COWAL GOLD OPERATIONS
PROCESSING RATE MODIFICATION

Response to Submissions
2018

COWAL GOLD OPERATIONS PROCESSING RATE MODIFICATION

RESPONSE TO SUBMISSIONS

JUNE 2018
Project No. HAL-16-41
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1 INTRODUCTION

The Cowal Gold Operations (CGO) is located approximately 38 kilometres (km) north-east of West Wyalong in New South Wales (NSW). Evolution Mining (Cowal) Pty Limited (Evolution) is the owner and operator of the CGO.

The location of the CGO is shown on Figure 1. The area of land to which the CGO's Development Consent (DA 14/98) is relevant includes Mining Lease (ML) 1535 and the CGO's water supply pipeline and Bland Creek Palaeochannel Borefield.

ML 1535 encompasses approximately 2,636 hectares (ha). It is bordered by Evolution's Exploration Licence (EL) 7750 (Figure 1).

Open pit mining operations at the CGO are supported by on-site facilities including water management infrastructure/storages, a process plant and tailings storage facilities. Mined waste rock from the open pit is hauled to waste rock emplacements. Ore mined from the open pit is hauled directly to the primary crusher (adjacent to the process plant), run-of-mine pads or low grade ore stockpiles prior to processing. Mineralised material is also separately stockpiled for potential future processing.

Gold is extracted from the ore using a conventional carbon-in-leach cyanide leaching circuit in the process plant. Tailings are pumped from the process plant via a pipeline to the tailings storage facilities. The gold product is recovered and poured as gold bars or doré.

Evolution is a major local and regional employer and the economic activity associated with the CGO has significant flow-on benefits to West Wyalong and the surrounding region.

Evolution (2018) prepared the *Cowal Gold Operations Processing Rate Modification Environmental Assessment* (the EA) that is being assessed under the NSW *Environmental Planning and Assessment Act, 1979* (EP&A Act).

The EA was placed on public exhibition by the NSW Department of Planning and Environment (DP&E) from 18 April 2018 to 15 May 2018.

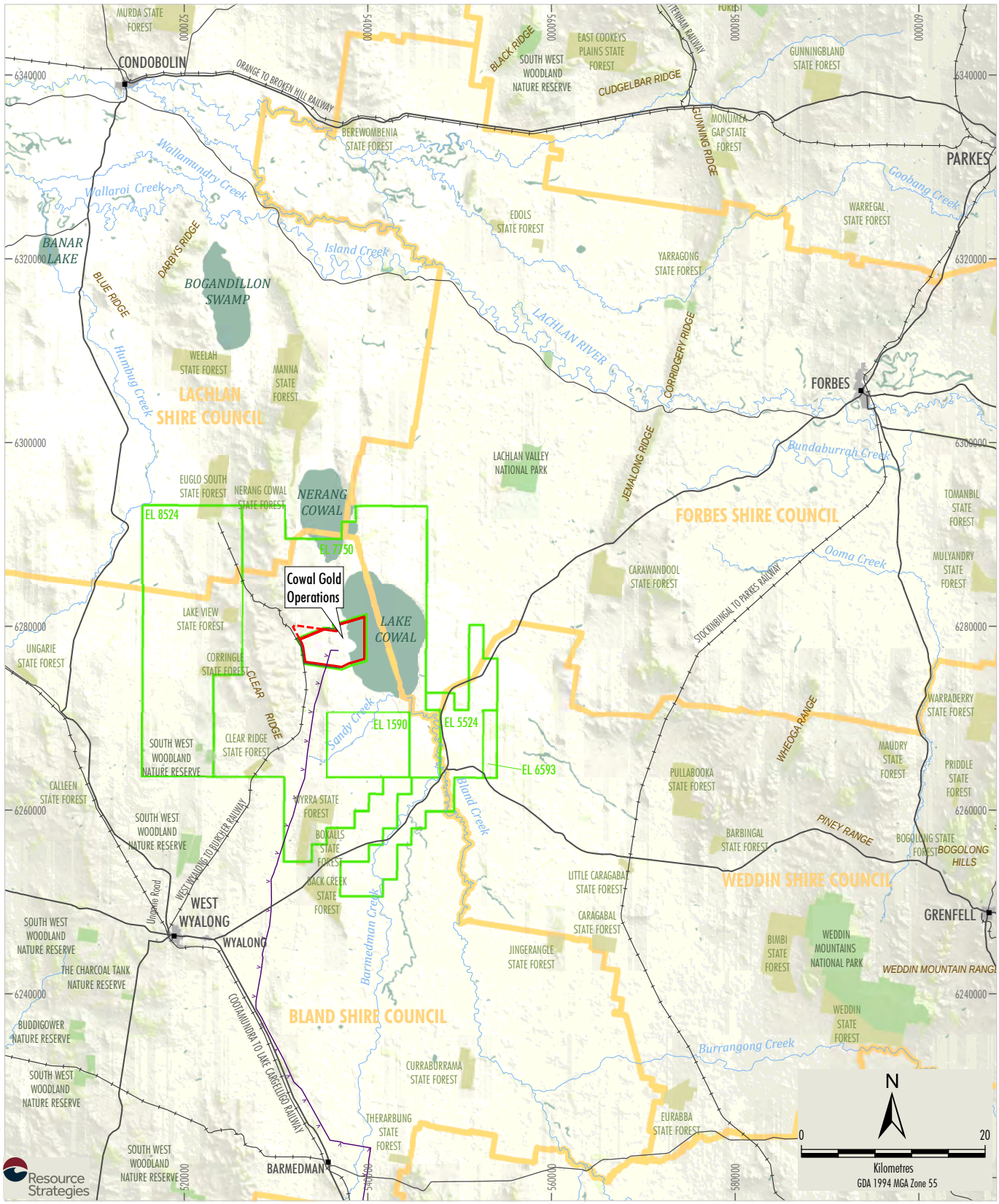
During this period, Government agencies, non-government organisations (NGOs), businesses and members of the public were invited to provide submissions on the EA to the DP&E.

The DP&E has requested that Evolution review and respond to the range of submissions that were received on the EA.

Evolution's responses to submissions have been structured as follows:

- Part A – Response to Government agency submissions (Section 5.1).
- Part B – Response to NGO submissions (Section 5.2).
- Part C – Response to Public Submissions (Section 5.3).

This Response to Submissions Report has been structured generally in accordance *Guideline 5; Responding to Submissions of the Draft Environmental Impact Assessment Guidance Series June 2017* (DP&E, 2017).



LEGEND

- Mining Lease Boundary (ML 1535)
- Mining Lease Application (MLA 1)
- Exploration Licence (EL)
- National Park & Nature Reserve
- State Forest
- Local Government Area Boundary
- Electricity Transmission Line
- Railway

Source: © NSW Department of Finance, Services & Innovation (2017)

Evolution Mining Cowal

CGO PROCESSING RATE MODIFICATION

Regional Location

Figure 1

2 OVERVIEW OF THE MODIFICATION

The Modification involves expansion of the CGO within ML 1535 and a new Mining Lease Application MLA area (MLA 1, encompassing approximately 255 ha) and an increase to the CGO's approved ore processing rate of 7.5 million tonnes per annum (Mtpa) to 9.8 Mtpa.

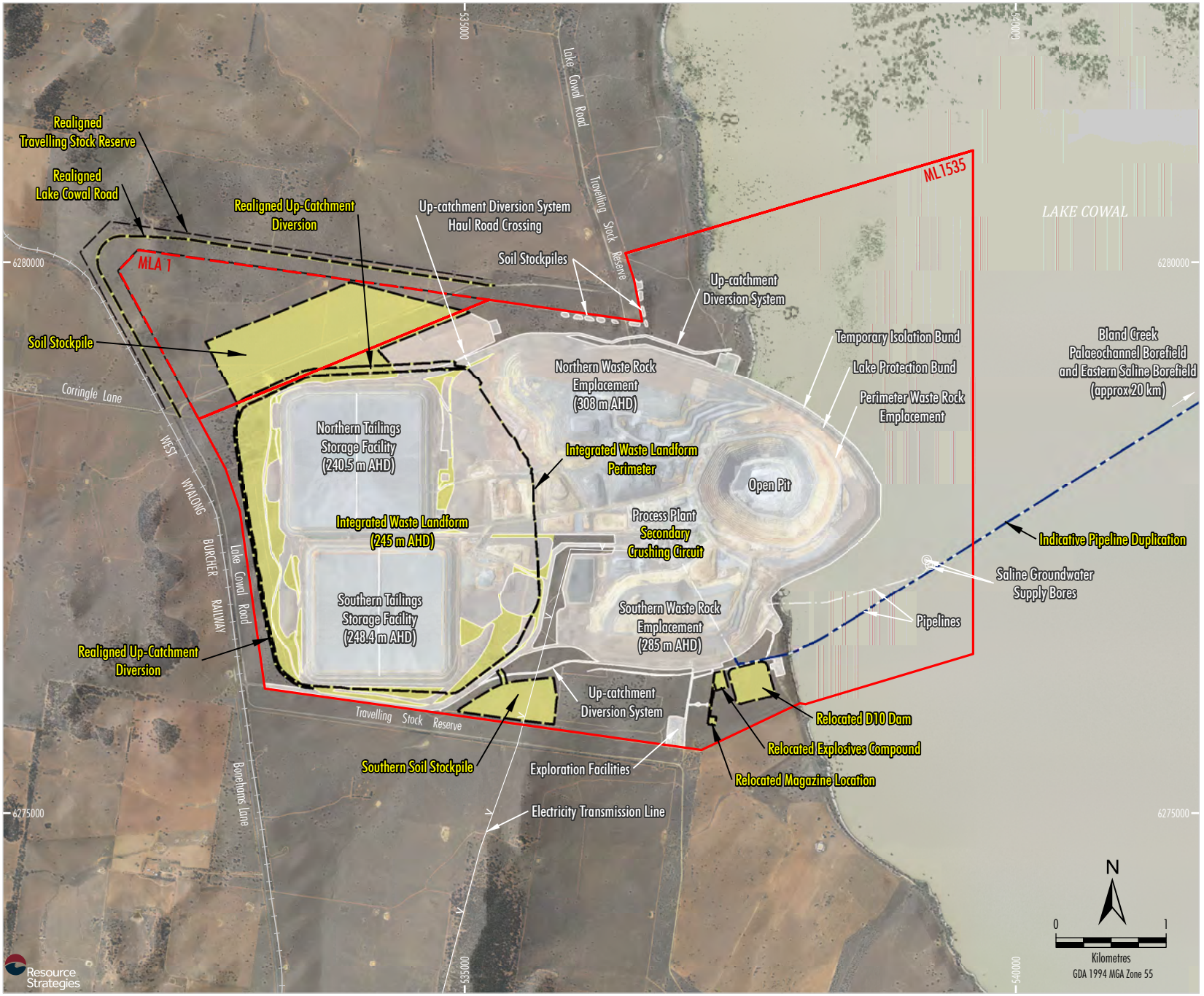
In general, there would be no change to the existing functionality of the CGO due to the Modification, as the Modification would involve:

- continued mining in the existing open pit for the extraction of gold-bearing ore and waste rock;
- continued use of existing waste rock emplacements in addition to the proposed Integrated Waste Landform (IWL) for the placement of waste rock extracted from the open pit;
- continued use of existing ore processing infrastructure, along with the installation of a secondary crushing circuit within the existing process plant area; and
- continued storage of tailings on-site within the existing tailings storage facilities (TSFs) and within the IWL.

The Modification components are shown on Figure 2 and Table 1 provides a summary comparison of the approved CGO and the Modification components.

The Modification involves **no change** to the following key components of the existing CGO:

- life of the CGO;
- mining methods;
- extent and depth of the open pit;
- lake isolation system;
- maximum waste rock emplacement heights;
- cyanide leaching circuit;
- cyanide destruction method;
- approved cyanide concentration limits in the aqueous component of the tailings slurry;
- water supply sources;
- approved daily or annual extraction limits of the Bland Creek Palaeochannel Borefield;
- site access road;
- power supply;
- exploration activities; or
- hours of operation.



LEGEND

- Mining Lease Boundary (ML 1535)
- Mining Lease Application Boundary (MLA 1)
- Approximate Extent of Approved Surface Development
- Approximate Extent of Additional Modification Surface Disturbance
- Modification Component

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

Evolution Mining Cowal

CGO PROCESSING RATE MODIFICATION

Modification General Arrangement

Figure 2

Table 1
Summary Comparison of Approved CGO and the Modification

Development Component	Approved CGO[1]	Proposed Modification
Tenement	Development approved to occur within the Development Application areas, including ML 1535.	New ML tenement (MLA 1) proposed to north-west of ML 1535.
Mining Method	Open pit mining operations.	No change.
Life of Mine	28 year operational life of the CGO, up to 31 December 2032.	No change.
Gold Production	Producing a total of approximately 5.5 Million ounces (Moz) of gold over the life of the CGO.	Minor increase in gold production over the life of the CGO in the order of 6.1 Moz (due to processing of additional mineralised material).
Open Pit Extent	Development of the open pit in stages as it is progressively deepened and widened within the existing disturbance area. Total open pit area of approximately 131 ha and final depth of approximately -331 metres (m) Australian Height Datum (AHD).	No change.
Ore Production and Processing	Approximately 167 million tonnes (Mt) of ore produced over the life of the CGO.	No change.
	Gold extracted from the ore using a conventional carbon-in-leach cyanide leaching circuit.	No change.
	Ore processing rate of up to 7.5 Mtpa.	Ore processing rate increase up to 9.8 Mtpa. Increased annual consumption of process consumables (including cyanide use [refer below]). No new process consumables. Construction of a secondary ore crushing circuit within existing process plant.
	Processing of approximately 31 Mt of mineralised material.	Processing of approximately 39.3 Mt of mineralised material.
Waste Rock Management	Mined waste rock emplaced in the northern, southern and perimeter waste rock emplacements over the life of the CGO.	Emplacement of waste rock around the perimeter of the IWL. No change to footprints of the southern or perimeter waste rock emplacements.
	Approximately 309 Mt of waste rock produced over the life of the CGO.	Approximately 299 Mt of waste rock produced over the life of the CGO.
	Temporary stockpiling of mineralised material on the northern waste rock emplacement to a maximum design height of approximately 288 m AHD. This material would be processed and the stockpile would be progressively removed.	Increase in elevation of the mineralised material stockpile to 320 m AHD.
	Northern waste rock emplacement to be constructed to a maximum design height of approximately 308 m AHD.	No change.
	Southern waste rock emplacement to be constructed to a maximum design height of approximately 283 m AHD.	No change.
	Perimeter waste rock emplacement to be constructed to a maximum design height of approximately 223 m AHD.	No change.
Soil Management	Application of soil resources management strategies/objectives in accordance with the existing Erosion and Sediment Control Management Plan (ESCMP).	No change.
	Development of soil stockpiles within ML 1535.	Relocation of soil stockpiles within ML 1535 and development of new soil stockpiles within ML 1535 and MLA 1.

Table 1 (Continued)
Summary Comparison of Approved CGO and the Modification

Development Component	Approved CGO[1]	Proposed Modification
TSFs	Tailings deposited in two TSFs (Northern and Southern). Approved construction of a rock fill buttress cover on the outer slopes of the TSF embankments to provide long-term stability.	Modification/expansion of existing TSFs within ML 1535 (i.e. the IWL) to integrate with the northern waste rock emplacement.
	The TSF footprints cover an area of approximately 350 ha.	New footprint for the IWL.
	Northern TSF (NTSF) and Southern TSF (STSF) to be constructed to a maximum design height of approximately 264 m AHD and 272 m AHD, respectively.	NTSF and STSF to be constructed to approximately 240 m AHD and 248 m AHD, respectively. IWL within ML 1535 to be constructed to maximum design height of approximately 245 m AHD. Tailings deposition within the IWL would inundate the NTSF.
	No construction work on the TSF embankments between the hours of 7.00 am to 6.00 pm.	Waste rock hauled to the IWL and handled 24 hours a day. An increase to the TSF construction fleet.
Cyanide Concentration Levels	Use of cyanide in accordance with the approved Cyanide Management Plan (CMP). Cyanide concentrations in the aqueous component of the tailings slurry stream at the process plant not to exceed the following: • 20 milligrams per litre (mg/L) weak acid dissociable cyanide (CN_{WAD}) (90^{th} percentile over 6 months); and • 30 mg/L CN_{WAD} (maximum permissible limit at any time).	No change.
Cyanide Consumption	Cyanide consumption for the primary and oxide circuits is approximately 0.7 kilograms (kg) and 0.8 kg of cyanide per tonne of ore, respectively. Primary ore leach circuit including recovery of gold from flotation tailings.	Increase in annual cyanide consumption for the primary and oxide circuits by approximately 25 percent (%). No change to approved primary ore leach circuit.
Water Supply Sources and Infrastructure	Water used for ore processing is sourced from the following internal and external sources: • Return water from the TSFs. • Open pit sump and dewatering borefield. • Rainfall runoff from mine waste rock emplacements, and other areas which is collected as part of the Internal Catchment Drainage System (ICDS) in contained water storages. • Saline groundwater supply borefield which is pumped from four production bores located in the south-east of ML 1535[2]. • Eastern Saline Borefield located approximately 10 km east of Lake Cowal's eastern shoreline. • Bland Creek Palaeochannel Borefield which comprises four production bores within the Bland Creek Palaeochannel located approximately 20 km to the east-northeast of the CGO. • Licensed water accessed from the Lachlan River which is supplied via a pipeline from the Jemalong Irrigation Channel (i.e. Bore 4 offtake).	No change to water supply sources. Duplication of existing water supply pipeline across Lake Cowal. Recovery of water from the TSFs at an increased rate. Additional use of Lachlan River water, in an average year. No change to existing approved water supply storages, except for relocation of contained water storage D10 within ML 1535.

Table 1 (Continued)
Summary Comparison of Approved CGO and the Modification

Development Component	Approved CGO[1]	Proposed Modification
Water Supply Sources and Infrastructure (continued)	Approval for construction of a new pump station and associated diesel generator and access track on the eastern side of Lake Cowal adjacent to the existing mine water supply pipeline to improve capacity/flows. Approval for construction of a new water supply storage (D10) within ML 1535.	No change (except for relocation of D10 within ML 1535).
Bland Creek Palaeochannel Borefield Extraction Limits	The maximum extraction of water from the Bland Creek Palaeochannel will not exceed: • 15 megalitres per day (ML/day); or • 3,650 megalitres per annum (ML/annum). Extraction is managed to maintain groundwater levels above the established NSW Department of Industry – Water (DI – Water) (formerly the NSW Department of Primary Industries – Water [DPI – Water]) trigger levels.	No change.
Site Water Management Infrastructure	The existing CGO water management infrastructure is comprised of the following major components: • Up-catchment Diversion System (UCDS) and the ICDS (including the contained water storages); • lake isolation system (comprising the temporary isolation bund, lake protection bund and perimeter waste rock emplacement); • integrated erosion, sediment and salinity control system; and • open pit sump and dewatering borefield. Contained water storage D5 is approved to be modified to accommodate the extension of the open pit (known as D5A). Approval for construction of a new contained water storage/sediment dam for the soil stockpile catchment area located in the north of ML 1535. Relocation of some dewatering bores as the open pit extends beyond the currently installed bores around its perimeter.	No change to the existing lake isolation system. Relocation of a portion of the UCDS and ICDS around the IWL (within ML 1535 and MLA 1) and relocation of approved contained water storage D10 (within ML 1535).
Biodiversity Offset Strategy	The Biodiversity Offset Strategy is shown conceptually in Appendix 4 of Development Consent (DA 14/98).	Revised Biodiversity Offset Strategy.
Power Supply Activities[3]	Electricity to the site via a 132 kilovolt (kV) electricity transmission line (ETL) from Temora, approximately 90 km south of the CGO.	No change.
Exploration	Exploration activities undertaken within ML 1535 in accordance with existing tenement.	No change.
Site Access Road	Site access road following existing roads from West Wyalong to the CGO. Light vehicle access from Condobolin and Forbes.	No change to existing site access route from West Wyalong to the CGO. Proposed new site access routes from Forbes and Condobolin for temporary use[4].
Hours of Operation	24 hour operations, seven days a week.	No change.
Employment	The average workforce employed at the CGO is currently approximately 385 people (including Evolution staff and on-site contractor's personnel). During peak periods, the CGO employs up to 435 people.	A minor increase (approximately 10 people) to the average and peak workforce employed at the CGO. Short term construction workforce of up to 100 people (road relocation and pipeline duplication).

1 Approved CGO approved on 26 February 1999 as modified.

2 Evolution has currently installed two of the four approved production bores.

3 The operations of the Eastern Saline Borefield and Temora to Cowal ETL are approved separately under the EP&A Act.

4 During periods where existing preferred routes are unavailable (e.g. due to flood inundation or road closure).

3 ANALYSIS OF SUBMISSIONS

3.1 NUMBER OF SUBMISSIONS

A total of 29 submissions on the Modification were received from Government agencies, NGOs, and members of the public. Graph 1 presents a summary of the number of submissions by submitter category.

In summary, the submissions comprised of 19 supporting submissions, nine submissions in the form of comments, and one submission in the form of an objection (Graph 2). A breakdown of the submissions is provided in the following sections.

3.2 GOVERNMENT AGENCY SUBMISSIONS

A total of nine submissions were received from NSW government agencies (including local councils), one which was in support (i.e. the Lachlan Shire Council) and the remainder of which were in the form of comments or suggested conditions.

3.3 NON-GOVERNMENT AGENCY SUBMISSIONS

A total of four submissions were received from NGOs, including environmental and community organisations; two were in support, one was in the form of comments and one (from the West Plains Water Users Association) was in the form of an objection.

3.4 PUBLIC SUBMISSIONS

A total of 16 supporting submissions were received from members of the public. No submissions in the form of comments or objections were received from members of the public.

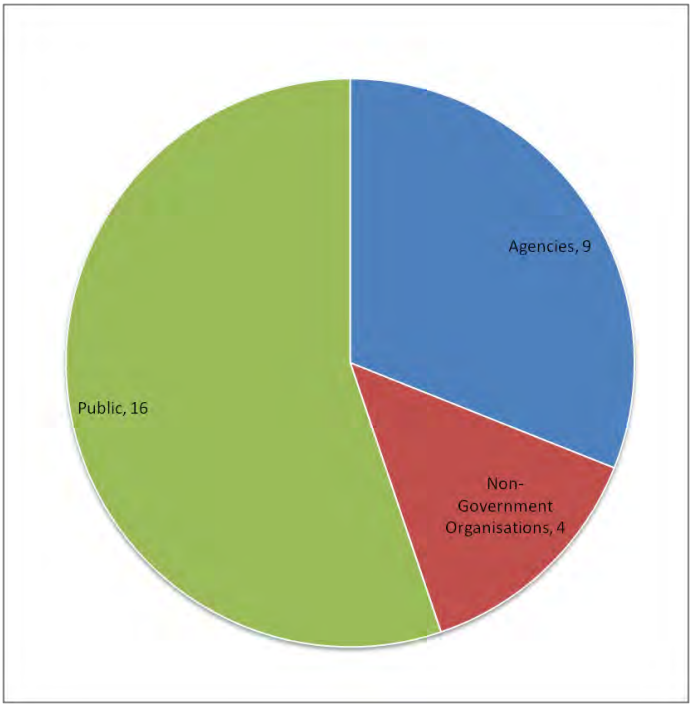
3.5 KEY ISSUES RAISED IN SUBMISSIONS

The most commonly raised issues in submissions pertained to:

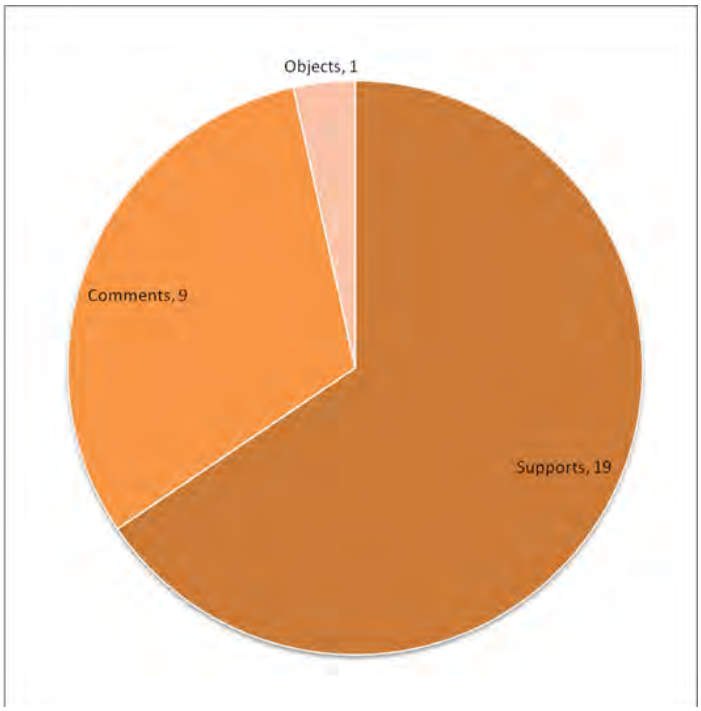
- potential impacts of the Modification on the Bland Creek Palaeochannel Borefield;
- queries of a technical nature on the Biodiversity Assessment Report and Biodiversity Offset Strategy (BARBOS); and
- concerns regarding road transport impacts of the Modification on the local road network.

A number of issues raised in the public/NGO submissions pertained to elements of the approved CGO that would be unchanged for the Modification (e.g. the use of the trigger levels for Bland Creek Palaeochannel extraction).

Graph 1
Summary of All Submissions



Graph 2
Summary of Submission Types



4 ACTIONS TAKEN FOLLOWING EXHIBITION OF ENVIRONMENTAL ASSESSMENT

During preparation of the EA, Evolution met with members of the Lachlan Valley Water Users Group twice to discuss the Modification, EA content and its findings.

Since commencement of EA exhibition, Evolution contacted Lachlan Valley Water Users Group to check whether the concerns raised by Wests Plains Water Users and the Trigalana Water Users Group Inc in their submissions were representative of other water users. No concerns were reported to Lachlan Valley Water Users Group from other water users, therefore, no further consultation was warranted.

Changes to the Modification

Following exhibition of the Modification and a comprehensive review of the comments and objections raised. No changes are proposed to the Modification described in the EA.

5 RESPONSES TO SUBMISSIONS

5.1 PART A – RESPONSES TO GOVERNMENT AGENCY SUBMISSIONS

Responses to government agency submissions are provided in the following subsections. In addition, Evolution notes and acknowledges:

- The recommended conditions provided by the Environment Protection Authority.
- The submission provided by Bland Shire Council.
- The submission in support by Lachlan Shire Council.
- The submission provided by the Heritage Council.
- The submission provided by Division of Resources and Geoscience.
- Comments from the Roads and Maritime Services.

5.1.1 Office of Environment and Heritage

Biodiversity

Biodiversity Assessment Report

Office of Environment and Heritage (OEH) Recommended Condition of Development Consent

> *Any vegetation clearing required for the final development footprint that is additional to the BARBOS must be assessed in accordance with the Framework for Biodiversity Assessment (FBA) (OEH, 2014).*

Response

OEH comments noted. Section 1.2 of the BARBOS (Appendix C of the EA) (Resource Strategies, 2018) states:

> *It should also be noted that the BAR Footprints are indicative and may vary slightly following further detailed mine planning and particularly the detailed design of supporting infrastructure. While some changes to the BAR Footprints would be expected over the life of the mine, any such changes are expected to be minor and therefore would have no material impact on biodiversity values.*

Issue Raised – Plant Community Types

> *OEH understand that it may be unwieldy for the BAR to refer to the NSW Plant Community Types (PCTs) when the BioBanking Credit Calculator uses Biometric Vegetation Types (BVTs).*
>
> *However, BVTs have been phased out and any future assessments or auditing of Offset Areas will use PCTs. The EPBC Act bilateral assessment undertaken by OEH on behalf of the Commonwealth also requires reporting by PCT.*
>
> *Corresponding PCTs have been added to tables in most tables in Sections 2 and 3 but generally not in Section 4.*

OEH recommended action:

> *Include PCT numbers in Table 10, 14, 19, 28, 29, 30 and 31.*

Response

Table 2 (reproduced from Table 25 of the BARBOS) provides a summary of the credits listing both BVTs and PCTs.

Issue Raised – Stage 2 Impact Assessment

> *Maps listed in Table 21 (FBA Appendix 7, page 102) as required for the Impact Summary is section have not been individually included. While the information is included in earlier parts of the BAR, providing the required maps would be helpful given there are two assessment areas.*

Response

Figures 3 to 8 provides the relevant mapping as requested by OEH.

Issue Raised – Measure to Avoid and Minimise Impacts

> *The FBA requires a table of measures to avoid and minimise the impacts of the project, to be implemented before, during and after construction, including action, outcome, timing and responsibility (Table 21, page 102).*
>
> *As discussed in this section, mitigation measures in existing Cowal Gold Operations management plans and protocols are applicable to the Modification. There are a number of interrelated and potentially overlapping management plans that are shown on page 13 of the Cowal Gold Operations Environmental Management Strategy 2014, available from the Evolution Mining website (evolutionmining.com.au/wp-content/uploads/2015/07/Environmental-Management-Strategy.pdf).*
>
> *Section 7 of the EA has a consolidated summary of environmental management and monitoring measures that does not provide the required detail.*

Table 2
Ecosystem Credit Requirements

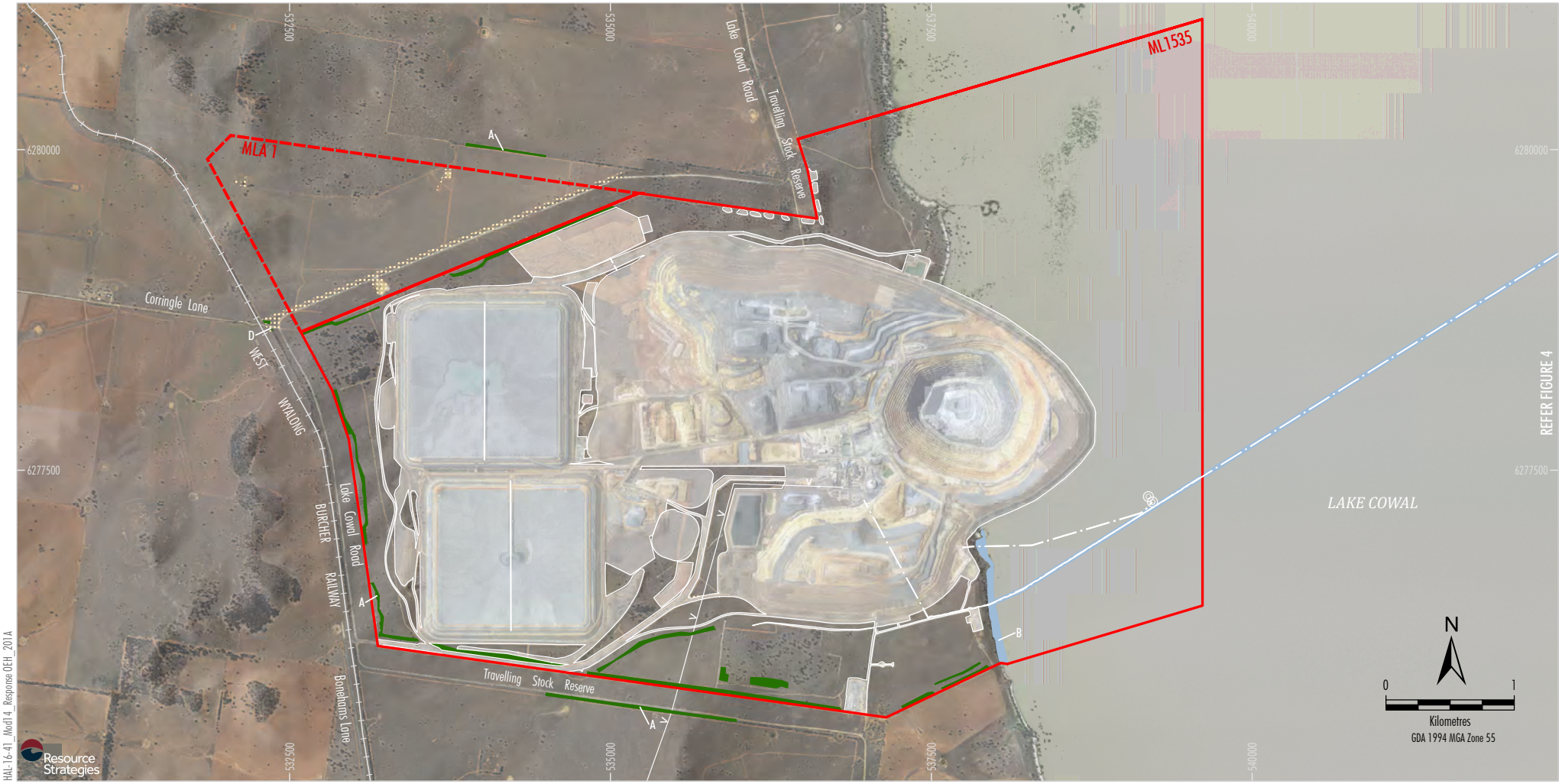
#	Vegetation Community (BVT)	PCT	Clearance Area (ha)	Credit Requirement (Attachments D and E)	Credits from BVTs able to be retired to address the Ecosystem Credit Requirement (Attachments D and E)	Offset Location (Attachments D and E)
Semi-arid Woodlands (Grassy sub–formation) – Riverine Plain Woodlands						
1a	Weeping Myall Open Woodland (Semi Cleared in Moderate Condition) (LA212)	26	1.3[A, B]	51	LA 212	Lower Slopes - Lachlan
1b	Weeping Myall Open Woodland (Semi Cleared in Low Condition) (LA212)		0.2 [A, B]	58		
1c	Weeping Myall Open Woodland (Derived Native Grassland in Low Condition) (LA212)		3[A]			
Grassy Woodlands – Floodplain Transition Woodlands						
2a	Inland Grey Box - White Cypress Pine Woodland (Semi Cleared in Moderate Condition) (LA152)	82	6.5[C]	816	LA 152, LA 153, LA 154, LA162, LA 163, LA175, LA 178, LA 194, LA 195	Lower Slopes - Lachlan
2b	Inland Grey Box - White Cypress Pine Woodland (Derived Grassland in Low Condition) (LA152)		23.5[D]			
Forested Wetlands – Inland Riverine Forests						
3	River Red Gum Forest (Moderate Condition) (LA191)	249	0.4	19	LA 191, LA 263	Lower Slopes - Lachlan
Semi-arid Woodland (Grassy sub–formation) – North-west Floodplain Woodlands						
4	Belah Woodland (Low Condition) (LA105)	55	16.5	193	LA 105	Lower Slopes - Lachlan
Semi-arid Woodland (Scrubby sub–formation) – Inland Rocky Hill Woodlands						
5	Dwyer's Red Gum - White Cypress Pine - Currawang Woodland (Moderate Condition) (LA144)	185	1	18	LA 144, LA 204, LA 220, LA 122, LA 126, LA 141, LA 142, LA 143, LA 147, LA 148, LA 149, LA 181, LA 184, LA 200, LA237, LA 249, LA 270, LA 253, LA 254, LA 269, LA 267	Lower Slopes - Lachlan
6a	Highly Modified Derived Grasslands (Moderate Condition) (LA138)	250	63.5	679	LA 138, LA 244, LA 238	Lower Slopes - Lachlan
6b	Highly Modified Derived Grasslands (Low Condition) (LA138)		170.8	1,853		
		Total	**286.7**	**3687**	**-**	**-**

A Equivalent to the Myall Woodland Endangered Ecological Community (EEC) listed under the BC Act.

B Equivalent to the Myall Woodland EEC listed under the EPBC Act.

C 6.5 ha equivalent to the Grey Box EEC listed under the EPBC Act and BC Act.

D 23.5 ha equivalent to the Grey Box EEC listed under the BC Act, including approximately 5 ha equivalent to the Grey Box EEC listed under the EPBC Act.



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LEGEND

Mining Lease Boundary (ML 1535)

Mining Lease Application Boundary (MLA 1)

Approximate Extent of Approved Surface Development

AREAS NOT REQUIRING ASSESSMENT - MINE SITE

Map Units

A Plantings

B Lake Bed

D Cleared

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

Evolution Mining Cowal

CGO PROCESSING RATE MODIFICATION

Areas Not Requiring Assessment - Mine Site

Figure 3

LEGEND

Approximate Extent of Approved Surface Development

AREAS NOT REQUIRING ASSESSMENT - PIPELINE

Map Units

B Lake Bed

C Cropping

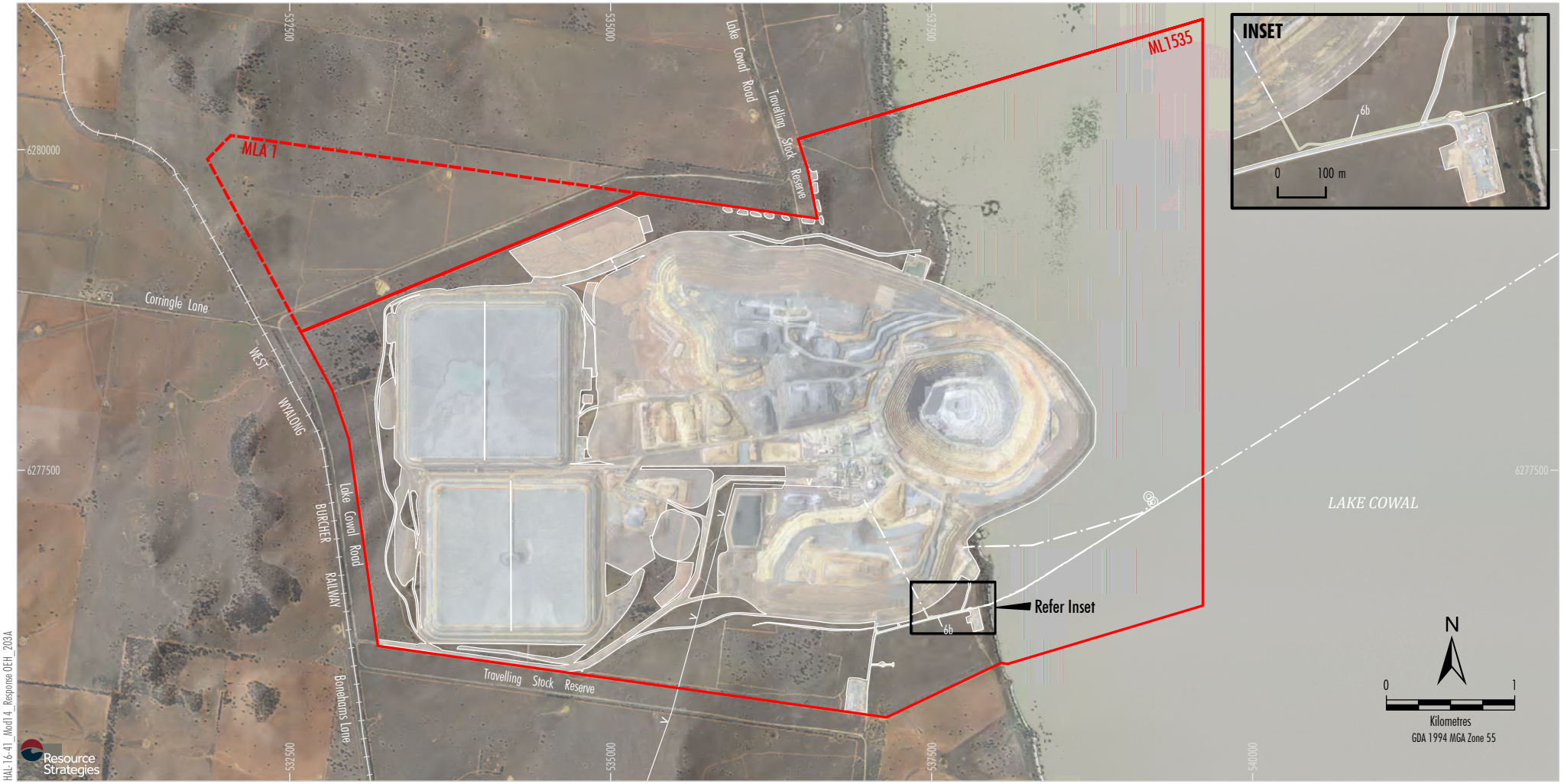
Source: © NSW Department of Finance, Services & Innovation (2017)
Orthophoto: Evolution (Oct 2017)

Evolution Mining Cowal

CGO PROCESSING RATE MODIFICATION

Areas Not Requiring Assessment - Pipeline

Figure 4



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LEGEND

Mining Lease Boundary (ML 1535)

Mining Lease Application Boundary (MLA 1)

Approximate Extent of Approved Surface Development

BIOMETRIC VEGETATION TYPE NOT REQUIRING OFFSET

Grasslands - Western Slopes Grasslands

6b Highly Modified Derived Grasslands (Low Condition) (LA138)

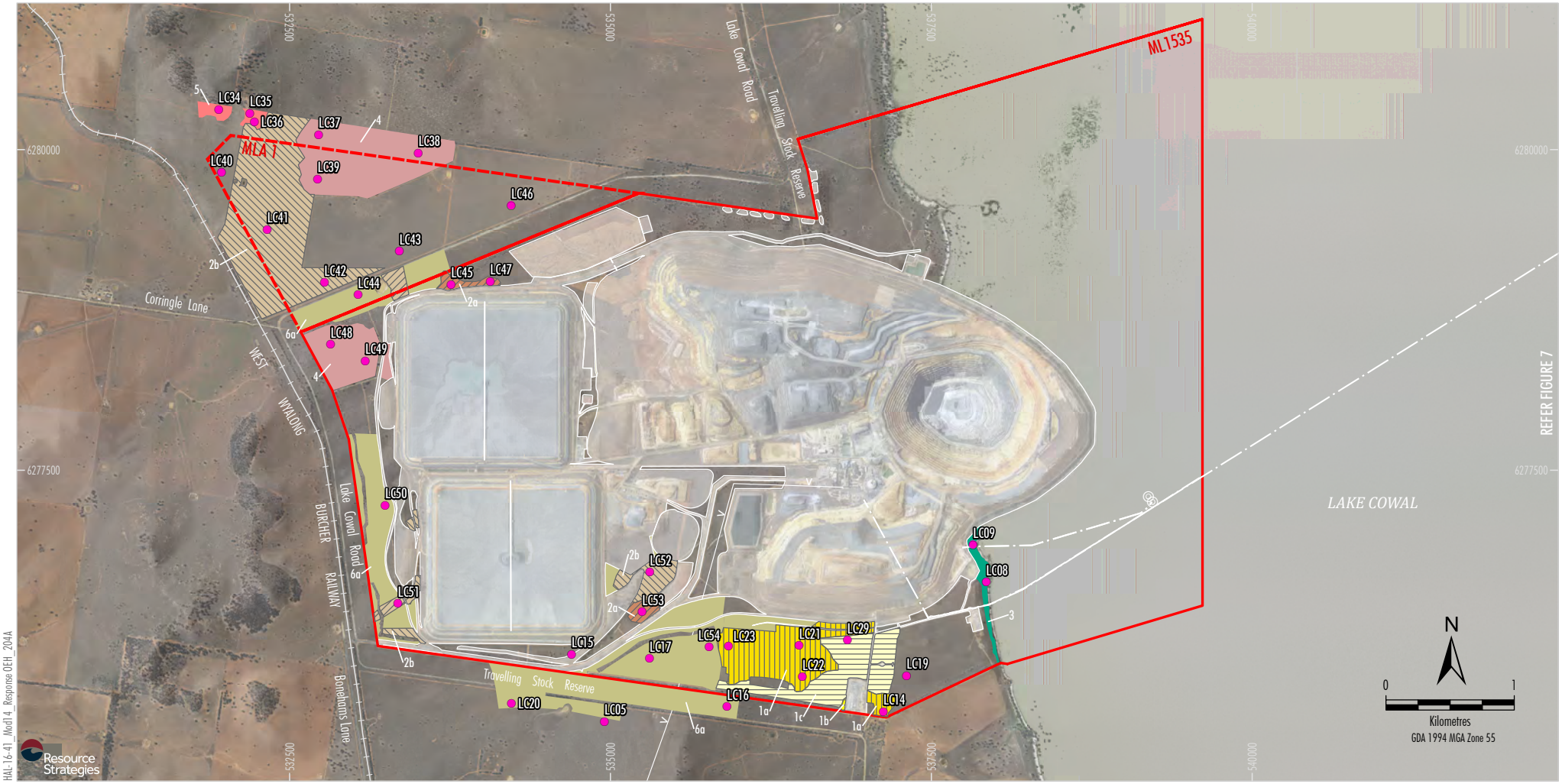
Source: © NSW Department of Finance, Services & Innovation (2017)
Orthophoto: Evolution (Oct 2017)

Evolution Mining Cowal

CGO PROCESSING RATE MODIFICATION

Biometric Vegetation Type Not Requiring Offset

Figure 5



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LEGEND

- Mining Lease Boundary (ML 1535)
- Mining Lease Application Boundary (MLA 1)
- Approximate Extent of Approved Surface Development
- FBA Plot

BIOMETRIC VEGETATION TYPE REQUIRING OFFET - MINE SITE

Semi-arid Woodlands (Grassy sub-formation) - Riverine Plain Woodlands

- 1a Weeping Myall Open Woodland (Semi Cleared in Moderate Condition) (LA212)
- 1b Weeping Myall Open Woodland (Semi Cleared in Low Condition) (LA212)
- 1c Weeping Myall Open Woodland (Derived Grassland in Low Condition) (LA212)

Grassy Woodlands - Floodplain Transition Woodlands

- 2a Inland Grey Box - White Cypress Pine Woodland (Semi Cleared in Moderate Condition) (LA152)
- 2b Inland Grey Box - White Cypress Pine Woodland (Derived Grassland in Low Condition) (LA152)

Forested Wetlands - Inland Riverine Forests

- 3 River Red Gum Forest (Moderate Condition) (LA191)

Semi-arid Woodlands (Grassy sub-formation) - Northwest Floodplain Woodlands

- 4 Belah Woodland (Low Condition) (LA105)

Semi Arid Woodland (Shrubby sub-formation) - Inland Rocky Hill Woodlands

- 5 Dwyer's Red Gum - White Cypress Pine - Currawang Woodland (Moderate Condition) (LA144)

Grasslands - Western Slopes Grasslands

- 6a Highly Modified Derived Grasslands (Moderate Condition) (LA138)

Threatened Ecological Communities

- Grey Box Woodland EEC (BC Act and EPBC Act)
- Grey Box Woodland EEC (BC Act)
- Weeping Myall Woodland EEC (BC Act and EPBC Act)
- Weeping Myall Woodland EEC (BC Act)

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

Evolution Mining Cowal

CGO PROCESSING RATE MODIFICATION

Biometric Vegetation Type Requiring Offset - Mine Site

Figure 6

LEGEND

- Approximate Extent of Approved Surface Development
- FBA Plot

BIOMETRIC VEGETATION TYPE REQUIRING OFFET - PIPELINE

Semi-arid Woodlands (Grassy sub-formation) - Riverine Plain Woodlands

- 1a Weeping Myall Open Woodland (Semi Cleared in Moderate Condition) (LA212)
- 1b Weeping Myall Open Woodland (Semi Cleared in Low Condition) (LA212)
- 1c Weeping Myall Open Woodland (Derived Grassland in Low Condition) (LA212)

Forested Wetlands - Inland Riverine Forests

- 3 River Red Gum Forest (Moderate Condition) (LA191)

Threatened Ecological Communities

- Weeping Myall Woodland EEC (BC Act and EPBC Act)
- Weeping Myall Woodland EEC (BC Act)

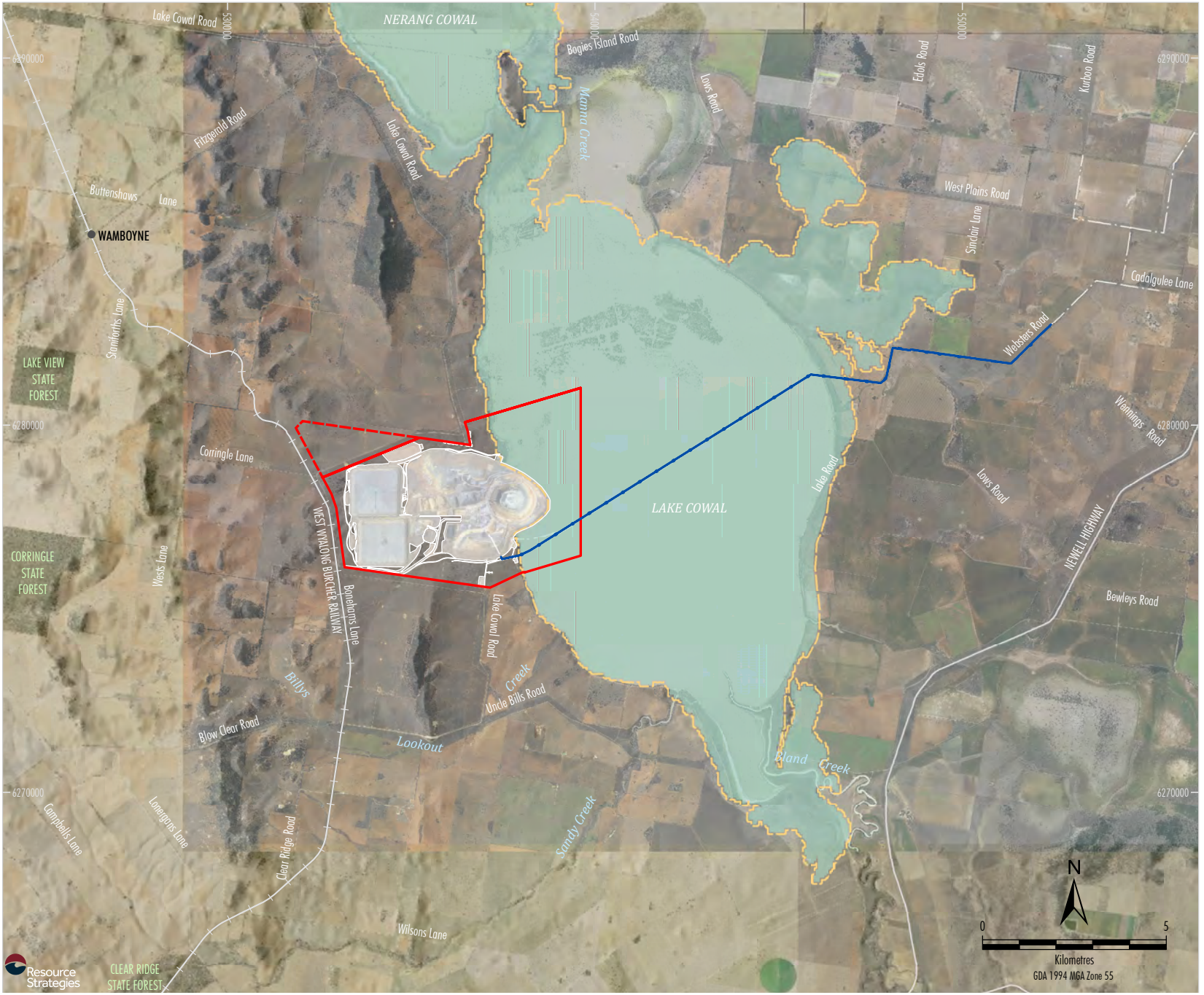
Source: © NSW Department of Finance, Services & Innovation (2017)
Orthophoto: Evolution (Oct 2017)

Evolution Mining Cowal

CGO PROCESSING RATE MODIFICATION

Biometric Vegetation Type Requiring Offset - Pipeline

Figure 7



LEGEND

- Mining Lease Boundary (ML 1535)
- Mining Lease Application Boundary (MLA 1)
- Approximate Extent of Approved Surface Development
- BAR Footprint - Pipeline

IMPACTS REQUIRING FURTHER CONSIDERATION - PIPELINE

- Wetland in the Directory of Important Wetlands Australia
- 50 m Buffer of a Wetland in the Directory of Important Wetlands Australia

Source: Evolution (2018); © NSW Department of Planning and Environment (2017); Department of Finance, Services & Innovation (2017); Crown Lands and Water - a Division of the NSW Department of Industry (2013); Office of Environment and Heritage NSW; Australian Government Department of the Environment (2017)
Orthophoto: Evolution (Oct 2017); Department of Finance, Services & Innovation (2017)

Evolution Mining Cowal

CGO PROCESSING RATE MODIFICATION

Impacts Requiring Further Consideration - Pipeline

Figure 8

HAL-16-41_Mod14_Response OEH_206A

OEH recommended action:

- *OEH require the following details for each mitigation action to ensure that mitigation and management actions are carried out at the appropriate time:*
  - *who will be responsible for individual actions (including the position title of the officer responsible)*
  - *outcome or measure of success*
  - *triggers for an alternative action*
  - *when the action will be completed*
  - *identification of the existing plan that will be updated to include each action.*

These details should be completed before the start of construction to clearly identify the proponent's commitments for management and mitigation. Each action should be individually identifiable to allow their inclusion in the various construction and operational management plans.

Response

From the review of the FBA (OEH, 2014):

FBA requires a table of measures to avoid and minimise the impacts of the project, to be implemented before, during and after construction, including:

- *action;*
- *outcome;*
- *timing; and*
- *responsibility.*

The actions to be implemented are outlined in Tables 22 and 24 of the BARBOS. It is noted that the FBA does not require the BARBOS to detail *triggers for an alternative action* and therefore these details are not provided.

Evolution is responsible for all actions to be implemented. It is noted that the FBA does not require the BARBOS to nominate *who will be responsible for individual actions (including the position title of the officer responsible)* and therefore these details are not provided.

Notwithstanding, Table 3 provides the measures to avoid and minimise the impacts of the project, to be implemented before, during and after construction, including action, outcome, timing and responsibility.

Table 3 also includes the existing management plan that will be updated to include each action.

Issue Raised – Direct Impacts and Measures to Avoid and Minimise Impacts

The BAR lists measures from the CGO Compensatory Wetland Management Plan (CWMP) that may be used to manage disturbance to the Compensatory Wetland area due to the modification. OEH agree that the measures are appropriate but recommend a stronger commitment to specific measures to ensure continued improvement in condition of the Compensatory Wetland Area and to meet the requirements of Condition 3.10(A)(ii) of the development consent.

Actions mentioned in BAR Section 4.1.4 (page 68) are also appropriate and should be applied to any area of disturbance within the Compensatory Wetland area. Activities must avoid increasing the likelihood of failure of enhancement measures currently underway.

Specific measures to be implemented in the Compensatory Wetland Area should include, but not be limited to:

- *Limiting vehicular access to the Compensatory Wetland area according to Section 6.1.6 (page 21) of the CWMP.*
- *Weed control as per CWMP section 7.2 (page 29) and Section 6 of the Land Management Plan or relevant update in LMP Addendum 2015.*
- *Prevention of weed establishment and spread by ensuring vehicle hygiene measures for any earthworks machinery brought in for the works (LMP Section 6.4 page 25).*
- *Increased monitoring in the 12 months following construction to prevent weed establishment, including monthly inspections for erosion, sedimentation, slumping, weeds establishment and weed control following details mentioned in Section 4.1.4 (page 68).*

OEH recommended action:

Specify mitigation and monitoring measures to be implemented within the Compensatory Wetland Area in accordance with the BAR and Compensatory Wetland Management Plan.

Response

Noted. Refer to Table 3.

Table 3
Impact Avoidance and Mitigation Measures at the CGO

Action	Outcome	Timing	Responsibility	Management Plan
Revegetation of the post-mine landforms (including waste rock emplacements).	Stable rehabilitated landforms that increase the areas of endemic vegetation.	Ongoing during operations and post--closure.	Evolution	Rehabilitation Management Plan[1]
Rehabilitation of the final void.	Final void surrounds safe (for humans and stray stock).	Ongoing during operations and post-closure.	Evolution	Rehabilitation Management Plan[1]
Rehabilitation of the approved TSFs.	Stable rehabilitated landforms that increase the areas of endemic vegetation.	Ongoing during operations and post-closure.	Evolution	Rehabilitation Management Plan[1]
Delineation of disturbance area.	Vegetation clearance is minimised.	Before and during construction and operations.	Evolution	Flora and Fauna Management Plan[2]
Pre-clearance surveys.	Minimise impact of land clearance on fauna.	Before and during construction and operations.	Evolution	Flora and Fauna Management Plan[2]
Fauna management strategies.	Minimise impact of land clearance on fauna.	Before and during construction and operations.	Evolution	Flora and Fauna Management Plan[2]
Vegetation clearance procedure.	Minimise impact of land clearance on fauna.	Before and during construction and operations.	Evolution	Flora and Fauna Management Plan[2]
Vehicle speed limits and road signage.	Reduce the danger of vehicles to wildlife.	Before and during construction and operations.	Evolution	Flora and Fauna Management Plan[2]
Threatened Species Management Protocol.	Minimise impact of land clearance on threatened species.	Before and during construction and operations.	Evolution	Implementation of the Threatened Species Management Protocol[3]
Mechanisms to keep fauna away from the TSFs.	Minimise fauna interaction with the TSFs.	Ongoing during operations.	Evolution	Flora and Fauna Management Plan[2]
Cyanide destruction process.	Minimise exposure of fauna to cyanide.	Ongoing during operations.	Evolution	Flora and Fauna Management Plan[2]
Monitoring of fauna usage of the final void.	Monitoring to detect fauna usage of the final void.	Post-closure.	Evolution	Flora and Fauna Management Plan[2]
Monitoring of fauna usage of the TSFs.	Monitoring to detect fauna usage of the TSFs.	Ongoing during operations.	Evolution	Flora and Fauna Management Plan[2]
Remnant Vegetation Enhancement.	Enhancement of habitat available to flora and fauna within four Remnant Vegetation Enhancement Areas.	Ongoing during operations.	Evolution	Flora and Fauna Management Plan[2]
Protection of Remnant Vegetation within ML 1535.	Areas of woodland (Myall Woodland EEC) located near the southern boundary of ML 1535 protected from disturbance during operations.	Ongoing during operations.	Evolution	Flora and Fauna Management Plan[2]

Table 3 (Continued)
Impact Avoidance and Mitigation Measures at the CGO

Action	Outcome	Timing	Responsibility	Management Plan
Limiting vehicular access during construction of the pipeline in the CGO Compensatory Wetland.	Potential impacts from vehicles are minimised.	During construction.	Evolution	Compensatory Wetland Management Plan[4]
Weed management during construction of the pipeline in the CGO Compensatory Wetland.	Weed impacts are minimised.	During construction.	Evolution	Compensatory Wetland Management Plan[4]
Vehicle hygiene weed measures during construction of the pipeline in the CGO Compensatory Wetland.	Weed impacts are minimised.	During construction.	Evolution	Compensatory Wetland Management Plan[4]
Monthly monitoring for 12 months following construction of the pipeline in the CGO Compensatory Wetland the following: erosion, sedimentation, slumping and weed establishment.	Impacts on the native vegetation in the CGO Compensatory Wetland are minimised.	During construction.	Evolution	Compensatory Wetland Management Plan[4]
Dust control.	Dust impacts are minimised.	Ongoing during operations.	Evolution	Air Quality Management Plan[5]
Noise management.	Noise impacts are minimised.	Ongoing during operations.	Evolution	Flora and Fauna Management Plan[2]
Blasting management.	Blasting impacts are minimised.	Ongoing during operations.	Evolution	Flora and Fauna Management Plan[2]
Pest (animal and vermin) control.	Animal pest impacts are minimised.	Ongoing during operations.	Evolution	Flora and Fauna Management Plan[2]
Weed management.	Weed impacts are minimised.	Ongoing during operations.	Evolution	Flora and Fauna Management Plan[2]
Site water management.	Surface water impacts are minimised.	Ongoing during operations.	Evolution	Water Management Plan[6]
Design – Impact Avoidance.	Vegetation clearance is minimised.	Before construction.	Evolution	Flora and Fauna Management Plan[2]
Revegetation of the post-mine landforms.	Mine rehabilitation would include species characteristic of the Grey Box EEC and Weeping Myall Woodlands EEC listed under the EPBC Act.	Ongoing during operations and post-closure.	Evolution	Rehabilitation Management Plan[1]
Vegetation Clearance Protocol - Delineation of disturbance area.	Vegetation clearance is minimised.	Before construction.	Evolution	Flora and Fauna Management Plan[2]

Table 3 (Continued)
Impact Avoidance and Mitigation Measures at the CGO

Action	Outcome	Timing	Responsibility	Management Plan
Fencing.	Fencing along the travelling stock reserve (TSR) would exclude livestock from the land between the re-aligned TSR and the proposed stockpile.	Before construction.	Evolution	Flora and Fauna Management Plan[2]
Seed Collection.	Seed from species characteristic of the Grey Box EEC and Weeping Myall Woodlands EEC listed under the EPBC Act would be collected.	Before and during construction and operations.	Evolution	Flora and Fauna Management Plan[2]
Mechanisms to keep fauna away from the TSFs.	The IWL would be less conducive to the establishment of wildlife habitats	During construction and operations.	Evolution	Flora and Fauna Management Plan[2]

Source: After Resource Strategies (2018).

[1] Evolution (2017a).

[2] Evolution (2016).

[3] Barrick (2003a).

[4] Barrick (2003b).

[5] Evolution (2015).

[6] Evolution (2017b).

Issue Raised - Indirect Impacts and Measures to Avoid and Minimise Impacts

> *The EA proposes changes to the reporting of fauna deaths. OEH require more information about how the fauna death monitoring has been analysed to ensure that the objectives of the monitoring and outcomes are being met and the proposed changes are in accordance with the conditions of development consent.*
>
> *...*
>
> *OEH generally support the streamlining of monitoring and reporting by the proponent. Section 3.15.2 proposes to modify Development Consent condition 3.2(b) and the Flora and Fauna Management Plan to focus reporting only on cyanide-related native fauna deaths.*
>
> *While consent condition 3.2 does have a focus on impact of the tailings dam on native fauna, OEH need to be sure that fauna deaths from other potential impacts will not be inadvertently overlooked because of the proposed changes. The purpose of this reporting is to determine if deaths are attributable to activities on the site and to implement contingency measures if impacts are occurring.*

OEH recommended action:

> *An analysis of the fauna death data collected to date along with potential impacts from Mod 14 to provide evidence for streamlining reporting of fauna deaths. This could be in the context of a review of the Flora and Fauna Management Plan, or as a stand-alone study.*

Response

It is noted that OEH generally support the streamlining of monitoring and reporting. In accordance with Development Consent Condition 3.2(b) (ii), Evolution are currently required to report all fauna deaths (except those attributable to physical trauma such as vehicle strike) to the OEH, Division of Resources and Energy (now the Division of Resources and Geoscience), Community Environmental Monitoring and Consultative Committee (CEMCC) and in the case of fish, Department of Primary Industries (Fisheries) within 24 hours (or next working day). All deaths or other incidents attributable to physical trauma are summarised in the CGOs Annual Review.

As part of the Modification, Evolution proposes to modify Development Consent condition 3.2(b) to refocus the immediate reporting, to these many Departments, potential cyanide-related incidents rather than the unnecessary reporting of fauna deaths that are not cyanide-related.

Although a small number to date at the CGO, fauna deaths immediately reported to all of the above Departments are attributed mainly to natural causes, vegetation clearance and misadventure (e.g. collision with buildings). Evolution have a detailed vegetation clearance protocol that is implemented to minimise the risk of fauna deaths during vegetation clearance as well as separate reporting of the vegetation clearance activities.

Issue Raised – Impacts on Landscape Features that Require Further Consideration

> *OEH agree that any impacts to the state significant biodiversity link will be minimised by filling the excavated channel, followed by monthly monitoring for weed establishment and erosion/sedimentation issues, and corrective actions if detected.*

OEH recommended action:

> *Include mitigation actions described in Section 4.1.4 in the LMP or updates.*

Response

Mitigation actions identified in the BARBOS have been added to Table 3, refer to above.

Issue Raised – Cumulative Impacts

> *The total offset including existing areas has been provided but not the accumulated area of native vegetation and fauna habitat clearing for the Cowal Gold Operation (page 69).*

Response

In the order of 1,214 ha of native vegetation is approved to be cleared (or has been cleared) for the CGO.

Issue Raised - Summary of the Impact Avoidance and Mitigation Measures

> *OEH generally support the avoidance and mitigation measures in Table 24 (page 76). More details are required to meet the requirements of the FBA, as discussed for Section 4.1.1 above.*

Response

Noted. Refer to Table 3 above.

Issue Raised – Cumulative Impacts Austral Pillwort monitoring

The BAR states that annual monitoring for Austral Pillwort (Pilularia novae-hollandiae), listed as endangered under the Biodiversity Conservation Act 2016, will be discontinued.

OEH do not agree that annual monitoring of Austral Pillwort can be discontinued on the basis that monitoring since 2012, including the current survey, has not detected the species. There is potentially over 20 years of survey and monitoring data (1995 – 2018) so a comprehensive review of the monitoring program is due.

Austral Pillwort is a site-managed species within the NSW Government Saving Our Species program. That means that it requires site-based management to secure it from extinction in NSW for 100 years. Lake Cowal is one of two management sites where conservation activities need to take place to ensure conservation of this species.

OEH recommended action:

- *Evolution Mining to provide all references related to Austral Pillwort to OEH for review, including unpublished monitoring reports and data.*
- *OEH coordinate a review of the Austral Pillwort monitoring project to identify potentially redundant effort and ensure future targeted survey or actions for the species contribute to the SOS program.*
- *Survey for Austral Pillwort must be included in assessments for any future development applications.*

Response

Evolution will consult further with OEH regarding the Austral Pillwort monitoring during preparation of a revised Flora and Fauna Management Plan.

Biodiversity Offset Strategy

Issue Raised – Biobanking Credit Reports

BioBanking Credit Calculator reports for the Offset Areas in Attachments F1, F2, F3 and F4 are out of date and do not match the BOS or the BioBanking Credit Calculator.

The Flora and Fauna Study in BAR/BOS Attachment A uses different labels for the Offset Areas to those presented in the BOS.

OEH recommended action:

- *The BioBanking Credit Calculator reports at Attachment F must be updated to reflect the proposals in the BioBanking Credit Calculator and as presented in the BAR/BOS.*
- *The BOS requires a table at the start and/or addition to Table 28 showing the correlation between the Offset Area numbering and the Study Area labels used by AMBS in their 2017 Biodiversity Offset Investigation.*
- *Conditions of development approval relating to the retirement of credits associated with this project must be consistent with the NSW biodiversity offsets policy for major projects.*

Response

The BioBanking Credit Calculator reports were submitted to the OEH on 2 May 2018.

The survey report by AMBS Ecology & Heritage (AMBS) studied areas (called Study Areas) within which offset areas were selected (i.e. the Study area and offset areas are not the same shape in all cases), namely:

- Offset Area 3 is located within Study Area 1a;
- Offset Area 4 is located within Study Area 2;
- Offset Area 5 is located within Study Area 3; and
- Offset Area 6 is located within Study Area 4.

Issue Raised - Management of the Proposed Offset Areas

As far as OEH are aware, to date there has been no independent audit of the change in biodiversity values and site condition at the existing CGO Offset Areas. Management of the proposed offset areas to achieve the improvement in site condition required at a BioBank site may be different to that currently employed by Evolution Mining at the CGO Offset Areas.

Response

Noted.

Issue Raised - Consolidated Summary of Environmental Management and Monitoring Measures

Concerns were raised over the commitments made in both the BAR and BOS, that they may not be included in existing CGO management plans.

Response

Noted. Existing CGO management plans would be updated to include commitments detailed in the BAR and BOS.

Aboriginal Cultural Heritage

OEH recommended action:

> *Updating of the Indigenous Archaeology and Cultural Heritage Management Plan IACHMP with information on the sites recorded current assessments, and amended as necessary to accommodate any legal instruments (AHIP or Care Agreements).*

Response

Noted. The Indigenous Archaeology and Cultural Heritage Management Plan (IACHMP) would be updated to include the Modification, as necessary.

OEH recommended action:

- *OEH requires an Unanticipated finds protocol to the developed. The following protocol is recommended:*
    - *If any Aboriginal object is discovered and/or harmed in, or under the land, while undertaking the proposed development activities, the proponent must:*

1. *Not further harm the object*
2. *Immediately cease all work at the particular location*
3. *Secure the area so as to avoid further harm to the Aboriginal object*
4. *Notify OEH as soon as practical on 131555, providing any details of the Aboriginal object and its location*
5. *Not recommence any work at the particular location unless authorised in writing by OEH.*

In the event that skeletal remains are unexpectedly encountered during the activity, work must stop immediately, the area secured to prevent unauthorised access and NSW Police and OEH contacted.

Response

Evolution's Aboriginal Heritage Impact Permits (AHIPs) are area-based (i.e. authorise harm, management and collection to Aboriginal objects within the subject area subject to certain management strategies being implemented). For example, Consent 1467 (relating to the mine site) authorises impact to: "All Aboriginal objects situated within the boundaries of the lands described in Schedule B" (i.e. ML 1535). The approved *Indigenous Archaeology and Cultural Heritage Management Plan* (Barrick (Cowal) Limited, 2003c) details the management of Aboriginal heritage items within ML 1535, as well as other parts of the CGO, consistent with the requirements of all relevant AHIPs. Accordingly, Evolution would continue to employ measures in accordance with the AHIPs and recommendations in Aboriginal Cultural Heritage Assessment (Appendix D of the EA):

> *Should previously unrecorded sites be discovered within the Subject Area these sites should be:*
>
> - *recorded on AHIMS, including significance assessment; and*
> - *incorporated into the management regime presented by these recommendations, being – salvage of scarred trees or collection of surface artefacts or excavation of ovens.*

OEH Recommended Condition of Development Consent

> *No harm can occur to any Aboriginal objects within the modification area unless an Aboriginal Heritage Impact Permit (AHIP) has been issued by OEH.*

Response

Noted. A new AHIP (and/or a variation to existing Permits/Consents) would be sought for the proposed MLA 1 area.

5.1.2 Department of Industry – Crown Lands and Water Division

Water Resources

Department of Industry – Crown Lands and Water Division (DI-CL & WD) recommendation prior to project approval

> *The proponent provides additional information regarding the transport and storage of contaminants sourced from seepage from the proposed Integrated Waste Landform in the short, medium and long term (ie until hydrologic equilibrium is re-established post mining).*

Additional comments:

> *The conclusions in relation to seepage quality and migration are not considered adequately justified in the EA. Whilst the seepage may remain within the groundwater between the Integrated Waste Landform (IWL) and the final void in the short term no justification has been provided that this will continue once the water in the pit has reestablished equilibrium in the long term.*

Response

The primary seepage control which would be employed for the IWL would be the continuation of the required floor permeability of no greater than 1 x 10^{-9} metres per second (m/s).

The Modification EA included assessment of potential impacts to groundwater quality due to seepage from the TSFs and IWL and was undertaken using an analytical particle tracking approach. Section 5.2 of Appendix A of the EA (Coffey Services Australia Pty Ltd [Coffey], 2018) presents long-term, post-mining seepage modelling for the Modification. The modelling approach provides a conservative estimate of the likely contaminant travel times through the subsurface because the modelling ignores the processes of sorption, chemical oxidation and degradation which serve to delay or otherwise reduce the mobility of groundwater chemical changes. Appendix A states:

> *Current work indicates that cyanide would not reach beyond 2 km from the TSFs wall before 100 years. This assessment represents a conservative case, since cyanide associated with potential seepage from the TSFs degrades due to hydrolysis, volatilisation (to HCN gas), oxidation and biological activity. For this reason, and the fact that the assessment ignores the hindrance to solute migration imposed by the TSFs liner, the likely groundwater transport of cyanide from the TSFs is expected to be much more limited.*

In the long-term, consistent with all previous assessments at the CGO, seepage was predicted to migrate towards and terminate at the final void:

> *Figure A-44 (Appendix A) shows long-term groundwater head contours and groundwater flow direction for the dry lake scenario. The flow directions for the inundated lake scenario are consistent with those for the dry lake scenario.* ***Contaminants associated with potential seepage from the IWL would flow in the direction of the final pit void and ultimately terminate in that void****. The final pit void therefore becomes a long-term sink for all groundwater within ML 1535. As a result, analytes are expected to concentrate within the pit voids over hundreds of years (e.g. water salinity in the pit will rise). Analytes associated with potential seepage from the IWL are expected to remain within groundwaters between the IWL and the final void over the long-term.*

Figure A-44 is reproduced below as Figure 9 and shows the dominant groundwater flow direction towards the void. This finding is supported by Hydro-Engineering Consultants (HEC) (2018) (Appendix B of the EA), who concludes that, based on previous hydraulic modelling of the final void, the final void would fill slowly reaching an equilibrium water level between approximately relative level (RL) 125 m and RL 135 m (approximately 80 m below spill level and 120 m below the IWL) over several hundred years. It is this depression of the groundwater table in perpetuity that is predicted to continue to direct groundwater flow towards the void in the long-term.

Evolution would continue to monitor groundwater levels surrounding the IWL using existing active monitoring bores (located adjacent to the IWL footprint) and new monitoring bores proposed as part of the Modification (Section 4.1.3 of the EA). If required, contingency measures to control groundwater levels would include (Appendix A of the EA):

- the installation of additional bores to pump groundwater back to the TSFs or IWL (i.e. pump back system); or
- the installation of trench drains and sumps to collect groundwater and control further rise in groundwater levels.

Following mine closure, the elevated groundwater levels surrounding the IWL are expected to dissipate over time as the head of water within the IWL and STSF gradually reduces (i.e. due to evaporation and groundwater movement towards the final void).

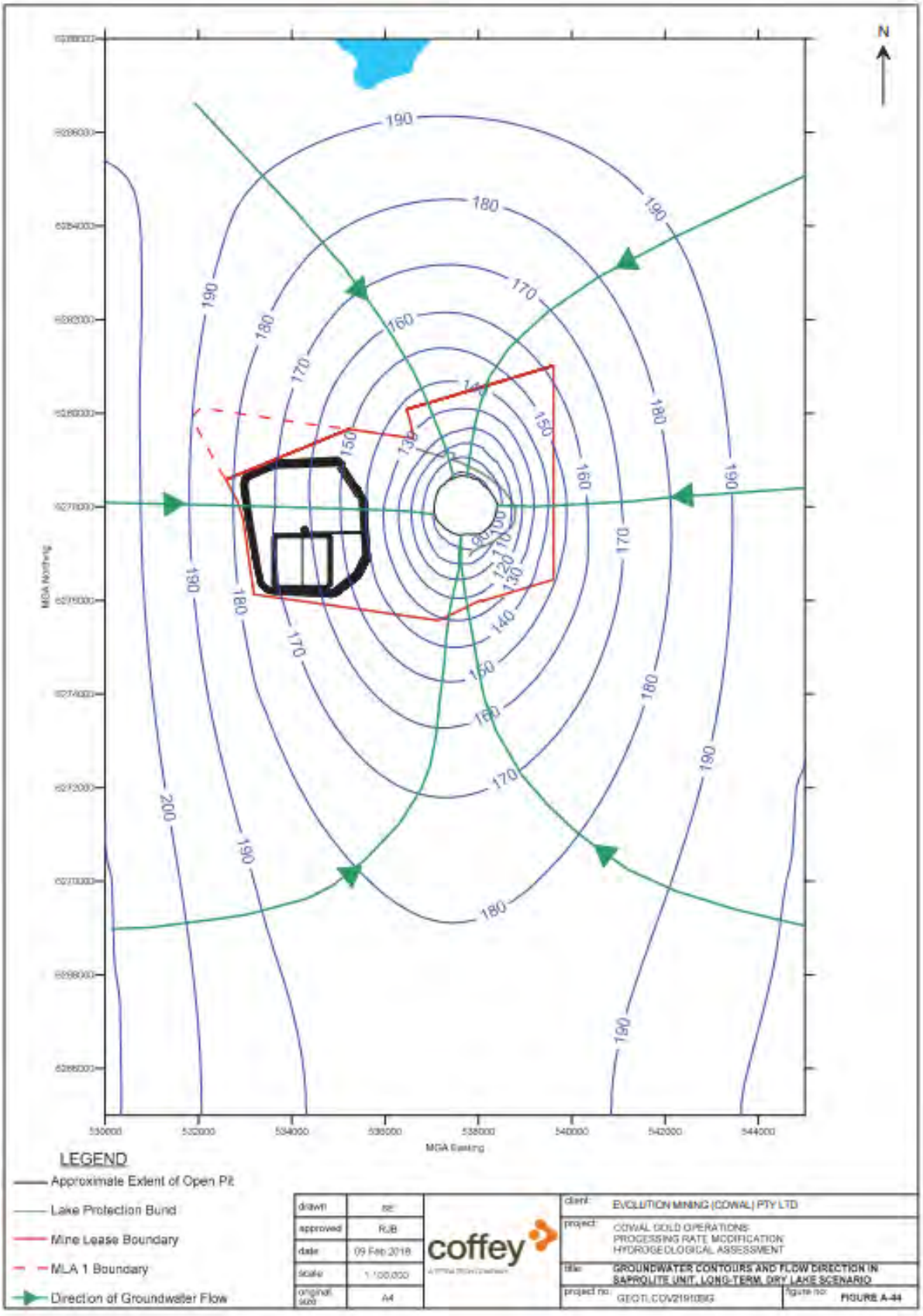


Figure 9 Groundwater Contouring and Flow Direction

DI-CL & WD Recommendation post project approval

- *The current measure implemented by the proponent to maintain the Bland Creek Paleochannel Borefield above established trigger levels set out in the current Water Management Plan (WMP) should continue. It is recommended this measure which includes sourcing additional external or internal water supplies be included as a management strategy within the WMP.*
- *The proponent updates the existing Water Management Plan in consultation with Lands and Water. This is to include a revised monitoring network/program and corresponding mitigation and contingency measures. It is also recommended a strategy be developed to address the water supply shortfalls simulated in the modelling.*
- *Consider options for the final landform to include minimising the ongoing runoff from clean areas into the void. This will enable diversion back into the natural surface water system and reduce the potential for water licensing requirements.*
- *The final landform will be required to develop a stabilised surface water management system. This should be consistent with the Guidelines for Controlled Activities on Waterfront Land (DPI Water).*

Response

Evolution agrees with DI-CL & WD's post project approval recommendations, however notes that the final landform development would only consider the *Guidelines for Controlled Activities on Waterfront Land* (DI-Water, 2018) to inform parts of the final landform where this guideline is most applicable (i.e. the new lake foreshore).

5.1.3 Forbes Shire Council

Road Transport

Issue Raised

Forbes Shire Council (FSC) requires the following information:

- *Details of any ancillary construction site offices during the construction period of the proposed pipeline;*
- *Details of depth and placement of pipeline, specifically under any public roads;*
- *A detailed map showing existing easements and exact placement of the proposed pipeline;*
- *Comprehensive details on the size, origin and destination of heavy vehicles and their haulage routes;*
- *Proposed routes of heavy vehicles and other construction related traffic during the construction period of the pipeline;*
- *Details of parking for heavy vehicle and other construction related traffic, as well as turning areas and temporary storage during the construction phase of the proposed pipeline;*
- *Interaction with any school buses using the route; and*
- *A decommissioning plan for the pipeline.*

Pursuant to Section 138(1) of the Roads Act 1938, the applicant must seek consent from Council prior to any work on the pipeline commences (sic) *that may disturb the surface of a public road, including works in, on or over a public road.*

Response

The pipeline duplication is described in Section 3.8.1 of the EA:

> *The existing mine water supply pipeline to Bore 4 would be duplicated as part of the Modification (Figure 1-2). The pipeline would be constructed within the existing 40 m pipeline corridor.*
>
> *The pipeline construction would involve burial of the new pipeline (with a nominal diameter of up to 600 millimetres) to a nominal depth of approximately 1 m. Surface disturbance associated with the pipeline construction would be approximately 6 m, with additional disturbance associated with occasional laydown areas.*

Figures 3a and 3b of Appendix C of the EA show the general arrangement of the pipeline duplication. These figures show the alignment and location of laydown areas on the eastern side of Lake Cowal, as requested by FSC. The general arrangement is indicative and may vary slightly following further detailed mine planning and particularly the detailed design of supporting infrastructure. No offices would be located on the eastern side of Lake Cowal.

Section 5.13 of Appendix H of the EA describes the potential traffic impacts associated with the pipeline construction:

As noted in Section 4.1.1, some of the 30 workers associated with the pipeline construction activity would work at times from the eastern side of Lake Cowal, and so may not travel on the CGO Access Road as assumed in the foregoing assessment. A dedicated bus route is likely to operate as required from West Wyalong to the eastern side of Lake Cowal, and workers may also be occasionally transported from the CGO Access Road to the eastern side of Lake Cowal by bus. If required, that bus would primarily travel via the existing preferred mine access route to/from Forbes, i.e., Lake Cowal Road, Fitzgerald Road, Lake Cowal Road and Bogies Island Road then Lows Road.

As noted in Section 4, some deliveries of materials would be made to the eastern side of Lake Cowal during the pipeline construction activity, rather than to the CGO Access Road as assumed above. Approximately 50 deliveries of pipe would be required for the pipeline construction activity, using articulated vehicles with extendable trailers, half of which would travel to the eastern side of Lake Cowal. These are likely to be sourced from Newcastle, and so would approach the CGO via Forbes, and use part of the existing Forbes mine access route to access the eastern side of Lake Cowal. The trucks would use West Plains Road and Lows Road.

Some deliveries of sand and other materials would also occur to the eastern side of Lake Cowal. These deliveries are expected to be primarily sourced from West Wyalong or Jemalong, so the trucks would use Newell Highway (north or south), West Plains Road and Lows Road to access the eastern construction site.

The number of vehicles travelling to and from the eastern side of Lake Cowal during the pipeline construction activity would have negligible impact on the operating conditions of the road network. It is recommended that a Construction Traffic Management Plan be prepared to manage the heavy vehicles associated with the pipeline construction, including identification of routes to be used.

Evolution would continue to consult with FSC regarding the pipeline duplication and would seek approval under Section 138 of the *Roads Act, 1993*, where applicable.

Kelly's Coaches have confirmed that the pipeline duplication construction activities (i.e. in the vicinity of Webster Road) are not on any existing school bus route. Therefore, no interaction with school buses are expected from construction traffic.

Section 5.3.2 of the EA describes the proposed decommissioning activities for the pipeline duplication:

The long-term strategy and rehabilitation concepts for the duplicate pipeline across Lake Cowal would be the same as for the existing pipeline.

At the end of the mine life, the pipelines would either be raised and dismantled for recycling or kept in place if required for local use. If dismantled, the sections of pipeline in the bed of Lake Cowal would be raised when the lake is dry and disturbed areas revegetated with endemic species. If this is not possible due to successive high rainfall seasons, any decision to remove the pipelines would be discussed with the relevant regulatory authorities. However, given the likely maintenance period for CGO rehabilitation, it is likely that Lake Cowal would be sufficiently dry at some stage during this period.

Issue Raised

The Road Transport Assessment appears to lack some detail regarding the numbers, size, origin and destination of the additional heavy vehicles required for the project. Before a determination on the proposal is made, Council require this information to determine if intersection or road upgrades are required before the project can commence and funding arrangements for both road or intersection upgrades and ongoing financial contributions for repair and maintenance.

Council notes that the applicant is proposing to create a Traffic Management Plan (TMP) in consultation with Bland Shire Council, Forbes Shire Council and Roads and Maritime Services. Council welcomes this, and proposes that the DPE, within its determination of the proposal, require the following:

- *That a Dilapidation Report be created in consultation with Bland Shire Council, Forbes Shire Council and Roads and Maritime Services before and after the proposed construction period;*
- *That the proponent commit to ensuring all roads impacted by the proposal are maintained at a similar or better condition than they were at the time of the Dilapidation Report; and*
- *Details of any proposed road closures during the construction period of the pipeline.*

Prior to the commencement of any proposed road upgrades, the applicant must seek consent from Council under Section 138a of the Roads Act 1993.

Response

The Road Transport Assessment (Appendix H of the EA) (GTA Consultants, 2018), was prepared in accordance with the *Guide to Traffic Generating Developments* (Roads and Traffic Authority, 2002).

The key assumptions regarding traffic generation are described in Appendix H of the EA, however a summary is provided in Table 4.

In consideration of the changes to traffic movements due to the Modification, GTA Consultants (2018) found that the Modification can be satisfactorily accommodated by the road network, with acceptable impacts on the capacity, condition, safety and efficiency of the road network, subject to consideration of a number of minor road treatment measures.

Evolution has a road maintenance Memorandum of Understanding with the Forbes, Lachlan and Bland Shire Councils. Given the suite of mitigation measures proposed, and that changes in heavy vehicle movements are largely associated with gravel transport, which is proposed for FSC's benefit, this instrument is considered to be sufficient to manage road maintenance contributions for the CGO, including for the Modification.

Water

Issue Raised

> *Section 4.2.4 of Appendix B Hydrological Assessment states that Coffey (2018) modelled the maximum extraction rate appropriate for Bland Creek Palaeochannel Borefield at 5.9 ML/day. However, Council understands that applicant is proposing a maximum extraction rate of 15 ML/day. Further justification is required for this discrepancy, and plans on how the applicant proposes to mimimise any impact on the Borefield must be detailed prior to a determination being made on the proposal. Council requests the DPE closely engage with it on water take matters.*

Response

Extraction from the Bland Creek Palaeochannel is described in Section 2.8.3 of the EA:

> *Water extraction is licensed by WAL 31864 under the Water Sharing Plan for the Lachlan Unregulated and Alluvial Water Sources 2012, which has an annual extraction limit of 3,650 ML. The CGO Development Consent (DA 14/98) currently limits extraction from the Bland Creek Palaeochannel Borefield to 15 ML/day or 3,650 ML/annum.*
>
> *Groundwater Contingency Strategy*
>
> *In addition to the above, existing extraction from the Bland Creek Palaeochannel Borefield is managed in accordance with groundwater trigger levels developed in consultation with DI-Water and other water users within the Bland Creek Palaeochannel, including stock and domestic users and irrigators, as detailed in the CGO Water Management Plan (WMP).*
>
> *The trigger levels are as follows:*
>
> - *Bland Creek Palaeochannel Borefield area: Bore GW036553 (trigger levels of 137.5 m AHD and 134 m AHD).*
> - *Billabong area: Bore GW036597 (trigger level 145.8 m AHD).*
> - *Maslin area: Bore GW036611 (trigger level 143.7 m AHD).*
>
> *Groundwater levels associated with the Bland Creek Palaeochannel Borefield are monitored by DI-Water.*
>
> *Investigation and mitigation contingency measures have been developed should groundwater levels reach either relative level (RL) 137.5 m AHD (trigger for investigation) or RL 134 m AHD (trigger for mitigation).*
>
> *The effect of the above is that pumping from the Bland Creek Palaeochannel Borefield ceases when required to meet the trigger levels described above, and water requirements at the CGO are met by alternative internal or external water supplies, including Lachlan River Water Entitlements (Section 2.8.4).*

Consistent with the above, Coffey (Appendix A of the EA) has used its regional groundwater model and has ascertained that a sustainable yield of 4.4 ML/day can be extracted from the palaeochannel whilst fully implementing the abovementioned trigger levels. This volume is within the maximum daily licensed volume of 15 ML/day. Accordingly, no discrepancy is apparent as the model and results are entirely consistent with the trigger levels and water licence limits.

Gravel Extraction

Issue Raised

> *Council seeks increased clarity regarding the cost of the gravel supplied to it. For instance it is not clear whether the proponent is proposing the sell the gravel privately as well as to the Councils and Roads and Maritime Services. If this is the case, a Development Application would be required. Further clarity is required to ensure that an appropriate share of gravel is reserved for each council.*

Response

As discussed in the EA (Section 1.4.2), prior engagement with the Councils has led to the inclusion of road base material (i.e. gravel) for use by the Councils and RMS in the Modification description. Cost of the gravel would be a commercial matter between Evolution and the relevant council and/or RMS. Evolution looks forward to discussing gravel supply quantities and costs with FSC, should the Modification be approved.

Table 4
Road Transport Assessment Assumptions Summary

Information	Reference in Appendix H	Information Summary
Existing workforce and residential location of employees	Section 2.1.2	• 70.4% West Wyalong; • 10.7% Forbes; • 7.1% Other (Barmedman, Bedgerabong, Burcher, Girral, Lake Cowal, Tallimba, Ungarie, Ariah Park, and Warroo); • 6.8% Wyalong; and • 5.0% Condobolin.
Existing bus use	Section 2.1.3	Various bus types and capacities to and from Forbes, Condobolin and West Wyalong.
Source of site deliveries	Table 2.2	• 55.2% Sydney; • 25.2% West Wyalong; • 9.1% Yarwun via Dubbo; • 4.9% Galong; • 2.8% Kooragang; • 2.1% Wollongong; and • 0.7% Melbourne.
Modification Construction Workforce	Section 2.2.1	During peak construction activity, the total workforce at the CGO is anticipated to be 540 people.
Modification Operational Workforce and Deliveries	Section 2.2.2	The operational workforce (including Evolution staff and on-site contractor's personnel) would increase by 10 workers, and an increase of approximately 25% in deliveries is anticipated with the Modification.
Modification Access Routes	Section 2.2.4	As described in Section 2.2.4 and shown on Figure 1.1 and Figure 2.1 of Appendix H.
Additional Traffic Modification Construction	Section 4.1.3	Additional 12 light and 32 heavy vehicles/day.
Additional Traffic Modification Operations	Section 4.2.4	Additional 6 light and 94 heavy vehicles/day (it is noted that 80 heavy vehicles/day are associated with gravel haulage for council/NSW Roads and Maritime Services [RMS] use).

Source: GTA Consultants (2018).

5.2 PART B – RESPONSES TO NON-GOVERNMENT AGENCY SUBMISSIONS

Two of the NGO submissions supported the Modification. The following subsections provide responses to comments received, including the only objection received in relation to the Modification.

5.2.1 West Plains Water Users

Issue Raised

> *The West Plains Water Users Association (WPWUA) strongly objects to the Cowal Gold Mine Mod 14 with regards to the use of water from the Bland Creek Paelochannel as we believe that the use of that water is unsustainable in the long term.*
>
> *We believe the main source of water should come from the Lachlan River extraction via Jemalong Irrigation Limited. In the initial report done by Coffy* (sic) *and Partners, the use of 10 megalitres per day was deemed unsustainable, yet the former owners went ahead regardless and the drawdown of the aquifer was massive from 15 metres to 60 metres below ground level in 2005/6.*
>
> *Evolution seems to have the same attitude, with NSW State Water says there has been no recharge from the 2016 flood event.*

Response

Extraction from the Bland Creek Palaeochannel Borefield is managed in accordance with the groundwater trigger levels developed in consultation with DI-Water and other water users within the Bland Creek Palaeochannel, including stock and domestic users and irrigators, as detailed in the CGO Water Management Plan. No change to these management measures or to trigger levels are proposed for the Modification. Water for the CGO is also sourced from the Lachlan River and this would continue for the Modification.

Issue Raised

> *We do not believe that the stated Hydrological Assessment for the Modification Appendix A of 4.4 ML/day is sustainable, nor will be adhered to. There was next to no allocation of water from JIL during the drought years of 2002 - 10, so maximum extraction was occurring from the Bland Creek Paelochannel . Similarly, in dry years maximum water will have to come from the Bland Paelochannel and saline borefields .*
>
> *The figures in Table 3.2 appear to be unrealistic, based on past draw downs of the Paelochannel during drought years, and show a lack of rigorous assessment of the reality and impact of State Water's ZERO allocation in drought years.*
>
> *The farms on the eastern side of Lake Cowal depend heavily on the Bland Creek Paelochannel for stock and domestic water, and depend exclusively on it in times of drought.*
>
> *The proposed modification assertions of the reliability of temporary Lachlan River Water is incorrect, and shows a complete lack of study of historical fact - temporary water is not guaranteed from year to year.*

Response

The outcomes of the site water balance model are presented in Table 12 of Appendix B of the EA (HEC, 2018). The results are presented in dry (10^{th} percentile rainfall sequence), median and wet (90^{th} percentile rainfall sequence). HEC used a total of 128 years of daily rainfall and pan evaporation data (Appendix A), including periods of very low rainfall such as the millennium drought.

The availability of water from the Lachlan River was reviewed by HEC (2018). HEC states (Appendix B of the EA):

> *CL&W trading records show that between approximately 4,000 ML and 274,000 ML of temporary water has been traded annually in the Lachlan River Regulated Water Source since records began in the 2004 to 2005 season. All general security accounts were reset on 8 March 2012 to 136% following the first spill of Wyangala Dam since December 2000. From 1 July 2011 to 1 July 2015, the available water determinations (AWDs) were zero but since then has ranged from 4% on 7 August 2015, 16% on 2 September 2015, 5% on 2 October 2015, 18% on 1 July 2016, 25% on 15 July 2016, 9% on 5 September 2016, 5% on 10 April 2017, 2% on 15 June 2017 and zero on 1 July 2017. As at 14 August 2017[1], AWDs for general security accounts were 2%, with high security accounts at 100%. DPI-Water will continue to closely monitor rainfall and river inflows as well as usage in the valley to determine when subsequent changes to AWDs are made. As at 17 February 2018, Wyangala Dam reservoir was at 72.7 % of capacity[2].*
>
> *...*

[1] NSW Water Register (DPI Water, 2017) http://www.water.nsw.gov.au/water-licensing/registers

[2] Refer http://realtimedata.water.nsw.gov.au/water.stm

The median predicted annual demand from the Lachlan River peaks at approximately 2,854 ML. In relation to the projected CGO requirements during the Modification, from HEC's review, it appears that there has in previous years been adequate temporary water available on the market from this source.

Extraction from the Blank Creek Palaeochannel Borefield is managed in accordance with the groundwater trigger levels.

Issue Raised

Additionally, just because there have been no critical incidents relating to the transport of hazardous materials, does not mean that there will not be in the future, so rigorous guidelines/study need to stay in place to protect the environment and animal and human life.

Response

As part of the Modification, Evolution proposes to remove Development Consent condition 5.4(b)(i) (Transport of Hazardous Materials Study). This is because transport of hazardous materials is conducted in accordance with the Australian Dangerous Goods Code, which sets out the requirements for transporting dangerous goods by road or rail. Furthermore, no incidents involving the transport of hazardous materials have occurred through the operation of the CGO.

5.2.2 Trigalana Water Users Group Inc

Issue Raised

Our water user groups (Trigalana Water Users Group inc & East Trigalana Water Users Group Inc) rely solely on the Bland Paleo Channel for stock and domestic water for our properties. We feel that the water modelling is not sufficient in relation to the proposed mod 14. The priority external water source is the Bland Paleo Channel and we would like to see more emphasis placed upon using Lachlan River water which is available to be traded in through the Jemalong Irrigation Ltd infrastructure whilst the water is available.

Response

As described by HEC (2018), the first priority external source is the eastern saline borefield, followed by the Bland Creek Palaeochannel and the Lachlan River. Extraction from the Bland Creek Palaeochannel is subject to the existing triggers, which remain unchanged for the Modification.

As described in Section 4.2.3 of the EA, no additional surface Water Access Licences (WALs) beyond those already held by Evolution (i.e. WAL 14981, WAL 13749 and WAL 13748) from the Lachlan River would be required for the Modification. However, Evolution would continue to investigate the availability/use of additional licence allocations on the Lachlan River for purchase and use for the CGO.

5.3 PART C – RESPONSES TO PUBLIC SUBMISSIONS

All 16 submissions received from members of the public were in support of the Modification. Evolution thanks these members of the public for their continued support of the CGO.

6 PROJECT EVALUATION

The Modification EA described that approval of the proposed changes to the CGO for the Modification is considered to be justified for a number of reasons, including (Evolution, 2018):

- The Modification would improve the financial resilience of the CGO against rising operational costs, such as electricity or other external economic factors.
- The Modification would include a small increase in the operational workforce and would assist to facilitate the continuity of employment for the existing CGO workforce, providing job security for local mine employees and contractors, and to continue to stimulate demand in the local and regional economy.
- The Modification would include the implementation of mitigation measures, and management measures (including performance monitoring), to minimise potential impacts on the environment and community.
- The cost benefit analysis estimated the incremental (i.e. in comparison to the approved CGO) net production benefits of the Modification to Australia (over and above the economic benefits of the approved CGO) to be some $62 M (present value) and to NSW to be some $27 M. The Modification would result in additional contributions to regional and NSW output and business turnover and household income.

Based on Evolution's consideration of the submissions by regulatory agencies, NGOs and members of the public, Evolution considers that the justification provided in the EA remains unchanged.

7 REFERENCES

Barrick (Cowal) Limited (2003a) *Cowal Gold Project Implementation of the Threatened Species Management Protocol*.

Barrick (Cowal) Limited (2003b) *Cowal Gold Project Compensatory Wetland Management Plan.*

Barrick (Cowal) Limited (2003c) *Indigenous Archaeology and Cultural Heritage Management Plan*.

Coffey Services Australia Pty Ltd (2018) *Cowal Gold Operations Processing Rate Modification Hydrogeological Assessment.*

Department of Industry – Water (2018) *Guidelines for Controlled Activities on Waterfront Land.*

Department of Planning and Environment (2017) *Guideline 5; Responding to Submissions of the Draft Environmental Impact Assessment Guidance Series June 2017*.

Evolution (2015) *Cowal Gold Project Air Quality Management Plan.*

Evolution (2016) *Cowal Gold Operations Flora and Fauna Management Plan.*

Evolution (2017a) *Cowal Gold Operations Rehabilitation Management Plan*.

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Office of Environment and Heritage (2014) *Framework for Biodiversity Assessment*.

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Roads and Traffic Authority (2002) *Guide to Traffic Generating Developments*.