COWAL GOLD OPERATIONS PROCESSING RATE MODIFICATION

Environmental Assessment 2018

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MAIN REPORT

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APPENDICES

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29 March 2018

Executive Director, Resource Assessments & Business Systems
Department of Planning and Environment
23-33 Bridge Street
SYDNEY NSW 2000

Attention: Mr David Kitto

Dear David,

RE: Cowal Gold Operations Processing Rate Modification

The enclosed Environmental Assessment for the Cowal Gold Operations Processing Rate Modification (the Modification) has been prepared for Evolution Mining (Cowal) Pty Limited (Evolution) by Resource Strategies Pty Ltd.

Evolution believes the Environmental Assessment represents an accurate statement of Evolution's development intentions and commitments in regard to environmental management and monitoring for the Modification.

Yours sincerely,
Evolution Mining (Cowal) Pty Limited

JASON GREIVE
General Manager
Cowal Gold Operations

Evolution MINING

EXECUTIVE SUMMARY

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ES1 BACKGROUND

The Cowal Gold Operations (CGO) is located approximately 38 kilometres 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 ES-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 ES-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.

ES1.1 MODIFICATION OVERVIEW

Recent feasibility studies have identified potential opportunities to maximise the ore processing capacity of the CGO's existing processing plant. On this basis, Evolution proposes to increase the CGO's approved ore processing rate of 7.5 million tonnes per annum (Mtpa) to 9.8 Mtpa. This would include the implementation of a secondary crushing circuit at the processing plant.

The Modification would improve the financial resilience of the CGO, provide job security for local mine employees and contractors (including an additional 10 full time jobs) and continue to stimulate demand in the local and regional economy.

The Modification would result in additional contributions to regional and NSW output and business turnover and household income.

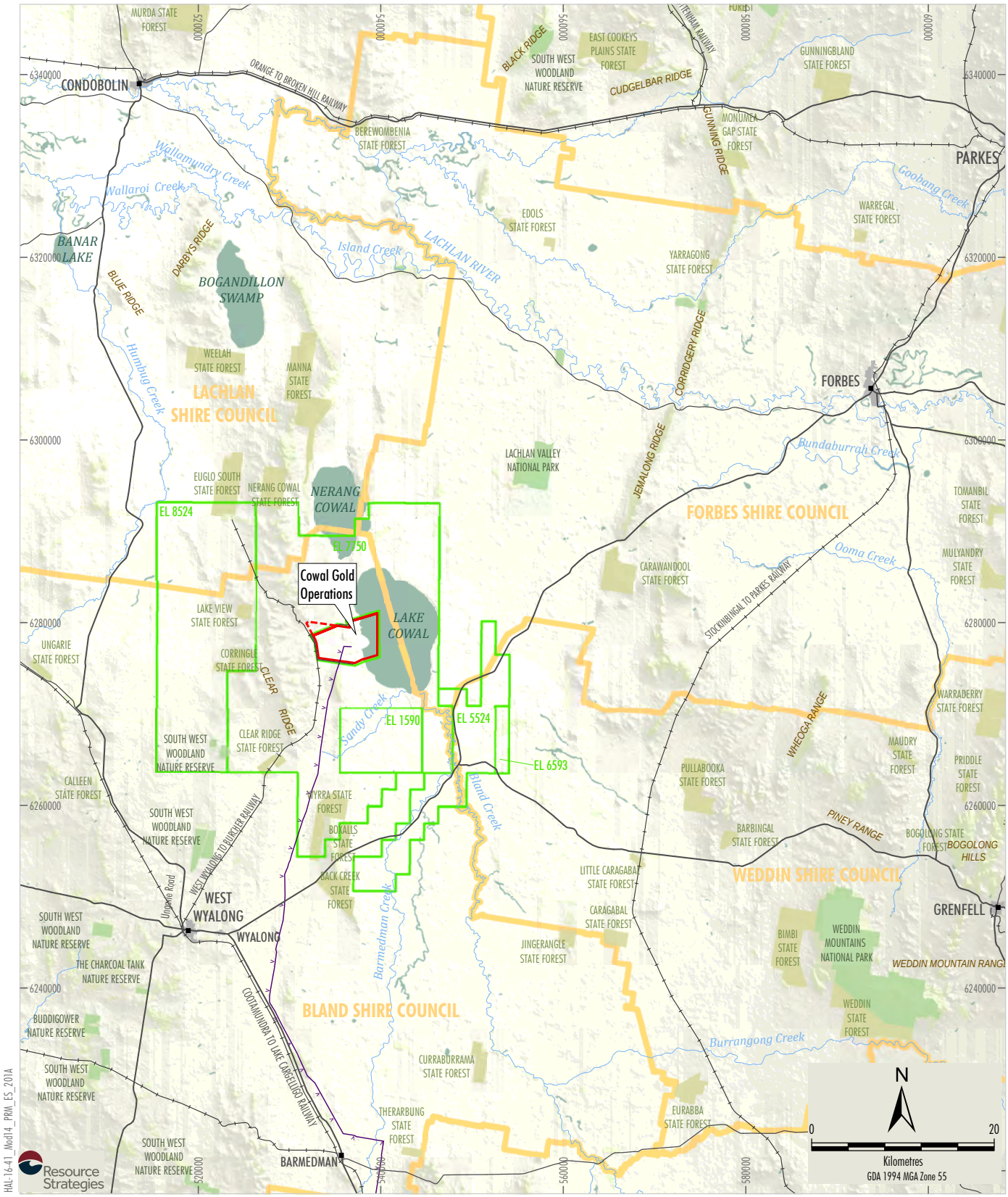
The Modification would include the development of an Integrated Waste Landform (IWL) to facilitate the storage of tailings over the life of mine in a landform which integrates with the northern waste rock emplacement. The IWL's design objectives are to (CMW Geosciences, 2018):

- Provide life of mine tailings storage for the CGO.
- Provide optimum removal of water from the facility and return to the process plant for re-use for ore processing.
- Optimise tailings storage capacity by maximising tailings density.
- Maximise the efficiency of mine waste rock removal through its use as IWL embankment material.

To accommodate the IWL, the Modification involves expansion of the CGO within ML 1535. In addition, a new Mining Lease Application (MLA) area (MLA 1, encompassing approximately 255 ha) (Figure ES-2) is proposed to accommodate infrastructure displaced by the IWL.

The Modification would include the implementation of mitigation measures, and management measures (including performance monitoring), to minimise potential impacts on the environment and community. In addition, as part of the Modification, Evolution would make gravel material available to local government authorities and the Roads and Maritime Services for local road projects.

Approval for the Modification is being sought via Section 75W of the *Environmental Planning and Assessment Act, 1979.*



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

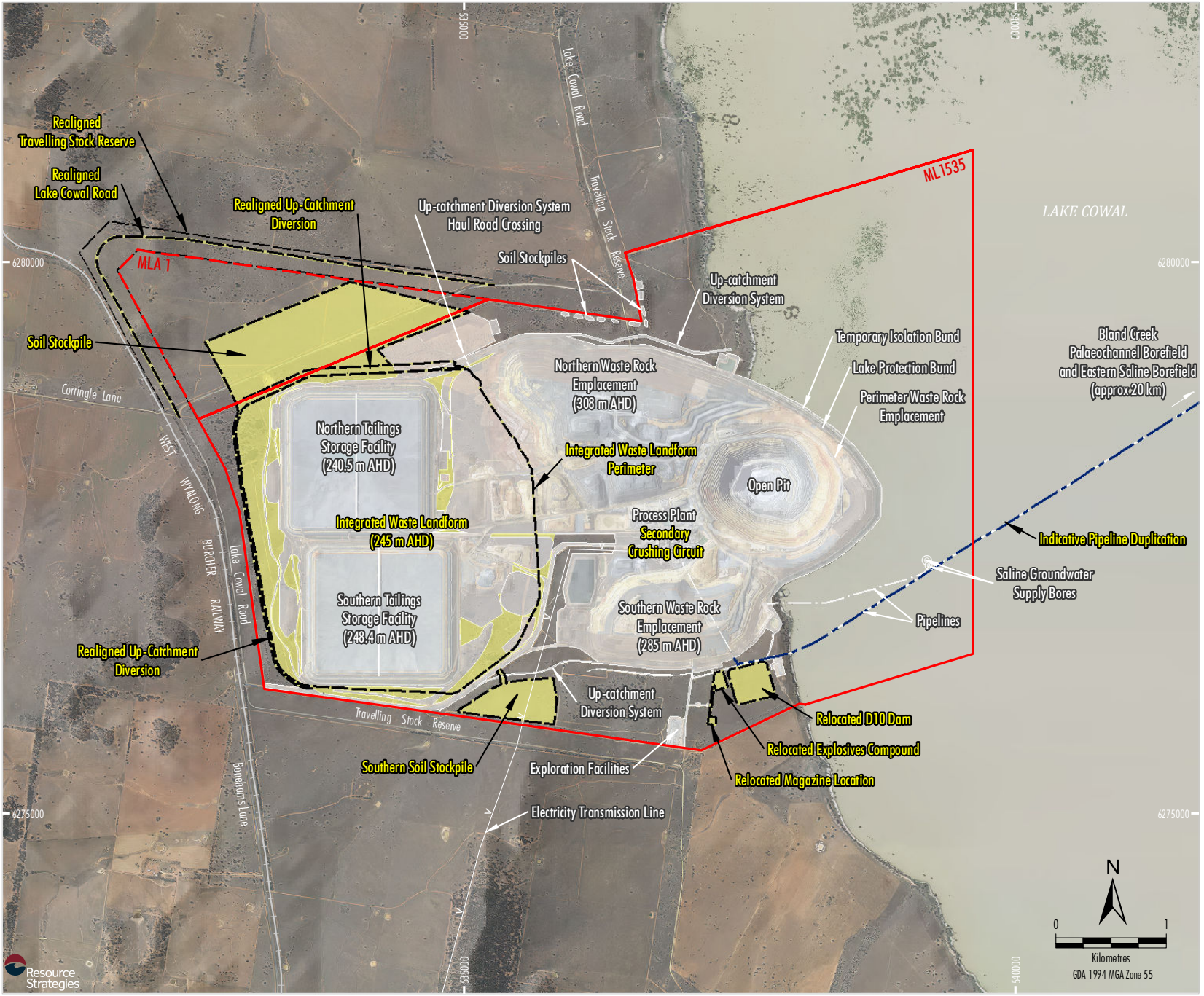
Source: © NSW Department of Finance, Services & Innovation (2017)

Evolution Mining Cowal

CGO PROCESSING RATE MODIFICATION

Regional Location

Figure ES-1



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 ES-2

HAL-16-41_Mod14_PRM_ES_202A

ES1.2 MODIFICATION BENEFITS

The Modification would facilitate employment of an additional 10 full time jobs as well as the continued employment of the existing CGO employees, and would continue to stimulate demand in the local and regional economy. In addition, approximately 100 people would be employed during the Modification construction phase.

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 Million (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. Contributions to the regional economy would include:

- the CGO itself being located within the region and the direct economic activity that it brings including direct employment and wages;
- expenditure by the CGO on inputs to production that can be sourced from the region such as repairs and maintenance; and
- expenditure of employee wages in the regional economy.

ES1.3 CONSULTATION

Consultation has been conducted with key state government agencies, local councils and the local community.

Consultation will continue during the assessment phase of the Modification.

ES2 ENVIRONMENTAL ASSESSMENT

A number of environmental studies were completed to assess potential environmental impacts associated with the Modification.

Environmental monitoring, mitigation and management at the CGO is currently conducted in accordance with the conditions of Development Consent (DA 14/98), Environment Protection Licence 11912 and ML 1535.

The environmental studies completed for the Modification indicate that existing monitoring, mitigation and management measures could continue to be implemented to minimise the potential impacts of the CGO on existing environmental values and the nearest private dwellings.

ES2.1 GROUNDWATER

A Hydrogeological Assessment for the Modification was conducted by Coffey Services Australia Pty Ltd.

Open Pit Mining

The key findings of the Hydrogeological Assessment relevant to potential impacts associated with continued mining operations at the CGO are as follows:

- Groundwater inflow to the open pit has not increased during lake-fill events, which supports the predictions of previous assessments that Lake Cowal is hydraulically separated from the underlying aquifers and the CGO open pit.
- No significant change in groundwater inflow to the open pit is expected due to the Modification.
- Groundwater drawdown due to open pit mining and extraction from the ML 1535 groundwater supply bores would generally be confined to the saline aquifers within ML 1535.
- The open pit would continue to act as a groundwater sink.
- Other than Evolution, there are no known users of the saline aquifers surrounding ML 1535.

Based on the above, negligible incremental impacts to Lake Cowal or other groundwater users were predicted due to open pit mining for the Modification.

External Groundwater Supply

Groundwater from the Bland Creek Palaeochannel would continue to be supplied to the CGO for the Modification.

Groundwater levels in the Bland Creek Palaeochannel would continue to be managed in accordance with the existing Groundwater Contingency Strategy (developed in consultation with the Department of Industry - Water and other groundwater users) to minimise impacts of groundwater supply on other groundwater users.

To date, water level monitoring in the Bland Creek Palaeochannel has determined when Evolution has periodically ceased supply from the Bland Creek Palaeochannel and commenced supply from alternative internal or other external water supplies (e.g. from the Lachlan River).

The Hydrogeological Assessment predicted that Evolution could continue groundwater supply from the Bland Creek Palaeochannel Borefield and Eastern Saline Borefield in accordance with the existing Groundwater Contingency Strategy for the Modification.

Therefore, no additional impacts to other groundwater users were predicted due to the continued use of the Bland Creek Palaeochannel Borefield and Eastern Saline Borefield.

Licensed Groundwater Extraction

Evolution holds appropriate water access licences to account for groundwater inflow to the open pit.

No new Water Access Licences would be required for groundwater inflow to the open pit from the alluvial aquifers or the fractured rock system, the ML 1535 saline groundwater supply bores or the Eastern Saline Borefield.

There would be no change to the existing daily or annual extraction limits from the Bland Creek Palaeochannel Borefield for the Modification and no additional Water Access Licences are required for the Modification.

ES2.2 SURFACE WATER

A Hydrological Assessment for the Modification was conducted by Hydro Engineering & Consulting Pty Ltd.

The key findings of the Hydrological Assessment are as follows:

- The Modification would not change the existing lake isolation system that currently separates the CGO open pit from Lake Cowal.
- The Modification would not change the design objectives of the Internal Catchment Drainage System (ICDS) and Up-Catchment Diversion System (UCDS). The UCDS would be augmented to accommodate the IWL and would continue to divert up-catchment runoff around the CGO. The ICDS would continue to control runoff from active mining areas.
- Water balance modelling concluded that no spills from contained water storages in ML 1535 are predicted.
- No causal link between the existing operations at the CGO and water quality in Lake Cowal has been identified, and negligible impacts to surface water quality are predicted due to the Modification.
- Negligible additional impacts to the catchment and hydrology of Lake Cowal are predicted due to the Modification.
- The additional water required for the processing rate increase would be sourced from temporary transfers of water licence allocations of Lachlan River water. It is expected there would be continued reliable supply of water available from the Lachlan River trading market.
- Consistent with the approved CGO, the final void water level would stabilise well below the spill level, and water captured in the final void would become hypersaline (consistent with predicted long-term final void behavior for the existing CGO).

The Water Management Plan, Surface Water, Groundwater, Meteorological and Biological Monitoring Programme and Erosion and Sediment Control Management Plan would be updated to incorporate the Modification.

ES2.3 BIODIVERSITY

A Biodiversity Assessment was prepared for the Modification, and was Peer Reviewed by Dr Colin Driscoll.

The Biodiversity Assessment was prepared in accordance with the Secretary's Environmental Assessment Requirements for the Modification and relevant State and Commonwealth requirements. The NSW *Biodiversity Offset Policy for Major Projects* (the NSW Offset Policy) (and supporting NSW *Framework for Biodiversity Assessment*) was applied.

A significant number of vegetation, flora and fauna surveys and monitoring programmes have been conducted within ML 1535 and the broader CGO area. These studies were used to characterise potential impacts to biodiversity associated with the Modification.

The Modification layout has been designed to avoid and minimise additional surface disturbance.

Notwithstanding, the residual Modification disturbance area is 315.2 ha in size, with 286.7 ha comprising native vegetation and the remaining 28.5 ha comprising previously cleared land (non-native), plantings and lake bed.

The removal of existing habitat within the additional disturbance areas is unlikely to substantially impact any threatened species given the disturbed nature of the area, and given this area is surrounded by approved mine disturbance areas with poor connectivity to habitats outside of the CGO. Established vegetation clearance protocols would continue for the Modification to manage potential impacts to flora and fauna.

A biodiversity offset strategy has been prepared in accordance with the NSW Offset Policy. This offset comprises some 486.5 ha of land. This would supplement the existing CGO offset areas which are in the order of 440 ha (Figure ES-3).

ES2.4 ABORIGINAL HERITAGE

An Aboriginal Cultural Heritage Assessment was prepared by Niche Environment and Heritage. Consultation for the Aboriginal Cultural Heritage Assessment was undertaken in consideration of the Office of Environment and Heritage's *Aboriginal cultural heritage consultation requirements for proponents 2010*.

Evolution has obtained Permits and Consents under sections 87 and 90 of the *National Parks and Wildlife Act, 1974* for the management of Aboriginal heritage at the CGO. Activities for the existing CGO have been generally conducted in accordance with relevant Permit and Consent conditions and the Indigenous Archaeology and Cultural Heritage Management Plan. A number of Aboriginal heritage surveys and assessments have previously been undertaken in the CGO area and surrounds and additional archaeological and cultural surveys were undertaken for the Modification.

During the surveys (which were conducted over a larger area than the Modification disturbance area), an additional 65 Aboriginal cultural heritage sites were identified. The most common site encountered during the survey was stone artefacts.

The preliminary results of the ACHA were used in the design of the surface infrastructure, with sites avoided wherever possible.

During detailed design of surface infrastructure, further consideration would be given to the location of identified sites, to avoid and minimise potential impacts to Aboriginal cultural heritage where possible. Practical measures such as temporary fencing may be used to assist with site avoidance if considered necessary.

Notwithstanding, the Modification would directly and indirectly impact the Aboriginal cultural heritage of the Modification area due to the direct disturbance of land within ML 1535, the proposed MLA 1 area and the existing pipeline corridor.

The Modification would directly harm 22 sites, indirectly harm 5 sites and cause no harm to 38 sites. While the sites that are expected to be harmed may be avoided during the detailed design phase of the surface infrastructure (e.g. through placement of the final alignment of the pipeline), it has been conservatively assumed that they would be impacted.

The existing Permits and Consents allow for the disturbance of all sites within ML 1535 and associated with the operation of the water supply pipeline. A new Aboriginal Heritage Impact Permit (and/or a variation to the existing Permits/Consents) would be applied for as part of the Modification for the proposed MLA 1 area.

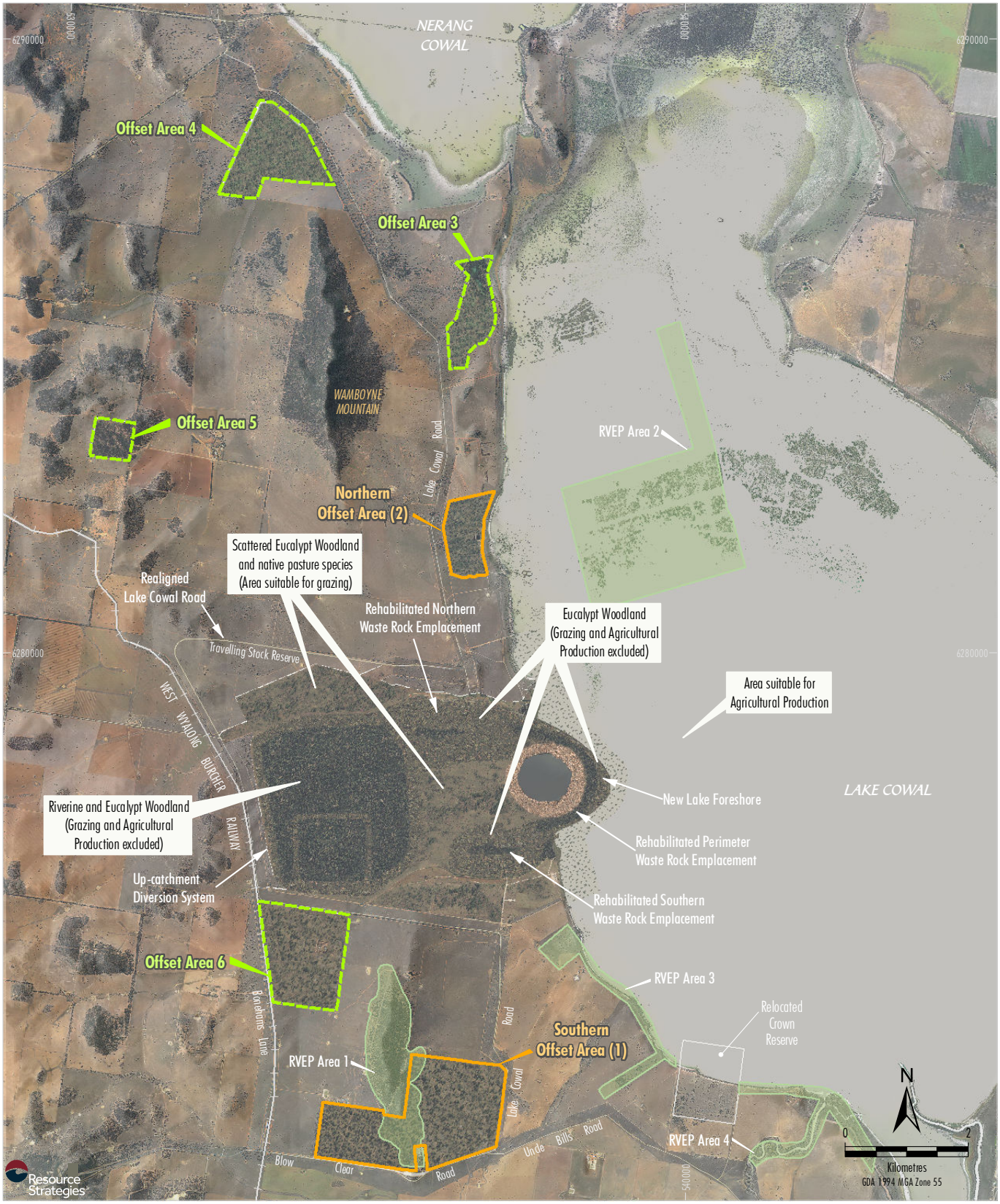
Salvage, excavation, monitoring and management measures relevant to Aboriginal heritage would continue to be conducted in accordance with the existing Indigenous Archaeology and Cultural Heritage Management Plan, Permits and Consents.

ES2.5 NOISE AND BLASTING

A Noise and Blasting Assessment was prepared by Renzo Tonin & Associates.

Noise

The Modification would involve development of the IWL which includes haulage of waste rock from the open pit. Noise levels at privately-owned dwellings are expected be similar for the Modification compared with the approved CGO.



LEGEND

Existing Offset Area
(Voluntary Planning Agreement to be registered on the title of the lands)

Proposed Offset Area
(Biobanking Agreement to be registered on the title of the lands)

Remnant Vegetation Enhancement Program Area
(Management of these areas would be maintained for the term of Evolution's tenure of the land)

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

Evolution MINING Cowal

CGO PROCESSING RATE MODIFICATION

Conceptual Final Landform and Proposed Final Land Use Areas

Figure ES-3

In summary, predictive noise modelling indicated:

- one privately-owned receiver would be within the Modification Noise Management Zone (i.e. 3 to 5 A-weighted decibels [dBA] above the project-specific noise level); and
- two privately-owned receivers would be within the Modification Noise Affectation Zone (i.e. greater than 5 dBA above the project specific noise level).

Evolution would continue to implement the noise management measures and monitoring programme detailed in the Noise Management Plan.

In accordance with the NSW *Voluntary Land Acquisition and Mitigation Policy for State Significant Mining, Petroleum and Extractive Industry Developments* and Development Consent (DA 14/98) conditions, receivers within the Noise Management Zone would be offered mitigation measures at the dwelling (e.g. mechanical ventilation/comfort condition systems to enable windows to be closed without compromising internal air quality/amenity). Receivers in the Noise Affectation Zone would have the right to request acquisition of their property.

Blasting

It was predicted that the CGO could continue to operate in compliance with relevant blast overpressure and vibration criteria at all privately-owned dwellings for the Modification.

ES2.6 AIR QUALITY

An Air Quality Impact Assessment was prepared by Pacific Environment Limited.

No exceedances of the relevant air quality criteria were predicted at any privately-owned receiver. Existing mitigation, management and monitoring measures described in the Air Quality Management Plan would continue for the Modification. In addition, additional haul road watering would be implemented during construction of the IWL to control potential dust emissions.

ES2.7 OTHER ENVIRONMENTAL ASPECTS

With regard to other relevant environment aspects, it was predicted:

- The Modification would require additional delivery trucks and additional road transport movements associated with employee movements. Employee movements are mitigated by the use of buses. Notwithstanding, a number of minor road treatments such as signage and road surface treatments are proposed to mitigate potential impacts on the road network.
- The Modification would not change potential impact mechanisms to the public or to public property, to the extent that previously identified hazard or risk levels for the CGO would increase.

ES3 REHABILITATION

A Rehabilitation and Landscape Management Strategy has been prepared for the Modification to provide a description of rehabilitation principles, objectives, concepts and methods that would be used to guide rehabilitation for the Modification.

Rehabilitation would continue to be progressive and include revegetating final landforms with native and/or endemic species characteristic of remnant vegetation within the surrounding landscape which are suited to the physiographic and hydrological features of the CGO's final landforms. The Rehabilitation and Landscape Management Strategy presented would continue to be provisional to allow for the consideration of results from future rehabilitation investigations, trials and rehabilitation monitoring (consistent with current practice).

The CGO's long-term land use strategy would remain unchanged for the Modification and would be applied to the MLA 1 area, modified landforms which would result from the Modification (i.e. the IWL) and the proposed Modification Biodiversity Offset Areas. The long-term land use strategy for the CGO post-mining would continue to include fenced rehabilitation areas with grazing excluded and areas suitable for agricultural production including managed grazing by livestock and use of lake areas (Figure ES-3).

The approved rehabilitation strategies and objectives for the tailings storage facilities would remain unchanged for the Modification and would be applied to the IWL. Similarly, the approved rehabilitation concepts for the final void would also remain unchanged.

The rehabilitation management measures and rehabilitation monitoring programme detailed in the CGO's Rehabilitation Management Plan would continue to be implemented for the Modification and the Rehabilitation Management Plan revised where necessary to reflect the rehabilitation concepts for the Modification.