of information to the local community and relevant agencies regarding the CGO, its progress and environmental management performance will be achieved via the following communication and reporting mechanisms.

A CEMCC has been established in accordance with Condition 9.1(d) of the CGO Development Consent (DA 14/98). The CEMCC currently consists of:

- four community representatives (including one member of the Lake Cowal Landholders Association);
- one representative of the Lake Cowal Foundation;

- one representative of the Wiradjuri Condobolin Corporation;
- one representative of the BSC;
- one representative of the Forbes Shire Council;
- one representative of the Lachlan Shire Council;
- an independent chairperson; and
- two representatives of Evolution.

The CEMCC will provide opportunities for members of the community to attend CEMCC meetings to discuss specific issues relevant to them, including flora, fauna and rehabilitation related issues. This will be achieved by landholders making a request to the CEMCC regarding a particular issue, or by the landowner registering a complaint in the complaints register. Landowners who register complaints may be invited to join in discussion of the issue at the next CEMCC meeting.

9.1.6 Evolution Website and Community Call Line

Evolution's website (www.evolutionmining.com.au) provides updates on assessments and approvals relevant to the CGO and provides access to relevant environment and community information.

A dedicated Community Complaints Line has been established (via phone [02] 6975 3454 or email community.cowal@evolutionmining.com.au) that is available 24 hours, seven days a week for community members who have enquiries or who wish to lodge complaints in relation to Evolution's activities at the CGO.

A summary of complaints is documented in the Annual Review.

9.2 Review of This Rehabilitation Management Plan

The rehabilitation principles and targets described in this RMP will continue to be tracked via Evolution's internal review and tracking systems and the reporting and auditing mechanisms described in this Section.

The results of environmental performance monitoring, technical studies and field trials undertaken will contribute to refining future mine plans.

The CGO's Environmental Management System maintains the following documents and information:

- approvals documents;
- construction and design documents;
- sub-consultant reports (including technical reports) relevant to rehabilitation and closure;
- anecdotal evidence;
- operational monitoring data (including baseline data); and
- stakeholder closure consultation documentation.

The Environmental Management System is updated on a regular basis to incorporate ongoing monitoring and survey results and mine modifications.

In accordance with Clause 11 of Schedule 8A to the Mining Regulation 2016, CGO will amend the prepared rehabilitation management plan in the following circumstances:

- as a consequence of an amendment made to the rehabilitation objectives, rehabilitation completion criteria or final landform and rehabilitation plan
- to reflect any changes to the risk control measures in the rehabilitation management plan that are identified in a rehabilitation risk assessment
- whenever directed in writing to do so by the Secretary.

Additionally, in line with the Environmental Management Strategy as stipulated by the DA 14/98 and SSD 10367 the GGO will review this RMP within three months of:

(i) the submission of an annual review;
(ii) the submission of a non-compliance or incident notification;
(iii) the submission of the independent environmental audit;
(iv) the approval of any modification to the conditions of this consent; or
(v) a direction of the Planning Secretary

9.3 Implementation

A general overview of the responsibility of Evolution personnel in regard to the monitoring, review and implementation of the RMP is provided in Table 13.

Table 13: Responsibility table

Environmental Management Role	Responsibility
Sustainability Manager (or Delegate)	• Oversee the development and implementation of Environment and Social Responsibility (ESR) management systems and governance programs to ensure the operation maintains compliance with applicable environmental and social obligations (internal and external). • Promote and enhance the company's reputation and relationship with the broader community and stakeholders through positive consultation, proactive engagement and compliance with relevant legislation and permitting conditions. • Manage stakeholder engagement for the CGO through community meetings, media, publications and site visits. • Oversee the implementation of organisational policies, standards, plans and procedures. • Oversee the environmental monitoring program to meet the environmental obligations. • Oversee the development and management of ESR risks. • Manage the ongoing implementation and compliance of the Wiradjuri Native Title Agreement. • Coordinate cultural heritage matters ensuring compliance with relevant NSW legislation and Cultural Heritage Management Plans. • Lead, coach and mentor a dynamic team to provide high quality ESR service and support to the CGO. • Establish training and awareness programs for employees, contractors and visitors to site in relation to the ESR management plans developed to comply with ESR obligations and Evolution's policies in relation to ESR management and performance. • Oversee the governance programme to monitor compliance and performance of department managers, supervisors, employees, and contractors against the ESR management programmes. • Oversee the establishment of environmental monitoring objectives to meet the requirements of environmental obligations and stakeholder expectations. • Act as the spokesperson for all ESR matters related to the operations. • Oversee the preparation and delivery of internal and external reports as per ESR obligations. • Promote the Company's ESR strategy by educating staff and contractors.

	• Responsible for the development of the rehabilitation, biodiversity offsets, mine closure and land strategies, and oversees the implementation of associated programs and activities. • Responsible for the annual strategic planning for the environmental function, facilitating the development and implementation of performance metrics, work programs, and operating and capital budgets.
	• Maintain project approvals, ensuring approval obligations are suitable for the continued operation of the CGO. • Ensure all CGO approval documents are submitted as required by licences, Development Consent and Mining Lease conditions and other permits. • Manage consultants involved in CGO approvals processes. • Work with relevant Government Agencies and consultants to ensure necessary project approvals are achieved. • Promotes and enhances the company's reputation and relationship with the Government regulators, local landholders and other stakeholders. • Maintains the implementation of the environment management system and governance programs to ensure the CGO maintains compliance with applicable environmental obligations and minimises environmental harm and risk.
Environment Superintendent (or delegate)	• Oversees the environmental monitoring and reporting program • Coordinates external environmental audits and site visits, acting as primary contact on environmental matters. • Implementation and compliance with environmental management plans, environmental approvals, licensing and permits. • Annual internal auditing and reporting (Annual Review). • Public monthly reporting of environmental monitoring data. • Closure rehabilitation. • ChemAlert updating. • Pest and weed control works coordination. • Equipment management. • Scheduling of Corrective Action Preventative Action (CAPA) follow up for Audits. • Significant Environmental Aspects and Formal Risk Assessments and Management of Change program supervision.
General Manager	• Provide adequate resourcing to support site environmental management and implementation of the RMP. • Provide strategic direction. • Responsible for management of Evolution staff and all contractors
Mining Manager	• Responsible for ensuring all mining works are carried out in accordance with the RMP and other relevant approvals and legislation. • Provide strategic direction

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11 LIST OF ABBREVIATIONS AND ACRONYMS

AEMR	Annual Environmental Management Report
AHD	Australian Height Datum
AMBS	Australia Museum Business Services
BOMP	Biodiversity Offset Management Plan BSC Bland Shire Council cm centimetre
CEMCC	Community Environmental Monitoring and Consultative Committee
CGO	Cowal Gold Operations
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CWMP	Compensatory Wetland Management Plan
DA	Development Application
DECC	NSW Department of Environment and Climate Change (former)
DECCW	NSW Department of Environment, Climate Change and Water (former)
DEWHA	Commonwealth Department of the Environment, Water, Heritage and the Arts (former)
DII	NSW Department of Industry and Investment (former)
DPE	NSW Department of Planning and Environment
DPI	NSW Department of Primary Industries
DRE	Division of Resources and Energy within the NSW Department of Trade and Investment, Regional Infrastructure and Services
DSC	NSW Dams Safety Committee
EA	Environmental Assessment
EEC	Endangered Ecological Community
EFA	Ecosystem Function Analysis
EP&A Act	NSW Environment Planning & Assessment Act, 1979
EPA	Environment Protection Authority
EPL	Environment Protection Licence
ESCMP	Erosion and Sediment Control Management Plan
ESR	Environment and Social Responsibility
FFMP	Flora and Fauna Management Plan ha hectare
ICDS	Internal Catchment Drainage System
JLWMPSPC	Jemalong Land and Water Management Plan Steering Plan Committee km kilometre
LFA	Landscape Function Analysis
LLS	Local Land Services
LMP	Land Management Plan m metre mm millimetre
ML	Mining Lease

NOW	NSW Office of Water
NSW	New South Wales
NTSF	Northern Tailings Storage Facility
NUDLC	National Uniform Drillers Licensing Committee
NWE	Northern Waste Emplacement
OEH	NSW Office of Environment and Heritage
REMP	Rehabilitation and Environmental Management Plan
RMP	Rehabilitation Management Plan
RRA	Rehabilitation Risk Assessment
RVEP	Remnant Vegetation Enhancement Programme
SIA	Social Impact Assessment sp. species
SSMP	Soil Stripping Management Plan
STSF	Southern Tailings Storage Facility
SWE	Southern Waste Emplacement
TARP	Trigger Action Response Plan t/ha tonnes per hectare t/ha/m tonnes per hectare per metre
TSMP	Threatened Species Management Protocol
UCDS	Up-Catchment Diversion System
V:H	Vertical : Horizontal
VCP	Vegetation Clearance Protocol
<	less than
>	more than
%	percent