May 2017

Independent Environmental Audit

Cowal Gold Operations

Photo courtesy of Cowal Gold Operations

Trevor Brown & Associates
APPLIED ENVIRONMENTAL MANAGEMENT CONSULTANTS

REPORT: CGO/REV1/MAY 2017

Independent Environmental Audit Cowal Gold Operations

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Trevor Brown
Principal Environmental Management Consultant/Auditor

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Glossary and Abbreviations

Annual Return	Annual Return required under the EPL No.11912
Annual Review	Review required under Development Consent 14/98 condition 9.1(b)
BCA	Building Code of Australia
BSC	Bland Shire Council
CEMCC	Community Environmental Monitoring and Consultative Committee
CGM	Cowal Gold Mine
CGO	Cowal Gold Operations
Department	Department of Planning and Environment
DII	Department of Industry and Investment
Director-General	Director-General Department of Planning and Infrastructure, or delegate
DoP	Department of Planning
DP&E	Department of Planning and Environment
DPI	Department of Primary Industries
DPI-Water	Department of Primary Industries-Water
DSC	Dam Safety Committee
EA	Environmental Assessment *Cowal Gold Mine Extension Modification* 12 Sep 2013
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulations*
EPL	Environment Protection Licence 11912
Evolution	Evolution Mining (Cowal) Pty Limited
IMP	Independent Monitoring Panel
INP	NSW Industrial Noise Policy
ML	Mining Lease
NEPM	National Environmental Protection Measure
Minister	NSW Minister for Planning, or delegate
MOP	Mining Operations Plan
NOW	New South Wales Office of Water (now DPI-Water)
Secretary	Department of Planning and Environment, or delegate

Executive Summary

An environmental audit of the Cowal Gold Mine (CGM) was conducted between the 15 and 19 May 2017 by Trevor Brown Principal Environmental Management Auditor and Robert Drury of Trevor Brown & Associates, for Evolution Mining to assess the status of the Cowal Gold Operations with the Development Consent 14/98 MOD 13 conditions. The audit reviewed the status of compliance of the operations from 1 May 2016 to 30 April 2017.

The audit was conducted generally in accordance with the Australian/New Zealand Standards AS/NZS ISO 19011:20011 - Guidelines for Auditing Management Systems.

The documentation and files held at the Cowal Gold Operations site and interviews/discussions with relevant site personnel provided the auditors with the required information and documentation for the verification of compliance of the operations with the Development Consent 14/98 MOD 13 and other statutory environmental approvals.

The Cowal Gold Operations are being developed and operated generally in accordance with the Environmental Assessments and generally demonstrate a high level of compliance with Consolidated Development Consent 14/98 MOD 13.

Environmental Management Strategy **Status:** **Compliant**
The Environmental Management Strategy approved by DP&E on the 28 November 2014 satisfies the requirements of Development Consent 14/98 MOD 13 condition 9.1(a) and provides a sound basis for the environmental management of the Cowal Gold Operations.

The Environmental Management Strategy is supported by a suite of specific environmental aspect management plans that have been implemented as approved for the project under the Development Consent 14/98 conditions. The Cowal Gold Operations Environmental Management Strategy also addresses the elements of AS/NZS ISO 14001 and Cowal Gold Operations are ISO 14001 certified for Mining and Ore Processing Operations and Support Services for Gold and Silver production.

The Surface Water, Groundwater, Meteorological and Biological Monitoring Program collates the monitoring programs to be carried out in relation to the Cowal Gold Operations development and satisfies the requirement of Development Consent 14/98 MOD 13 condition 9.1(a)(vi).

Environmental Management Plans **Status:** **Compliant Ongoing**
All Cowal Gold Operations environmental management plans, strategies and monitoring programs were reviewed during 2015 to address the requirements in Development Consent 14/98 MOD 11. Revisions of the documents prepared where required, were submitted to the relevant authorities for approval. All revised documents have been approved by the relevant authorities except for the Indigenous Archaeology and Cultural Heritage Management Plan, Rehabilitation Strategy, and Monitoring Program for Lake Protection Bund, Water Storages, Tailings Storage Facilities and Pit Walls (LPBMP) that were submitted in 2015 and Evolution Mining was still awaiting approval for these documents at the date of this audit (May 2017).

Revisions to the Environmental Management Strategy, Flora and Fauna Management Plan and Biodiversity Offset Management Plan were submitted to DP&E in November 2016 and Evolution Mining was awaiting approval for these documents from DP&E at the date of this audit (May 2017).

All future revisions of the environmental management plans, strategies and monitoring programs should amend reference to Barrick where relevant and ensure the Development Consent condition numbers in the documents are consistent with Consolidated Development Consent 14/98 MOD 13.

Annual Reviews **Status:** **Generally Compliant Ongoing**
The Annual Reviews prepared for the Cowal Gold Operations (2015 and 2016), address the requirements of Development Consent 14/98 MOD 13 condition 9.1(b). The documents have been submitted to the relevant authorities and an annual presentation provided at the Cowal Gold Operations site for representatives of the

authorities / stakeholders (i.e. OEH/EPA, DPI-Water, DRE, DPI-Fisheries, Dam Safety Committee, Bland Shire Council and Community Environmental Monitoring and Consultative Committee).

Rehabilitation **Status:** **Generally Compliant Ongoing**

The Rehabilitation Management Plan (in conjunction with the requirements of the Land Management Plan and Mining Operations Plan) provide the basis for the rehabilitation of the Cowal Gold Operations site. Progress with the application of the rehabilitation methods outlined in the management plans and Mining Operations Plan was negatively affected on site due to the influence of the extreme weather conditions experienced (wet during 2010-2012, dry in 2012-2015, wet conditions again 2016).

Rehabilitation trials on the Cowal Gold Operations site to determine suitable substrates (i.e. blends of rock, subsoil, gypsum and mulches) and procedures for stabilisation and revegetation of disturbed areas have provided the basis for vegetative establishment on the site. The improvement in the rehabilitation of the Southern and Northern Waste Rock Emplacements noted during the 2016 and 2017 audits, indicated that Cowal Gold Operations were progressing towards conforming with the rehabilitation objectives and targets in the Mining Operations Plan section 6 and Development Consent 14/98 MOD 13 condition 2.4(a), with a significant increase in the areas of rehabilitation that had been achieved by May 2017, through the application of the trial substrates and availability of the full time bulldozer resource and dedicated operator introduced by the Environment team over the 2015 to 2017 period.

Heritage **Status:** **Compliant Ongoing**

The Heritage Management Plan prepared for the Cowal Gold Mine site provided for management of the European heritage items - 'Cowal West Homestead Complex' components (including the living quarters and Shearing Shed). Demolition of the Homestead complex, approved under Development Consent 14/98 MOD 9 March 2010, occurred during 2012-2013. The Shearing Shed was dismantled and re-constructed at the Lake Cowal Foundation Information Centre in April 2013.

The Indigenous Archaeology and Cultural Heritage Management Plan developed and implemented for the Cowal Gold Mine project provides adequate management and controls for the protection of Aboriginal interests in the ML 1535 area. Archaeological investigations and collection of artefacts prior to disturbance of any area of the Cowal Gold Operations site have been managed by Dr Colin Pardoe and Dr Kamminga (Consultant Archaeologists) and Cultural Heritage Officers provided by Wiradjuri Condobolin Corporation. The surveys are conducted under Section 87 Permits and Section 90 Consents issued under the *National Parks and Wildlife Act*.

Flora and Fauna **Status** **Compliant Ongoing**

The Flora and Fauna Management Plan (2015) prepared for the Cowal Gold Operations is consistent with the requirements of Development Consent 14/98 MOD 13 condition 3.2(b) and provides an adequate basis for the management of flora and fauna on the project ML 1535 area and surrounding mine owned land.

The implementation of the management measures in the Flora and Fauna Management Plan are supplemented by the Compensatory Wetland Management Plan, Land Management Plan, Rehabilitation Management Plan, and Surface Water, Groundwater, Meteorological and Biological Monitoring Program.

The monitoring program reports prepared under the Flora and Fauna Management Plan have provided a comprehensive ongoing assessment of the status of flora, fauna, avifauna, fish and habitats of the Cowal Gold Operations project development and demonstrate that the project has not had a measurable negative impact on the surrounding environment or its flora and fauna.

As monitoring of the Fellman's Hill Revegetation Enhancement Project concluded that "*Macropods continue to graze the vegetation on Fellman's Hill…. and their grazing can have significant effects of the recovery and health of the woodland vegetation"* it is recommended that consideration should be given to further controlling overabundant macropod numbers on the Fellman's Hill Revegetation Enhancement area

Recommendation:
It is recommended that consideration should be given to further control of the overabundant macropod numbers on the Fellman's Hill Revegetation Enhancement area.

Compensatory Wetland Area Management **Status** **Compliant Ongoing**

The Compensatory Wetland Management Plan provides a comprehensive management and monitoring regime that is providing detailed reports on the status of the accessible compensatory wetland areas. The surveys and reports on the flora and fauna in the declared areas are indicating that the removal of livestock from grazing in the compensatory wetland areas and the climatic influences (particularly the heavy rainfall years and flooding of the Lake Cowal area), have had a significant positive influence on the structure and composition of the lake foreshore communities.

Biodiversity Offset **Status** **Ongoing**

The Biodiversity Offset Management Plan prepared to satisfy Development Consent 14/98 MOD 11 condition 3.4(c) was submitted to OEH on 25 February 2015 for comment and a response was received on 13 March 2015. The revised Biodiversity Offset Management Plan Revision B was submitted to the DP&E on 19 May 2015 and approved on 21 March 2016. A Planning Agreement in relation to the long term protection of the biodiversity offset areas for the Biodiversity Offset Areas was prepared under the *Environment and Planning and Assessment Act 1979* section 93F and submitted to DP&E on 8 December 2015. A decision on the draft Planning Agreement by DP&E was still under consideration by DP&E at the date of this audit (May 2017).

Management of the biodiversity offset areas has occurred by Evolution Mining and monitoring has been conducted by DnA Environmental to assess the annual status of the proposed areas.

Erosion and Sediment Control **Status** **Compliant Ongoing**

The erosion and sediment control strategies implemented under the Erosion and Sediment Control Plans are considered effective, as demonstrated by environmental performance indicators. The Erosion and Sediment Control Plans have been prepared and are generally consistent with requirements in *Managing Urban Stormwater: Soils and Construction (Volume 2E – Mines and Quarries) Manual* (EPA 2008) Appendix C. The rock-topsoil rehabilitation treatment method for final landform slopes continues to demonstrate effective erosion control as evidenced by DnA Environmental in their annual reports.

Soil Stripping **Status** **Compliant Ongoing**

The Soil Stripping Management Plan implemented for activities on the Cowal Gold Operations project site is considered adequate and representative of mining best practice, with the separation of the topsoil and subsoil horizons stockpiled for reuse of the topsoil and subsoil for rehabilitation and final constructed surfaces on the tailings storage facilities and waste rock emplacement areas.

A topsoil stockpile database is updated as new mining information is obtained from estimates determined from the site activities and aerial photography and surveying of the stockpiles conducted to accurately record soil stockpile locations and volumes.

Land Management **Status** **Compliant Ongoing**

The Land Management Plan prepared for the Cowal Gold Operations project provides the basis for the long term management of the disturbed areas of ML 1535 and collates many of the management measures in other plans that also have associated long term management and rehabilitation strategies / processes for the project (e.g. Flora and Fauna Management Plan, Remnant Vegetation Enhancement Program, Rehabilitation and Offset Management Plan, Rehabilitation Management Plan, Compensatory Wetland Management Plan etc.).

The monitoring surveys conducted during in 2016 have shown the effects of the meteorological conditions (mainly associated with rainfall) on the diversity and establishment of species across the Cowal Gold Operations site and surrounding Evolution Mining owned land.

Hazardous Waste and Chemical Management **Status** **Compliant Ongoing**

The Hazardous Waste and Chemical Management Plan has been revised regularly to address the changes in Cowal Gold Operations under the various Modifications to the Development Approval 14/98. The management procedures and protocols have resulted in best practice for any mine waste materials, chemicals transported to, stored and/or used on the site. The Hazardous Waste and Chemical Management Plan provides the processes and procedures on site for the management of all hazardous chemicals transported to, stored on, used in the process plant, and management of hazardous wastes generated on site. The handling of fuels, oils, and

chemicals on site is managed in accordance with the plans, audits and reporting required under Development Consent 14/98 condition 5.4, the Emergency Response Management Plan and Safety Management System.

All mining generated wastes (i.e. waste rock, tailings, contaminated material) on site are managed under the Hazardous Waste Management Plan and Mining Operations Plan. Recyclable wastes and administrative/putrescible wastes are managed under contract with JR Richards and Sons (licenced waste contractors).

Cyanide Management **Status** **Compliant Ongoing**

The Cyanide Management Plan prepared to satisfy Development Consent 14/98 condition 5.3(b), and subsequent addenda have been approved by DP&I/DP&E. The management of cyanide at the Cowal Gold Operations site and process plant is representative of best practice. Cowal Gold Operations is a signatory to the *"International Cyanide Management Code for the Manufacture, Transport, and Use of Cyanide in the Production of Gold"* and regular third party audits of the site practices and record keeping have confirmed compliance with the requirements of the *International Cyanide Management Code*. Between May 2016 and April 2017 no cyanide results exceeded the 20mg CN_{WAD}/L or the maximum 30mg CN_{WAD}/L level.

Donato Environmental Services reported six monthly on wildlife visitation to the tailings storage facilities and noted that deaths of avifauna attributable to cyanide in the tailings storage facilities had not occurred between May 2016 and April 2017. It was also noted that the monitored cyanide concentrations were all below the level that would be expected to cause mortality.

Water Management **Status** **Compliant Ongoing**

The Water Management Plan prepared to satisfy Development Consent 14/98 MOD 13 conditions provides an adequate program for the management of water and controlling the surface water quality from the disturbed areas of the Cowal Gold Operations site and groundwater quality and levels. The water monitoring program has been conducted in accordance with the Surface Water, Groundwater, Meteorological and Biological Monitoring Program and Erosion and Sediment Control Management Plan.

The independent revision of surface water monitoring data (David McMahon of McMahon Earth Science - D M McMahon Pty Ltd) concluded that *"A comparison of the 2016 Lake Cowal surface water quality results against the baseline water quality results from 1991 – 1992 and 2010-2014 indicates that the 2016 monitoring results are generally similar. A comparison of the 2016 Lake Cowal surface water quality results against the ANZECC and ARMCANZ (2000) default trigger values for surface water (lakes) indicates that the 2016 monitoring results (totals and dissolved) were below or marginally above the default trigger values. Heavy metal readings are similar to historical data. Overall, the pH and Electrical Conductivity is within the range of values previously recorded. The 2016 sediment results compared against the ANZECC and ARMCANZ (2000) were all below the recommended trigger values, apart from total Antimony. They were all similar to historical data."*

The groundwater monitoring data review conducted by Coffeys Geotechnics in 2016 concluded that *"the groundwater quality results and trends reported illustrated that the full* containment of mine site water and water management control measures, and control of runoff from the tailings storage facilities and waste rock emplacements, have been successful and appear to have prevented groundwater contamination."

Air Quality **Status** **Compliant**

The Air Quality Management Plan (dated February 2015) was prepared to satisfy Consolidated Development Consent 14/98 MOD 11 and implemented for the Cowal Gold Operations. Compliance with the dust attributable to the Cowal Gold Operations was assessed with the criteria achieved at all residences and all bird-breeding areas between May 2016 and May 2017. Where dust results were recorded above the criteria the veracity of the reported dust deposition data was compromised by inundation of the gauges with sediment-laden lake waters during the period of heavy rainfall.

The air quality data collected from the air quality monitoring program was independently reviewed annually by Dr Stephen Cattle of University of Sydney and it was reported that no exceedance of the air quality TSP and PM_{10} criteria occurred between May 2016 and May 2017.

Blasting **Status** **Generally Compliant Ongoing**

The Blast Management Plan implemented for the Cowal Gold Operations provides a sound basis for the control of overpressure noise and vibration impacts from the mining activities and the procedures and blast methodology in the Blast Management Plan and Standard Operating Procedure conform to best practice as outlined in current regulatory guidelines. Blast overpressure and vibration monitoring from May 2016 to April 2017 demonstrated compliance for all blasts conducted between Monday and Saturday with the criteria specified in the Development Consent 14/98, EPL 11912, and ML 1535 conditions. Exceedance of the 95dBL assessment criteria that were blast related occurred on three occasions between January and December 2016 from a total of 21 Sunday and Public Holiday blasts.

Noise **Status** **Compliant Ongoing**

The Noise Management Plan prepared to satisfy the requirements of Development Consent 14/98 MOD 13 condition 6.4(e) was approved by DP&E on 5 March 2015. The implementation of the control strategies outlined in the Noise Management Plan have minimised noise emissions from the Cowal Gold Operations and are considered best practice and effective as demonstrated by the noise monitoring data and environmental performance indicators.

Operational noise surveys have demonstrated that Cowal Gold Operations is in compliance with the noise assessment criteria imposed in the Development Consent 14/98 and EPL conditions. No operator attended noise monitoring results exceeded the noise impact assessment criteria, between the May 2016 and April 2017.

Independent Monitoring Panel **Status** **Compliant Ongoing**

The Independent Monitoring Panel Reports prepared for 2016 provided a useful third party review of the status of the Cowal Gold Operations activities in relation to environment management and rehabilitation. Cowal Gold Operations have responded to the Independent Monitoring Panel recommendations in a timely manner and developed programs to address the IMP recommendations.

1. Introduction

1.1 Background

The Development Consent 14/98 granted on 22 July 2014 for the Cowal Gold Operations (CGO) requires an Independent Third Party Audit of compliance in accordance with the Consolidated Development Consent 14/98 MOD 13 condition 9.2(a) – Independent Environmental Audit:

> *"By the end of July 2016, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:*
> - *be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;*
> - *include consultation with the relevant agencies, BSC and the CEMCC;*
> - *assess the environmental performance of the development and assess whether it is complying with the requirements in this consent and any other relevant approvals (such as environment protection licences and/or mining lease (including any assessment, plan or program required under this consent);*
> - *review the adequacy of any approved strategy, plan or program required under this consent or the abovementioned approvals; and*
> - *recommend measures or actions to improve the environmental performance of the development, and/or any strategy, plan or program required under this consent."*

The Independent Environmental Audit required by the end of July 2016 was conducted to satisfy condition 9.2(a) and submitted to the Secretary of DP&E on 29 July 2016.

This current independent environmental audit was commissioned by Evolution Mining and the site inspections and document review conducted between 15 to 19 May 2017 by Trevor Brown & Associates to assess compliance of the Cowal Gold Operations with Consolidated Development Consent 14/98 MOD 13.

1.2 Scope of Work

This current independent environmental audit was conducted generally in accordance with AS/NZS ISO 19011:2014 - *Guidelines for Auditing Management Systems* and the *Independent Audit Guideline* (Department of Planning and Environment October 2015).
The Cowal Gold Operations have occurred in accordance with the Development Consent 14/98 and Modifications 1 to 12.

The scope of work for the independent environmental audit of the Cowal Gold Operations included:

- review of the implementation of the requirements of the development consent conditions, and other environmental licences and approvals with environmental conditions for the operation of the Cowal Gold Operations;
- conduct site inspections and review on-site documentation and monitoring data relevant to the independent environmental audit;
- hold discussions with project staff in relation to the Development Consent conditions and implementation of the requirements;
- assess compliance of the Cowal Gold Operations with the Development Consent conditions and other environmental approval conditions; and
- prepare an Independent Environmental Audit Report providing assessment of compliance against the environmental approval conditions.

1.3 Structure of the Report

The report has been prepared to provide comment on each condition of approval in a tabulated form, with additional discussion in the main text of the document where required on specific matters. The tabulated comments are attached for the Development Consent conditions, Environmental Protection Licence (EPL) conditions and Mining Lease (ML) environmental conditions, with discussion of the status of compliance provided where relevant:

Abbreviations
Executive Summary
Section 1 Introduction
Section 2 Cowal Gold Operations Project
Section 3 Environmental Approvals and Licences
Section 4 Cowal Gold Operations Status May 2017
Section 5 Review of Environmental Management
Section 6 Conclusions
Attachment A Consolidated Development Consent 14/98 MOD 13 Conditions of Approval
Attachment B Environment Protection Licence No. 11912 Conditions
Attachment C Mining Lease No. 1535 environmental conditions

1.4 Compliance Tables

The audit assessed the activities for compliance with the intent of the Consolidated Development Consent 14/98, Environment Protection Licence 11912 and Mining Lease 1535 conditions via site inspections, document review and verification of relevant documentation related to the conditions of approval (presented in Attachments A – C).

The compliance status / risk level of each condition is expressed in the Attachments to this report as:

Status	Description[1]
Compliant	Where verifiable evidence has been collected to demonstrate that the intent of the elements of the requirements of the regulatory approval and appropriateness of implementation against the Project Approval Condition has occurred.
Compliant COMPLETE	The elements of the requirements of the regulatory approval and appropriateness of implementation against the Project Approval Condition has occurred and the actions are complete.
Compliant Ongoing	The intent and specific requirements of the condition have been met and the requirements are ongoing for the operation of project.
Administrative Non-compliance	A technical non-conformance with a condition of the consent that would not result in any risk or material harm to the environment (e.g. the submission of a report to government later than required under the approval conditions).
Non-Compliance – Low Risk	Non-compliance with the potential for moderate environmental consequences, but is unlikely to occur, or, potential for low environmental consequence but is likely to occur.
Non-Compliance – Moderate Risk	Non-compliance with the potential for serious environmental consequences but unlikely to occur, or, potential for moderate environmental consequence but likely to occur.
Non-Compliant – High Risk	Non-compliance with the potential for significant environmental consequences, regardless of the likelihood of occurrence.
Not active / Not triggered	A regulatory approval requirement / condition has an activation or timing that had not been triggered at the time of the audit, therefore a determination of compliance could not be made.

[1] *Independent Audit Guideline*, section 4, DP&E October 2015

Noted	A statement or fact where no assessment of compliance is required.

Any Non-compliance (if identified) will be subject to a risk assessment in accordance with the *Draft Guidelines – Independent Environmental Audits of Mining Projects* section 7.2 and reported in section 5 Conclusions of this Independent Environmental Audit Report.

1.5 Audit Protocol

The Independent Environmental Audit process involved the review of documentation and monitoring records provided by Cowal Gold Operations, site inspections and interviews with Cowal Gold Operations personnel. The information obtained from site inspections and document review was assessed for compliance status with the Development Consent 14/98 and other environmental approval conditions and environmental performance of the Cowal Gold Operations with the approval conditions. Information evaluation included:

- assessment of Cowal Gold Operations activities and environmental performance in relation to compliance with the Development Consent and other environmental approval conditions applicable to the project;
- as appropriate, confirmation of conformance with the criteria / standards against which the independent environmental audit has been conducted, where specified in conditions;
- review of relevant Cowal Gold Operations documentation and monitoring data, and observations made during the site inspections, assessed and outcomes collated to ensure that audit findings can be verified and conclusions substantiated;
- risk level of any non-compliance identified (consistent with the *Independent Audit Guideline* section 4.1 Table 2 assessment) conducted to rank the risk of issues in relation to environmental harm.

A detailed site inspection of the following Cowal Gold Operations was undertaken between 15 and 19 May 2017:

- Open Cut mining operations;
- Waste rock emplacement areas, tailings storage facilities and general waste management areas.
- Rehabilitation areas where surface disturbance was completed;
- Surface water management structures and systems;
- Bulk fuel and chemical storages areas;
- Process plant area;
- Biodiversity Offset Areas

1.5 Limitations of the Audit

The auditor received complete cooperation from Cowal Gold Operations staff during the audit. Any documentation not immediately available during the site visit / inspection was provided to the auditors for review subsequent to the site visit.

The findings of the audit are based upon visual observations on the Cowal Gold Operations site, interviews with site personnel and review of documents and records provided by Cowal Gold Operations. Opinions presented in this audit report apply to the site as observed at the time of the audit inspection and from information provided by Cowal Gold Operations personnel. Any changes or additions to this information of which Trevor Brown & Associates is not aware and has not had the opportunity to evaluate, cannot therefore be considered in this report. The auditor has taken due care to consider all reasonably available information provided during the audit and has taken this information to represent a fair and reasonable characterisation of the environmental status of the site.

The adequacy of strategy/ plans / programs required under the consent were assessed by reference to the requirements of the conditions of approval for Cowal Gold Operations.

2. Cowal Gold Operations Project

2.1 Project Background

Barrick (Australia) Limited (Barrick) developed and operated the Cowal Gold Mine between in accordance with Consolidated Development Consent 14/98 Modifications 1 to 11 Conditions of Approval between 2004 and 2015. Evolution Mining (Cowal) Pty Limited (Evolution) acquired 100% interest in the Cowal Gold Project from Barrick in 2015 and has operated and developed the Cowal Gold Operations since July 2015.

The construction activities associated with the mine and process plant development commenced in January 2004. Operation of the mine and process plant between 2006 and May 2017 has occurred generally in accordance with the Cowal Gold Mine development described in the documents Environmental Impact Statement – Cowal Gold Project dated 13 March 1998 and approved Modifications 1-13.

2.2 Project Location

The Cowal Gold Operations consist of an open cut gold mine, process plant and accompanying infrastructure owned and operated by Evolution Mining. The mine is located on the shoreline of Lake Cowal, approximately 37 kilometres (km) northeast of West Wyalong, within Bland Shire local government area in a semi-arid, predominantly cleared agricultural landscape used for livestock grazing and grain cropping.

Small remnants of native vegetation are located several km to the west of the mine, and along the Lake Cowal shoreline. When inundated, Lake Cowal provides habitat for migratory waterbirds and when dry, the bed of Lake Cowal is used for grazing and cropping.

ML 1535 encompasses approximately 2,650 hectares (ha) and is bordered by Evolution's Exploration Licence (EL) 7750 and is north-west of Evolution's EL 1590.

2.3 Topography

The Cowal Gold Operations site is located in the Lachlan River Valley, on the western margin of the Bland Creek Palaeochannel Plain. The region is characterised by a flat landscape with very low undulating hills and occasional rocky outcrops. The majority of vegetation in the area has been cleared, with most of the cleared areas used for agriculture. Remnant and secondary vegetation is restricted to elevated rocky areas.

Ground elevations at the mine site range from around 225 m AHD on the western mine lease boundary to approximately 200 m AHD at the eastern lease boundary at Lake Cowal. The Bland Creek Palaeochannel Borefield area has an elevation of just under 210 m AHD, with minimal variation. Hills formed by rock outcrops on the fringes of the Bland Creek floodplain reach to in excess of 300 m AHD.

2.4 Geology

The regional geological setting is dominated by the Gilmore Fault Zone, a structurally and lithologically complex feature that trends north-south through ML 1535, approximately 500 m west of the Cowal Gold open pit. The Cowal mineralisation is hosted within a sequence of Ordovician volcaniclastic rocks. The volcaniclastic sequence is intruded by several Late Ordovician diorite/gabbro stocks and mafic to intermediate dykes. There are numerous faults and shear zones that transect the orebody. The host rocks do not outcrop and are overlain by a Tertiary aged lateritic profile and Quaternary sediments of varying thicknesses of the Tertiary and Quaternary regolith deposits. The Bland Creek Palaeochannel Plain was formed by the infilling of the Lachlan and Bland Creek Palaeochannels, located to the north and east of Lake Cowal respectively, with sediments of the Lachlan and Cowra Formations. The depth of these sediments is over 100 m. Locally, Pleistocene Cowra alluvium overlies ML 1535 and thick Quaternary lacustrine sediments underlie Lake Cowal.

Gold mineralisation primarily occurs in dilational quartz-carbonate-sulphide and carbonate ± quartz-sulphide veins throughout the deposit, the veins are parallel-sided and range in thickness from less than 1 mm to 10 mm. Sulphide mineralisation in the veins consists of pyrite with minor sphalerite, chalcopyrite, pyrrhotite and galena. Adularia is a common auxiliary mineral.

2.5 Regional Hydrology

The Lachlan River is the major regional surface water system, forming part of the Murray-Darling Basin.
The Cowal Gold Operations site is located on the western side of Lake Cowal, a fresh water lake that receives inflow from:

- Bland Creek, which drains into the lake at its southern end; and
- Lachlan-Lake Cowal floodway to the north-east; when breakout flows from the Lachlan River are directed (during floods) into the north-east section of Lake Cowal.

The lake covers an area of approximately 10,500 ha and holds 150,000 megalitres (ML) of water when full. Lake Cowal is an ephemeral shallow freshwater lake that is predominantly dry with water influx occurring during severe rainy seasons. The lake is filled by runoff from the Bland Creek catchment to the south and flood breakout from the Lachlan River to the north. Lake Cowal overflows into Nerang Cowal, another ephemeral lake to the north, and then into Bogandillon Swamp before returning to the Lachlan River.

Water courses in the area (with the exception of the Lachlan River) are intermittent. Bland and Barmedman Creeks are the largest of the local creeks that form ephemeral tributaries to Lake Cowal, flowing in from the south.

2.6 Regional Hydrogeology

Regionally, groundwater resources are present in the Bland Creek Palaeochannel, that includes two main geological formations with three distinct alluvial sequences:

- **Cowra Formation**: comprises isolated sand and gravel lenses in predominantly silt and clay alluvial deposits:
    - **Upper Cowra Formation**: this sequence generally occurs from ground surface to an average depth of approximately 45 m to 50 m over most of the Cowal Gold Operations site and surrounding area. The average depth to groundwater is approximately 7 m, giving an average saturated thickness of just over 40 m.
    - **Lower Cowra Formation**: this sequence generally occurs over an average depth interval of approximately 50 m to 90 m over most of the Cowal Gold Operations site and surrounding area.
- **Lachlan Formation**: comprises quartz gravel with groundwater of generally low salinity. This sequence generally occurs over an average depth interval of around 90 m to 120 m in the Bland Creek Palaeochannel. Within this formation there are two distinct sequences:
    - High permeability sands and minor gravels close to and within the deeper parts of the palaeochannel.
    - Lower permeability sediments that generally occur further away from the deeper parts of the palaeochannel and surround the high permeability sands and minor gravels. The average hydraulic conductivity of this sequence appears similar to the Lower Cowra Formation.

2.7 Project Description

The major components of the approved Cowal Gold mining operations are an open cut pit that protrudes into Lake Cowal, a processing plant, a perimeter waste rock emplacement that separates the pit from the lake, the northern and southern waste rock emplacements and two tailings storage facilities (TSFs). The general arrangement of these components is shown in Figure 2.7.

The Cowal Gold mining operations occur within Mining Lease 1535. Consolidated Development Consent 14/98 MOD 13 allows for the extraction and processing of up to 7.5 million tonnes (Mt) of ore per year. Mining is permitted to continue until 31 December 2032.

Cowal Gold mining is open cut, with rock and ore being broken up in the open pit by drilling and blasting. Haulage of waste rock from the open pit occurs by trucks to the northern, southern or perimeter waste rock emplacements.

The mineralised ore is hauled to either the primary crusher or to the ore stockpiles. The ore is crushed and conveyed to the processing plant. The primary ore is ground to a fine slurry and cyanide is used to separate / leach the gold from the ore. The finely ground rock residue (tailings) left after the leaching process is treated to destroy the cyanide and pumped to the tailings storage facilities.

The tailings storage facilities are constructed progressively by raising the height of the surrounding embankments in advance of storage requirements. The bulk of the water from the TSFs drains to the centre of each facility where it is reclaimed and recycled for use in the processing plant.

Figure 2.7: Cowal Gold Operations Site – General Layout

3. Environmental Approvals and Licenses

3.1 Project Approval

The Cowal Gold mine has operated under the Cowal Gold Mine Development Consent (DA 14/98), that was granted under delegation from the Minister for Planning and Environment on 26 February 1999 following a Commission of Inquiry. The development consent has been Modified on 13 occasions and allows Evolution Mining to undertake the following activities until 31 December 2032 (Consolidated Development Consent 14/98 MOD 13 condition 1.2(a):

- extract ore from a single open pit, utilising conventional drill and blast, load and haul methodologies;
- process up to 7.5 million tonnes of ore per year;
- extract gold from the ore using a conventional carbon-in-leach cyanide leaching circuit in the process plant;
- operate the Bland Creek Palaeochannel borefield; and
- undertake progressive rehabilitation of the Cowal Gold Operations site.

The Cowal Gold mine was originally approved under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Although Part 3A was repealed on 1 October 2011, the project remains a 'transitional Part 3A project' under Schedule 6A of the EP&A Act, so any modification to this approval is made under the former Section 75W of the Act. Recent Modifications to Development Consent (DA 14/98) granted between May 2016 and May 2017 were:

Table 3.1: Part 3A Modifications to Development Consent DA 14/98 – 2016 and 2017

Date of Modification	Modification Summary
Modification 13 7 February 2017	The Development Consent MOD 13 amendments to conditions of approval include: • an eight-year mine life extension (to 2032); • increases to the heights of the TSFs and mineralised material stockpile; • limiting TSF rock buttress construction to daytime hours; • revised noise criteria and noise acquisition and mitigation provisions; • updated figures that reflect the revised project (i.e. deeper pit and modified TSFs); and • a number of administrative changes, including updated definitions and agency names.
Modification 12 16 May 2016	MOD 12 involved a small number of minor amendments to the MOD 11 conditions including amending the cyanide monitoring and reporting requirements and a number of administrative changes to the consent, specifically: • amending the description of the biodiversity offset strategy to accurately reflect the description in the *Cowal Gold Mine Biodiversity and Offset Management Plan*, which was approved by the Department on 10 September 2015; • amending various conditions to accurately reference the current names of the relevant government agencies; • updating the definitions to reflect Evolution Mining as the Applicant (following acquisition of the Cowal Gold Mine in July 2015 from Barrick); and • removing a duplicate paragraph in Condition 4.5(c).

Review of compliance with the Consolidated Development Consent 14/98 MOD 13 conditions, is provided in Attachment A.

3.2 Environment Protection Licence

Barrick (Cowal) Pty Limited received an Environment Protection Licence (EPL) 11912 under section 55 of the *Protection of the Environment Operations Act 1997* for the Cowal Gold Mine on 23 December 2003. Following acquisition of the Cowal Gold Mine Project in July 2015, the EPL was transferred to Evolution Mining (Cowal) Pty Limited. Notices of Variation of the Licence between 2015 and May 2017 have been advised by the EPA and are summarised in Table 3.2.

Table 3.2: EPL 11912 Notices of Variation February 2015 and May 2017

Date	EPL Notices of Variation
4 April 2017 1550488	Minor administrative amendments and minor alignment of monitoring frequencies consistent with management plans reviewed by the EPA and approved by DP&E
20 Feb 2017 1544422	The following variations have been made to the licence: • Monitoring point locations and descriptions for surface water, groundwater, dust and blasting have been updated. • Baseline dust monitoring has been removed. • Blasting criteria has been updated to include reduced evening and night time limits. • The total cyanide and weak acid dissociable cyanide alternative sample methods have been • reviewed, approved and updated.
3 Feb 2015 1528088	• The sensitive receptor noise monitoring locations have been reduced to acknowledge noise mitigation and acquisition rights assigned to three (3) receptors and noise limits at the remaining receptors have been reduced. • The frequency of noise monitoring has been increased to quarterly as determined by the DP&E. • The application of noise limit criteria under certain meteorological conditions has been clarified.

Review of compliance with the EPL 11912 conditions is presented in Attachment B.

3.3 Mining Lease

Mining Lease No.1535 was granted under the *Mining Act 1992* on 13 June 2003. A Mining Operations Plan (MOP) has been prepared in accordance with the requirements of Mining Lease 1535 condition 25, Development Consent 14/98 condition 2.1 and the latest Division of Resources and Energy (DPI-DRE) guideline - *ESG3: Mining Operations Plan (MOP) Guidelines, September 2013*. The MOP describes the proposed operational mining activities for the currently approved Cowal Gold Operations for the period 1 September 2016 to 31 August 2018.

Compliance with the Mining Lease environmental conditions is summarised in Attachment C, Mining Lease Environmental Conditions Table.

3.5 Section 87 Permits and Section 90 Consents

Section 87 Permits and Section 90 Consents under the *National Parks and Wildlife Act 1974* were granted by National Parks and Wildlife Service for the Cowal Gold Mine development:

National Parks & Wildlife Act Approval	Authority	Date Granted	Conditions
Permit #1361 - section 87(1)	NPWS	23 May 2002	Valid for period of exploration drilling on the lots covered by the permit.
Consent #1467 - section 90	NPWS	27 Nov 2002	These approvals lapse when rehabilitation work is completed under ML1535 to the Minister's satisfaction, or 18 years after completion of construction works, whichever occurs first.
Permit # 1468 - section 87(1)	NPWS	27 Oct 2003	
Consent #1680 - section 90	NPWS	28 Jul 2003	
Permit #1681 - section 87(1)	NPWS	28 Jul 2003	

3.4 Water Licences

Cowal Gold Operations have the required current Bore Licences issued under the Water Act 1912 for the operation of the Cowal Gold Mine and process plant. Cowal Gold Operations also have water entitlements under Water Access Licences for extraction of surface and groundwater from Regulated Sources and the Lachlan River Regulated -Water Sharing Plan, for water supply to the operations.

Water Licence	Authority	Date Granted	Expiry Date	Conditions
Bland Creek Palaeochannel borefield WAL 31864 Water supply work approval 70WA614076	NOW & EPA	14 Sep 2012	13 Sep 2025	Construction and operations of the Water supply bores in the Bland Creek Palaeochannel bore-field
Saline groundwater supply borefield within ML 1535 WAL 36615 Water supply works approval	NOW & EPA	21 Mar 2014	13 Sep 2025	Upper 10% (366 units. Upper Lachlan Alluvial Zone 7). Valid for the operation of three lake floor saline production bores when not inundated by Lake Cowal.
Monitoring and test bore licences WAL36569 DA No. 2011/0064 #70BL233321 & 70BL233323	NOW & FSC	20 Dec 2010	9 Jun 2025	Valid for the operation of the eastern saline bore-field.
Pit dewatering bores WAL 36615 Water supply works approval 70WA614090	NOW & EPA	21 Mar 2014	13 Sep 2025	Upper 10% (366 units. Upper Lachlan Alluvial Zone 7). Replacement de-watering bore licenses as exchanged for decommissioned bores.
Pit dewatering bores WAL 36617 Water supply works approval 70WA614090	NOW & EPA	21 Mar 2014	13 Sep 2025	Lower 90% (3294 units. Upper Lachlan Fold MDB). Replacement de-watering bore licenses exchanged for decommissioned bores.
Supply Work Approval 70WA614805	NOW	12 Jan 2010	13 Sep 2025	Surface supply work Licence for TIB-LPB and buried bore-field poly-pipeline under Lake Cowal.
High Security Title WAL13749 NOW Reference 70AL603333	LPI and NOW	21 Dec 2006	Life of ML	Title for allocation from Regulated River Source.
High Security Title WAL14981, NOE Reference 70WA603145	LPI and NOW	15 Sep 2011	Life of ML	Title for allocation from Lachlan River Regulated -Water Sharing Plan.
General Security WAL13748 DNR Reference 70AL603332	LPI and NOW	21 Dec 2006	Life of ML	Title for allocation from Regulated River Source.

4. Cowal Gold Operations Status – May 2017

The Cowal Gold Operations development between May 2016 and April 2017 occurred in accordance with Development Consent 14/98 MOD 11 between May 2016 and February 2017, and Development Consent 14/98 MOD 13 between February 2017 and May 2017. The Development Consent 14/98 MOD 13 requirements were implemented with revision/updated environmental management plans being prepared as required to address the MOD 13 conditions.

Mine developments that occurred between May 2016 and April 2017 are:

Northern Waste Rock Emplacement Rehabilitation Trials
Replicate rehabilitation trials adjacent to Pond D1 on the northern face of NWRE were established using the rock-topsoil method as a basis. The rehabilitation of this area was progressed in 2014/2015 with re-contouring and placement of rock / topsoil surfacing prior to seeding and planting of tube stock.

Aerial view of rehabiltated trials on the NWRE batter adjacent to Pond D1

Revegetation of NWRE batter slope (viewed from the Lake Protection Bund access track)

Increased wall height on Pond D1

Bund wall protection of Pond D1 during the peak water level of Lake Cowal in 2016.

The perimeter wall of Pond D1 was raised as a precaution against heavy rainfall events resulting in flooding of Lake Cowal.

The increase in Pond D1 wall height protected D1 from inflow from the Lake or overflow of retained water to the Lake during the recent inundation in 2016.

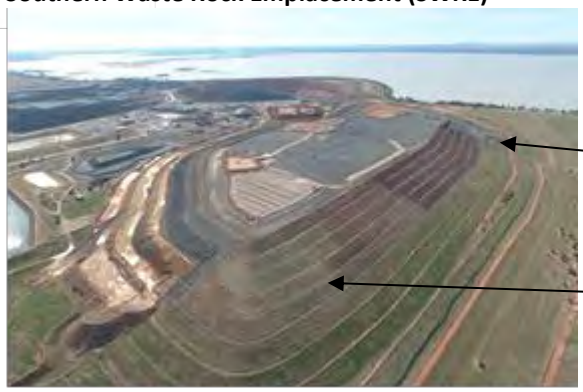
Northern Waste Rock Emplacement (NWRE)
No areal expansion of the NWRE occurred between May 2016 and May 2017, but the NWRE emplacement continued to receive waste rock and low grade ore from the open pit development resulting in an increase in height of the emplacement. ROM 8 and ROM 9 stockpiles were constructed on top of the NWRE at 1268 m RL in February and August 2016 respectively.

The NWRE is approved to an increase in height of 308m in Development Consent 14/98 MOD 11.

Northern Waste Rock Emplacement (NWRE) May 2016

Northern Waste Rock Emplacement (NWRE) May 2017

Southern Waste Rock Emplacement (SWRE)



Southern Waste Rock Emplacement (SWRE)

The SWRE continued to receive waste rock with the north-west corner of the SWRE expanded in February 2015 into an area of the basal layer where the 'Cowal West' homestead stood until May 2012.

The rehabilitation trials on the south side of the SWRE provided information on the most suitable rehabilitation procedure(s) for the waste rock emplacements.

Shaping, topsoil placement and progressive rehabilitation of the western end of the SWRE commenced during 2015 and revegetation of the finished batters progressed along the southern walls of the SWRE during 2016-2017.

Perimeter Waste Emplacement (PWE)

No expansions occurred on the Perimeter Waste Emplacement between April 2016 and May 2017. Some trials and rehabilitation of the batters above the Lake Protection Bund roadway occurred during 2015 with contouring, rock and topsoil placement and seed and tube stock planting.

The establishment of grass cover and successful growth of tube stock was observed during the May 2017 site inspection.

The upper batters of the PWE have been shaped and contoured, and topsoil placed ready for revegetation when the weather conditions are suitable for germination of seed.

Perimeter Waste Emplacement rehabilitation on the outside lifts (above the Lake Protection Bund)

Northern Tailings Storage Facility (NTSF)

A new lift (Stage 6) on the NTSF was completed in December 2016 and tailings were deposited to the NTSF from January 2017 to the date of this audit (May 2017).

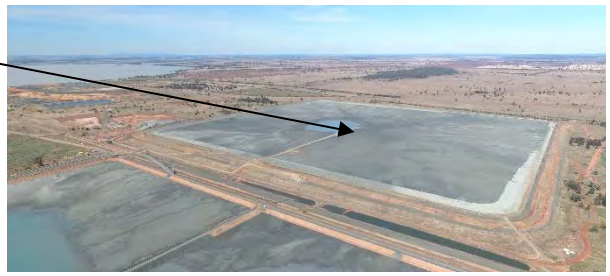
Supernatant water from the tailings storage facility is collected and returned to the process plant for reuse.

The TSF walls were being strengthened with rock armouring for the future lifts of the tailings storage facilities.

Southern Tailings Storage Facility (STSF)

Tailings deposition to the STSF occurred until January 2017until the STSF capacity had been reached (tailings were then redirected to the NTSF).

A new lift on the STSF was being constructed at the date of this audit (May 2017), with STSF walls were being strengthened with rock armouring for the future lifts of the tailings storage facilities.



Southern Tailings Storage Facility (STSF) April 2017

Temporary Isolation Bund and Lake Protection Bund

Temporary Isolation Bund - establishment of natural vegetation providing protection and stabilisation of the outer bund wall from the waters of Lake Cowal (when the lake bed was inundated).

Lake Cowal waters reached the Temporary Isolation Bund in May 2016 and the Temporary Isolation Bund was overtopped by the waters of Lake Cowal in October 2016.

The outer faces of the Lake Protection Bund access track were stabilised using the rock-topsoil during 2011/2012. The establishment of natural vegetation on the Temporary Isolation Bund batters provided protection of the outer bund wall from wind / wave erosion resulting from the waters of Lake Cowal during the 2016 inundation.

5. Review of Environmental Management

A summary of compliance of the Cowal Gold Operations with Consolidated Development Consent 14/98 MOD 13 conditions, EPL 11912 conditions and implementation of the requirements with the environmental approvals are presented below. (Summary Tables of compliance are provided in Attachments A to D of this report).

5.1 Environmental Management

5.1.1 Environmental Management Strategy

[Consolidated Development Consent 14/98 MOD 13 condition 9.1(a)]

The Environmental Management Strategy prepared to satisfy the requirements of Development Consent 14/98 MOD 13 condition 9.1(a) dated October 2014, was approved by DP&E on the 28 November 2014.

The objectives of the Environmental Management Strategy are to fulfil the relevant requirements of Development Consent DA 14/98 condition 9.1(a) by providing a strategic framework for environmental management of the CGO including all relevant approvals and environmental management plans (EMPs), strategies, and programs prepared for the CGO project. An overview of the CGO environmental management plans, strategies and programs required under the Development Consent 14/98 is provided in Section 5 of the Environmental Management Strategy.

The Environmental Management Strategy is relevant to all activities associated with operation of the Cowal Gold Operations within Mining Lease (ML) 1535 including the mining and process plant operations, operation of the Bland Creek Palaeochannel Bore-field and Eastern Saline Bore-field (and Eastern Pump Station) and offset areas.

Evolution Mining Limited has an Environmental and Sustainability Policy that all staff and contractors are required to adhere to:

Evolution MINING

ENVIRONMENT AND SUSTAINABILITY POLICY

Evolution Mining Limited ("Evolution Mining" or the "Company") is committed to attaining an outstanding level of environmental performance in all of our workplaces.

Our environmental care and culture will be formed on the basis of:

• Commitment to this Policy, with supportive funding and a belief that the majority of environmental incidents are preventable and controllable with foresight, relevant training, purposeful attitude and appropriate equipment;
• Accountability of Management with the support of all Personnel to ensure that the Workplace and the practices comply with statutory and license conditions;
• The Company will strive to implement leading industry practices and environmental management systems at all levels including exploration, development, operations, decommissioning, closure and rehabilitation;
• Regular assessment of the environmental performance of the Company's activities will be undertaken to comply with the Company's commitments and conditions and to report findings to stakeholders, the community and regulatory authorities; • Continually striving to identify opportunities to effectively manage energy and water whilst minimising waste and reducing our environmental footprint; • Increasing awareness of Personnel on the potential environment impacts of activities in which we are involved and how those impacts can be minimised;
• We undertake to maintain appropriate emergency and response programs and to notify the relevant authority in the event of any reportable environmental incident; and • Contribute to conservation of biodiversity and integrated approaches to land use.

Jake Klein Executive Chairman Evolution Mining Limited

The Cowal Gold Operations Environmental Management Strategy addresses the elements of AS/NZS ISO 14001 and Cowal Gold Operations are ISO14001 certified for Mining and Ore Processing Operations and Support Services for Gold and Silver production.

Table 5.1 Environmental Management Strategy vs AS/NZS ISO14001 Elements

ISO 14001 Element	Environmental Management **Strategy** section
4.2- Environmental Policy	Evolution Mining Environmental Policy
4.3.1 - Environmental Aspects	Section 2.0 Overview of the Cowal Gold Operations
4.3.2 - Legal and Other Requirements	Section 2 - Statutory Requirements
4.3.3 - Objectives and Targets	Section 1 - Purpose and Scope of this EMS
4.3.4 - Environmental Management Programs	Section 5 - Environmental Management Plans
4.4.1 - Structure and Responsibility	Section 3 - Site Environmental Management Structure
4.4.2 - Training Awareness and Competence	Section 4.0 - Training
4.4.3 - Communication	Section 7 – Information Dissemination and Section 8 - Complaints and Dispute Resolution
4.4.7 - Emergency Preparedness and Response	Section 10 - Emergency or Incident Response
4.5.1 - Monitoring and Measurement	Section 5 Environmental Management Plans and Monitoring Programs
4.5.2 - Non-conformance, Corrective Action	Section 9 - Non-Compliance with Statutory Requirements

5.1.2 Environmental Monitoring

[Consolidated Development Consent 14/98 MOD 13 condition 9.1(a)(vi)]

The Surface Water, Groundwater, Meteorological and Biological Monitoring Program (Revision L dated May 2015) provides a clear plan that collates the monitoring programs to be carried out in relation to the development and satisfies the requirement of Development Consent 14/98 MOD 13 condition 9.1(a).

The Surface Water, Groundwater, Meteorological and Biological Monitoring Program:

- provides a description of baseline surface water, groundwater, meteorological and biological monitoring information against which on-going monitoring results can be compared, where baseline monitoring data is sufficient;
- establishes a monitoring program that contributes to the assessment of the effectiveness of environmental impact mitigation measures;
- outlines a process by which administering authorities and stakeholders can regularly assess and confirm the effectiveness of the management strategies; and
- provides details of the surface water, groundwater, meteorological and biological monitoring programs during the operational phase of the Cowal Gold Mine and details the proposed strategies for monitoring during the post-mine operations phase.

The technical objectives of the individual monitoring programs that comprise the SWGMBMP are:

- The surface water monitoring program is to collect data to:
  - identify existing anthropogenic influences on the Lake;
  - review the on-site water management structures and their effectiveness;
  - establish degrees of flux in the Lake habitat to apply to the biological components of the SWGMBMP
  - determine the event of frequencies of various rainfall events and subsequently review the performance of site water management structures (e.g. sediment dams, diversion channels);
  - establish the lake catchment characteristics to provide a holistic appraisal of the Lake and processes that alter its hydrology and water quality; and
  - gauge the effects of surface water flows in Bland Creek on Lake water levels.
- The groundwater monitoring programme is to collect data in order to:
  - provide a means by which potential impacts such as drawdown effects from groundwater extraction and groundwater quality effects from seepage may be assessed.
- The meteorological monitoring programme is to collect data in order to:

- provide information for the understanding of Lake hydrological and meteorological processes, verifying parameters relevant to the potential noise and/or air quality issues, reviewing the site water balance, design criteria of water management structures and rehabilitation design criteria, and refining the baseline environmental database.

- The biological monitoring programme are to:
  - apply long-term monitoring results to enable the detection of significant changes in the biological components of the Lake and the identification of the mining operation's role in such changes; and
  - establish the basis from which any short-term effects (e.g. an accident at the mine, or elsewhere in the catchment) or any mortality of birds or fish for whatever reason, could be immediately investigated and assessed in terms of prior conditions.

5.1.3 Conclusion

Environmental Management Strategy **Status:** **Compliant**

The Environmental Management Strategy approved by DP&E on the 28 November 2014 satisfies the requirements of Development Consent 14/98 MOD 13 condition 9.1(a) and provides a sound basis for the environmental management of the Cowal Gold Operations.

The Environmental Management Strategy is supported by a suite of specific environmental aspect management plans that have been implemented as approved for the project under the Development Consent 14/98 conditions.

The Surface Water, Groundwater, Meteorological and Biological Monitoring Program collates the monitoring programs to be carried out in relation to the Cowal Gold Operations development and satisfies the requirement of Development Consent 14/98 MOD 13 condition 9.1(a)(vi).

5.2 Environmental Management Plans

[Consolidated Development Consent 14/98 MOD 13MOD 13 condition 9.1(a)(vi)]

5.2.1 Status of Environmental Management Plans and Monitoring Programs

The Environmental Management Plans and Monitoring Programs required under the Consolidated Development Consent 14/98 MOD 13 for environmental management at the Cowal Gold Operations support the Cowal Gold Operations Environmental Management Strategy.

Each of the management plans, strategies and monitoring programs were reviewed during 2014 - 2016 to address the requirements in Development Consent 14/98 MOD 11 to 13, with revisions of documents prepared where required and submitted to the DP&E for approval.

The current status of the management plans and monitoring program documents for the Cowal Gold Operations is summarised in Table 5.2.1.

Table 5.2.1: Status of Consolidated Development Consent 14/98 MOD 11 Environmental Management Plans and Monitoring Program documents – May 2017

Condition	Document Title	Document Revision / Addendum and Approval Status
2.4(c)	Rehabilitation Management Plan (RMP)	RMP-C dated February 2015, prepared and submitted to DRE for approval on 13 April 2016.
3.1(a)(i)	Heritage Management Plan (HMP)	HMP01_0 dated September 2003. No revision required to meet MOD 13.

Condition	Document Title	Document Revision / Addendum and Approval Status
3.1(a)(ii)	Indigenous Archaeology and Cultural Heritage Management Plan (IACHMP)	IACHMP-Addendum dated February 2015 was submitted to DP&E in April 2015. Awaiting approval from DP&E.
3.2(b)	Flora and Fauna Management Plan (FFMP)	FFMP-I dated February 2015. Approved by DP&E on 21 March 2016. Further revision submitted in November 2016 awaiting approval from DP&E.
3.3	Compensatory Wetland Management Plan (CWMP)	CWP01-I dated September 2003. No revision required to meet MOD 13.
3.4(c)	Biodiversity Offset Management Plan (BOMP)	BOMP-A dated May 2015, approved by DP&E on 21 March 2016. Further revision submitted in November 2016 awaiting approval from DP&E.
3.5(a)	Erosion and Sediment Control Management Plan (ESCMP)	ESCMP01_0, Addendum dated February 2015 Approved by DP&E on 21 March 2016.
3.5(b)	Soil Stripping Management Plan (SSMP)	SSMP-L dated February 2015. Approved by DP&E on 21 March 2016.
3.7	Land Management Plan (LMP)	LMP Addendum dated March 2015. Approved by DP&E on 21 March 2016.
3.8	Rehabilitation Strategy (RS_RMP)	RS_RMP prepared and submitted to DRE for approval on 22 April 2016. Awaiting approval.
4.4	Water Management Plan (WMP)	WMP-T dated May 2015. Approved by DP&E on 19 November 2015
4.5	Water Monitoring (in Surface Water, Groundwater, Meteorological & Biological Monitoring Program (SWGWMBMP)	WMP and SWGMBMP dated May 2015. Approved by DP&E on 19 November 2015.
	Monitoring Program for Lake Protection Bund, Water Storages, Tailings Storage Facilities and Pit Walls (LPBMP)	LPBMP-01-L Addendum dated April 2015 Submitted to DP&E on 15 May 2015. Awaiting approval from DP&E.
5.3(b)	Cyanide Management Plan (CMP)	CMP Addendum dated July 2010. No revision required to meet MOD 11.
5.3(d)	Cyanide Monitoring Program	No revision required to meet MOD 11.
5.4	Hazardous Waste and Chemical Management Plan (HWCMP)	HWCMP01-T dated May 2011. No revision required to meet MOD 11.
6.1(c)	Air Quality Management Plan (AQMP)	AQMP-C, dated February 2015. Approved by DP&E on 18 February 2016.
6.3(e)	Blast Management Plan (BLMP)	BLMP-L, dated January 2015. Approved by DP&E on 10 December 2015.
6.4(e)	Noise Management Plan (NMP)	NMP-S, dated November 2014 / Approved by DP&E on 5 March 2015.

Condition	Document Title	Document Revision / Addendum and Approval Status
9.1(a)	Environmental Management Strategy (EMS)	EMS-A (dated October 2014) approved by DP&E 28 November 2014. Further revision submitted in November 2016 awaiting approval from DP&E.

5.2.2 Conclusion

All Cowal Gold Operations environmental management plans, strategies and monitoring programs were reviewed during 2015 to address the requirements in Development Consent 14/98 MOD 11. Revisions of the documents prepared where required, were submitted to the relevant authorities for approval. All revised documents have been approved by the relevant authorities except for the Indigenous Archaeology and Cultural Heritage Management Plan, Rehabilitation Strategy, and Monitoring Program for Lake Protection Bund, Water Storages, Tailings Storage Facilities and Pit Walls (LPBMP), submitted in 2015 and Evolution Mining was still awaiting approval for these documents at the date of this audit (May 2017).

Revisions to the Environmental Management Strategy, Flora and Fauna Management Plan and Biodiversity Offset Management Plan were submitted to DP&E in November 2016 and Evolution Mining was awaiting approval for these documents from DP&E at the date of this audit (May 2017).

All future revisions of the environmental management plans, strategies and monitoring programs should amend reference to Barrick where relevant and ensure the Development Consent condition numbers in the documents are consistent with Consolidated Development Consent 14/98 MOD 13.

5.3 Annual Review

[Consolidated Development Consent 14/98 MOD 13 condition 9.1(b)]

5.3.1 Annual Reviews

Development Consent 14/98 MOD 13 condition 9.1(b) requires an Annual Review *"by the end of July each year, or as otherwise agreed with the Secretary, the Applicant shall review the environmental performance of the development to the satisfaction of the Secretary".*

The DP&E issued a series of Guidelines related to the NSW Integrated Mining Policy to *"improve consistency and accountability for assessment decisions by helping proponents to develop applications and compliance reports that better communicate key issues to government and the community."* The Annual Review Guideline brings together the annual reporting requirements of the Division of Resources and Energy (DRE) and the Department of Planning and Environment (DP&E) into a single, concise document. The Guideline also refocusses the content of an annual review into a targeted compliance document, requiring concise self-reporting. (The Guideline does not integrate the reporting requirements of the Environment Protection Authority).

Annual Reviews prepared for the Cowal Gold Operations in 2015 and 2016 have been prepared generally in accordance with the Annual Review Guideline (DP&E October 2015) and submitted to the DP&E in accordance with the requirements of Development Consent 14/98 MOD 13 condition 9.1(b), as summarised in Table 5.3.1.

Table 5.3.1: Annual Review Section addressing Development Consent 14/98 MOD 13 Condition 9.1(b) Requirement

Condition 9.1(b) Requirement	Annual Review Section addressing the Condition 9.1(b) Requirement	Compliance Status
This review must: (i) describe the development that was carried out in the previous calendar year, and the	(i) Section 2 – Operations during the Reporting Period describes the development that was carried out in	**Compliant**

Condition 9.1(b) Requirement	Annual Review Section addressing the Condition 9.1(b) Requirement	Compliance Status
development that is proposed to be carried out over the next year;	the previous 12 months; and Section 7 outlines the Activities Proposed for the Next Annual Review Period.	
(ii) include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, which includes a comparison of these results against the: • the relevant statutory requirements, limits or performance measures/criteria; • the monitoring results of previous years; and • the relevant predictions in the EIS;	(ii) Section 3 – Environmental Management and Performance provides a comprehensive review of the monitoring results for the Cowal Gold Operations development over the previous year, including a comparison of results against the relevant statutory requirements, limits or performance measures/criteria. The comparison of monitoring results from previous years and relevant predictions in the EIS are commented on where required.	**Compliant**
(iii) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance,	(iii) Section 3 – Environmental Management and Performance reports any non-compliances under Reportable Incidents for each environmental aspect.	**Compliant**
(iv) identify any trends in the monitoring data over the life of the development;	(iv) Section 3 –comments on any trends in monitoring data, if identified.	**Compliant**
(v) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and	(v) The predicted impacts identified in the Environmental Assessment for the Cowal Gold Extension Modification (MOD 13) and any significant discrepancies identified with the actual impacts (as monitored) would be reported in Section 3 of the Annual Review.	**Compliant**
(vi) describe what measures will be implemented over the next year to improve the environmental performance of the development.	(v) Section 3 outlines improvements proposed under each environmental aspect, for the next reporting period.	**Compliant**

5.3.2 Conclusion

The Annual Reviews prepared for the Cowal Gold Operations (2015 and 2016), address the requirements of Development Consent 14/98 MOD 13 condition 9.1(b). The documents have been submitted to the relevant authorities and an annual presentation provided at the Cowal Gold Operations site for representatives of the authorities / stakeholders (i.e. OEH/EPA, DPI-Water, DRE, DPI-Fisheries, Dam Safety Committee, Bland Shire Council and Community Environmental Monitoring and Consultative Committee).

5.4 Rehabilitation

[Consolidated Development Consent 14/98 MOD 13 conditions 2.4(a) to 2.4(c, and 3.8]

5.4.1 Environmental Assessment

5.4.1.1 Environmental Impact Statement Cowal Gold Mine Project 1998

The rehabilitation philosophy for the Cowal Gold Mine Project expressed on the Environmental Impact Statement 1998 was to create stable rehabilitated landforms which increase areas of endemic vegetation in the Project area

and the conservation status of lake-land habitats in general. Rehabilitation would be progressive and in accordance with approved plans.

New Lake Foreshore would be rehabilitated as a series of zones (a flood zone around the fringe of the Lake and three Lake edge zones, viz. littoral zone, rush zone and depending, on Lake levels at the time, a water zone). The outer slopes of the mine waste rock emplacements would be covered with a layered system of soils and subsoils retrieved from stockpiles or direct from mine operations. Reverse grade berms together with the considerable depth of the cover proposed would have the effect of absorbing and storing rainfall in all but extreme events.

Drainage on the top surfaces of the waste rock emplacements would be managed by a series of small shallow drainage features (swales) which in combination with a deep cover and high absorption capacity would support a woodland vegetation community.

The final void is to leave its surrounds safe for humans, stock and wildlife and where feasible create habitat opportunities for waterbirds at the approximate level at which void water would reach its equilibrium. The volume of the void would be around 80,000 ML. Groundwater inflows, rainfall and site runoff are expected to gradually increase the level of water in the void over a period of 100 years. An evaluation of the likely geochemical characteristics of the water show that the long term scenario would be for the deep water to trend towards hypersalinity.

The outer embankments of the tailings storage facilities would be left grassed until the cessation of use (to minimise bird habitat potential) at which stage they would be revegetated using endemic shrub and woodland species with the embankments developed in the same reverse grade as proposed for the waste emplacements. Surfaces would receive a deep cover to allow rainfall to be absorbed and stored by the covers allowing a woodland vegetation with a relatively high demand for water to be established.

5.4.1.2 Environmental Assessment Cowal Gold Mine Extension, Modification 11

The Environmental Assessment - Cowal Gold Mine Extension Modification 11 - Appendix I Rehabilitation, described the rehabilitation principles, objectives, concepts and methods for the Modification and the rehabilitation and a land use management strategy for the Cowal Gold Mine Operations. The rehabilitation and land use management strategy retains the approved final landform design concepts for the Cowal Gold Mine and integrates the results of rehabilitation investigations and trials conducted prior to MOD 11 approval into the rehabilitation program.

Consistent with the approved rehabilitation program, progressive rehabilitation and revegetating of final landforms with native and/or endemic species characteristic of remnant vegetation within the surrounding landscape will continue. The Cowal Gold Mine post-mining landform will include conservation areas (fenced to exclude grazing) to re-establish a greater extent of endemic vegetation within the former ML 1535 area, and would also include areas suitable for agricultural production.

Rehabilitation concepts for the waste rock emplacement and tailings storage facility would be refined (based on the results of the rehabilitation investigations and trials) and include:

- benign rock mulch on the slopes of these landforms to improve long-term slope stability; and
- hay mulch to minimise potential soil erosion from the slopes of these landforms.

Various soil amelioration methods would continue to be implemented for MOD 13 (e.g. gypsum application to sodic and dispersive stockpiled soils) to enhance the suitability of the soil for plant growth and improve revegetation outcomes for the Cowal Gold Operations final landforms.

Rehabilitation investigations and trials will continue and the results from these investigations and trials would continue to inform and refine the Cowal Gold Operations rehabilitation program, consistent with current practices.

5.4.1.3 *Environmental Assessment Cowal Gold Mine Life, Modification 13*

The currently approved final landform design concepts would remain unchanged for Modification 13. The Cowal Gold Operations final landforms would be:

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

Consistent with the Division of Resources and Energy *ESG3: Mining Operations Plan (MOP) Guidelines September 2013* (MOP Guidelines), the following conceptual rehabilitation domains have been developed based on the Cowal Gold Operations final landforms:

- Domain 1A – Final Void;
- Domain 2B – Permanent Water Management Infrastructure;
- Domain 3C – Infrastructure Area
  - Grassland/Scattered Eucalypt Woodland;
- Domain 4D – Tailings Storage Facilities
  - Eucalypt Woodland;
- Domain 5D – Waste Rock Emplacements
  - Eucalypt Woodland;
- Domain 6D – Woodland Corridor – Eucalypt Woodland; and
- Domain 7E – New Lake Foreshore
- Riverine Woodland/Freshwater Communities.

The rehabilitation objectives (section 5.5.2) and final landform and revegetation concepts for each domain/key final landform are consistent with the rehabilitation principles and proposed rehabilitation activities described in the Mining Operations Plan section 7.2.

5.4.2 Rehabilitation Objectives

[Consolidated Development Consent 14/98 MOD 13 condition 2.4(a)]

The rehabilitation of Cowal Gold Operations site is to be generally consistent with the proposed rehabilitation outcomes described in the Environmental Assessment 2016 Appendix F (depicted in Development Consent 14/98 Appendix 2) as amended by the proposed rehabilitation strategy (Development Consent 14/98 MOD 13 condition 3.8), to comply with the objectives in Development Consent 14/98 MOD 13 condition 2.4(a) Table 1, to the satisfaction of Director of Division of Resources and Energy (DRE).

Table 5.4.2: Rehabilitation Objectives Development Consent 14/98 MOD 13 condition 2.4(a)

Feature	Condition 2.4(a) Objective	Actions (April 2017)
Mine site (as a whole)	• Safe, stable and non-polluting. Final landforms designed to incorporate micro-relief and integrate with surrounding natural landforms. • Constructed landforms are to generally drain to the final void. • Minimise long term groundwater seepage zones. • Minimise visual impact of final landforms as far as is reasonable and feasible	• Rehabilitated waste emplacements have rough surfaces from mixing of topsoil / subsoil, and rock, and ripping. • Runoff water from rehabilitated landforms generally drains to the active mining void where practicable and is pumped to water storage ponds for reuse in the process plant. • The waste dump landform design includes terraces but does not include large structural drainage control measures.

Feature	Condition 2.4(a) Objective	Actions (April 2017)
		• Progressive rehabilitation of the waste emplacements and tailings storage facilities outer batters minimises visual impacts of the landforms outside of the ML boundary and assists with integration into the natural landscape.
Final void	• Minimise the size and depth of final void; drainage catchment of final void; and risk of flood interaction up to the Probable Maximum Flood; • To be permanently separated from Lake Cowal by the Lake Protection Bund. • High-wall to be long term stable.	• To be addressed in the Rehabilitation Strategy to be submitted to the DP&E by Year 7 of mining operations or 5 years before mine closure. • The Cowal Gold mine void is permanently separated from Lake Cowal by the Lake Protection Bund. • The Cowal Gold Mine high-wall is being developed for long tern stability.
Surface infrastructure	• To be decommissioned and removed	• Not yet triggered
Agriculture	• Restore or maintain land capability generally as described in the EIS.	• Not yet triggered. To be addressed in the Rehabilitation Strategy to be submitted to the DP&E by Year 7 of mining operations or 5 years before mine closure.
Rehabilitation and other vegetated land	• Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems.	• Ecosystems are being established on the Lake Cowal foreshore and waste emplacements with rehabilitation monitoring undertaken annually using Ecosystem Function Analysis (EFA) to assess establishment against key indicators.
Community	• Ensure public safety. • Minimise adverse socio-economic effects associated with mine closure	• Security fencing and signage is in place around the ML boundaries to prevent unauthorised access to the mining operations area. • Scio-economic effects associated with mine closure will be addressed in the Mine Closure Plan.

5.4.3 Rehabilitation Management Plan

[Consolidated Development Consent 14/98 MOD 13 condition 2.4(c)]

A Rehabilitation Management Plan to satisfy the requirements of Development Consent 14/98 MOD 13 condition 2.4(c) was prepared in accordance with the DRE Guidelines EDG03 *Guidelines to the Mining, Rehabilitation and Environmental Management Process* (January, 2006) and ESG3: *Mining Operations Plan Guidelines*, September 2013. Consultation occurred with DP&E, DPI-Water, OEH, BSC and the CEMCC, regarding the Rehabilitation Management Plan, and the Rehabilitation Management Plan submitted to the DRE for approval on 13 April 2015.

The DRE required the Rehabilitation Management to be appended to the Mining Operations Plan (MOP) for approval and MOP for the period 1 September 2016 to 31 August 2018 was submitted to the DRE in July 2016.

Management measures and practices outlined in the Rehabilitation Management Plan April 2015 are listed in Table 5.4.3.

Table 5.4.3: Rehabilitation Management Plan – Practices and Measures

Section /Page No.	Rehabilitation Management Plan Measures and Practices	Comments	Implementation Status
s.4.1 / p.35	In accordance with Development Consent Condition 2.4(b), rehabilitation of final landforms or disturbed areas will be undertaken progressively as soon as reasonably practicable following disturbance.	Progressive rehabilitation of the waste emplacements and tailings storage facilities outer batters is occurring when practicable to stabilise the disturbed areas and minimise visual impacts of the landforms outside of the mining lease boundary.	**Compliant Ongoing**
	Progressive rehabilitation will aim to minimise erosion and sedimentation potential and to minimise visual impacts of CGO landforms.	Rehabilitation of waste emplacements and tailings storage facility batters has minimised erosion and visual impacts of the landforms.	**Compliant Ongoing**
	Interim rehabilitation measures that will be implemented to minimise the area exposed for dust generation will include the establishment of a cover crop on newly rehabilitated landforms / areas and on long-term soil stockpiles.	Establishment of a cover crop on newly rehabilitated landforms and long-term soil stockpiles has occurred to reduce potential for dust generation.	**Compliant Ongoing**
	Rock mulch will also be applied as soon as practicable following the completion of shaping of the waste emplacement and tailings storage facility batters to minimise the potential for windblown dust from the surface waste rock and soil erosion from rainfall.	The use of rock 'mulch' on the waste emplacements and batters of the tailings storage facilities has been successful in minimising soil erosion and stabilising the slopes for establishment of cover crop and reducing potential for dust generation.	**Compliant Ongoing**
	Following re-profiling works and rock mulch and topsoil application, native pasture hay (or straw hay) will be applied on northern and western facing landform slopes (as these aspects are subject to prevailing conditions), to assist with stabilising and minimising the loss of topsoil resources.	Application of straw/hay mulch to areas that have been finally profiled has occurred successfully on the Northern waste emplacement landform slopes for stabilisation of the topsoil profile and management of soil erosion. Grass establishment on the waste emplacement batters has also resulted in surface mulching with the dried vegetative matter providing a cover following seasonal die-off.	**Compliant Ongoing**
s.4.2 / p.35	A Vegetation Clearance Protocol (VCP) has been developed for the CGO (refer to Figure 10 of the Rehabilitation Management Plan).	The Vegetation Clearance Protocol activated for any new area of vegetation to be cleared within the ML 1535 site with a preliminary habitat assessment, involves inspection of all trees and potential habitat features located within proposed disturbance areas prior to any clearing.	**Compliant Ongoing**
s.4.2 / p.35	In the event that any threatened species are observed during the preliminary or secondary habitat assessments, the Threatened Species Management Protocol (TSMP) will be initiated.	Threatened Species Management Protocol (TSMP) (and associated Threatened Species Management Strategies) have been initiated in accordance with the Flora and Fauna Management Plan Appendix A if any threatened species was observed during	**Compliant Ongoing**

Table 5.4.3: Rehabilitation Management Plan – Practices and Measures

Section /Page No.	Rehabilitation Management Plan Measures and Practices	Comments	Implementation Status
	The TSMP (and associated Threatened Species Management Strategies) are described in detail in the Flora and Fauna Management Plan Appendix A.	preliminary or secondary habitat assessments.	
	Vegetation clearance operations will be managed to maximise the re-use of cleared vegetative material and habitat resources/features on the site.	The re-use of cleared vegetative material and habitat resources / features on the site is maximised during vegetation clearance activities.	**Compliant Ongoing**
s.4.3 / p.36	As a component of the VCP, trees may be examined for their provision of seed. and the seed collected at the time of vegetation clearance for use in rehabilitation or habitat enhancement programs within ML 1535 and/or within the CGO offset and RVEP areas	Seed is collected when available at any time of vegetation clearance for use in rehabilitation or habitat enhancement programs.	**Compliant Ongoing**
s 4.6 / p40	An Erosion and Sediment Control Management Plan (ESCMP) has been developed for the CGO in accordance with Development Consent 14/98 Condition 3.5(a).	The implementation of the Erosion and Sediment Control Management Plan (ESCMP), detail the control systems in place at the CGO and the program to monitor and report on the effectiveness of these systems / structures.	**Compliant Ongoing**
s.4.7 / p.41	Weeds will be managed at the CGO in accordance with measures described in Land Management Plan section 6 and Flora and Fauna Management Plan section 9.8.	The weed management program implemented on ML 1535 land and a other Evolution Mining owned land minimises new weed incursion and control of the spread of any existing noxious weeds on Cowal Gold Operations owned land.	**Compliant Ongoing**
s.4.7 / p.41	Pest control activities at the CGO in accordance with the procedures detailed in Land Management Plan section 7 and Flora and Fauna Management Plan section 9.9).	A pest control program has been facilitated in conjunction with adjacent landholders and landholder groups through the CEMCC. Pest control activities described in the Land Management Plan section 7 are implemented across the mine owned properties. Regular inspections to assess the status of pest populations within ML 1535 and on all Cowal Gold Operations owned land is conducted and reported in the Annual Review.	**Compliant Ongoing**
s.4.8 / p.42	A perimeter security and fauna exclusion fence will be constructed around the boundary of ML 1535 (Development Consent 14/98 condition 2.3) and around the perimeter of the tailings storage facilities (Development Consent Condition 3.2(b)(v)).	The ML 1535 perimeter fence-line and the tailings storage facility perimeter fence has been constructed and is inspected and maintained (as required) to restrict livestock and unauthorised access to the ML 1535 area.	**Compliant Ongoing**

Table 5.4.3: Rehabilitation Management Plan – Practices and Measures

Section /Page No.	Rehabilitation Management Plan Measures and Practices	Comments	Implementation Status
s.4.9 / p.43	Grazing and cropping activities will be excluded within ML 1535 during operation and rehabilitation of the CGM (in accordance with Landscape Management Plan).	The perimeter boundary fence around ML 1535 is maintained and prevents access to the Cowal Gold Operations site by stock, to minimise potential for damage to rehabilitated areas.	**Compliant Ongoing**
s.4.10 / p.43	Progressive rehabilitation of CGO landforms or landform features (e.g. batter slopes) will be undertaken in accordance with the concepts and measures in this Rehabilitation Management Plan to reduce the contrast between the CGO landforms and the surrounding landscape.	Progressive rehabilitation of CGO landforms or landform features is ongoing to address the conceptual final landform.	**Compliant Ongoing**
s.4.10 / p.43	Vegetation screens will be planted along sections of the western and northern boundaries of ML 1535 to shield continuous views of the CGO from Lake Cowal Road. The vegetation screens include endemic plants that are compatible with the existing surrounding vegetation.	The establishment of vegetation along the northern boundary of ML 1535 is 'softening' the visual impact of the Cowal Gold Operations when viewed from Lake Cowal Road. Vegetative establishment along the western boundary of the tailings storage facilities and along the boundary fence-line of the site is reducing the visual impact of the development.	**Compliant Ongoing**
s.5.1 / p.45	A rehabilitation monitoring methodology in consideration of the *Rehabilitation and Environmental Management Plan* (REMP) Guidelines 2010 will be prepared to assess the performance of CGO rehabilitation areas and to assess regeneration and revegetation performance within the CGO Offset and RVEP Areas.	DnA Environmental (2011) prepared a report R*ehabilitation monitoring methodology and determination of completion criteria: ecosystem sustainability for the Cowal Gold Mine* that provides a detailed description of the monitoring methodology for the Cowal Gold Operations site. Rehabilitation monitoring occurs during spring to capture an accurate representation of species present in the area. A summary of the results of this monitoring is provided in the Annual Reviews.	**Compliant Ongoing**
s.5.1 / p.46	The rehabilitation monitoring methodology components will be undertaken within 20 m x 50 m monitoring quadrats established at each rehabilitation monitoring site and reference site. A LFA transect will be established along the 20 m downslope boundary of each quadrat.	Annual rehabilitation monitoring of the established quadrants is conducted by DnA Environmental and reported in the Annual Review.	**Compliant**

The rehabilitation of the Cowal Gold Operations disturbed areas is occurring in accordance with the Rehabilitation Management Plan 2015. The timing and establishment of rehabilitation of the Cowal Gold Operations areas arepresented in the MOP section 7. The rehabilitation has been occurring when practicable

(i.e. dependent on suitable meteorological conditions and completion of areas for rehabilitation and revegetation determined by mining and waste emplacement activities).

5.4.4 Rehabilitation Performance Criteria

Rehabilitation performance indicators and completion criteria were developed (based on monitoring data obtained from relevant reference sites) for assessment of rehabilitation performance on the Cowal Gold Operations site.

The performance indicators and completion criteria were developed by DnA Environmental (2011)[2] and were based on major stages of ecosystem development consistent with the EDG03 *Rehabilitation and Environmental Management (REMP) Guidelines* (DRE, September 2013). The performance criteria were developed to reflect the measures for mine site rehabilitation and assessed annually.

DnA Environmental (2011) developed a set of indicators and completion criteria, with Completion Performance Indicators and Desirable Performance Indicators. Completion Performance Indicators are the completion criteria required to be met for mining lease relinquishment and are directly relevant to rehabilitation objectives. Desirable Performance Indicators provide an indication of desirable ranges (e.g. rehabilitation monitoring results may not yet fall within reference site ranges but may be within desirable levels).

The rehabilitation performance indicators and completion criteria are presented in the Rehabilitation Management Plan section 6 (2015).

5.4.5 Rehabilitation Monitoring

The rehabilitation monitoring methodology developed by DnA Environmental (2011) to assess the key performance indicators and completion criteria, are representative of the Cowal Gold Operations site final landforms and long-term land use strategy. The rehabilitation monitoring methodology includes a combination of:

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

The monitoring methodology is also used to assess the performance of regeneration and revegetation activities undertaken within the Remnant Vegetation Enhancement Program (RVEP) Areas and Northern and Southern Offset Areas. The vegetation assemblages reported by DnA Environmental in the Annual Rehabilitation Monitoring Reports, are considered as representative of, and consistent with, the final land use and approved rehabilitation objectives for Cowal Gold Operations:

- **Lake:** Woodlands occurring within the lake and lake foreshores (RL 205 – 220m);
- **Slopes**: Woodland occurring on flat to gently undulating slopes (RL 210 – 225);
- **Hills:** Woodlands occurring on low ridges, hills and elevated land (RL220 – 245m); and
- **Grass:** Cleared native grasslands, occurring on flat to gently undulating slopes (RL 210 – 225m).

5.4.6 Rehabilitation Trials

Rehabilitation trials on the Cowal Gold Operations site have occurred progressively based on results of previous trials and recommendations made by the Independent Monitoring Panel in their annual reports:

[2] DnA Environmental (2011) *Rehabilitation monitoring methodology and determination of completion criteria: ecosystem sustainability for Cowal Gold Mine Table 4*

- Material Amelioration – Continued investigation into the optimal soil treatment measures for stockpiled topsoil and subsoil resources to improve their suitability for rehabilitation use;
- Rehabilitation Media – Continued investigation into the effectiveness of various applications associated with the rock mulch, topsoil and hay cover systems in stabilising landform slopes (i.e. controlling erosion) and providing a suitable medium for revegetation;
- Revegetation – Ongoing and new vegetation growth trials relevant to revegetation species suited to the surface rehabilitation materials of Cowal Gold Operations area final landforms to refine revegetation objectives; and
- Replicate trials on the waste rock emplacements, tailing storage facility bunds and other disturbed areas to determine the optimal blend of rock, subsoil, gypsum and mulches for long term rehabilitation for the Cowal Gold Operations site.

Using information gained from the progressive trials conducted on the Cowal Gold Operation site, rehabilitation of completed areas on the northern and southern waste rock emplacements commenced in the 2013 with reshaping and placement of topsoil, rock, gypsum application and mulch, prior to seeding and some tube-stock planting. Rehabilitated areas on the Northern Waste Rock Emplacement and Southern Waste Rock Emplacement were observed during the 2017 audit to be well established shaped batters that did not show any significant erosion at the date of this audit (May 2017) and exhibited good grass cover and healthy shrub and tree establishment.

DnA Environmental conducts an annual assessment of rehabilitation on the Lake Cowal Foreshore, Southern Waste Rock Emplacement, Northern Waste Rock Emplacement, and the Tailings Storage Facilities batters. Observations indicated a satisfactory establishment of grass species and tube-stock on the majority of the completed batters of the waste rock emplacements.

5.4.7 Rehabilitation Status – May 2017

Reporting and general observations related to rehabilitation during this independent environmental audit site inspections, indicate:

- Progressive rehabilitation is occurring within ML 1535 area.
- Riparian vegetation is being established along permanent drainage lines. Stabilisation using mesh and hydro-mulching along permanent drainage lines was observed during the audit.
- Pre-clearance surveys have been undertaken (as required) in accordance with the Vegetation Clearance Protocol.
- Soil stockpile management and soil replacement has been undertaken in accordance with the Soil Stripping Management Plan.
- Maintenance of the vegetative screens (e.g. addition and replacement of plants where required) has been undertaken on sections of the western and northern boundaries of ML 1535 to break up continuous views of the Cowal Gold Operations and activities from Lake Cowal Road.
- Seed is collected when practicable during vegetation clearance activities.
- Habitat features (i.e. hollows, openings, cracks and/or loose bark) have been salvaged at the time of vegetation clearance activities.
- Weed control and feral pest measures implemented are ongoing and considered effective.
- Grazing and cropping activities are excluded within ML 1535 with perimeter fencing erected and maintained to restrict entry of grazing animals.
- Bushfire management strategies are implemented in accordance with the Bushfire Management Plan.

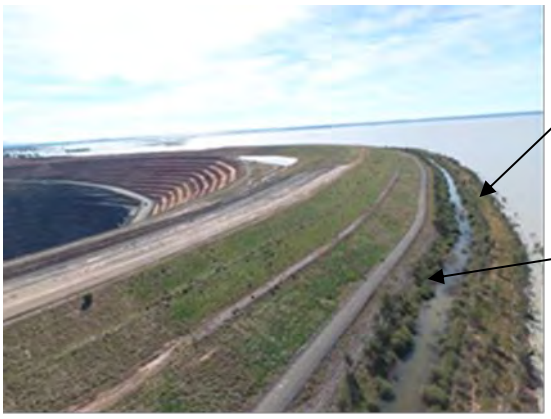
The 2017 independent environmental audit determined that the Cowal Gold Operations rehabilitation works conducted were generally in compliance with the Development Consent 14/98 and Mining Lease 1535 conditions and MOP commitments. Cowal Gold Operations significantly modified the waste rock emplacement area rehabilitation practices based on the outcomes from the series of trials (refer to section 5.4.6) on the NWRE, SWRE and Tailings Storage Facility batters and advice from the Independent Monitoring Panel. The key changes in the rehabilitation implementation was blending of competent waste rock with topsoil to:

- cover the dispersive subsoil following gypsum application;
- improve the erosion resistance of the surface of the waste rock emplacements;
- encourage deep drainage of run-off;
- reduce the reliance on structural drainage measures; and
- provide micro-relief to improve visual amenity and to provide habitat.

This methodology has proved successful on Cowal Gold Operations site and is being adopted for all waste rock emplacements and other disturbed areas. The Cowal Gold Operations Environmental personnel demonstrated a clear understanding of the rehabilitation constraints posed by the site materials and climatic conditions specific to the Cowal Gold Project location. A full time bulldozer resource and dedicated operator recently made available for rehabilitation purposes during 2015/2016 resulted in an improved rate and quality of land profiling works for rehabilitation areas.

Much of the subsoil on the Cowal Gold Operations site has the potential to be dispersive and highly erodible. This material is evident in the upper sections of the open pit void, the Southern Waste Rock Emplacement and the Perimeter Waste Emplacement. The dispersive material in the Perimeter Waste Emplacement and Southern Waste Rock Emplacement has largely been capped with rock blended with topsoil.

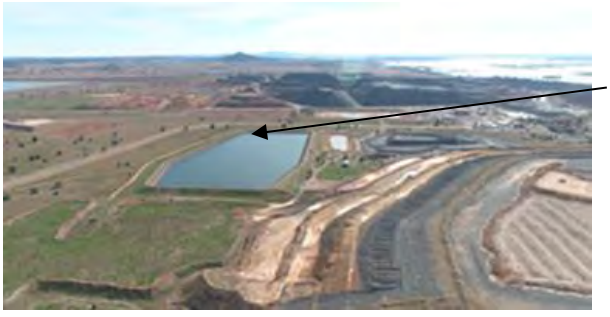
Land within ML 1535 is under rehabilitation (i.e. either shaped and covered with rock armour, topsoil and revegetation) or rehabilitated and under maintenance has included (at May 2017):



The temporary isolation bund (shaped, topsoiled and revegetated with native and exotic tree and grass species including scattered aquatic species such as Lignum [*Muehlenbeckia florulenta*], Rush [*Eleocharis spp*.], River Cooba [*Acacia stenophylla*] and River Red Gum [*Eucalyptus camaldulensis*].

The lake protection bund (shaped and lower batter rock armoured, topsoiled and revegetated with native and exotic tree and grass species including scattered aquatic species such as Lignum, Rush spp., River Cooba and River Red Gum).

- Up-Catchment Diversion System (UCDS) has been rehabilitated and is under maintenance.
- components of the Internal Catchment Drainage System (ICDS) surface water diversion structures have been rehabilitated and under maintenance.



The embankments of contained water storage D9 (shaped, rock armoured, topsoiled and revegetated with native and exotic grass species. The grass cover is well established and the batters of D9 do not show any erosion.

An area of approximately 20ha on Northern Waste Rock Emplacement (NWRE) north facing lower, mid and upper outer batter slopes were shaped, rock armoured and topsoiled (with gypsum), with revegetation including native and exotic grass species established across northern extent of the rehabilitation area and Eucalypt and Acacia species established across the lower rehabilitated area. The areas that had been seeded and tube stock planted during 2014 to 2016 showed accumulation of litter cover that is assisting the functional capacity of the area and establishment of the Eucalypt and Acacia species.

The Southern Waste Rock Emplacement (SWRE) lower, mid and upper outer batter slopes of southern section and lower slopes of eastern section have been shaped in 2015/2016, rock armoured and topsoiled (including gypsum application) with extensive colonisation by the rye grass on the lower lifts that were seeded in 2016.
The rye grass growth on the lower lifts is providing protection and accumulation of litter cover. Seed trials for revegetation of the batters had been undertaken on the upper lifts to establish tree and shrub species and associated habitat requirements, in early 2017. This revegetation seeding trial was still at an early stage at the date of this audit.

The perimeter waste rock emplacement outer batter slopes of southern and eastern sections have been shaped, rock armoured and topsoiled (with gypsum application) and revegetated with native and exotic grass species that was exhibiting healthy cover with some small shrub / tree growth establishing from tube-stock planted during 2015-2016.
The batters appeared stable with some minor erosion observed. The soil/rock treatment applied to this area had improved the stability and vegetative growth on the batters and presented a visual appearance of grassland establishment similar to the open undisturbed area of the mining lease to the south of the emplacement.

The NTSF and STSF batters were disturbed during 2016-2017 as a result of modifications to the tailings storage facility walls being strengthened with rock armouring for the planned future tailings storage facility design. No rehabilitation occurred on the NTSF during 2016 due to the buttressing for subsequent lifts in future years. The outer face of the lift was constructed with primary waste rock and therefore will be protected from erosion.

The tailings storage facility batters will be rehabilitated to meet the Cowal Gold Operations rehabilitation performance criteria when the rock armouring of the batter surfaces are completed.

The lake foreshore bunds rehabilitation sites have shown an increasing trend in ecological function largely due to the increase in ground cover from plants that established as a result of natural regeneration from the topsoil seed bank and broadcasting of seed applied by hand. The inundation of Lake Cowal in 2010 resulted in a significant increase in floristic diversity and remedial earthworks undertaken on the lake foreshore protection bund in 2012 addressed much of the gully erosion issues.

Lake protection bund rehabilitation from plants established as a result of natural regeneration from the topsoil seed bank.

The ecological data obtained from the lake foreshore rehabilitation area indicates improved plant cover and increasing diversity with abundance of native species recorded.

In 2016 extensive flooding over the winter period, resulted in water flooding the temporary bund. It was noted that the *Muehlenbeckia florulenta, Eucalyptus camaldulensis* and *Acacia stenophylla* saplings had significantly grown with the *M. florulenta* providing dense habitat for Superb Fairy Wrens and Zebra Finches.

5.4.8 Rehabilitation Strategy

[Consolidated Development Consent 14/98 MOD 13 condition 3.8]

A rehabilitation strategy for appropriate long-term land use has been developed for the Cowal Gold Operations and is described in the Rehabilitation Management Plan section 3.2. The long term rehabilitation strategy will apply to land within ML 1535, the Bland Creek Palaeochannel water supply pipeline and borefield, the Eastern Saline Borefield and Barrick-owned land outside ML 1535. The long-term strategy is to be developed in consultation with the DPI-Water, OEH, Bland Shire Council, the CEMCC and to the satisfaction of the Secretary of DP&E is required to be submitted by Year 7 of mining operations or five years before mine closure (whichever is the sooner).

As the Cowal Gold mining operations are approved until 2032 (Development Consent 14/98 MOD 13 condition 1.2) the requirement for submission of the final rehabilitation strategy to the DP&E is not yet triggered. The Mining Operations Plan for the Cowal Gold Operations is regularly reviewed and updated and incorporates proposed rehabilitation concepts for approval prior to implementation.

The final Rehabilitation Strategy submitted for approval by Year 7 of mining operations or five years before mine closure will include:

- proposed long-term land uses;
- potential environmental impacts associated with the proposed long-term land uses; and
- long-term management measures.

5.4.9 Conclusion

The Rehabilitation Management Plan (in conjunction with the requirements of the Land Management Plan and Mining Operations Plan) provide the basis for the rehabilitation of the Cowal Gold Operations site. Progress with the application of the rehabilitation methods outlined in the management plans and Mining Operations Plan was negatively affected on site due to the influence of the extreme weather conditions experienced (wet during 2010-2012, dry in 2012-2015, wet conditions again 2016).

Rehabilitation trials on the Cowal Gold Operations site to determine suitable substrates (i.e. blends of rock, subsoil, gypsum and mulches) and procedures for stabilisation and revegetation of disturbed areas have provided the basis for vegetative establishment on the site. The improvement in the rehabilitation of the Southern and Northern Waste Rock Emplacements noted during the 2016 and 2017 audits, indicated that Cowal Gold Operations were progressing towards conforming with the rehabilitation objectives and targets in the Mining Operations Plan section 6 and Development Consent 14/98 MOD 13 condition 2.4(a), with a significant increase in the areas of rehabilitation that had been achieved by May 2017, through the application of the trial substrates and availability of the full time bulldozer resource and dedicated operator introduced by the Environment team over the 2015 to 2017 period.

5.5 Heritage

[Development Consent 14/98 MOD 13 condition 3.1]

5.5.1 Environmental Assessment

5.5.1.1 Environmental Impact Assessment - Cowal Gold Mine 1998

Aboriginal Heritage

The Environmental Impact Assessment provided a background description of the proposed Cowal Gold Project area. Lake Cowal itself is named after the Aboriginal word “cowal” meaning “large water” while “nerang” (as in Nerang Cowal) means “little water” and historical information suggests that Wiradjuri was the language group occupying the region surrounding Lake Cowal.

Consultation with local and regional Aboriginal land councils recommended that management of sites to be disturbed by the Cowal Gold Project be directed towards enhancing local knowledge and appreciation of the cultural heritage of Lake Cowal. Sites not affected by the Project area would be fenced and signposted while artefacts on areas to be disturbed would be collected and stored.

An archaeological site management program to protect, wherever possible, or salvage known sites within the Project area would be developed in consultation between the West Wyalong Aboriginal Land Council (WWALC), the Wiradjuri Regional ALC, the NSW ALC, NPWS and the Proponent. Site management would be directed towards protecting sites as well as enhancing local knowledge and appreciation of the cultural heritage of Lake Cowal.

European Heritage

A study of the history of Lake Cowal was undertaken in 1993 by the Bland Historical Society (BHS, 1993) which addressed issues such as European settlement and the role of mining in the local area. Pastoral settlement began in the area around 1842 and by the early 1900s, wheat growing had become well-established with some 11,900 acres of land devoted to wheat production. In addition to agricultural practices, gold mining was also a feature of the historic development of the region. Mining continued to around 1920 decreasing as deposits

were discovered elsewhere in Australia. No significant heritage items within the Project area were identified during the 1993 survey. The Bland Shire Local Environment Plan 1993 (LEP) Schedule 1 does not list any items of local regional or state significance within the area to be disturbed by mining activities.

5.5.1.2 Environmental Assessment - Mine Extension Modification 11

Environmental Assessment - Cowal Gold Mine Extension Modification Appendix G -Aboriginal Cultural Heritage Assessment was prepared by Bio-Anthropology & Archaeology in August 2013.
A number of Aboriginal heritage surveys and assessments previously undertaken in the Cowal Gold Mine area and surrounds and additional archaeological and cultural surveys, were assessed for the 2013 Modification.

The three previously registered sites in the Modification area were inspected, and in addition, 86 Aboriginal artefacts/objects were identified by the Modification surveys. These artefacts/objects were consistent with the types previously found around Lake Cowal.

The 2013 Modification layout was designed to avoid and minimise potential impacts to Aboriginal heritage, including as follows:

- The soil stockpiles in the north of ML 1535 was designed to avoid known Aboriginal heritage sites.
- The expansions of the tailings storage facilities and the southern waste rock emplacement were designed to maintain their existing surface disturbance footprints.
- The eastern pump station (and associated access track) would be located to avoid disturbance to the lunette associated with Lake Cowal, which is considered to be culturally significant due to the potential for Aboriginal burials.
- Other additional soil stockpiles or waste rock emplacements have been located to minimise any potential impacts to known Aboriginal heritage sites.

Several previously registered sites considered to be of limited archaeological significance are located within the Modification area and would be subject to direct disturbance.

It was also noted that comments provided by Aboriginal representatives during the consultation process for the 2013 Modification indicated that while cultural significance is difficult to rate, the sites and objects within the Modification area were considered to be typical of such settings. It was considered there is very little potential for physical damage to individual in situ lithic artefacts not associated with the above sites (i.e. artefacts that are part of the background distribution).

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, and permits and consents under the *National Parks and Wildlife Act*.

5.5.1.3 Environmental Assessment - Mine Life Extension Modification 13

Aboriginal Heritage
The Environmental Assessment concluded there would be no increase in existing/approved surface disturbance areas at the Cowal Gold Operations site, therefore, there would be no change to Aboriginal heritage impacts associated with the 2016 Modification. The existing Cowal Gold Operations layout and the Modification layout have been designed to avoid and minimise potential impacts to Aboriginal cultural heritage.

Non-Aboriginal Heritage
No registered non-Aboriginal heritage items would be potentially impacted by the 2016 Modification. The only non-Aboriginal heritage items in the ML 1535 area and surrounds listed under the Bland Local Environment Plan were the Cowal West Homestead and Shearing (Wool) Shed. Demolition of the Cowal West Homestead Complex (i.e. the Homestead, Shearing Shed and Hayshed) was approved for the E42 Modification 2009, and the demolition occurred during 2011 to 2012. The relocation and reconstruction of the Shearing Shed at the Lake Cowal Conservation Centre was completed in April 2013.

5.5.2 Heritage Management Plan

[Consolidated Development Consent 14/98 MOD 13 condition 3.1(a)(i)]

The non-indigenous Heritage Management Plan was prepared to satisfy Development Consent 14/98 and approved by DIPNR in 2003. The Heritage Management Plan was reviewed in 2008 and 2015 and no revision of the document was required.

Management measures related to European heritage in the non-indigenous Heritage Management Plan are listed in Table.5.5.2.

Table 5.5.2: Heritage Management Plan – Management Measures

Section/ Page No.	Heritage Management Plan Management Measures	Comment	Implementation Status
s.7/p16	Monitor the effectiveness of the management measures outlined in the HMP.	The management measures related to the European heritage structures on site was undertaken in accordance with the Heritage Management Plan, prior to any demolition during 2012-2013.	**Compliant COMPLETE**
s.7/p16	Dust and blast monitoring programs will be conducted in accordance with AS: Use of explosives (1993). If blast monitoring exceeds standards, a structural assessment of the quarters and shed will occur.	Dust and blast monitoring occurred as part of the Cowal Gold Mine and Operations monitoring programs with results assessed in relation to the prescribed levels. As the living quarters and shearing shed were dismantled in 2012-2013 and removed from the Cowal Gold Operations site, this condition is no longer applicable.	**Compliant COMPLETE**
s.7/p18	The non-indigenous heritage program will be revised / updated as required.	Demolition of the 'Cowal West Homestead Complex' approved by MOD 9 March 2010 occurred during 2011-2012 with reconstruction of the Shearing Shed at the Lake Cowal Foundation Information Centre in 2013. Review of the Heritage Management Plan for non-indigenous heritage items in 2015 did not identify any requirement for revision.	**Compliant**
s.9/p20	An Annual Review will be prepared in accordance with Development Consent 14/98 MOD 13MOD 13 Condition 9.2.	The Annual Reviews prepared for the Cowal Gold Operations in accordance with Development Consent 14/98 condition 9.1(b) report on non-indigenous heritage components in section 3.14.	**Compliant**

5.5.3 Indigenous Archaeology and Cultural Management Plan

[Consolidated Development Consent 14/98 MOD 13 condition 3.1(a)(ii)]

The Indigenous Archaeology and Cultural Heritage Management Plan prepared to satisfy Development Consent 14/98 condition 3.3(ii) was approved by the Wiradjuri Condobolin Corporation (WCC) in writing on 11 November 2003. Approval was given under the auspices of the Wiradjuri Condobolin Culture and Heritage Company (WCC&HC), to set up and manage the cultural and heritage component of an Agreement between the owners of the Cowal Gold Mine/Operations project and the Wiradjuri Condobolin People.

The Indigenous Archaeology and Cultural Heritage Management Plan is reviewed and revised as necessary to reflect the *Due Diligence Code of Practice for Protection of Aboriginal Objects in NSW*, dated 24 February 2010.

The Indigenous Archaeology and Cultural Management Plan required under Development Consent 14/98 MOD 13 condition 3.1(a)(ii) was reviewed and submitted to DP&E for approval on 2 April 2015.

The implementation of the management program for indigenous archaeology and cultural heritage has occurred in accordance with the Indigenous Archaeology and Cultural Heritage Management Plan with surface archaeological surveys conducted prior to any land disturbance or earthworks on any new areas of surface disturbance on Mining Lease 1535 that occurred between May 2016 to May 2017.

Management measures in the Indigenous Archaeology and Cultural Heritage Management Plan are listed in Table 5.5.3.

Table 5.5.3: Indigenous Archaeology and Cultural Heritage Management Plan Management Measures

Section/ Page No.	Indigenous Archaeology and Cultural Heritage Management Plan Management Measures	Comments	Implementation Status
s.5.4/p20	In all areas within ML 1535, water pipeline and bore-field area where soil stripping occurs, the areas will be inspected after topsoil removal to identify "datable materials". Samples will be obtained and submitted for chronological analysis. (Permit 1682 Special Condition 11)	All areas within ML 1535, water pipeline alignment and bore-field area where soil stripping has occurred, were resurveyed in accordance with Permit 1682 Special Condition 11.	**Compliant**
s.5.4/p20	A cultural heritage officer approved by the West Wyalong Aboriginal Land Council will be available on site to monitor construction earthworks. An archaeologist will also be on site to monitor the works to a depth at which Aboriginal objects are likely to exist.	Cultural Heritage Officers provided by Wiradjuri Condobolin Corporation, working under the Principal Consulting Archaeologist Dr Colin Pardoe and Dr Kamminga, have undertaken surface archaeological surveys prior to any land disturbance or earthworks on the Cowal Gold Operations mine lease site.	**Compliant**
s.5.4/p21	If an Aboriginal object (other than human skeletal remains) of a type that has not been previously identified during the archaeological works is identified during construction earthworks, the Aboriginal object will be collected (Special Condition 10 in each of Permit 1468 / Consent 1467, and Special condition 11 of Permit 1681 / Consent 1681).	Archaeological surveys have been carried out within the ML 1535 for any new areas of surface disturbance. No new objects of a type that has not been previously identified have been found. Surface survey west of the NWRE during 2016-2017 identified two rock scatters that were collected for placement in the Keeping Place.	**Compliant**
s.5.4/p21	Construction works shall stop if human skeletal remains are identified and the DECC (OEH) will be immediately notified (Special Condition 1 of Permit 1468 / Consent 1467 and Permit 1681 / Consent 1680).	No skeletal remains have been identified during the development of the Cowal Gold Operations on ML 1535.	**Not triggered**
s.5.5/p21	With respect to all collected Aboriginal objects: • Sufficient data must be recorded to enable technological analysis to be undertaken for report purposes; • This information must form the basis of a master inventory;	Archaeological investigations and collection of artefacts from any area proposed to be disturbed on the Cowal Gold Operations site have been conducted under Section 87 and 90 Consents issued for the project by NPWS.	**Compliant**

Section/ Page No.	Indigenous Archaeology and Cultural Heritage Management Plan Management Measures	Comments	Implementation Status
	• Each object must be bagged and labelled detailing the specific area of collection. (Special Condition 12 of Permit 1468 and Special Condition 4 of Permit 1681).	Each object collected has been bagged and labelled detailing the specific area of collection.	
S5.6/p21	All collected Aboriginal objects must be kept in the existing temporary Keeping Place within the project compound.	Collected Aboriginal objects are kept in a temporary Keeping Place on the Cowal Gold Operations site.	**Compliant**
s.5.6/p21	Barrick must fund the design and construction of a Keeping Place for Aboriginal objects collected pursuant to Permit 1468, at a location to be agreed with the registered native title claimants for the ML Area and the West Wyalong Local Aboriginal Land Council. Barrick must reach an agreement with the registered native title claimants for the ML Area and the West Wyalong Local Aboriginal Land Council about the details of the keeping place. If no agreement is reached before the commencement of construction, the details will be determined by OEH. (***Special (Consent 1467 condition 9***)	The permanent Keeping Place at the Condobolin Aboriginal Community Centre, for Aboriginal objects salvaged from the Cowal Gold Operations site has been constructed and completed but the objects/items had not been transferred to the permanent site at the date of this audit (May 2017).	**Compliant**
P22/s.5.7	Overall responsibility for the Cowal Gold Project lies with the General Manager of the Cowal Gold Project. The General Manager will ensure that the management measures in this IACHMP are implemented, including by delegation. Permit 1468 and Permit 1681 are held by Barrick's consultant archaeologists Dr Pardoe and Dr Kamminga, and they are responsible for ensuring that the terms and condition of the permits are complied with.	Principal Consulting Archaeologists Dr Colin Pardoe and Dr Kamminga have managed and supervised all archaeological surveys / investigations prior to any land disturbance or earthworks at the Cowal Gold Operations mine lease site.	**Compliant**
P225/s.6.3.1	The Wiradjuri Condobolin people (within 30 days of Board Approval for the project) would be briefed on matters including cultural heritage issues; annually, on matters including cultural heritage issues; and on any cultural heritage issues that Barrick reasonably believes they should or might wish to be informed of as soon as possible after they arise, and on any material changes in the circumstances which were the subject of a briefing.	Regular meetings are arranged and held with the Wiradjuri Condobolin people in relation to cultural heritage issues and project status. Meetings between Evolution Mining and the Cowal Project Co-ordinating Committee (CPCC) and the Employment Training and Business Committee (ETBC) are held as required.	**Compliant**
P25/s.6.3.2	Evolution Mining will produce a Mining Operations Plan to give a detailed account of the proposed mine site activities for a nominated term. It will include all mining and rehabilitation	Mining Operations Plans have been progressively prepared for the Cowal Gold development. The current MOP covers 1 September 2016 to 31 August 2018	**Compliant**

Section/ Page No.	Indigenous Archaeology and Cultural Heritage Management Plan Management Measures	Comments	Implementation Status
	operations and relevant environmental controls and procedures necessary for compliance with lease conditions. It will include the relevant Aboriginal heritage management measures to be included during works for the nominated MOP term.		
P23/s.6.3.2	The Annual Review will annually report relevant cultural heritage management measures conducted for the previous year. Proposed management measures for the next year will also be reported.	Annual Reviews prepared for the Cowal Gold Mine and Operations in accordance with Development Consent 14/98 condition 9.2 report on Aboriginal Heritage matters in section 6.11.	**Compliant**

5.5.4 Conclusion

The Heritage Management Plan prepared for the Cowal Gold Mine site provided for management of the European heritage items - 'Cowal West Homestead Complex' components (including the living quarters and Shearing Shed). Demolition of the Homestead complex, approved under Development Consent 14/98 MOD 9 March 2010, occurred during 2012-2013. The Shearing Shed was dismantled and re-constructed at the Lake Cowal Foundation Information Centre in April 2013.

The Indigenous Archaeology and Cultural Heritage Management Plan developed and implemented for the Cowal Gold Mine project provides adequate management and controls for the protection of Aboriginal interests in the ML 1535 area. Archaeological investigations and collection of artefacts prior to disturbance of any area of the Cowal Gold Operations site have been managed by Dr Colin Pardoe and Dr Kamminga (Consultant Archaeologists) and Cultural Heritage Officers provided by Wiradjuri Condobolin Corporation. The surveys are conducted under Section 87 Permits and Section 90 Consents issued under the *National Parks and Wildlife Act*.

5.6 Flora and Fauna Management

[Consolidated Development Consent 14/98 MOD 13 condition 3.2]

5.6.1 Environmental Assessment

5.6.1.1 Environmental Impact Assessment – Cowal Gold Project 1998

Flora

Native vegetation patterns in the NSW Central Western Slopes region since European settlement, has undergone far-reaching changes (Goldney and Bowie, 1990), due primarily to the importance of the region for agricultural production. Up to 95% of the original native vegetation has been removed for cropping and grazing purposes (Murray-Darling Basin Ministerial Council, 1987).

Flora survey and reporting of the mining operations area (including the proposed water supply borefield and pipeline) was undertaken by Anne Clements and Associates (1995 and 1996) and the Charles Sturt University (1997). No rare or threatened Australian plants (ROTAP) were recorded during this survey however a single species listed as endangered in the *Threatened Species Conservation Act* 1995, Austral pilwort (*Pilularia novae-hollandiae*), was identified from gilgai south of the proposed process plant area and from the Bland Creek floodplain approximately 12 km south-east of the mining operations area.

Based on the flora survey and mapping, nine main plant communities were identified from the Project area and surrounds (after Bower, 1997; Charles Sturt University, 1997). These communities were defined by the largest and most numerically dominant plant species as:

- Community 1 – Remnant Woodland (*Eucalyptus dwyeri – Acacia doratoxylon – Callitris endlicheri*)
- Community 2 – Eucalypt Woodland (*E. dwyeri – E. populnea – E. microcarpa – Callitris glaucophylla – Casuarina cristata*)
- Community 3 – Predominantly Cleared Agricultural Land with Scattered Bimble Box (*Eucalyptus populnea) Woodland)*
- Community 4 – Fringing River Red Gum (*Eucalyptus camaldulensis*)
-
- Community 5 – Lignum (*Muehlenbeckia florulenta*)
- Community 6 – Lakebed (*Eragrostis australasica – Medicago polymorpha*)
- Community 7 – Mixed Woodland (*Acacia pendula – Casuarina cristata*)
- Community 8 – Wilga Woodland (*Geijera parviflora Casuarina cristata*)
- Community 9 – Belah Woodland (*Casuarina cristata*)

The 1997 flora survey and reporting found the areas within the proposed mining operations area that would be disturbed/modified as a result of the proposed development are either:

(i) dominated by weeds (viz. the lakebed, shoreline and understorey of the woodland areas); or
(ii) extensively cropped (e.g. the southern tailings storage); or
(iii) contain areas of relatively high species diversity even after many decades of grazing and cultivation (e.g. northern waste emplacement) however these species are common and not restricted to the Lake Cowal region.

Remnant vegetation would be left in place where possible during the development of the Project and new landforms would be progressively rehabilitated. The Project area would be rehabilitated by revegetating the new landforms with selected communities of endemic vegetation that are both suitable to the physiographic and hydrological features of each landform, whilst expanding the areas of remnant endemic vegetation that currently exist in the immediate region. It is proposed that regional seed collecting programs would commence in the construction phase, to allow sufficient time to commence rehabilitation of the new Lake foreshore at the completion of foreshore reconstruction activities.

The protection of remnant vegetation and the rehabilitation of disturbed areas of ML 1535 to conform with the Environmental Impact Statement objectives will be addressed in the Rehabilitation Management Plan and Mining Operations Plans.

Fauna

Based on previous habitat assessment (Vestjens, 1977), dominant vegetation types, density of hollow-bearing trees, occurrence of substratum (such as fallen tree limbs, logs, decorticated bark, leaf litter and suitably dense ground cover), levels of disturbance (historic, current and on-going), fire regime and abundance of water, four primary habitat types were delineated at the Project area and surrounds:

- Lakebed
- Riparian Zone
- Cleared farming and grazing land
- Vegetated slopes

Commitments to the protection and management of the Project on fauna will be addressed in the management plans developed for the Project.

5.6.1.2 Environmental Assessment - Mine Extension Modification 11, 2013

The Environmental Assessment - Cowal Gold Mine Extension Modification - Appendix D Threatened Species Assessment was prepared, and peer reviewed by Professor David Goldney (Cenwest Environmental Services) in September 2013.

A significant number of vegetation, flora and fauna surveys and monitoring programs were conducted within ML 1535 and the broader Cowal Gold Operations area to characterise potential impacts to biodiversity associated the Modification 2013.

The layout of the Cowal Gold Modification has been designed to avoid and minimise any additional surface disturbance with:

- The additional soil stockpiles and water storage dam D10 would avoid clearance of patches of Myall Woodland EEC within ML 1535.
- The eastern pump station and associated access track would be located within a grazed paddock to avoid clearing any trees, native flora species and fauna habitat.
- The eastern pump station would be powered by a diesel generator, rather than an electricity transmission line, negating the need for native vegetation clearance for the power supply.
- There would be no change to the existing surface disturbance footprints of the tailings storage facilities or the perimeter and southern waste rock emplacements.

Notwithstanding, there would be residual impacts to biodiversity associated with the disturbance of approximately 122 ha of land, comprising approximately:

- 100 ha of derived native grassland and 2 ha of other native vegetation (including 2.5 ha of Myall Woodland EEC); and
- 20 ha of cultivated land dominated by introduced flora species.

No threatened flora or fauna species listed under the *NSW Threatened Species Conservation Act*, 1995 were considered likely to be significantly adversely impacted by the 2013 Modification. The removal of existing habitat within the additional disturbance area is unlikely to substantially impact any threatened species given the small and disturbed nature of the area, and given this area is surrounded by approved mine disturbance areas with poor connectivity to habitats outside of ML 1535. Established vegetation clearance protocols would continue for the Modification to manage potential impacts to flora and fauna.

5.6.1.3 Environmental Assessment - Mine Life Modification 13, 2016

The 2016 Modification would not change the approved surface development extent of the Cowal Gold Operations site (i.e. no land clearance beyond currently approved disturbance areas would occur). As a result, the Modification would not disturb any existing fauna habitat or vegetation within ML 1535 or its surrounds.

5.6.2 Flora and Fauna Management Plan

[Consolidated Development Consent 14/98 MOD 13 condition 3.2(b)]

A Flora and Fauna Management Plan prepared to satisfy Development Consent 14/98 condition 3.4 for the Cowal Gold Mine was approved by DIPNR on 30 October 2003. The Flora and Fauna Management Plan was revised and approved by DoP in October 2008. An addendum to the Flora and Fauna Management Plan to reflect the revised monitoring program for fish and aquatic invertebrates, to maintain consistency with the approved Surface Water, Groundwater, Meteorological and Biological Monitoring Program, was prepared in May 2010.

A revised Flora and Fauna Management Plan to meet the requirements of Development Consent 14/98 MOD 11 condition 3.2(b) was prepared and submitted to DP&E on 19 May 2015 and approved on 21 March 2016.

The Flora and Fauna Management Plan, provides general management strategies for the conservation of wildlife values within ML 1535 and the areas of Lake Cowal adjacent to the mine lease. The Threatened Species Management Protocol and Vegetation Clearance Protocol developed as part of the Flora and Fauna Management Plan have been implemented and the requirements of each Protocol completed prior to the disturbance of areas of the Cowal Gold Operations site.

Management measures included in the Flora and Fauna Management Plan (2015) are summarised in Table 5.6.2.

Table 5.6.2: Flora and Fauna Management Plan Management Measures

Section/ Page No.	Flora and Fauna Management Plan Management Measures	Comments	Implementation Status
s.3 /p.13	In accordance with Development Consent Condition 3.2(b)(v), effective mechanisms shall be developed to keep fauna and avifauna away from the tailings storages.	The tailings storage facilities have been designed and constructed: • to minimise the area of open water in the tailings dams; • fenced to prevent terrestrial fauna from entering the areas; • maintained to reduce the area of potential wildlife habitat; and • using current best practice methods to deter avifauna.	**Compliant**
s.3.1/p.14	The area of open water in the tailings dams will be minimised by maximising the dry density of tailings and the re-use of water from the tailings dams (North Limited, 1998a).	A spigotted ring main is used to deposit tailings peripherally around the tailings storage facility to ensure supernatant water collects around the decant towers near the centre of the storage facility. The supernatant water is returned to the process plant for reuse.  **Spigotted ring main around the periphery of the tailings storage**	**Compliant**
s.3.1.2/p14	Water re-use will be maximised using an under-drainage pipe network, decant towers, reclaim water dam and water return pipeline to the process water storage pond. The tailings ponds will be maintained as small as possible through continual recycling of water through the processing plant.	Recovery of supernatant water from the tailings storage facilities occurs for reuse in the process plant. The removal of supernatant water is maximised to reduce the area of surface water on the tailing storage facilities, to deter fauna and avifauna from using the tailings storages.	**Compliant**
s.3.2/p.14	The perimeter of the tailings storages has been fenced to prevent medium to large terrestrial fauna (such as Echidnas, Emus and Kangaroos), as well as amphibians from entering the area. Gates have been constructed within the fence to provide mine personnel access to the tailings storage area. The fence is approximately 2 metres (m) high with holes no greater than 5 centimetres (cm) in diameter in	The tailings storage facilities are fenced with access for CGO personnel gained through locked gates. The gates are closed immediately after entry or exit of vehicles. The area immediately adjacent to the fence is kept clear of tall vegetation so that fauna cannot use it to gain access to the tailings storage area.	**Compliant**

Section/ Page No.	Flora and Fauna Management Plan Management Measures	Comments	Implementation Status
	accordance with Development Consent Condition 3.2(b)(v). The bottom metre of the fence includes mesh with holes of 2 cm in diameter.	 **Fencing around the Tailings Storage Facilities to prevent terrestrial fauna entering the TSF.**	
s.3.3/p.15	Rehabilitation of the tailings storage areas during operations will be such that minimal habitat opportunities will be created for terrestrial fauna. Rehabilitation of the tailings storage batters will achieve soil stabilisation yet will not create desirable habitat.	The NTSF and STSF batters were being strengthened with rock buttresses at the date of this audit (May 2017) for the planned future tailings storage facility design. The tailings storage facility batters will be rehabilitated to meet the Cowal Gold Operations rehabilitation performance criteria when the rock armouring of the batter surfaces are completed.	**Compliant**
 **NTSF and STSF February 2017**		 **TSF batters being strengthened with rock buttresses**	
s.3.5/p.16	Hazing techniques employed to deter avifauna may include: • radar lobe systems that detect avifauna presence at the tailings facilities; • bird deterrent stations, activated remotely by either the radar or timer mode which broadcast bird distress calls, barking dogs, gun shots etc; • gas cannons linked to the radar or timer-mode control station/s; • solar powered scattered laser light tripod station (held in safe storage to be used if required).	Use of noise cannons at the tailings storage facilities and radar activated acoustic deterrents have been installed around the TSF to scare birds off the tailings storage areas. Total wildlife visitations to the TSF were lower between July and December 2016 that the previous monitoring period and the corresponding 2015 survey period (Donato February 2017).	**Compliant**
s.4/p.17	In accordance with Consent Condition 3.2(b)(i), the tailings storages will be	Daily observational monitoring (usually twice daily) of the tailings storage	**Compliant**

Section/ Page No.	Flora and Fauna Management Plan Management Measures	Comments	Implementation Status
	monitored for daily and seasonal fauna usage, and to determine whether deaths or other effects or incidents are occurring.	facilities occurs to identify any incidents or deaths of fauna or avifauna within the tailings storage areas. Any incidents are recorded and recovery of any affected fauna / avifauna occurs where practicable.	
s.4.1/p.17	In the event that native fauna incidents or deaths are recorded, the Protocol for reporting any deaths or other incidents within ML 1535 will be initiated.	The protocol for reporting any deaths or other incidents within ML 1535 has been implemented in accordance with the Flora and Fauna Management Plan section 6. Recording of any fauna incidents on the tailings storage areas are reported to the Environment Manager and actions initiated in accordance with the Protocol.	**Compliant**
s.4.1/p.17	Usage of the tailings dams by bat fauna will be monitored using an Anabat CF Zcam echolocation call detector system, controlled by a call-activated switching device. The Anabat detectors record from sunset to sunrise every night at the active tailings storage facility and at a control monitoring site (i.e. the farm homestead stock dam at the 'Hillgrove' residence (Evolution-owned property).	Bat activity surveys (ANABAT) are undertaken each month at the active tailings facility and a control site on the Lake Cowal Foundation land. Data from a random sample of four nights per month is analysed and control site reference data and tailings storage facility data is compared for similarity or variance. The Anabat Ultrasonic Bat Detectors are removed from site each six months for calibration.	**Compliant**
s.4.2/p.18	Usage of the tailings dams by fauna will be reported to OEH on a six monthly basis, unless otherwise directed by the Secretary, in accordance with Development Consent Condition 3.2(b)(i).	Six Monthly Reports of usage of the tailings storage facility by fauna is prepared by Donato Environmental Services and provided to the OEH, and monitoring results are also reported in the Annual Review section 3.8.	**Compliant**
s.5/p.19	In accordance with Development Consent condition 3.2(b)(vi), Sections 5.1 and 5.2 include plans for the rescue and rehabilitation of wildlife that may become bogged/sick/trapped in the tailings dams or elsewhere within ML 1535.	Wildlife rescue and rehabilitation plans were prepared in consultation with the Wildlife Information and Rescue Service (WIRES). The wildlife rescue procedures are provided in the Flora and Fauna Management Plan sections 5.1 and 5.2.	**Compliant**
s.6.2/p.21	In accordance with Development Consent condition 3.2(b)(ii), any fauna deaths (except those attributable to physical trauma such as vehicle strike) are reported to the OEH, DRE and CEMCC).A record will be maintained of any wildlife deaths or other incidents and this record will be provided in the Annual Review (Section 17) in accordance with Development Consent condition 3.2(b)(ii).	Records of all fauna deaths are prepared by Cowal Gold Operations personnel and reported in the Annual Review 3.8. No fauna deaths attributable to TSF cyanide were reported between May 2016 and April 2017. Any fauna deaths that could be attributable to cyanide would be reported within 24 hours to the OEH, DRE and CEMCC.	**Compliant**

Section/ Page No.	Flora and Fauna Management Plan Management Measures	Comments	Implementation Status
s.6.3/p.20	In accordance with Development Consent condition 3.2(b)(iii) fauna autopsy facilities will be provided to enable the cause of any fauna death(s) to be quickly determined. The Flora and Fauna Management Plan section 6.1 details the collection and recording procedures for any fauna found dead in the ML area, Section 6.2 outlines the reporting of native fauna deaths. Sections 6.3.1 and 6.3.2 provide an overview of the procedures and laboratory tests to be conducted on dead fauna recorded in the ML area and the reporting of autopsy results.	Fauna autopsies are undertaken by the West Wyalong Veterinary Clinic as required. The dead fauna requiring autopsy are delivered to the West Wyalong Veterinary Clinic by Cowal Gold Operations personnel and a report is provided by the veterinarian on the cause of death. A summary of the fauna deaths is provided in the Annual Review in section 6.9.3 Table 21.	**Compliant**
s.8/p.24	Contingency measures for reducing cyanide levels in the tailings dams in the event it is established that fauna deaths are occurring from cyanide in tailings dam water as required in Development Consent 14/98 MOD 11 condition 3.2(b)(iv).	Contingency measures for reducing cyanide levels in the tailings dams (as outlined in the Flora and Fauna Management Plan section 8.2) would be implemented if required.	**Not triggered**
s.9.1/p.25	In accordance with Development Consent 14/98 MOD 11 condition 3.2 (b)(vii), a number of methods will be utilised to protect, conserve and enhance wildlife values within ML 1535 and around Lake Cowal.	The Flora and Fauna Management Plan includes reference to other management plans relating to flora and fauna management: • Compensatory Wetland Management Plan initiatives (Section 9.2); • Remnant Vegetation Enhancement Programme areas (Section 9.3); • the CGM offset areas (Section 9.4); rehabilitation of ML 1535 disturbance areas (Section 9.5); • CGM design (Section 9.6); • Threatened Species Management Protocol (Section 9.7); • Vegetation Clearance Protocol (Section 9.8); • Weed control (Section 9.9); • Pest control (Section 9.10); and • Other management measures (Section 9.11).	**Compliant**
s.9.3.1/p.26	In order to encourage the natural regeneration of native plant species, livestock will be controlled in the enhancement areas through fencing control and management, as outlined in the LMP.	Remnant vegetation and regeneration areas within ML 1535, on Evolution Mining owned land and around Lake Cowal, have been fenced to exclude livestock, as outlined in Land Management Plan section 4.3 and 4.4.	**Compliant Ongoing**

Section/ Page No.	Flora and Fauna Management Plan Management Measures	Comments	Implementation Status
s.9.3.2/p. 32	Remnant vegetation monitoring will be conducted annually within the enhancement areas. A number of survey plots (50 x 20 m) will be established within each enhancement area to obtain quantitative data on species diversity and abundance. The survey plots will be monitored annually (when not inundated) after Year 2 of mine operations. Control plots may also be established at sites outside of the enhancement areas to provide a reference point against which the management measures can be assessed.	Remnant vegetation monitoring within survey plots established in the enhancement areas, has been conducted annually by DnA Environmental. Reports are prepared describing the status of the vegetation in each survey plot, with photo points established for each quadrat to record annual status.	**Compliant**
s.9.5/p.33	Mine rehabilitation works will be undertaken progressively in accordance with a progressive rehabilitation works detailed in the CGM MOP in accordance with the requirements of DRE's MOP Guidelines and the Conditions of Authority for ML 1535 (Section 2.2). The status of progressive rehabilitation works will be reported annually within the CGO Annual Review.	Mine rehabilitation is being undertaken generally in accordance with the approved MOP, although meeting the specific targets for rehabilitation time frames have been affected by extreme weather conditions. Progress has improved with significant areas of rehabilitation achieved on the waste rock emplacements between 2010 and 2017. Rehabilitation status is reported in the Annual Reviews in section 8.	**Compliant Ongoing**
s.9.6/p.38	In accordance with Development Consent 14/98 MOD 13 condition 3.2(a)(ii), topsoil stockpiles within ML 1535 will not be located within any area of remnant Wilga Woodland.	No soil stockpiles were located within any area of Wilga Woodland between 2016 and 2017.	**Compliant**
s.9.6/p.38	Fences will be constructed within ML 1535 and around the ML 1535 boundary in accordance with Development Consent 14/98 MOD 11 condition 2.3 which requires the mine site to be secured.	The Cowal Gold Operations site has a security fence around the boundary of ML 1535, with internal fencing around the tailings storage facility areas.	**Compliant**
s.9.7/p.39	The Threatened Species Management Protocol was developed to minimise potential impacts of the Project on threatened flora and fauna species known and/or considered possible occurrences in the Project disturbance areas and/or immediate surrounds. The Threatened Species Management Protocol will be implemented in accordance with Development Consent condition 3.2(c)	Flora and Fauna Management Plan Appendix A - Threatened Species Management Protocol has been implemented as required for the protection of threatened species if encountered on the Cowal Gold Operations site. The Threatened Species Management Protocol was not triggered between April 2016 and May 2017.	**Compliant**
s.9.8/p.41	In accordance with Development Consent condition 3.2(b)(vii) which requires the protection of retained habitats within the ML area and	In accordance with Development Consent 14/98 MOD 13 condition 3.2(a)(i) and the Flora and Fauna Management Plan, a Vegetation	**Compliant**

Section/ Page No.	Flora and Fauna Management Plan Management Measures	Comments	Implementation Status
	Development Consent condition 3.2(a)which requires the minimisation of the removal of trees and other vegetation from the mine site, a Vegetation Clearance Protocol (VCP) has been developed for the Project. All vegetation clearance activities required by the Project will be conducted in accordance with the VCP. The VCP will be implemented by suitably qualified person(s) and coordinated by the Environmental Manager.	Clearance Protocol has been implemented where any vegetation clearance activities have been required within ML 1535. Vegetation clearance has been restricted to areas required for mine activities, buildings and paved surfaces, or areas necessary for fire control. The Vegetation Clearance Protocol is consistent with the JLWMP and LWMPLC to minimise vegetation clearance in the region.	
s.9.9/p.46	Weeds will be managed at the CGM in accordance with measures described in Section 6 of the LMP. The CGM's rehabilitation monitoring programme includes monitoring and recording weed presence within the rehabilitation areas. Rehabilitation monitoring results will be detailed in an annual rehabilitation monitoring report, and any weed control measures conducted will be reported in the Annual Review (Section 17). In addition, an annual weed survey is also conducted across ML 1535 and all Evolution Mining owned lands which includes a detailed description of any weeds present, its location (including a photographic record) and recommended management/control measures.	Annual weed surveys of the Cowal Gold Operations / Evolution Mining owned lands, were conducted in December 2016 by NGH Environmental and involved recording the extent of weed occurrences, details of weed distribution and any new weed species infestation. Photographs, general descriptions and GPS coordinates have been taken of each of the surveyed areas of ML 1535 and the Cowal Gold Operations / Evolution Mining owned lands. An additional area was surveyed in 2016, north of the mine site that had recently been purchased by Evolution Mining. Six transects that ran into Lake Cowal were unable to be surveyed this year due to the Lake inundation. During the 2016 survey, six noxious weed species listed as Class 4 Noxious Weed under Bland Shire Council were recorded: • Bathurst Burr (*Xanthium spinosum*) • Noogoora Burr (*Xanthium occidentale*) • Lippia (*Phyla canescens*) • African Box Thorn (*Lycium ferocissimum*) • Galvanised Burr (*Sclerolaena birchii*) • Scotch Thistle (*Onorpodum acanthium*) Management recommendations area provided in section 3.2 of the NGH report. The weed management program is reported in the Annual Review section 6.10.	**Compliant**
s.9.10/p.47	Pest control on ML 1535 will be conducted in accordance with the general procedures detailed in the Land Management Plan section 7 and in conjunction with adjacent landholders for more effective pest control.	Use of the NSW Agriculture Vertebrate Pest Control Manual for pest control activities occurs as necessary. A regular control program of baiting for foxes is conducted. Control of spiders and black crickets has also occurred at 3 to 6 monthly intervals as required.	**Compliant**

Section/ Page No.	Flora and Fauna Management Plan Management Measures	Comments	Implementation Status
s.10/p.49	In the event that a threatened species is identified within a Cowal Gold Operations disturbance area, the Threatened Species Management Strategy phase of the Threatened Species Management Protocol that involves the identification of mitigation measures to ameliorate any potentially significant impacts on the threatened species, will be initiated.	No new threatened species were identified on the ML 1535 or other Evolution Mining owned land during the April 2016 to May 2017 period. In accordance with the Threatened Species Management Protocol, the management strategies developed would be subject to review and approval by the OEH, prior to implementation if new threatened species were identified.	**Compliant**
s.11/p.51	In accordance with Development Consent 14/98 MOD 11 condition 3.2(b)(viii), flora, fauna, fish and aquatic invertebrates will be monitored. The results of the monitoring programme will be reported in the Annual Review. .	The fauna, flora, fish and aquatic invertebrates monitoring has been conducted in accordance with the Surface Water, Groundwater, Meteorology and Biological Monitoring Plan and in accordance with Development Consent 14/98 MOD 11 condition 3.2(b)(viii).	**Compliant**
s.11.1.5/p. 54	The Blast Management Plan outlines a blast monitoring program that includes a network of six blast monitoring sites, two of which (sites BM04.1 and BM05) are located proximal to bird breeding areas. Evolution Mining is required to undertake remedial measures if blasting overpressure demonstrably disturbs bird breeding.	Bird breeding activity was variable during the period of Lake Cowal inundation between 2010 and 2013.It was reported that blasting did not affect bird breeding activity between 2010 and 2013. No breeding activity was reported in the bird survey report dated January 2016. In August 2016 report Dr P Gell, (August 2016) summarized that: "*… no evidence of breeding activity in the areas where colonial nesting typically occurs. While many duck species were seen among trees seeking nest sites, the only observations of breeding activity were of seven Grey Teal ducklings on transect 2 and three on transect 1. A Black Swan was sitting on a nest on transect 7. The lake level was sufficiently high for these non-colonial species to breed successfully*". It was also reported that blasting did not appear to haveaffected bird breeding activity.	**Compliant**
s.11.1.6/p.55	Water-bird surveys within the Compensatory Wetland will be conducted annually during the main bird breeding periods. The monitoring program will utilise the existing waterbird survey transect within ML 1535.	Bird surveys were conducted on Lake Cowal in January, August and November 2016 and January 2017 by the Water Research Network, Federation University, utilising the established waterbird survey transects within ML 1535.	**Compliant**

Section/ Page No.	Flora and Fauna Management Plan Management Measures	Comments	Implementation Status
s.11.2.1/p.56	Monitoring will be conducted to determine whether vegetation planted within the New Lake Foreshore is establishing and to determine the need for any maintenance and/or contingency measures (such as the requirement for supplementary plantings, erosion control or weed and pest control). Visual observations will be made on a regular basis to assess the health of planted vegetation. In addition, a number of survey plots (50 x 20 m) will be monitored annually following the commencement of revegetation activities (when the area is not inundated) to obtain quantitative data on species diversity and abundance. The quality of rehabilitation will be monitored using Ecosystem Function Analysis (EFA) or a similar systems-based approach.	The new lake foreshore has been established and is demonstrating increasing flora growth and diversity, particularly on the temporary isolation bund and the Lake Protection Bund. The DnA Environmental, *Compensatory Wetland Monitoring* Report concluded: *"The data obtained presently do not indicate any adverse effects occurring within the compensatory (CW) wetland areas, rather the restriction of grazing has promoted extensive regeneration of M. florulenta growing within the lake environment. These shrubs had become well established and were able to provide habitat and nesting sites for range of migratory birds during the four years that Lake Cowal was inundated. In the remaining and grazed wetland areas the extent of M. florulenta regeneration has been lower due to a combination of a cultivation history and heavy grazing by livestock and this was more pronounced in the grazed wetland areas."* The Compensatory Wetlands site was not monitored during 2016 due to Lake Cowal inundation.	**Compliant Ongoing**
s.11.3.1/p.57	Biological monitoring, including fish and aquatic invertebrates, will be undertaken in accordance with Development Consent 14/98 MOD 11 condition 3.2(b)(viii). In accordance with Development Consent 14/98 MOD 11 condition 4.5(b), a biological monitoring program has been developed and implemented for the operational phase of the mine.	The biological monitoring program (for fish and aquatic invertebrates) was developed in consultation with and to the satisfaction of the DI&I-Fisheries. In addition, the Independent Monitoring Panel (Development Consent 14/98 MOD 13 condition 9.2(b)) were consulted during preparation of the monitoring program. Details of the program implemented are provided in the Surface Water, Groundwater, Meteorological and Biological Monitoring Program (SWGMBMP) 2015.	**Compliant**
s.11.3.2/p.57	As outlined in the Compensatory Wetland Management Plan, fish fauna surveys will be conducted within the New Lake Foreshore, Compensatory Wetland and remaining wetland areas within ML 1535, no more than annually, when the lake is full (i.e. at full storage level).	Based on the assessments of aquatic habitat and fish communities, the Compensatory Wetland, Enhancement Wetland and the New Lake Foreshore areas within ML1535 have similar habitat compared to adjacent comparative sites, and provide habitat structures that support feeding, shelter and reproduction for a variety of fish species. The fish survey conducted in December 2016 showed the dominance of species, including introduced species,	**Compliant**

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		that are resilient to harsh environmental conditions can rapidly colonize newly available habitat. The high abundance and diversity of introduced fish species is consistent with present day fish communities in the Lachlan River and wider Murray Darling Basin. Only three native species (common carp gudgeon, bony bream and Australian smelt) were caught in December 2016, with three introduced species (carp, goldfish and eastern gambusia) also caught.	
s.12.2.1/p.59	Water quality of Lake Cowal will be monitored in accordance with Development Consent 14/98 condition 4.5(b) for a number of parameters along the Lake Cowal transect and lake inflow sites.	Flora and Fauna Management Plan Table 6 outlines the monitoring locations, frequency of monitoring and surface water parameters, consistent with the SGWMBMP (2015).	**Compliant**
s.12.2.1/p.59	Bird breeding/behaviour monitoring will continue to be conducted by a suitably qualified person during the main bird breeding periods each year at the main bird breeding areas of Lake Cowal and will continue to include observations of bird behaviour during blast events. Monitoring results from the Cowal Gold Operations noise and blast monitoring programs (as detailed in the Noise Management Plan and Blast Management Plan respectively) will also be used to monitor noise and blasting impacts.	Noise monitoring carried out quarterly in accordance with Development consent MOD 13 condition 6.4(e)(iii) and the Noise Management Plan (2015) are used to monitor noise and blast impacts. Results of waterbird behaviour monitoring conducted by Dr Peter Gell of the Water Research Network, Federation University Ballarat, found that the lake level was sufficiently high for non-colonial species to breed successfully, and there was no abrupt change in the behaviour of any bird species to noise (or other effects) from blasts conducted at the Cowal Gold Operations.	**Compliant**
s.12.2.1/p.60	Dust deposition levels surrounding the CGM and Lake Cowal will continue to be monitored in accordance with the Air Quality Management Plan (AQMP). The air quality monitoring sites are located both proximal to and distant from the CGM on the lake's eastern shore near bird breeding areas.	Dust deposition monitoring occurs in accordance with the Air Quality Management Plan where access to monitoring sites has been available. During the March to June 2012 and 2016, the high water level of Lake Cowal resulted in the loss of some dust gauges located at sites within the inundated area of the lake. The dust monitoring requirements were revised in the Air Quality Management Plan (2015), approved by DP&E and EPA (in a Variation to the EPL 11912 dated 4 April 2017) to exclude the dust gauge locations within the Lake Cowal inundation area.	**Compliant**
s.12.2.2.1/p61	The occurrence of the Austral Pillwort within ML 1535 and immediate surrounds not disturbed by the CGM will	Annual targeted surveys for the Austral Pillwort within ML 1535 and immediate	**Compliant**

Section/ Page No.	Flora and Fauna Management Plan Management Measures	Comments	Implementation Status
	be monitored annually. A Threatened Species Management Strategy has been developed for the Austral Pillwort and involves the identification of mitigation measures to ameliorate any potential impacts on the threatened species.	surrounds not disturbed by the Cowal Gold Operations, have been conducted. No Austral Pillwort has been found during the surveys conducted by DnA Environmental between 2013 and 2016, (despite expanding the monitoring survey areas).	
s.12.2.2.2/p61	Dust deposition levels surrounding the CGM and Lake Cowal will continue to be monitored in accordance with the AQMP. The AQMP monitoring program includes sites located within ML 1535 and near the foreshore of Lake Cowal (i.e. proximal to potential habitat for the Austral Pillwort).	Dust monitoring sites surrounding the Cowal Gold Operations and Lake Cowal are identified in the Air Quality Management Plan Table 6 and Figure 4.	**Compliant**
s12.2.3.1/p62	Water quality of Lake Cowal will be monitored for a number of parameters along the Lake Cowal monitoring transects and at lake inflow sites in accordance with the SWGMBMP.	Water quality monitoring has been undertaken in Lake Cowal along six transects used during the baseline monitoring program. Monitoring sites are located close to the Cowal Gold Operations, within central Lake Cowal, at sites distant from the Cowal Gold Mine and at Lake Cowal inflow sites. The monitoring sites within Lake Cowal were reviewed and revised during 2016	**Compliant**
S12.2.3.6/p63	Incidental observations of fauna activity within ML 1535 will be documented during weekly inspections for any bird strike on electricity transmission lines on ML 1535. The monitoring program will record any deaths or other incidents involving native fauna.	Weekly inspections of fauna activity within ML 1535 are conducted and the observation / monitoring program records any deaths or other incidents involving native fauna.	**Compliant**
s.12.2.4.1/ p.64	Water quality of Lake Cowal will be monitored for a number of parameters along the Lake Cowal transect and lake inflow sites. Table 6 outlines the monitoring locations, frequency of monitoring and surface water parameters that will be monitored in accordance with the SWGMBMP. The default high conservation/ecological value protection level triggers (including the 99% protection level for toxicants) provided in ANZECC and ARMCANZ (2000) will be used to trigger surface water investigations, as described in Section 8 of the SWGMBMP.	Water quality monitoring of Lake Cowal occurred along the Lake Cowal transects and lake inflow sites identified in the Water Management Plan and Surface Water, Groundwater, Meteorological and Biological Monitoring Program during 2016, when water in Lake Cowal reached the AHD 204.5m. No monitoring results between May 2015 and May 2017 resulted in triggering of the high conservation / ecological value protection scheme.	**Compliant**
s.12.2.4.3/p64	Dust deposition levels surrounding the Cowal Gold Operations site and Lake Cowal will continue to be monitored in accordance with the AQMP.	Dust monitoring in accordance with the Air Quality Management Plan was conducted at dust monitoring sites identified in Table 6 and Figure 4, surrounding the Cowal Gold Operations and Lake Cowal.	**Compliant**

Section/ Page No.	Flora and Fauna Management Plan Management Measures	Comments	Implementation Status
S12.2.4.4/p64	The sediment monitoring will be relevant to potential surface water quality and dust deposition impacts, and will be undertaken during lake "dry" and "wet" periods (when the lake level is at or above 204.5m AHD) where practicable. A detailed description of the sediment monitoring program is provided in the biological monitoring programme component of the SWGMBMP. Biological monitoring results will be interpreted and reported in the Annual Review.	Sediment monitoring conducted by DM McMahon was reported in the Lake Cowal *Surface Water and Sediment Sampling and Analysis Reports* between 2011 and 2014 and in 2016 when the lake level was at or above 204.5m AHD. The Lake Cowal sediment results were assessed against the ANZECC and ARMCANZ (2000) recommended trigger values and demonstrated that the extractable results were generally below the recommended trigger values.	**Compliant**
s.12.4/p.69	In the event that assessment of the monitoring results (Section 12.3) indicates that impacts are occurring on birdlife in bird breeding areas, threatened flora, threatened fauna, fish or aquatic invertebrates, contingency measures will be implemented.	No impact on birdlife in bird breeding areas, threatened flora, threatened fauna, fish or aquatic invertebrates that required contingency measures to be implemented, were identified in the annual surveys conducted between April 2016 and May 2017.	**Compliant**
s.13/p.77	Upon the cessation of mining operations, tenure of ML 1535 will be maintained by Evolution Mining until lease relinquishment criteria are satisfied.	Not activated until the cessation of mining operations.	**Not activated**
s.17/p.82	An Annual Review will be prepared in accordance with the requirements of Consent Condition 9.1(b)	Annual Review prepared in accordance with Development Consent 14/98 MOD 13 condition 9.1(b) reported flora and fauna management in sections 3.7 and 3.8.	**Compliant**

5.6.3 Flora and Fauna Monitoring

[Consolidated Development Consent 14/98 MOD 13 condition 3.2(b)(i)]

Flora and fauna monitoring has been conducted in accordance with the Development Consent 14/98 MOD 13 condition 3.2(b)(i) and Flora and Fauna Management Plan (2014) section11.

The implementation of the Flora and Fauna Management Plan and monitoring of the status of the Cowal Gold Mine and Operations in relation to flora and fauna, has been reported in the various programs and reports produced for the project between 2013 and 2017. A summary of the findings related to flora and fauna monitoring surveys between 2015 and 2017 are:

- No replanting or additional tree and shrub planting occurred in the four monitoring quadrants set up on Fellman's Hill Revegetation Enhancement Project between May 2016 and May 2017. Monitoring at Fellman's Hill Revegetation Enhancement Project is conducted annually by DnA Environmental.

- A program of macropod numbers control on the Fellman's Hill Revegetation Enhancement area occurred during 2016, with 200 Eastern Grey kangaroos tagged and/or culled on Felman's Hill area (RVEP1). There were still significant numbers of macropods on the site at the time of this audit (May 2017).

- Bird surveys were conducted in August and November 2016 on Lake Cowal by the Water Research Network, Federation University, indicated that the continuing emptying of Lake Cowal and drying of

survey transect areas had significant impacts on bird breeding activities and species diversity, due to the lowering water levels. The November 2016 report concluded that "*the recent rainfall in 2016 transformed Lake Cowal from a largely dry system to a productive wetland providing areas of shallow margins for wading (stilt, avocets) and dabbling duck species. The lake was also deep enough to cater for birds typical of deeper waters (e.g. Eurasian Coot and grebes). This transitional state lead to a species richness that was moderately high for winter surveys. This filling phase is not sufficiently mature to provide resources for fish-eating species (e.g. cormorants) whose numbers were low. Some ducklings and a nesting swan were observed marking an early start to the breeding season. The presence of many birds in nuptial plumage, and the number of ducks frequenting tree hollows, suggested the recent rain had prompted breeding behaviour in many species. The lake level is sufficiently high for these non-colonial species to breed successfully. Further rainfall or inflows in coming weeks may prompt colonially breeding species to nest also*."

5.6.4 Conclusion

The Flora and Fauna Management Plan (2015) prepared for the Cowal Gold Operations is consistent with the requirements of Development Consent 14/98 MOD 13 condition 3.2(b) and provides an adequate basis for the management of flora and fauna on the project ML 1535 area and surrounding mine owned land.

The implementation of the management measures in the Flora and Fauna Management Plan are supplemented by the Compensatory Wetland Management Plan, Land Management Plan, Rehabilitation Management Plan, and Surface Water, Groundwater, Meteorological and Biological Monitoring Program.

The monitoring program reports prepared under the Flora and Fauna Management Plan have provided a comprehensive ongoing assessment of the status of flora, fauna, avifauna, fish and habitats of the Cowal Gold Operations project development and demonstrate that the project has not had a measurable negative impact on the surrounding environment or its flora and fauna.

As monitoring of the Fellman's Hill Revegetation Enhancement Project concluded that "*Macropods continue to graze the vegetation on Fellman's Hill…. and their grazing can have significant effects of the recovery and health of the woodland vegetation"* it is recommended that consideration should be given to further controlling overabundant macropod numbers on the Fellman's Hill Revegetation Enhancement area

Recommendation:
It is recommended that consideration should be given to further controlling overabundant macropod numbers on the Fellman's Hill Revegetation Enhancement area.

5.7 Compensatory Wetland Management

[Consolidated Development Consent 14/98 MOD 13 condition 3.3]

5.7.1 Overview of the Lake Cowal Wetland[3]

The Lake Cowal wetland forms part of the Wilbertroy-Cowal wetlands that include Lake Cowal, Nerang Cowal and Bogandillon Swamp. This wetland system is located on the Jemalong Plain, a fluvial landform in the lower reaches of Bland Creek in the Lachlan Valley. The Jemalong Plain extends to the Lachlan River in the north and is bounded by ridgelines to the east and west.

The dynamics of the Wilbertroy-Cowal wetlands system have been modified significantly by agricultural land use within the catchment, clearing, levee construction and modifications to flood entry and exit points and the construction of the Jemalong-Wyldes Plains irrigation system including the Jemalong Weir.

Lake Cowal receives water inflow from:

[3] *Cowal Gold Project – Environmental Impact Statement*. North Limited (1998a)

- Bland Creek, which drains into the lake at its southern end.
- Inflows from the Lachlan River via breakout flows during major flood events in the Lachlan River causing back flooding to Lake Cowal via modified floodways at the north-eastern side of the lake; and
- inflow from incident rainfall.

When full, Lake Cowal overflows into Nerang Cowal to the north which in turn overflows to Manna Creek, Bogandillon Creek and ultimately into the Lachlan River.

Without inflows, drying of the lake is driven predominantly by high evaporative losses.

The vegetation on the lakebed of Lake Cowal is adapted to the irregular wetting and drying cycle. When inundated, propagules of ephemeral aquatic plants germinate and grow rapidly providing a food source for similarly ephemeral invertebrates and nomadic waterbirds. When dry, the bare lakebed is colonised by the seeds of many grasses and herbs creating a temporary grassland. The shallower parts of the lakebed also feature permanent swamp vegetation (*viz.* Lignum and Canegrass) which can tolerate the extremes of wet and dry (North Limited, 1998a).

The location of the Cowal orebody requires part of the open pit to extend beyond the full storage level of Lake Cowal. As a result, a New Lake Foreshore will be constructed that will comprise:

- a temporary isolation bund located closest to the lake and designed to prevent water inflow to the pit development area from the lake during construction of the lake protection bund;
- a lake protection bund is a low permeability embankment designed to prevent water inflow (during periods of high lake water level) from the lake into the open pit development area over the life of the mine and over the long-term and will be located behind the temporary isolation bund (i.e. closer to the pit);
- the lower batter of the perimeter waste emplacement that will surround the pit to the north, east and south and will be located behind the lake protection bund; and
- an intervening section of lakebed between the temporary isolation bund and the lake protection bund.

5.7.2 Compensatory Wetland Management Plan

[Consolidated Development Consent 14/98 MOD 13 condition 3.3]

The Compensatory Wetland Management Plan required under Development Consent 14/98 condition 3.10A(ii) was approved by DIPNR in 2003. The Compensatory Wetland Management Plan was reviewed in 2009 and as there had been no changes to the applicable guidelines, environmental requirements or operational practices no revision or update of the Plan was required at that time.

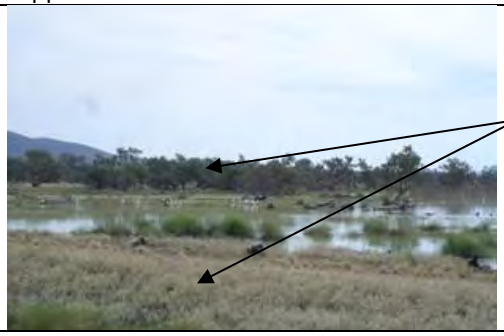
The Compensatory Wetlands Management Plan was reviewed in 2015 against the requirements of Development Consent 14/98 MOD 11 condition 3.3. The 2015 review concluded that there were no significant changes required to the currently approved Plan.

The objectives of the Compensatory Wetlands Management Plan outline the measures to be implemented for the loss of the 120ha of wetland that occurred during the mine development, through the enhancement of existing wetland within the Cowal Gold Operations mining lease area during the project operation (and to continue following closure of the mine).

The Compensatory Wetland Management Plan includes management measures listed in Table 5.7.2.

Table 5.7.2: Compensatory Wetland Management Plan Management Measures

Section /Page No.	Compensatory Wetland Management Plan Management Measures	Comments	Implementation Status
s.6.1/p18	Wetland enhancement measures will be implemented within the Compensatory Wetland areas including:	The compensatory wetland areas:	**Compliant**

Section /Page No.	Compensatory Wetland Management Plan Management Measures	Comments	Implementation Status
	• prevention of stock entry onto the enhancement area to encourage the natural regeneration of native plants; • measures to minimise the spread of weeds and competition with native flora; • measures to minimise the occurrence of feral pests; • provision of structural habitat for aquatic fauna; and • limiting vehicular access.	• have been fenced to prevent stock entry and encourage the natural regeneration of native plants; • Weed management, fox baiting, rodent and locust management measures have been implemented as required. • Vehicle access to the compensatory areas is limited by fencing and gated access points.	
s.6.1/p18	Planting of native wetland species within the compensatory wetland may be undertaken if monitoring indicates that doing so is necessary to enhance the regeneration of native vegetation within the area.	Monitoring of the wetland areas occurs to assess native vegetation succession, particularly along the lake foreshore is conducted annually by DnA Environmental; Planting of native species in the compensatory wetland areas has not occurred, but will occur if the annual survey results indicate enhancement of compensatory areas can be achieved.	**Compliant**
s.6.1.1/p19	Monitoring will be conducted to assess the regeneration of native vegetation within the compensatory wetland and to determine the need for any maintenance and/or contingency measures (such as the requirement for the planting of native species and weed/pest control).		**Compliant**
s.6.1.3/p19	Revegetation for the New Lake Foreshore will create a freshwater ecological community with a focus on the establishment of waterfowl habitat.	Filling of the lake in 2010-2012, followed by near drought conditions during 2012-2014 compromised development of the establishment of waterfowl habitat. Further inundation of Lake Cowal in 2016 has provided waterfowl habitat.	**Compliant**
s.6.2.4/p25	The New Lake Foreshore will primarily be revegetated using native seedlings propagated on-site or obtained from a supplier. 	The new lake foreshore is demonstrating increasing flora growth and diversity, particularly on the temporary isolation bund and the Lake Protection Bund. Natural native vegetation establishment along the lake foreshore increased significantly with the flooding of Lake Cowal in 2010 and 2016	**Compliant Ongoing**
s.6.2.4/p26	Revegetation methods will be reviewed and revised annually in consideration of the results of revegetation trials.	Annual reviews of revegetation methods have been conducted by DnA Environmental.	**Compliant**
s.6.2.5/p26	Revegetation species for the New Lake Foreshore will also be selected in consideration of the lake's hydrological regime (wetting and drying cycles), species performance during revegetation trials and suitability to substrate conditions. Species selection will be an iterative process,	Selection of suitable species for revegetation of the New Lake Foreshore is considered during compensatory wetland area monitoring and assessment of the rehabilitation.	**Compliant**

Section /Page No.	Compensatory Wetland Management Plan Management Measures	Comments	Implementation Status
	whereby revegetation trials and monitoring will provide information as to the most appropriate species for revegetation	Revegetation has not progressed as the New Lake Foreshore has not yet been established.	
s.6.2.6/p27	As a component of rehabilitation of the New Lake Foreshore, a number of revegetation trials will be undertaken.	Revegetation trials when undertaken will be based on findings of annual DnA Environmental surveys.	**Compliant Ongoing**
s.7.2/p29	Weed control within ML 1535 wetland areas will be conducted in accordance with the applicable procedures detailed in the LMP to limit adverse weed effects at neighbouring private properties.	Annual weed surveys are conducted on ML 1535 and all Evolution Mining owned land. Weed control is conducted regularly in accordance with the Land Management Plan section 6.5to reduce potential for weed invasion to private properties.	**Compliant Ongoing**
s.7.3/p31	Evolution Mining employees responsible for land management will implement pest control measures on mine-owned land, including wetland areas within ML 1535, in consultation with the CRLPB and NSW Agriculture, and in co-ordination with adjacent landholders. Pest control activities include: regular property inspections to assess the status of pest populations within Evolution Mining owned land, including wetland areas within ML 1535, and the need for the implementation of appropriate control strategies;	Regular property inspections, fox baiting programs, , spraying for control of locust (APLs) infestation, and other feral animal and vermin control measures are conducted by Cowal Gold Operations in accordance with Land Management Plan section 7 and the Rural Land Protection Act.	**Compliant Ongoing**
s.8.1/p33	Subsequent to the removal of livestock, monitoring will be conducted to determine whether natural regeneration is occurring within those areas subject to enhancement measures. The monitoring of natural regeneration will be conducted annually following the removal of livestock.	Annual monitoring of Evolution Mining owned land has been carried out annually by DnA Environmental to assess natural regeneration within areas subject to enhancement measures. Natural regeneration is occurring within those areas where livestock grazing has been eliminated.	**Compliant Ongoing**
s.8.1.3/p34	Incidental observations of fauna activity within ML 1535 wetland areas will be documented during weekly inspections of ML 1535. Surveys will also be conducted to determine the usage of wetland areas by wildlife.	Incidental 'drive' around surveys of fauna activity are conducted on the ML 1535 by Cowal Gold Operations Environmental staff and observations recorded. The recorded observations are assessed and reported in the Donato six monthly reports.	**Compliant Ongoing**
s.8.1.3/p34	Waterbird surveys will be conducted by year 5 of mine operations within the compensatory wetland and remaining wetland areas within ML 1535, and thereafter, annually. A number of survey transects will be established within the compensatory wetland and remaining wetland areas within MML 1535 to survey waterbird diversity and abundance.	Lake Cowal Waterbird Monitoring Surveys were conducted three times per year (January, August and November 2016) when the lake contains water, by Peter Gel of the Water Research Network, Federation University, Ballarat. .	**Compliant**

Section /Page No.	Compensatory Wetland Management Plan Management Measures	Comments	Implementation Status
s.8.1.3/p34	Fish fauna surveys will be conducted within the compensatory wetland and remaining wetland areas within ML 1535, no more than annually, when the lake is full.	Fish surveys were conducted in Lake Cowal by frc environmental between 2011 and 2014 after filling of Lake Cowal. The surveys ceased in 2015 due to the drying up of the lake. A further survey was conducted in December 2016 following inundation of the Lake.	**Compliant**
s.8.1.3/p34	A survey of terrestrial fauna will also be conducted of the New Lake Foreshore once vegetation has established and before year six of mine operations. Survey may include visual and opportunistic observations, active searches, spotlighting, identification of bird calls, amphibian calls, Elliott trapping and electronic call detection.	Terrestrial fauna assessment has been included in the annual DnA Environmental reports. Specific monitoring of the New Lake Foreshore area has not been undertaken as the New Lake Foreshore area had not been established.	**Compliant**
s.8.2/p34	Maintenance activities may be undertaken to facilitate the enhancement of wetland habitats. Routine maintenance measures may include: • supplementary plantings to replace losses; • control of erosion and sedimentation; • weed and pest control; and • limiting vehicle access	Maintenance activities in the wetland habitat areas around the lake foreshore temporary and permanent bunds, has occurred to reduce erosion and control weed infestation and pests. Vehicle access to wetland areas is restricted to reduce potential damage and promote natural enhancement of habitats.	**Compliant Ongoing**
s.9/p35	Prior to the cessation of mining operations, Evolution Mining will develop a strategy for the long-term land-use of its landholdings, including the wetland areas within ML 1535. The strategy for long-term land-use of the Project area and mine-owned land will be developed in consultation with the DPI-Water, EPA, OEH, BSC and to the satisfaction of the Director-General, and submitted five years before mine closure.	Noted. Yet to be commenced.	**Not triggered**
s.12/p39	An Annual Review will be prepared in accordance with the requirements of Development Consent 14/98 MOD 11 condition 9.2 and submitted to the Secretary DP&E.	Annual Review documents prepared for the Cowal Gold Operations in accordance with Development Consent 14/98 MOD 13 condition 9.2, address compensatory wetland management.	**Compliant**

5.7.3 Compensatory Wetland Area Surveys

Surveys of the compensatory wetland area terrestrial aspects have been undertaken annually by DnA Environmental during late spring (October/November). The latest report dated January 2016 concluded:

> *"Most changes in the wetlands have occurred as a result of climatic and biophysical factors and these were compounded in areas subjected to livestock grazing, especially during the dry conditions. Ongoing monitoring of these sites are (sic) likely to demonstrate further and significant changes with the drying of the lake and the development of the ephemeral wetland communities after a long agricultural history and significant flood event, especially in areas which are now restricted from grazing".*

The frc Environmental Report on the Compensatory Wetland Habitat and Fish Investigation 2016 concluded:

> *"Based on the assessments o! aquatic habitat and fish communities, the Compensatory Wetland Enhancement Wetland and the New Lake Foreshore areas within ML1535 have Similar habitat compared to adjacent comparative sites, and provide habitat structures that support feeding, shelter and reproduction for a variety of fish species. The current surveys show the dominance of species, including introduced species, that are resilient to harsh environmental conditions and that can rapidly colonise newly available habitat. The high abundance and diversity of introduced fish species is consistent with present day fish communities in the Lachlan River and wider Murray Darling Basin."*

5.7.4 Conclusion

The Compensatory Wetland Management Plan provides a comprehensive management and monitoring regime that is providing detailed reports on the status of the accessible compensatory wetland areas. The surveys and reports on the flora and fauna in the declared areas are indicating that the removal of livestock from grazing in the compensatory wetland areas and the climatic influences (particularly the heavy rainfall years and flooding of the Lake Cowal area), have had a significant positive influence on the structure and composition of the lake foreshore communities.

5.8 Biodiversity Offset

[Consolidated Development Consent 14/98 MOD 13 condition 3.4]

5.8.1 Environmental Assessment

5.8.1.1 Environmental Assessment - Mine Extension 2013

The proposed biodiversity offset strategy for the Cowal Gold project addressed potential residual impacts in accordance with the *NSW Offset Principles for Major Projects (State Significant Development and State Significant Infrastructure)* (OEH, 2013).

Offset areas have been established for the Cowal Gold Project under Development Consent 14/98 MOD 6 (dated 10 March 2010). The Northern Offset Area is located approximately 1 km north of ML 1535 and the Southern Offset Area is located approximately 3 km south of ML 1535. Extension of the Southern Offset Area to include an additional 230 ha of native vegetation is located on mine-owned land (2.4 km south of ML 1535).

The vegetation communities in the proposed offset areas are a good match for those proposed to be cleared for the Development Consent 14/98 MOD 11 and the areas of these vegetation communities are all larger in the proposed offset area than the areas proposed to be cleared. Two additional broad fauna habitat types/vegetation communities located within this proposed offset area provide potential habitat for threatened fauna species that have the potential to occur within the Modification 11 area.

The proposed extension of the Southern Offset Area offset area is adjacent to the existing conserved area and:

- contains approximately 48 ha of the Myall Woodland EEC listed under the NSW *Threatened Species Conservation Act*, 1995.
- contains approximately 143 ha of the Grey Box Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (Grey Box EEC) listed under the Commonwealth Environment *Protection and Biodiversity Conservation Act*, 1999.
- contains existing records of the Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*), sightings and nests, thereby conserving known habitat for the local population.

5.8.1.2 *Environmental Assessment - Mine Life Extension 2016*

Modification 13 would not change the approved surface development extent of the Cowal Gold Operations area (i.e. no land clearance or increase in existing/approved surface disturbance areas beyond currently approved disturbance areas). As a result, Modification 13 would not disturb any existing fauna habitat or vegetation and there would be no change to biodiversity impacts within ML 1535 or its surrounds.

A reconciliation of the proposed offset proposal against the *NSW Offset Principles for Major Projects (State Significant Development and State Significant Infrastructure)* (OEH, 2013) was confirmed by OEH as applying to the Modification 13.

5.8.2 Biodiversity Offset Management Plan

[Consolidated Development Consent 14/98 MOD 13 condition 3.4(c)]

The Biodiversity Offset Management Plan prepared to satisfy Development Consent 14/98 MOD 11 condition 3.4(c) was submitted to OEH on 25 February 2015 for comment and a response was received on 13 March 2015. The revised Biodiversity Offset Management Plan Revision B was submitted to the DP&E on 19 May 2015 and approved on 21 March 2016.

The objectives for the biodiversity offset areas are to:

- secure the tenure of the offset areas for long-term conservation purposes (excluding the land within the ETL and gas pipeline easements);
- enhance flora and fauna habitats within the offset areas, including increasing the area of Myall woodland through regeneration and revegetation;
- establish native vegetation characteristic of a Eucalypt woodland in the previously cleared agricultural land comprising Spear Grass – Windmill Grassland within the Revegetation Area of the Southern Offset Area; and
- improve the flora value of the land in the offset areas in the medium to long-term.

The management measures described in the Biodiversity Offset Management Plan are provided in Table 5.8.2.

Table 5.8.2: Biodiversity Offset Management Plan Management Measures

<table>
<tr><th>Section / Page No.</th><th>Biodiversity Offset Management Plan</th><th>Comments</th><th>Implementation Status</th></tr>
<tr><td>S4.1.1/p21</td><td>Locations of the northern and the southern offset areas are within the following mine owned properties:

Northern Offset Area
• Lot 8, DP 53097; and
• Lot 1, DP530299.
Southern Offset Area
• Lot 19, DP 753083; and
• Lot 18, DP753083.</td><td>Offset Areas including the Cowal Gold Mine Extension (long term protection arrangement yet to be agreed and approved by DP&E) are:
<table><tr><th>Offset Management Area</th><th>Size (ha)</th></tr><tr><td>Southern Offset Enhancement Area</td><td>260</td></tr><tr><td>Southern Offset Area Extension</td><td>100</td></tr><tr><td>Northern Offset Revegetation Area</td><td>80</td></tr><tr><td>Total</td><td>440</td></tr></table></td><td>Compliant Ongoing</td></tr>
<tr><td>s.4.3.1/p24</td><td>Measures to be undertaken to facilitate natural regeneration of canopy, understorey and ground strata flora species within the Northern and Southern Offset Areas are:
• fencing to exclude grazing;</td><td>Management measures implemented at the date of this audit include:
• fencing around offset areas has occurred to exclude grazing;</td><td>Compliant Ongoing</td></tr>
</table>

	• provision of signage to restrict access; • removal of unnecessary fencing; • soil erosion management; • control of animal pests; • control of weeds; • selective use of native plant fertiliser; • vehicle access management; and • habitat enhancement.	• signage has been erected to restrict and manage vehicle access onto the offset areas; • monitoring of offset areas for soil erosion occurs and management implemented as required; • control of animal pests and weeds occurs annually; • habitat enhancement is occurring with regeneration of natural vegetation in the Northern Offset Area, and planting of tube-stock in the Southern Offset Area. Other commitments related to the offset areas are awaiting a response from DP&E in relation to approval of the draft Planning Agreement for the long term protection of the biodiversity offset areas submitted to DP&E on 8 December 2015.	
s.4.3.2 / p26	The Offset Revegetation Area is located in previously-cleared cultivated paddocks comprising Spear Grass – Windmill Grassland. Revegetation activities will aim to re-establish woodland vegetation by selective planting native species characteristic of the surrounding existing remnant patches.	Revegetation of the previously cleared cultivated paddocks in the Southern Offset Area had commenced at the date of this audit (May 2017) with planting of woodland vegetation native species tube-stock in early 2017. 	**Ongoing**
s.4.3.2 / p26	Engage Greening Australia during 2015 to prepare a seed supply and planting implementation strategy for the offset areas (and the CGO rehabilitation program within ML 1535).	Greening Australia was commissioned during 2015 to prepare a seed supply and planting implementation strategy for the offset areas (and the Cowal Gold Operations rehabilitation program within ML 1535).	**Compliant**
s.4.4.3 / p29	Where practicable, vegetation clearance operations will be managed to maximise the salvage and re-use of cleared vegetative material and habitat resources / features. Habitat resources/features will be clearly marked (with flagging tape or similar) for salvage / relocation in the offset areas (or the Remnant Vegetation Enhancement Programme [RVEP] areas or for use in the CGO rehabilitation program).	A Vegetation Clearance Protocol (VCP) has been developed and is described in detail in the Flora and Fauna Management Plan Figure 7. Salvage and re-use of cleared vegetative material and habitat resources / features are clearly marked for salvage / relocation in the offset areas during vegetation removal.	**Compliant Ongoing**

s.4.3.5 / p29	A weed management strategy is to be developed for the CGO and includes: • identification of weeds by annual site inspections and recording in an annual weed survey report; • communication with other landholders/leaseholders and regulatory authorities to keep weed management practices in line with regional weed control activities; • mechanical removal of identified noxious weeds and/or the application of approved herbicides in authorised areas (herbicide use in and around wetland areas will be strictly controlled); • implementing follow-up site inspections to determine the effectiveness of the weed control measures; and • prevention of the establishment of new weeds on mine-owned land by minimising seed transport of weed species (measures may include the use of vehicle hygiene/wash down procedures for vehicles entering the offset areas.	The Land Management Plan section 6 outlines the weed management strategy and procedures in accordance with the requirements of Bland Shire Council. These procedures have been implemented for all mine-owned land, including the offset and RVEP areas. Annual weed inspections were conducted NGH Environmental. Control methods include chemical boom and spot spraying of the plants when conditions were suitable or physical removal by manually chipping the weeds out. During all weed control operations, only registered selective herbicides are used on land above the high water mark of Lake Cowal.	**Compliant Ongoing**
s.4.3.5 / p31	Pest control activities to be undertaken within the offset areas will involve: • regular property inspections to assess pest populations; • mandatory pest control for declared pests (i.e. rabbits, feral pigs, wild dogs and foxes) in accordance with Pest Control Orders under the *Local Land Services Act, 2013,* and management of plague locust species; • inspections to assess effectiveness of control measures implemented and review of these measures if necessary; and • documenting pest sightings and control measures in a Pest Register and marking the location of sightings on a map.	Biodiversity Offset Management Plan Table 8 lists pest management measures implemented within the offset areas. • regular property inspections are conducted to assess pest populations; • mandatory pest control implemented include - rabbits (Pindone treated carrots), feral cats (cat traps), wild dogs and foxes (1080 baits), in accordance with Pest Control Orders under the *Local Land Services Act, 2013;* • spraying for control of plague locust species; • inspections to assess effectiveness of control measures; and • documenting pest sightings in a Pest Register.	**Compliant Ongoing**
s.4.3.7 / p32	Grazing and cropping activities will be excluded within the offset areas and vegetation clearance restricted.	No grazing or cropping activities are allowed in the nominated offset areas. Each area if fenced to restrict access by stock.	**Compliant**
s.4.3.9 / p33	Bushfire management measures for all mine-owned lands including the offset areas will occur in consultation with the	Bushfire management measures for all mine-owned lands including the offset areas have been	**Compliant Ongoing**

	NSW Rural Fire Service, Riverina LLS and BSC. The bushfire prevention measures and fuel management measures will include: • educating employees and contractors on general fire awareness and response procedures; • fire track and fire break maintenance; • annual inspections to identify areas requiring bushfire control measures including assessment of fuel loads; and • fuel management (e.g. hazard reduction burns) in consultation with the NSW Rural Fire Service.	implemented in consultation with the NSW Rural Fire Service, Riverina LLS and BSC. • Permanent Cowal Gold Operations Emergency Response Officers are employed on-site and undertake regular training in firefighting and appliance familiarization, and receive regular training as members of RFS. • A fire trail register is maintained with a number of all-weather access tracks established and maintained within the mining lease, on Evolution-owned land and within Lake Cowal; • annual inspections include assessment of fuel loads; and fuel management (e.g. hazard reduction burns) control measures, in consultation with the NSW Rural Fire Service.	
s.4.3.10/ p33	Performance and completion criteria for the biodiversity offset strategy management measures relevant to short, medium and long-term timeframes of the strategy and a review of the progress against the performance and completion criteria will be undertaken annually and reported in the Annual Review.	Biodiversity Offset Management Plan Table 9 describes Biodiversity Offset Strategy Performance and Completion Criteria for offset area protection, remnant vegetation enhancement, revegetation implementation, weed and pest control, erosion control, access and bushfire control. Annual performance criteria are reported in the Annual Review in section 6.8.	**Compliant Ongoing**
s.6.2 / p52	An Annual Review will be prepared in accordance with the requirements of Development Consent Condition 9.1(b) and submitted to the Secretary DP&E.	Annual Reviews have been prepared by Cowal Gold Operations and biodiversity management is reported in section 6.8.	**Compliant Ongoing**

5.8.3 Biodiversity Offset Strategy

[Consolidated Development Consent 14/98 MOD 13 condition 3.4(a) and 3.4(b)]

The Biodiversity Offset Strategy required under Development Consent 14/98 MOD 11 condition 3.4 is included in the Biodiversity Offset Management Plan section 4, dated May 2015. The Biodiversity Offset Management Plan was submitted to OEH on 25 February 2015 for comment and a response was received on 13 March 2015. The Biodiversity Offset Management Plan was approved by DP&E on 21 March 2016.

To address Development Consent 14/98 MOD 11 condition 3.4(b) a Voluntary Conservation Agreement (VCA) was proposed and consultation occurred with the OEH. The OEH subsequently did not agree to the use of a VCA for the long term management of the offset areas.

A Planning Agreement for the Offset Areas was prepared under the *Environment and Planning and Assessment Act 1979* section 93F and submitted to DP&E on 8 December 2015. A number of edits suggested by DP&E and Evolution Mining legal advisors were incorporated into the Planning Agreement and bank guarantee. A further extension for the execution of the Planning Agreement until 30 June 2017 was requested and granted by the

DP&E on 30 June 2016. A decision on the draft Planning Agreement by DP&E in relation to the long term protection of the biodiversity offset areas was still under consideration by DP&E at the date of this audit (May 2017). (Correspondence has occurred with DP&E requesting extensions of time for obtaining approval of the Planning Agreement and finalisation of the Biodiversity Offset Strategy and the Biodiversity Offset Conservation Bond).

5.8.4 Conservation Bond

[Consolidated Development Consent 14/98 MOD 13 condition 3.4(d)]

Development Consent 14/98 MOD 11 condition 3.4(d), required a Conservation Bond to be lodged with the DP&E by the end of July 2015 (or later with the agreement of the Secretary of DP&E). Requests for extension of time for securing the offset areas (in accordance with the draft Planning Agreement – refer to section 5.8.3 above) and lodging the conservation bond have been submitted to DP&E and extensions granted.

The calculation of the Conservation Bond and lodgement of the bond with DP&E required the approval of the proposed offset areas, Biodiversity Offset Strategy and Biodiversity Offset Management Plan by DP&E / OEH. The Biodiversity Offset Strategy and Biodiversity Offset Management Plan was submitted to the OEH for consultation on 25 February 2015 and OEH responded with comments on 13 March 2015. The Biodiversity Offset Strategy and Biodiversity Offset Management Plan Revision B was submitted to DP&E on 19 May 2015 and was approved by DP&E on 21 March 2016.

Evolution Mining submitted the calculation of the draft Planning Agreement and Conservation Bond for the biodiversity offset areas to DP&E on 8 December 2015.

5.8.5 Management of the Proposed Biodiversity Offset Area

The Biodiversity Offset Management Plan includes management measures based on detailed flora and fauna surveys of the proposed offset areas and an assessment of the measures required to enhance the flora and fauna values of the selected areas. These management measures include:

- fencing to exclude grazing;
- provision of signage;
- removal of unnecessary fencing;
- soil erosion management;
- control of animal pests;
- control of weeds; and
- vehicle access management.

5.8.6 Biodiversity Offset Area Monitoring Program

[Consolidated Development Consent 14/98 MOD 13 Condition 3.4(c)(v)],

A monitoring program has been developed for the offset areas consistent with the methodology implemented for the Cowal Gold Operations on-site rehabilitation program (as described in the Rehabilitation Management Plan).

The offset monitoring program has been developed to:

- track the progress of the offset revegetation and regeneration against performance indicators and completion criteria;
- to monitor the effectiveness of the short, medium and long-term measures; and
- to determine the requirement for any ameliorative/contingency measures.

The offset monitoring program methodology was independently developed by DnA Environmental (2011) to assess the performance of the offset areas. The monitoring methodology includes:

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

Monitoring and management of the offset management areas has occurred in accordance with the requirements of the Biodiversity Offset Management Plan section 4.5 and the biodiversity offset areas will be monitored annually against the performance and completion criteria detailed in the Biodiversity Offset Management Plan section 4.6 and Table 9, to measure the effectiveness of the offset strategy measures and determine the need for ameliorative/contingency measures.

5.8.7 Biodiversity Offset Area Monitoring Results

5.8.7.1 Northern Offset Area

Species diversity in the Northern Offset Area site has followed a similar trend to reference sites monitored, with the changes strongly correlated with the changing seasonal conditions. The Northern Offset Area site exhibited a higher diversity of exotics species with the winter rainfall during 2016 encouraging a flush of annual exotic plants.

There was a significant increase in native plant abundance in monitoring site NOA01, with native plants continuing to provide the most ground cover, similar to the reference sites. Monitoring site NOA02 had a lower native plant cover.

The soil chemistry is highly variable within and between the Northern Offset Area monitoring sites with the results of the soil analyses indicating the soils in the lower slopes and gilgais environments around Lake Cowal, exhibiting “naturally” saline, slightly alkaline and potentially sodic characteristics.

5.8.7.2 Southern Offset

The Cowal Gold Operations Southern Offset Areas were old cropping paddocks and have become ecologically very stable due to the relatively high levels of litter, largely derived from dead annual plants. The soils were very hard and crusted and there was little evidence of erosion. The low levels of perennial vegetation combined with very hard crusted soils has resulted in sites with currently low infiltration and nutrient recycling capacity.

The soil properties are both low in organic matter, and in monitoring site SA02 quadrant, the soils continue to be sodic.

In October 2016, site SOA02 was planted in ~1m wide strips with tube-stock. Cryptogams remained common and the soils were very hard and crusted with little evidence of erosion. While there continued to be low perennial vegetation cover, there was an increased cover of litter and cryptogam covers in SOA01 and SOA02 during 2016.

Three additional monitoring sites in the Southern Offset Area were established on the eastern side of Fellman's Hill during 2016 as a result of the Southern Extension and Development Consent 14/98 approval conditions and management measures in the Biodiversity Offset Management Plan.

5.8.6 Conclusion

The Biodiversity Offset Management Plan prepared to satisfy Development Consent 14/98 MOD 11 condition 3.4(c) was submitted to OEH on 25 February 2015 for comment and a response was received on 13 March 2015. The revised Biodiversity Offset Management Plan Revision B was submitted to the DP&E on 19 May 2015 and approved on 21 March 2016.

A Planning Agreement in relation to the long term protection for the Biodiversity Offset Areas was prepared under the *Environment and Planning and Assessment Act 1979* section 93F and submitted to DP&E on 8 December 2015. A decision on the draft Planning Agreement by DP&E was still under consideration by DP&E at the date of this audit (May 2017).

Management of the biodiversity offset areas has occurred by Evolution Mining and monitoring has been conducted by DnA Environmental to assess the annual status of the proposed areas.

5.9 Erosion and Sediment Control

[Consolidated Development Consent 14/98 MOD 13 condition 3.5]

5.9.1 Erosion and Sediment Control Management Plan

[Consolidated Development Consent 14/98 MOD 13 condition 3.5(a)]

An Erosion and Sediment Control Management Plan required by Development Consent 14/98 condition 3.5(a) was approved by DIPNR in 2004. Review and amendment of the Erosion and Sediment Control Plan has occurred regularly as the Cowal Gold project has progressed. The revised Erosion and Sediment Control Management Plans were submitted to DP&E for approval when significant changes for the operational management of the site was proposed.

A revised Erosion and Sediment Control Management Plan required under Development Consent 14/98 MOD 11 condition 3.5(a) was prepared and submitted to DP&E on 24 February 2015 and approved on the 21 March 2016.

The Erosion and Sediment Control Management Plan presents general measures to be implemented to control erosion and sediment loss to the environment from the disturbed areas of the project site.

The management measures outlined in the Erosion and Sediment Control Management Plan are summarised in Table 5.9.1.

Table 5.9.1: Erosion and Sediment Control Management Plan Management Measures

Section /Page No	Erosion and Sediment Control Management Measures	Comments	Implementation Status
s.4.1.1 / p61	As the pipeline will be buried, no permanent erosion and sediment controls are necessary. The buried pipeline corridor will be progressively rehabilitated.	The pipeline construction across Lake Cowal and along the alignment to the east of the lake towards the production bores, occurred in 2004. The pipeline was buried 1.5 metres below the surface, the trench refilled with the original excavated material and compacted to the original ground level.	**Compliant COMPLETE**
s.4.2.3/p63	Weekly inspections will be undertaken during the operational phase of the Project to ensure	Inspection of the pipeline alignment occurred following completion of	**Compliant Ongoing**

Section /Page No	Erosion and Sediment Control Management Measures	Comments	Implementation Status
	revegetation and planting areas along the buried pipeline corridor have properly established. Inspections will record condition of the erosion and sediment control structures; maintenance requirements (if necessary) including instructive actions; volume of sediment removed (e.g. from sediment basins to retain capacity requirements); and sediment disposal locations.	construction in 2004 and has continued when Lake Cowal is not inundated. No erosion along the corridor was recorded during the period the lake bed was dry. The monitoring of the pipeline route did not occur during the period of inundation of Lake Cowal between 2010 and May 2014 and following inundation in 2016.	
s.4.2.3/p63	Maintenance activities, including; cleaning out of containment structures, diversion drains etc. where sediment/sand/soil/ vegetation builds up; repairing of areas of erosion (e.g. Lining with a suitable material which may include use of grasses, plastic, geotextile, rock, concrete); further application of seed/fertiliser in areas of minor soil erosion and/or inadequate vegetative establishment; and installation of additional erosion and sediment control structures.	Maintenance activities have occurred as required to ensure the erosion and sediment control structures within ML 1535 retain their operational performance. Diversion drains with additional erosion and sediment control structures were installed as required. The sediment control structures inspected during the 2017 audit were well maintained.	**Compliant Ongoing**
s.5.2.3/p66	Regular inspections will be undertaken during the operational phase of the project to ensure revegetation and planting areas along the relocated Travelling Stock Route have properly established.	The new road and Travelling Stock Route (TSR) works were completed in Q1 2004. Barrick transferred Lot 100 DP 1059150 as the land for the new TSR to the Crown Lands in 2004. The TSR is regularly inspected and maintenance or repairs would be conducted if required to maintain the route and manage erosion.	**Compliant COMPLETE**
s.6.1/p68	Salinity - Limit clearing of areas will be clearly delineated, where appropriate, with barrier mesh and sediment fencing in accordance with *Managing Urban Stormwater - soils and construction* section 4.2.1. Unrestricted vehicular / plant access to undisturbed areas will not be permitted. Vegetation in close proximity to works areas will be demarcated with flagging tape so as to prevent disturbance. All employees will undertake an induction/training program.	Areas of surface disturbance where salinity may be a potential problem were defined prior to commencement of any land disturbance works on ML 1535 and access limitations imposed. All Cowal Gold Operations employees and contractors undertake induction training that includes restriction of access to demarcated areas.	**Compliant Ongoing**
s.6.1/p68	Identify saline soils (infill testing) and selective soil resource management.	Infill testing of soil profiles is undertaken where new areas of works are to be commenced to confirm the precise depths of soil and any requirements for	**Compliant Ongoing**

Section /Page No	Erosion and Sediment Control Management Measures	Comments	Implementation Status
		amelioration at the time of soil excavation for stockpiling.	
s.6.1/p68	Identify low salinity construction material (construction fill testing) and selective resource management	Testing of soil profiles is undertaken prior to commencement on any new areas of works. Fill is tested for geochemical and geotechnical suitability prior to use for construction. Suitable fill is sufficiently impermeable with low dispersivity and low salinity and would not be acid forming.	**Compliant Ongoing**
s.6.1/p68	Fencing ML 1535 to restrict stock and prevent overgrazing and erosion.	ML 1535 has been fenced to restrict stock entry and the fence is inspected monthly and maintenance works conducted if necessary.	**Compliant Ongoing**
s.6.1/p68	Implement appropriate erosion and sediment control systems and ongoing monitoring and maintenance including water monitoring (suspended solids, EC and pH).	Monitoring and maintenance of erosion and sediment control structures occurs after rainfall events with inspections and water quality monitored.	**Compliant Ongoing**
s.6.2/p69	Containment and management of saline surface water runoff. The surface water management strategy is contained in the SWMP.	Surface water management within ML 1535 occurs in accordance with the Water Management Plan 2015.	**Compliant Ongoing**
s.6.2/p70	During project operations, water will accumulate within open pit due to surface water runoff. The final void will intercept a large proportion of runoff, preventing sediment from entering the Lake. As a result, salt loads entering the lake from the Project site are expected to marginally decrease post mining as salt will also be trapped by the void.	A strategy for the long term management of the final void will be developed in consultation with relevant agencies and stakeholders in accordance with Development Consent 14/98 MOD 13 Condition 4.4(b).	**Not triggered**
s.7/p71	Soil Management – the general strategy of soil resource management will be to strip soil resources from all proposed mine disturbance areas within ML 1535 and store these in dedicated stockpile areas for reuse during progressive rehabilitation works.	All topsoil resource is stripped from proposed disturbance areas within ML 1535 and placed in dedicated stockpile areas for reuse during rehabilitation works.	**Compliant Ongoing**
s.7.2/p72	Vegetation Clearance Protocol and Threatened Species Management Protocol will be implemented consisting of Pre-clearance survey for flora, including a targeted survey for any threatened species recorded in the mine site area; and preliminary and secondary fauna habitat assessments.	The Vegetation Clearance Protocol and Threatened Species Management Protocol described in the Flora and Fauna Management Plan are implemented and completed prior to any clearing of previously undisturbed areas of ML 1535.	**Compliant Ongoing**
s.8/p74	Effective rehabilitation will be implemented by undertaking the rehabilitation programme in	Rehabilitation of disturbed areas is undertaken in accordance with the Rehabilitation Management Plan and	**Compliant Ongoing**

Section /Page No	Erosion and Sediment Control Management Measures	Comments	Implementation Status
	accordance with the general principles outlined in the EIS (1998). These include the rehabilitation of project landforms is to be progressive and conducted in accordance with approved, verified plans which are to be updated annually.	current Mining Operations Plan for ML 1535. The rehabilitation status is updated annually and reported to DRE and in the Annual Review section 5.	
s.8/p74	The stability of newly prepared landforms prior to the establishment of long term vegetation is to be protected via the construction of moisture-retaining graded drains, water-holding structures (e.g. surface depressions) and, where appropriate, the use of authorised hybrid cover crops to provide initial erosion protection.	Stability of newly prepared landforms is undertaken in accordance with the Rehabilitation Management Plan and the current Mining Operations Plan for ML 1535.	**Compliant Ongoing**
s.8/p74	The annual rehabilitation program and budget is to be prepared by a site team incorporating the Project's senior management.	The annual rehabilitation program and budget is prepared by the site Environmental Section team and Cowal Gold Operations senior management.	**Compliant Ongoing**
s.11/p78	Report on the effectiveness and performance of the sediment and erosion control systems against the objectives contained in the ESCMP to control the movement of sediment and salinity migration from areas disturbed by mining and construction activities and to maintain downstream (Lake) water quality.	Effectiveness and performance of the sediment and erosion control systems against the objectives contained in the Erosion and Sediment Control Management Plan are reported annually in the Annual Reviews section 3.2.	**Compliant Ongoing**
s.12/p79	Annual Reviews prepared in accordance with Development Consent 14/98 MOD 13 condition 9.1(b).	Annual Reviews prepared in accordance with Development Consent 14/98 MOD 13 condition 9.1(b), addresses erosion and sediment control aspects in section 6.5.	**Compliant**

5.9.2 Erosion and Sediment Control Monitoring and Performance

[Consolidated Development Consent 14/98 MOD 13 condition 3.5(a)(iii)]

Erosion and sediment control management has involved maintenance and inspection of erosion and sediment control structures after any trigger rainfall events.

Cowal Gold Operations geotechnical department conducts monthly monitoring and assessment of all water holding ponds on site, waste rock emplacements and the lake protection bund for sediment movement and effectiveness of erosion control in accordance with the *Monitoring Programme for the Detection of Movement of the Lake Protection Bund, Water Storage and Tailings Structures and Pit/Void Walls*. The monthly monitoring and assessments has indicated no significant sediment movement or erosion of the contained water storages, waste rock emplacements, lake protection bund or temporary isolation bund.

The ongoing management of erosion and sediment control on the batters of the lake protection bund has included rock armouring to ensure that the rehabilitation of the constructed surfaces is maintained for long term stability.

Soil erosion primarily due to the dispersive subsoils was observed in the upper sections of the mine void during the 2017 audit. Sediment and turbid run-off is captured by the site drainage system and/or within the open pit sump and there is limited potential for off-site water quality impacts from this erosion. Cowal Gold Operations have implemented a program of works to stabilise the dispersive soils that may result in erosion, by reshaping, gypsum treatment and rock mulching/blending of the soils on the batters of the perimeter waste emplacement where appropriate.

The Independent Monitoring Panel recommendations in relation to the use and incorporation of sufficient gypsum into the soil during rehabilitation works has been implemented, prior to capping with rock and topsoil, to reduce the Exchangeable Sodium Percentage to less than 6. Gypsum is incorporated into the soil (mixed) and spread over the subsoil prior to the placement of waste rock and topsoil on the waste emplacement batters.

Contouring of areas of the Southern Waste Rock Emplacement to a slope of 1:5 has occurred in the areas of the emplacement under rehabilitation, with erosion control features included in the final rehabilitated surface configuration.

Contouring of areas of the Northern Waste Rock Emplacement and topsoil placement occurred during 2015/2017 with rehabilitation including surface mulching and planting of tube stock on the established final surface configuration. The finished rehabilitated areas have surface runoff and erosion control measures in place. The finalised landform and rehabilitation was observed to be stable with only minor localised erosion noted during the 2017 audit site inspection.

Lake Cowal has not been impacted by sediment inflow from disturbed areas of the Cowal Gold Operations, due to the effectiveness of the temporary isolation bund and vegetative cover on the adjacent lifts of the perimeter waste emplacement structure.

Lake Cowal water quality results did not indicate impact from the disturbed areas of the Cowal Gold Operations project site during the 2016 / 2017 period of inundation of Lake Cowal. The erosion and sediment control structures installed on the Cowal Gold Operations site have intercepted sediment laden runoff and retained the sediment on-site in pond D1, pond D4 and a ‘stilling basin’, prior to any potential discharge of water from the disturbed project area to Lake Cowal.

The new rock-topsoil rehabilitation treatment method for final landform slopes continues to demonstrate effective erosion control as evidenced by DnA Environmental in their annual reports.

5.9.3 Conclusion

The erosion and sediment control strategies implemented under the Erosion and Sediment Control Plans are considered effective, as demonstrated by environmental performance indicators. The Erosion and Sediment Control Plans have been prepared and are generally consistent with requirements in *Managing Urban Stormwater: Soils and Construction (Volume 2E – Mines and Quarries) Manual* (EPA 2008) Appendix C. The new rock-topsoil rehabilitation treatment method for final landform slopes continues to demonstrate effective erosion control as evidenced by DnA Environmental in their annual reports.

5.10 Soil Stripping

[Consolidated Development Consent 14/98 MOD 13 condition 3.5(b)]

5.10.1 Environmental Impact Assessment Cowal Gold Project 1998

As a part of the Cowal Gold Project Environmental Impact Statement (North Limited, 1998), a *Soils, Agricultural Suitability/Land Capability and Soil Resources* assessment was undertaken for proposed disturbance areas within ML 1535. The assessment included identification of soil types, general characterisation of suitable stripping depths for rehabilitation activities and formulation of soil stripping and soil stockpiling strategies.

The major soil types identified within ML 1535 disturbance areas were:

- hard pedal red duplex soils - this material is considered the most appropriate medium for rehabilitation. The top 0.35 m is also considered suitable "topsoil" for rehabilitation works;
- grey, brown and red cracking clays - the topsoil is considered as a moderately suitable rehabilitation medium, with the only limitations being moderate structural and salinity features. Erosion hazard could be high if used on sloping batters. This topsoil is considered the second most appropriate material for rehabilitation works, and the top 0.1 m is suitable for use as topsoil.;
- hill soils - the main limitations of these soils are poor water retention and acidity. They are of low suitability as revegetation soils.; and
- lacustrine (lake) sediments - these sediments are confined to areas below the Lake Cowal high water mark. Textures vary widely, with no relationship to material type except for the occurrence of sand and gravel bands in the transported material. Field textures are commonly medium clays, silty light clays and silty clay loams.

5.10.2 Soil Stripping Management Plan

[Consolidated Development Consent 14/98 MOD 13 condition 3.5(b)]

The Soil Stripping Management Plan required under Development Consent 14/98 condition 3.5(b) was approved by DIPNR in 2003. A revision of the Soil Stripping Management Plan required by Development Consent 14/98 MOD 11 condition 3.5(b) was submitted to DP&E on 24 February 2015 and approved on 21 March 2016.

Annual mapping and volume calculations of stockpiled soils are produced for the Cowal Gold Operations site (refer to Figure 5.10.2). Details of soil stockpile locations, stripping volumes and soil management measures are provided in the Mining Operations Plan and the volumes and stockpile locations presented on the Annual Soil Stockpile Map.

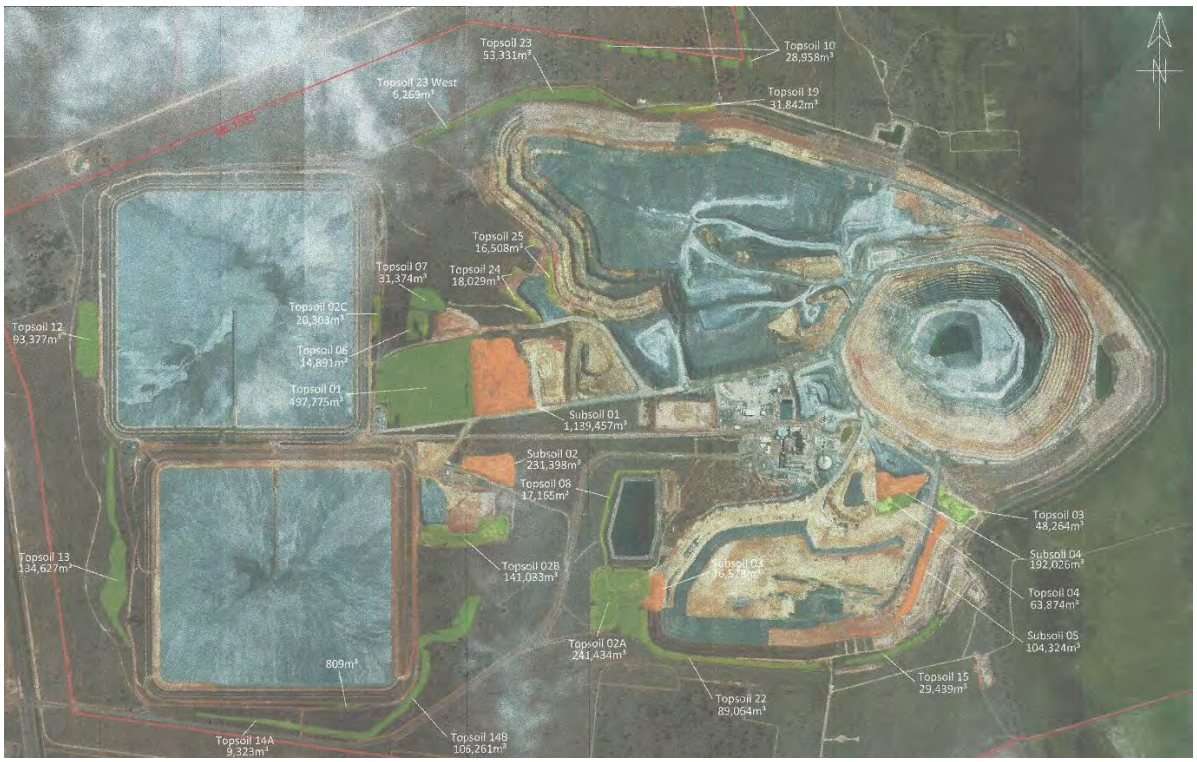


Figure 5.10.2: Annual mapping and volume calculations of stockpiled soils - Cowal Gold Operations site

The Soil Stripping Management Plan presents the processes and scheduling for the soil stripping activities detailed in the Mining Operations Plan section 4.4 (prepared in accordance with the Mining Lease requirements).

The Soil Stripping Management Plan management measures are summarised in Table 5.10.2.

Table 5.10.2: Soil Stripping Management Plan Commitments

Section /Page No.	Soil Stripping Management Plan Commitments	Comments	Implementation Status
s.4.1 / p12	Prior to soil stripping, testing of soil profiles will be undertaken where necessary to confirm the precise depths of suitable soil and any requirements for amelioration at the time of soil stockpiling	Prior to soil stripping, soil profiles are tested to confirm the depths of suitable soil and any requirements for amelioration at the time of soil stockpiling.	**Compliant Ongoing**
s.4.1 / p12	Disturbance areas will be stripped progressively, to reduce potential erosion and sediment generation, and to minimise the extent of topsoil stockpiles and the period of soil storage.	Areas to be stripped are planned progressively, to reduce the areas of cleared land to that required for current operations and to reduce the potential for erosion and sediment generation.	**Compliant Ongoing**
s.4.3 / p13	*Cultural Heritage Inspection* Soil stripping activities (including preliminary soil testing) will comply with the requirements of the NPWS Section 87 permit and Section 90 consent granted under the *National Parks and Wildlife Act, 1974*.	Cultural heritage inspections are conducted that allow both the collection of visible artefacts prior to soil stripping. Collection of any identified cultural heritage items / artefacts contained within the surface soil profile occurs and the items are placed in the Keeping Place on the Cowal Gold Operations site.	**Compliant Ongoing**
s.4.3 / p13	A comprehensive Ground Disturbance Permit process is in place at the CGO. All land disturbance activity must be pre-approved by the Community Relations and Environmental Departments. Wiradjuri Cultural Heritage Monitors will complete a visual inspection prior to final ground disturbance approval being granted	All land disturbance activity has only occurred after completion of a Ground Disturbance Permit and pre-approval by the Community Relations and Environmental Departments. Nominated Wiradjuri Cultural Heritage representatives conduct a visual inspection prior to any final ground disturbance approval being granted.	**Compliant Ongoing**
s.4.3 / p14	*Flora and Fauna Inspections* A Vegetation Clearance Protocol (VCP) and a Threatened Species Management Protocol (TSMP) have been developed for the CGM and are detailed in the CGM's Flora and Fauna Management Plan (FFMP).	A number of Belah trees were felled in February/March 2017 as part of the Stage H clearance works. Ground Disturbance Protocol and Vegetation Clearance Protocol were followed No topsoil stockpiles have been located within any area of Belah Woodland or Wilga Woodland.	**Compliant Ongoing**
s.4.3 / p14	***Stripping Activities*** As required by Development Consent Condition 3.2(a)(i), disturbance areas and the removal of trees and other vegetation from the mine site will be restricted to the minimum required. Once cleared of woody vegetation, soils will typically be stripped using a grader, scraper or bulldozer	Land disturbance areas and removal of trees and other vegetation on the ML 1535 site has been restricted to the minimum required for development of the mine and infrastructure. Scrapers have been used to strip soils where areas become too large for effective dozer or grader stripping.	**Compliant Ongoing**
s.4.4 / p16	The general protocol for the management of soil stockpiles includes soil handling measures that	Where practicable, soil is stripped from one area and immediately transferred to an active	**Compliant Ongoing**

Section /Page No.	Soil Stripping Management Plan Commitments	Comments	Implementation Status
	optimise the retention of soil characteristics favourable to plant growth: • locate soil stockpiles outside the Lake Cowal floodplain; • leave the surface of the completed soil stockpiles in a "rough" condition to help promote water infiltration and minimise erosion prior to vegetation establishment; • deep-rip soil stockpiles and seed (if necessary) to maintain soil organic matter levels, soil structure and microbial activity; • treat soil stockpiles with gypsum to reduce dispersiveness during stockpiling; • install signposts for all soil stockpiles with the date of construction and type of soil….	rehabilitation area for direct placement to reduce the size of soil stockpiles and optimise soil characteristics for rehabilitation • no soil stockpiles have been located on the Lake Cowal floodplain; • the surface of the completed soil stockpiles, are left rough to promote water infiltration and minimise erosion; • soil stockpiles are managed to maintain soil organic matter levels, soil structure and microbial activity; • soil stockpiles are treated with gypsum to reduce dispersiveness during storage; • soil stockpiles are labelled with the date of construction and soil type.	
s.4.4.1 / p17	Long-term topsoil stockpiles will be constructed up to a height of 3m with slopes at a maximum acceptable angle to resist erosion. Subsoil stockpiles will vary in height, determined by storage volumes and available space within the footprint of approved disturbance areas	Topsoil stockpiles have been constructed to 3m height. The batter slopes have been developed to reduce potential for erosion, with surface runoff collected and directed to the ICDS.	**Compliant Ongoing**
s.4.4.1 / p17	Where required to improve soil structural and fertility prior to application, soil stockpiles will be deep-ripped to establish aerobic conditions. All soil stockpiles will have sediment control measures installed in accordance with the requirements of the ESCMP.	Soil stockpiles are deep-ripped when established to encourage aerobic conditions and seeded if necessary and sown with suitable annual or select grass and legume species to maintain soil condition for future rehabilitation works.	**Compliant Ongoing**
s.4.4.3 / p18	An aerial survey will generally be conducted annually to confirm approximate volume of soil resource stocks. Details of estimated soil resource accounting (availability and requirements) will continue to be provided in the MOP. A detailed soil stockpile register will be maintained to track soil resource use and record soil treatments applied to each soil stockpile (e.g. gypsum or lime application rates).	Details of all soil stockpiles are recorded on a site database and with annual mapping that includes the location and volume of each stockpile and the stockpile maintenance records (refer to Figure 5.10.2 above).	
s.8.2.1/p24	Soil stripping activities against the objectives of this SSMP and the soil management objectives / strategies of the EIS are reported in the AEMR.	Annual Reviews have been prepared in accordance with Development Consent 14/98 Condition 9.1(b).	**Compliant Ongoing**

5.10.3 Soil Stripping Activity

Soil stripping on the Cowal Gold Operations site where required for the development on the mine, has occurred in accordance with the Soil Stripping Management Plan. In total more than 1.7 million m^3 of topsoil and 2.0 million m^3 of subsoil are stored on site.

The topsoil stockpile database is updated annually as new mining stockpile information is obtained from estimates determined from the site activities. Aerial photography and surveying of the soil stockpiles is conducted to accurately record soil stockpile locations and volumes.

5.10.4 Conclusion

The Soil Stripping Management Plan implemented for activities on the Cowal Gold Operations project site is considered adequate and representative of mining best practice, with the separation of the topsoil and subsoil horizons stockpiled for reuse of the topsoil and subsoil for rehabilitation and final constructed surfaces on the tailings storage facilities and waste rock emplacement areas.

A topsoil stockpile database is updated as new mining information is obtained from estimates determined from the site activities and aerial photography and surveying of the stockpiles conducted to accurately record soil stockpile locations and volumes.

5.11 Bushfire Management

[Consolidated Development Consent 14/98 MOD 13 condition 3.6]

5.11.1 Bushfire Management Plan

Although not required under the Consolidated Development Consent 14/98 MOD 13, a Bushfire Management Plan has been prepared as an internal management document and outlines fuel management and fire incident control measures implemented on ML 1535 and Evolution Mining owned properties to reduce fire risk to the immediate rural area. The Bushfire Management Plan is regularly reviewed in consultation with the Bland Shire Council and the NSW Rural Fire Service (RFS).

Cowal Gold Operations has two Category 7 fire tenders and two emergency firefighting units with approximately 1000L water tanks, each housed in an Emergency Response Station on the project site near the main maintenance workshop. Cowal Gold Operations has staff trained / active in the Bland-Temora Zone RFS and can assist local RFS brigades (Wamboyne, Clear Ridge and Blow Clear) with response to fire in the vicinity of the mine site.

Cowal Gold Operations Category 7 fire tender

Cowal Gold Operations Emergency Response / Rescue Station

The management measures outlined in the Bushfire Management Plan are summarised in Table 5.11.1.

Table 5.11.1: Bushfire Management Plan Management Measures

Section/ Page No.	Bushfire Management Plan Management Measures	Comments	Implementation Status
s.4.1.1 /p8	A trained and equipped fire response team is available at the Cowal Gold Operations site within each shift at the project.	Permanent Cowal Gold Operations Emergency Response Officers are employed on-site on a rotational shift basis. The Cowal Gold Emergency Response Team undertakes regular training sessions in firefighting skills and fire appliance familiarization and also receives regular training as members of RFS.	**Compliant**
s.5.4/p15	The project will have a fully functional and approved fire water supply designated to supply the mine offices, workshops and ancillary infrastructure. RFS brigades will contact the Project Emergency Response Coordinator if reticulated water is required for bushfire purposes.	RFS are able to draw water from Pond D6 or fill tankers from the Pond D6 pump off-take manifold or any other hydrant on site, in the event of any fire incidents.	**Compliant Ongoing**
s.5.5 / p15	No grass or vegetation will be burned off on the CGO site without the consent of the local fire authority.	No burning of grass or vegetation has occurred on the Cowal Gold Operations site.	**Compliant**
s.5.6/p15	Data from the site meteorological station will be used to determine whether conditions are suitable for fire management activities and bushfire fighting activities.	Data from the site meteorological station is continually available to the Cowal Gold Emergency Response Officers for use in relation to firefighting activities.	**Compliant Ongoing**
s.5.7/p16	A Fire Trail Register will be maintained to outline the following within the Project area and mine-owned lands: • records of maintenance works undertaken in fire trails and the date the work was undertaken; • records of any fuel management measures undertaken and the dates the work was undertaken; • details of the fire history of the project area, recorded as site observations.	A Fire Trail Register for the mine lease area is maintained on the Cowal Gold Operations computer network. The register lists the location of the fire trails and the trails are also marked on a site map, and action planned for fire trail maintenance.	**Compliant Ongoing**
s.6.2/p16	Strategies for fuel management will be adopted as appropriate and include: • grazing, slashing, pruning, mulching or other operations; • fuel management via burning where conventional fuel management strategies are inappropriate, impracticable or not successful; and • maintenance of designated firebreaks around the project	The bushfire management measures carried out on the Cowal Gold Operations and Evolution Mining owned sites have included: • creation of firebreaks around the ML 1535 boundary by slashing and grading; • slashing of large open areas within ML 1535 with high fuel loads; • mowing and grounds maintenance of bore-field stations;	**Compliant Ongoing**

Section/ Page No.	Bushfire Management Plan Management Measures	Comments	Implementation Status
	bore-field stations, the ML boundary and internally, around the mine.	• conducting regular inspections of the ML 1535 area to identify any significant fire risks.	
s.7.1/p19	A fire hazard reduction audit of mine-owned lands will be conducted annually, in consultation with the NSW RFS to identify hazard reduction methods to be adopted on mine-owned lands each season.	A review of fire hazard across the mine owned lands is conducted annually to identify hazard reduction works required.	**Compliant Ongoing**
s.7.1/p19	A general hazard audit of the project will be conducted in accordance with hazardous industry planning and Advisory Paper no. *5 "Hazard Audit Guidelines"* 12 months after commencement of operations and every three years thereafter.	A Hazard Audit has been conducted by Pinnacle Risk Management Pty Ltd each 3 years, commencing at the date of operation of process plant (i.e. April 2007), and subsequent Hazard Audits conducted in April 2010, 8-12 April 2013 and May 2016.	**Compliant Ongoing**
s.7.2.1/p19	The width of firebreaks will be equivalent to adjoining tree height, where practicable, to account for the majority of short distance spotting for low and moderate fires. Firebreaks will be maintained by a combination of slashing or grading, and by spraying or cultivation.	Firebreaks have been established and maintained in accordance with the requirements of the Bland Shire Council (BSC) and RFS and are entered onto the Firebreak Register. Maintenance of the firebreaks is conducted to the satisfaction of BSC and NSW RFS.	**Compliant Ongoing**
s.7.2.3/p20	General fuel management measures and fire hazard reduction (e.g. grazing, mulching, slashing etc.) will be implemented in accordance with the requirements of annual hazard reduction audit.	Fuel management by means other than burning has been implemented including grazing, slashing, pruning, mulching or other operations (e.g. ploughing, herbicide application and rolling) on the Evolution Mining owned lands.	**Compliant Ongoing**
s.7.2.3/p20	The Fire Safety Study, Hazard and Operability Study and Final Hazard Analysis will be conducted to assess and manage offsite risk to people and the biophysical environment.	A Fire Safety Study prepared by Pinnacle Risk Management for Cowal Gold Mine Operations was submitted to the Commissioner of the NSW Fire Brigade and DIPNR for approval in December 2004 in accordance with Development Consent 14/98. A Hazard and Operability Study prepared by Aker Kvaerner Australia Pty Ltd for the main plant area was submitted to DIPNR in December 2004. The Final Hazard Analysis was submitted to DIPNR on 22 Dec 2004 and approved in March 2005.	**Compliant**
s.10/p23	An Annual Review will be prepared in accordance with Development Consent 14/98 condition 9.1(b) and DMR requirements and submitted to the Secretary. Bushfire related	Annual Reviews prepared in accordance with Development Consent 14/98 condition 9.1(b), include bushfire management and actions in section 6.13.	**Compliant Ongoing**

Section/ Page No.	Bushfire Management Plan Management Measures	Comments	Implementation Status
	issues to be reported in the AEMR (Annual Review).		

5.11.2 Conclusion

The Bushfire Management Plan provides a sound basis for the management of Cowal Gold Operations ML 1535 area and Evolution Mining owned land, in relation to control of fuel sources and fire-fighting ability of the Cowal Gold Operations staff. Cowal Gold Operations has dedicated fire and hazard response equipment housed in the Emergency Response / Rescue Station located near the administration block, process plant and maintenance facilities on the site.

5.12 Land Management

[Consolidated Development Consent 14/98 MOD 13condition 3.7]

5.12.1 Land Management Plan

[Consolidated Development Consent 14/98 MOD 13 condition 3.7]

A Land Management Plan was prepared to satisfy the Development Consent 14/98 conditions and approved by the Director-General in 2003. The Land Management Plan outlines the management strategies and measures for all of the mine land holdings and has been reviewed following each Modification to the Development Consent.

An addendum to the Land Management Plan (May 2015) to satisfy Development Consent 14/98 MOD 11 condition 3.7 was approved by DP&E on 21 March 2016. Cowal Gold Operations rehabilitation concepts and measures and rehabilitation monitoring program are described in detail in the Rehabilitation Management Plan. Progressive rehabilitation works and proposed soil stripping works and areas are detailed in the current Mining Operations Plan (MOP) in accordance with the requirements of the Conditions of Authority for ML 1535 and the NSW Division of Resources and Energy (DRE) ESG3: *Mining Operations Plan (MOP) Guidelines* (2013).

The management measures outlined in the Land Management Plan are summarised in Table 5.12.1.

Table 5.12.1: Land Management Plan Management Measures

Section/ Page No.	Land Management Plan Commitments	Comments	Implementation Status
s.3.2 / p11	Mine-owned land outside the project ML area will continue to be utilised for farming / agricultural production by Evolution (Cowal) and/or licensees that sign agreements to conduct agricultural activities on Evolution mine owned land.	Management of Evolution mine-owned land outside the ML 1535 area is arranged through agreements with specific farmers and/or organisations.	**Compliant**
s.4.1 / p13	The relocated TSR will be separated by fencing from the Cowal Gold Operations mining operations to ensure the unimpeded movement of stock in the relocated reserve. Pastures on the relocated TSR will be managed by the CRLPB.	The relocated Travelling Stock Route is separated from the ML 1535 boundary with fencing that restricts movement of stock onto the MLA but does not restrict stock movement on the relocated TSR.	**Compliant COMPLETE**
s.4.3 / p14	Evolution will manage stock in enhancement areas to encourage the natural regeneration of native plant species as recommended by the LWMPLC, MLRVMP, JLWMP and the NSW Wetlands Management Policy,	Four exclusion fences have been established around the remnant vegetation areas on the Hillgrove property to assess the long term impact of kangaroos on pasture. Additional fencing has also been	**Compliant**

Section/ Page No.	Land Management Plan Commitments	Comments	Implementation Status
	through fencing control and the application of grazing management.	erected on the Thornton and Lake Cowal properties to reduce the impact of sheep grazing on remnant vegetation.	
s.4.3 / p14	Evolution will require Licensees of each property to prepare a Farm Management Plan. If in the future Evolution intend to farm these properties the Evolution ESR-Land Officer would prepare plans, to cover each Evolution owned property.	A Farm Management Plan was prepared for the 'Lake Cowal" property (dated 13 March 2013). Hillgrove, Thorton. Lakeside and Coniston are available for local landholders on short term agistment agreements. During 2016/17 the majority of the land was being used by famers affected by the 2016 flood event. Farm Management Plan will be prepared when these become active again for grazing or cropping.	**Compliant Ongoing**
s.4.4 / p15	Evolution owned land will be managed to avoid overgrazing and subsequent damage to native pastures. This will be achieved by implementing a Tactical Grazing approach (as described in Section 4.3).	Implementation of tactical grazing including 'crash grazing with sheep and cattle' can be used as required to minimise fire risk at Hillgrove, Lakeside, Lake Cowal and Thornton properties.	**Compliant Ongoing**
s.4.5 / p15	Paddocks requiring pasture renovation or re-establishment and those paddocks suitable for harvesting pasture seeds will be identified. Fertilisers and tillage techniques may be utilised on improved pastures. Direct drilling and minimum tillage techniques will be preferentially used to minimise soil disturbance and fertilisers may be applied periodically to improve soil fertility. The Tactical Grazing approach will be implemented for improved pastures on Evolution owned land.	Pasture re-establishment / renovation, and identification of paddocks suitable for crop harvesting has occurred on the Hillgrove and Corringle properties.	**Compliant Ongoing**
s.4.6 / p.15	Areas of Evolution owned land will continue to be available for pastures and other agricultural uses following mine closure. The areas available for different types of land-use will be determined by land ownership and consultation and agreements with regulatory agencies	To be determined following mine closure by land ownership and consultation and agreements with regulatory agencies.	**Not triggered**
s.5.1 / p16	In accordance with Development Consent 14/98 MOD 11 condition 3.2(b)(vii) which requires the protection and enhancement of existing retained habitats within the mining lease area and condition 3.2(a)(i) which requires the minimisation of removal of trees and other vegetation from the mine site, a Vegetation Clearance Protocol (VCP) has been developed for the Project. All	The Vegetation Clearance Protocol has been activated prior to any vegetation disturbance on any area within ML 1535 where clearance is proposed. Exclusion fences have been established around the remnant vegetation areas on the Hillgrove property to assess the long term impact of kangaroos on pasture,	**Compliant Ongoing**

Section/ Page No.	Land Management Plan Commitments	Comments	Implementation Status
	vegetation clearance activities required by the project will be conducted in accordance with the VCP.	and additional fencing has also been erected on the Thornton and Lake Cowal properties to reduce the impact of sheep grazing on remnant vegetation.	
s.5.2 / p16	In accordance with Development Consent 14/98 MOD 11 condition 3.2(a)(i) and the FFMP, topsoil stockpiles within the ML will not be located within any area of the remnant Wilga Woodland. Avoidance of Wilga areas within the ML will reduce the area of some soil stockpiles in comparison to the stockpiles shown on Figure 5-2 of the Project Environmental Impact Statement (EIS)	No soil stockpiles have been located within any area of remnant Wilga Woodland.	**Compliant**
s.5.3 / p17	A number of management measures will be implemented within the compensatory wetland and remaining areas of wetland within ML1535 including: prevention of livestock from entering the enhancement areas to encourage the natural regeneration of native plants; measures to minimise the spread of weeds and competition with native flora; measures to minimise the occurrence of feral pests; and limiting vehicular access.	Management measures to protect the compensatory wetland areas have been implemented in accordance with the Compensatory Wetland Management Plan section 6 and 7.	**Compliant**
s.5.4.1 / p19	*Remnant Vegetation Enhancement Program:* In order to encourage the natural regeneration of native plant species, livestock will be controlled in enhancement areas 1 to 4 through fencing control and management. The management of livestock will vary between enhancement areas, as outlined in Table 1 (LMP).	Presence of livestock in remnant vegetation areas is controlled with fencing and farm management practices to encourage natural regeneration of native plant.	**Compliant**
s.5.4.1 / p20	*Revegetation:* Selective planting of native vegetation may be conducted in enhancement areas 1-4 to increase the quantity of remnant vegetation and to link areas of existing remnant vegetation, where practicable. Livestock will be prevented from entering any portions of the enhancement areas which have been revegetated with native plant species.	Livestock are prevented from entering any portions of the revegetation enhancement areas that have regenerated with native plant species, by the erection of fences by Cowal Gold Operations.	**Compliant**
s.5.4.1 / p21	Revegetation activities will be implemented by a suitably qualified person(s) and coordinated by the Environmental Manager.	Revegetation activities in the remnant vegetation areas, is managed in co-operation with the Lake Cowal Foundation and DnA Environmental.	**Compliant Ongoing**

Section/ Page No.	Land Management Plan Commitments	Comments	Implementation Status
s.5.4.2 / p21	Remnant vegetation monitoring will be conducted within enhancement areas to: assess the progress of natural regeneration; determine whether vegetation planted within the enhancement areas is establishing; and determine the need for any maintenance and/or contingency measure (such as the requirement for revegetation, supplementary plantings and weed control).	Annual remnant vegetation monitoring is conducted annually by DnA Environmental to assess the status of the vegetation and determine the need for any maintenance and/or contingency measures in relation to the regeneration.	**Compliant Ongoing**
s.5.4.2 / p21	A number of survey plots (50 x 20 m) will be established within each enhancement area to obtain quantitative data on species and abundance.	A research study of native grass recruitment utilising pasture cropping trials was set up on the Hillgrove property as a University of Sydney honours project. These trials were conducted and funded through the Lake Cowal Foundation.	**Compliant**
s.5.4.2 / p21	Visual observations will be made on a regular basis of areas revegetated with native plants to assess the establishment and the health of planted vegetation. This information will be utilised to determine the need for any supplementary plantings that may be required.	Remnant vegetation monitoring is conducted annually by DnA Environmental. Reports are prepared describing the status of the vegetation in each survey plot, with photo points established for each quadrat for recording the annual appearance.	**Compliant Ongoing**
s.6.2 / p24	In accordance with BSC advice, Evolution will control weed species (African Boxthorn, Johnston Grass, Scotch/Illyrian Thistle, Silverleaf Nightshade, Spiny Burrgrass, St. Johns Wort, Wild Rash) in accordance with the Lachlan Valley Noxious Weeds Advisory Group weed management plans. The weed management plans are provided in LMP Appendix B.	Annual weed surveys and farm management assessment was conducted by NGH Environmental in March 2016. The latest survey showed Galvanised Burr to be the predominant weed species with African Boxthorn appearing to be in decline. *Lippia*, a Class 4 noxious weed, has been observed on one of the leased farms. On-going weed control measures are carried out on regular basis as required.	**Compliant Ongoing**
s.6.4 / p24	Preventative measures will be implemented on Evolution owned land related to movement of stock, use of locally sourced stock feed, reduction of on-farm weed sources.	Restriction/management of stock movements, and physical and/or chemical weed control measures are being employed within the ongoing regular weed control program.	**Compliant Ongoing**
s.6.5 / p25	Physical removal and chemical application are the main weed control measures to be applied.		**Compliant Ongoing**
s.6.6 / p26	Evolution owned land will be surveyed for weeds annually. Follow up inspections will also be made of specific areas following the implementation of weed control measures (to assess the success of the weed controls).	Annual weed surveys and farm management assessments have been conducted by NGH Environmental since March 2015.	**Compliant Ongoing**

Section/ Page No.	Land Management Plan Commitments	Comments	Implementation Status
s.6.6 / p26	The BSC will be consulted for the suitable control of any new noxious weed species if encountered in the protect area to meet the requirements of the Noxious Weeds Act, 1993.	Consultation with Bland Shire Council would occur if any new noxious weed species were encountered on the mine owned properties. Consultation with Council occurred following the recent discovery of *Lippia* on a leased farm (March 2015).	**Compliant Ongoing**
s.7.2 / p28	Evolution (Cowal) will undertake pest control operations in conjunction with adjacent landholders in accordance with CRLPB and NSW Agriculture recommendations and regular consultation with the CRLPB and NSW Agriculture (prior to and following annual pest inspections) and local landholders and landholder groups through the CEMCC process.	A regular control program for foxes is conducted using 1080 baits. Mice control continues annually through bait stations position around the mining lease and infrastructure. Control of spiders and black crickets has occurred at 3 to 6 monthly intervals.	**Compliant Ongoing**
s.7.2 / p28	Evolution personnel responsible for land management will use the Vertebrate Pest Control Manual Appendix C (NSW Agriculture, 2003b) as a guide for pest control activities on mine-owned land in consultation with the CRLPB and NSW Agriculture.	Use of the NSW Agriculture Vertebrate Pest Control Manual for pest control activities occurs as required.	**Compliant Ongoing**
s.8.2 / p30	Evolution will aim to prevent land degradation and rehabilitate previously degraded land or land affected by their activities where practicable. This aim is in accordance with the principles of the MLRVMP, JLWMP and LWMPLC to reduce soil erosion and damage to soil characteristics.	Rehabilitation of previously degraded land or land affected by mine activities, occurs when practicable, in accordance with the Land Management Plan.	**Compliant Ongoing**
s.9.1 / p30	Mine rehabilitation works will be undertaken progressively as construction activities and mining proceed, in accordance with EIS Section 5.	Rehabilitation trials as part of the progressive rehabilitation program have been undertaken on the disturbed areas of the ML 1535 site.	**Compliant Ongoing**
s.9.2 / p31	Evolution will develop a strategy for the long-term (i.e. post mine closure) land-use of its landholdings, including the project area. The strategy for long-term land-use of the project area and mine-owned land will be submitted by year 7 of mining operations or five years before mine closure, whichever is the earlier. The strategy will be developed in consultation with the DP&E, EPA, OEH, BSC, the CEMCC.	The long-term land-use strategy of the ML 1535 area and mine-owned land will be submitted five years before mine closure. The strategy will be developed in consultation with the DP&E, EPA, OEH, BSC, and CEMCC, with land owners and consultation and agreements with regulatory agencies.	**Not triggered**
s.12 / p35	An Annual Review will be prepared in accordance with the requirements of Condition 9.1(b) of the Development	Annual Reviews have been prepared in accordance with Development Consent 14/98 condition 9.1(b). Land	**Compliant Ongoing**

Section/ Page No.	Land Management Plan Commitments	Comments	Implementation Status
	Consent MOD 13 and will be submitted to the Secretary of the DP&E by the end of July each year, or as otherwise agreed with the Secretary.	management issues are reported in sections: • Section 6.7 –remnant vegetation management monitoring • Section 6.10 weed and pest control • Section 8 - rehabilitation and mine-owned land under license agreements	

5.12.2 Remnant Vegetation Enhancement Program

DnA Environmental has conducted annual remnant vegetation enhancement monitoring on the Cowal Gold Operations site and surrounding Evolution mine-owned land. Permanent monitoring sites were established in areas of remnant woodland to measure a range of ecological features and track any changes as part of the land management Remnant Vegetation Enhancement Program (RVEP). Many sites were inaccessible during flooding of Lake Cowal during 2010-2013 and in 2016-2017.

The wet weather that commenced in 2010 resulted in the inundation of Lake Cowal and water levels in Lake Cowal remained high with a peak flood event occurring March 2012. After March 2012 there was limited rainfall and most of 2013 was very dry with only 341.6mm recorded. This low rainfall had a significant impact on the floristic diversity and composition in the remnant vegetation areas. Flooding of Lake Cowal again occurred during 2016 limiting access to many of the monitoring sites.

The DnA Environmental *Rehabilitation Monitoring Reports* on the surveys conducted in 2016, concluded:

> "The Acacia pendula – Casuarina cristata reference sites occurring on flat to gently undulating slopes contained some large bare areas which are often typical of these communities due to intense competition from the trees (allelopathy), frequent inundation particularly in the gilgais and often hard scalded clay pans are common. There continued to be high levels of ground cover, but a declining trend was emerging on the Hillgrove property as heavy grazing pressure by resident macropods had a severe impact on the vegetation cover, and combined with intense tree competition resulted in large areas of exposed soil. (In 2015, there was little vegetative cover with only 4% of the transect being functional patch area but this had improved during 2016).
>
> Both sites in the Northern Offset Area typically demonstrated an increasing trend in ecological function as grazing pressure has been minimal, promoting an increase in perennial plant with litter cover and litter decomposition. This resulted in a reduction in soil surface crusting and surface hardness. In all sites the soils were typically very hard and slightly unstable, however these characteristics appear to be typical of the lower slope communities.
>
> Species diversity in the Northern Offset site followed a similar trend to the reference sites with changes strongly correlated with the changing seasonal conditions with a reduction in floristic diversity recorded in as conditions had become very dry. Good winter rainfall in 2016 resulted in a flush of annual exotic plants, but most of these were dead at the time of monitoring.
>
> In 2015 and 2016, the water had recently receded in both NOA sites and again provided additional habitat features and supported a range of moisture dependent plants. The Northern Offset Area sites were similar in composition to the reference sites, however they lacked the diversity and vertical structure which would be provided by a population

of trees, shrubs and sub-shrubs. In 2016 most exotic annual grasses were dead and the native perennial grass *Enteropogon acicularis* (Curly Windmill Grass) was the most dominant species. *Austrostipa blackii* (Crested Speargrass) and *Enchylaena tomentosa* (Ruby Saltbush) were the most dominant, while *Einadia nutans subsp. nutans* (Climbing Saltbush) was the most abundant.

The soil chemistry was highly variable within and between sites with the results of the soil analyses indicating the soils in the lower slopes and gilgai environments around Lake Cowal can be "naturally" alkaline, saline and potentially sodic. The data indicated the soils were deficient in organic matter, P and N but these also were typical of these lowland woodlands.

Recommendation: As the sites are destined for revegetation, it is highly recommended that deep ripping is not undertaken across the sites due to the occurrence of highly sodic soils. In addition, the gilgais and high species richness are likely to be compromised, decreasing the ecological function and high conservation significance of the site. However, to meet completion criteria targets which have been derived from the adjacent woodlands on flat to undulating slope communities, revegetation activities should aim to replicate these community types. Strategic hand planting of the shrubs and canopy species should be undertaken in appropriate locations, taking care to replicate the structure and future habitat requirements of these communities."

5.12.3 Conclusion

The Land Management Plan prepared for the Cowal Gold Operations project provides the basis for the long term management of the disturbed areas of ML 1535 and collates many of the management measures in other plans that also have associated long term management and rehabilitation strategies / processes for the project (e.g. Flora and Fauna Management Plan, Remnant Vegetation Enhancement Program, Rehabilitation and Offset Management Plan, Rehabilitation Management Plan, Compensatory Wetland Management Plan etc.).

The monitoring surveys conducted during in 2016 have shown the effects of the meteorological conditions (mainly associated with rainfall) on the diversity and establishment of species across the Cowal Gold Operations site and surrounding Evolution Mining owned land.

5.13 Water Management

[Consolidated Development Consent 14/98 MOD 13 condition 4.1 to 4.6]

5.13.1 Regional Surface Hydrology

The Cowal Gold Operations site is located on the western side of Lake Cowal, an ephemeral fresh water lake that forms part of the Wilbertroy-Cowal Wetlands that are located on the Jemalong Plain, in the lower reaches of the Bland Creek catchment. The area surrounding the Cowal Gold Operations site is drained by ephemeral drainage lines that flow to Lake Cowal. Lake Cowal is part of the wider Lachlan River valley. When full (at RL 205.65 m) Lake Cowal overflows into Nerang Cowal to the north which in turn overflows to Manna Creek, Bogandillon Creek and ultimately into the Lachlan River. Overflows from Lake Cowal to Nerang Cowal occurred in early 2012. When full the lake covers an area of approximately 105km^2 and holds up to 150 gigalitres of water.

Over the life of the Cowal Gold project, Lake Cowal remained dry until June 2010 when significant rainfall caused the lake to begin to receive water via two main breakout channels, an event that occurred again in May 2016:

- Bland Creek, an ephemeral waterway drains into the lake at its southern end; and
- Lachlan-Lake Cowal floodway to the north-east; when breakout flows from the Lachlan River are directed (during floods) into the north-east section of Lake Cowal.

Breakout from the Lachlan River to Lake Cowal occurred between late 2010 and 2012, and May-September 2016.

5.13.2 Environmental Assessment

5.13.2.1 Environmental Impact Statement Cowal Gold Project, 1998

Summary of findings in the initial Cowal Gold Project Environmental Impact Statement (1998) in relation to water impacts and management associated with the Cowal Gold Project were:

- Surface water on the mine site is to be permanently isolated from Lake Cowal by an Up-catchment Diversion System (UCDS), directing runoff from areas unaffected by mining around the perimeter of the site, and an Internal Catchment Drainage System (ICDS), capturing all site runoff and seepage for re-use in the processing plant. In the longer term the ICDS would direct site runoff to the final void which would become a permanent sink for groundwater and surface runoff.
- The long term final void water balance was such that the final void was predicted to not spill under any conceivable climate conditions.
- The operational water balance prediction predicted a moderately negative site water balance. External water supply would be required from the Bland Creek Palaeochannel Borefield.
- Mine waste rock material was predicted to have the potential to generate moderately saline seepage, particularly during the active mining phase. During the active mining phase, all runoff and seepage from the waste rock emplacements would be contained within the ICDS.
- The tailings storages were designed to be able to contain runoff from a 1 in 1,000 year average recurrence interval (ARI) rainfall event. Any spill or seepage would be contained within the ICDS, ultimately reporting to the open cut.
- It was predicted there would be little potential for movement of surface water or groundwater from the waste rock emplacements or of seepage from the tailings storages.
- Use of suitable soils and vegetation in rehabilitation of waste rock emplacements and the tailings storages was predicted to result in low salt fluxes in surface waters consistent with regional runoff water quality.

Commitments included in the Environmental Impact Statement (1998) were:

Environmental Impact Statement Commitments	Cowal Gold Mine Actions	Implementation Status
A comprehensive monitoring program would measure water quality at various points within the water management system.	A comprehensive monitoring program was developed and included in the Site Water Management Plan and Surface Water, Groundwater, Meteorological and Biological Monitoring Program for the Cowal Gold Mine project.	**Compliant**
Drawdown effects would be monitored at the borefield.	Groundwater monitoring of the Bland Creek Palaeochannel Bore-field was implemented in 2005 and has continued through to 2017, to assess drawdown effects on the groundwater resource.	**Compliant**
A continuous silt curtain would be installed around the construction zone of the temporary isolation bund.	 **Temporary Isolation Bund construction when Lake Cowal was dry (2005).**	**Compliant**

	During construction of the temporary isolation bund, the lakeside construction area was protected with silt/sediment fence. (Note: Lake Cowal was dry during the temporary isolation bund construction).	
Where possible it is proposed to bury the water supply pipeline from Bland Creek Palaeochannel borefield to the Project.	The water supply pipeline from Bland Creek Palaeochannel Borefield to the Cowal Gold Project site was buried as the pipeline was constructed across the dry bed of Lake Cowal.	**Compliant**

Pipeline construction to the east of the lake above the flood levels July 2004.

Pipeline trench across Lake Cowal (July 2004)

Pipeline route January 2005 following trench rehabilitation

5.13.2.2 Environmental Assessment Mine Extension Modification 2013

Environmental Assessment - Cowal Gold Mine Extension Modification Appendix B - Hydrological Assessment was conducted by Gilbert & Associates, and peer reviewed by Emeritus Professor Tom McMahon in September 2013. The Hydrological Assessment indicated that the existing water management system designed for the Cowal Gold Operations would manage any project water potential impacts that may occur from the development of the Modification 11.

The Cowal Gold Mine was designed and developed to manage surface water runoff and quality with:

- Surface water on the mine site permanently isolated from Lake Cowal by the Up-catchment Diversion System (UCDS), directing runoff from areas unaffected by mining around the perimeter of the site, and an Internal Catchment Drainage System (ICDS), capturing all runoff and seepage from the Cowal Gold Operations development area, for re-use in the processing plant;
- The operational water balance that predicted as moderately negative requiring an external water supply. The water balance requirement is primarily obtained from the Bland Creek Palaeochannel Borefield;
- Mine waste rock material that has the potential to generate moderately saline seepage from the waste rock emplacements, is contained on site within the ICDS;
- Tailings storages are designed to contain runoff from a 1 in 1,000year ARI rainfall event. Any spill or seepage would be contained within the ICDS, ultimately reporting to the open cut; and
- Use of suitable soils and vegetation in rehabilitation of waste rock emplacements and the tailings storages are predicted to result in low salt fluxes in surface waters consistent with regional runoff water quality.

The key findings of the Hydrological Assessment were:

- The extension to the Cowal Gold Mine open pit would not change the existing lake isolation system that currently separates the open pit from Lake Cowal.
- The Modification would not change the design objectives of the ICDS and UCDS as described below:
  - The UCDS would continue to divert up-catchment runoff around the Cowal Gold Operations.

- The ICDS would continue to control runoff from active mining areas and would be extended to include a dedicated sediment control system to manage surface water runoff from the additional soil stockpile located in the north of ML 1535.

- Water balance modelling concluded, no spills from contained water storages in ML 1535 are predicted.
- No causal link between the existing operations at the Cowal Gold Mine and water quality in Lake Cowal was identified and negligible impacts to surface water quality were predicted due to the Modification.
- Negligible additional impacts to the catchment and hydrology of Lake Cowal were predicted due to the Modification.
- It is expected there would be continued reliable supply of water available from the Lachlan River trading market.
- Consistent with the approved Cowal Gold Mine, the final void water level would stabilise well below the pit spill level, and water captured in the final void would become hypersaline.

The Site Water Management Plan, Surface Water, Groundwater, Meteorological and Biological Monitoring Program and Erosion and Sediment Control Management Plan would be updated to incorporate the new site water management infrastructure for the Cowal Gold Mine Extension Modification 11.

5.13.2.3 Environmental Assessment Mine Life Extension 2016

The Environmental Assessment for the Cowal Gold Mine Life Modification 2016, in Appendix A - Hydrological Assessment, conducted by Hydro Engineering & Consulting Pty Ltd (dated 10 November 2016) the key findings were:

- The extension to the Cowal Gold Operations open pit would not change the existing lake isolation system that currently separates the 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).
- Water balance modelling concluded that no spills from contained water storages in ML 1535 are predicted.
- No causal link between the existing operations and water quality in Lake Cowal were 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.
- 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 behaviour for the existing Cowal Gold Operations).

5.13.3 Water Management Plan

[Consolidated Development Consent 14/98 MOD 13 condition 4.4]

A Site Water Management Plan prepared to satisfy the requirements of Development Consent 14/98 condition 4.1, was approved by DIPNR in 2003. The Site Water Management Plan was subsequently amended to reflect approved Modifications to the Development Consent. A consolidated revision of the Site Water Management Plan was completed in November 2010 following receipt of comments from NOW and DECCW. Revised Site Water Management Plans were also submitted to DP&I on 17 February 2012 and August 2013 and the requirements of these revised plans were implemented for the operation of the mine.

The Water Management Plan prepared to satisfy Development Consent 14/98 MOD 11 condition 4.4 was prepared and submitted to DP&E in May 2015 and approved on 19 November 2015.

Management measures in the current Water Management Plan Revision T (2015) are listed in Table 5.13.3.

Table 5.13.3: Water Management Plan (2015) Management Measures.

Section / Page No.	Water Management Plan Management Measures	Comments	Implementation Status
s.4/p.19	The Up-catchment Diversion System provides for the diversion of upper catchment runoff and the Internal Catchment Drainage System ensures the containment of potentially contaminated water within the site.	The Internal Catchment Drainage System (ICDS), Up-Catchment Diversion System (UCDS), and settlement ponds were constructed and are maintained in accordance with the Site Water Management Plan (2003) / Water Management Plan 2015.	**Compliant**
s.4/p.19	Surface waters that collect within the Internal Catchment Drainage System will be managed by a series of contaminated water storages, bunds and drains. Internal Catchment Drainage System contained water storages for CGM runoff comprise storages D1, D2, D3, D4, D5, D8A and D8B. Contained water storages D1 to D5, D8A and D8B will be used to contain runoff from the waste emplacements and general site area. Water will be pumped to contained water storages D6 or D9 (process water storages) for consumption during ore processing.	Construction of the D1 and D4 water storages were completed by January 2005 and water management pond D5 adjacent to the process plant area was completed in 2005. Toe drains and contained water storages, D2, D3, D8A and D8B were constructed in stages around the waste emplacements and ore stockpile areas between 2005 and 2007. Water storage D6 was constructed in 2006 and is the main source of make-up water for the process plant. Water management pond D9 for temporary storage of water to supplement the bore water supply, was completed in June 2007. D10 (approved under MOD 11) had not been constructed at the date of this audit (May 2017).	**Compliant**
s.4/p20	D9 will contain make-up water from the Jemalong irrigation channels and the Bland Creek Palaeochannel bore-field, groundwater, site catchment water, pit dewatering water and incidental rainfall, but will not contain supernatant water from the tailings storage facilities. Water within contained water storage D9 will be pumped to D6 as required.	Water management pond D9, commissioned in June 2007, contains make-up water from the Bland Creek Palaeochannel borefield and eastern saline borefield groundwater, site catchment water, pit dewatering water, incidental rainfall and Lachlan River water entitlements, but does not contain supernatant water from the tailings storage facilities. D9 holds approximately 641.4 ML and provides temporary storage of water to supplement the bore water supply for the project and provide certainty of water supply for the process plant needs.	**Compliant**
s.4/p20	The contained water storages will be managed in such a manner to minimise potential water quality impacts. Containment storages will be sized to contain all water to at least a 1 in 100 year average recurrence interval (ARI) rainfall	The water storages have been constructed to contain all water to at least a 1 in 100 year average recurrence interval (ARI) rainfall event (or a 1 in 1,000 year ARI rainfall event for those storages containing runoff from the plant site and tailings storage facilities).	**Compliant**

Section / Page No.	Water Management Plan Management Measures	Comments	Implementation Status
	event (or a 1 in 1,000 year ARI rainfall event for those storages containing runoff from the plant site and tailings storage facilities).		
s.4.1.1/p26	The Up-catchment Diversion System will be constructed to simulate endemic drainage features that are known to be stable in the prevailing hydrological regime.	The UCDS is a permanent structure that has been developed as disturbed areas of mine site occurred and conveys upper catchment water around the western edge of the Cowal Gold Operations (near the tailings storage facilities) into existing drainage lines to the north and south. The UCDS was constructed with rock stabilisation barriers to control flow rates down the channel following rainfall events.	**Compliant**
s.4.1.2/p26	The lake protection bund, site water and tailings storage facilities will be constructed to the requirements of the NOW, OEH and DSC (Development Consent 14/98 4dated 2003).	The lake protection bund, site water and tailings storage facilities were constructed in accordance with the requirements of the DLWC, EPA and DSC during 2004.	**Compliant**
s.4.1.2/p28	The lake isolation system was designed to hydrologically separate the open pit and Lake Cowal during development, mining and post-closure of the CGM.	The lake isolation system constructed in 2004, comprises an isolation embankment designed to prevent the inflow of water from Lake Cowal to area during periods of high lake water levels. The lake isolation system comprises: • temporary isolation bund; • lake protection bund; and • perimeter waste emplacement.	**Compliant**
 **Cowal Gold Mine pit showing temporary isolation bund, lake protection bund and perimeter waste emplacement (2016)**.			
s.4.1.2 / p31	The perimeter waste emplacement will be constructed to RL 223 m and will surround the pit to the north, east and south. The emplacement will be located behind the lake protection bund and will be constructed from oxide mine waste rock with the outer	The perimeter waste emplacement was constructed to RL 223m to the north, east and south of the open pit. The perimeter waste emplacement is located behind the lake protection bund.	**Compliant**

Section / Page No.	Water Management Plan Management Measures	Comments	Implementation Status
	face constructed from low salinity topsoils/soils.		
s.4.1.4 / p30	The Cowal Gold Operations integrated erosion, sediment and salinity control system is presented in the ESCMP and is designed to prevent the discharge of sediment-laden runoff from the mine site to the Lake Cowal.	The surface water runoff from disturbed areas of ML 1535 and mine landforms (waste emplacements, haul roads, stockpiles etc.) is managed through sediment control structures (as described in the Erosion and Sediment Control Management Plan).	**Compliant**
s.4.2.1 / p45	The saline ground water supply bore-field would be operated during times when the bore-field is not inundated by Lake Cowal.	Two saline groundwater supply bores (WB01 and WB20) established during 2008 were approved as production bores by NOW (Water Licenses No. 70BL233231 and 70BL233233) in 2010. No extraction from the saline groundwater bores occurred between April 2010 and 2014, during the inundation of Lake Cowal. No extraction from the saline ground water bores has occurred since 2014.	**Compliant Ongoing**
s.4.2.1 / p46	Groundwater inflow to the open pit is managed by dewatering bores and in pit sumps (which also collect incidental rainfall).	A ring of dewatering bores currently operates to control groundwater levels around the open pit. Horizontal drains in the pit wall accelerate depressurisation of the aquifer system by draining groundwater into the pit sumps.	**Compliant Ongoing**
s.4.2.2 / p.49	Water that accumulates within the open cut will be managed, in consultation with NOW, in accordance with a pit dewatering program.	Surface Water management structures have been constructed collect pit face seepage from collection drains. In-pit sumps in the floor of the pit and water management structures divert water from other areas outside the external bund around the pit to site runoff collection ponds. The in-pit sumps have sufficient capacity to remove ponded water in the pit to D6 or D3 within 48 hours. Contained water storage D6 has a capacity to store runoff from the 1 in 1,000 year ARI 48hour event above its normal operating level.	**Compliant Ongoing**
 **Cowal Gold Mine open pit dewatering sump. The dewatering borefield is located around the perimeter of the open pit.**			
4.2.4/p.51	Any runoff from the external face of the southern waste emplacement would report to the external contained water storage	Water storage D4 was constructed below the external (south-eastern) toe of the southern waste emplacement area and collects surface runoff from the	**Compliant**

Section / Page No.	Water Management Plan Management Measures	Comments	Implementation Status
	D4 constructed below the external (south-eastern) toe of the southern waste emplacement area	external face of the southern waste emplacement. 	
S4.2.4/p53	The quantity of water in the process plant area will be managed through the storage water level in D5 being kept as low as possible by regularly transferring accumulated water to the process water storage (D6) for use in the process plant; and the process plant contained storage (D5) will be provided with sufficient storage for containment of the 1 in 1,000 year ARI, 48hour duration event.	The quantity of surface runoff water from the process plant area is managed by keeping the storage water level in D5 low by regularly transferring accumulated water to the process water storage (D6) for use in the process plant. Contained water storage D5 collects all surface runoff from the process plant area, minimising the potential of contamination of surrounding waters or land.	**Compliant**
s.4.2.7/55	Monitoring of EC and pH in the decant of the active tailings storage facility would be undertaken on a weekly basis.	Weekly monitoring of pH and EC occurs at the decant tower of the active tailings storage facility. 	**Compliant**
s.4.2.8/p.55	In accordance with Development Consent 14/98 Condition 5.6, a site sewage treatment facility has been installed. Treated sewage and sullage will continue to be disposed of to the satisfaction of Bland Shire Council (BSC) and the EPA and in accordance with the requirements of the NSW Department of Health.	The permanent on-site sewage management system installed west of the Mine Workshop in 2006, is compliant with the requirements of Bland Shire Council (BSC),the EPA and Department of Health. (The management and treatment of sewage is addressed in the Hazardous Waste and Chemical Management Plan).	**Compliant**
S4.3.6 / p66	Development Consent Condition 4.5(c) requires the preparation of a monitoring program for the detection of any movement of the lake protection bund, water storage and tailings structures and pit/void walls during the life of the CGM, with particular emphasis on monitoring after any seismic events. A *Monitoring Program for the Detection of any Movement of*	The *Monitoring Program for the Detection of any Movement of Lake Protection Bund, Water Storage and Tailings Structures and Pit/Void Walls* was approved by the Director-General on 9 October 2003 and the monitoring program implemented. Monitoring points in the Lake Protection Bund (located each 200m on top of the	**Compliant**

Section / Page No.	Water Management Plan Management Measures	Comments	Implementation Status
	Lake Protection Bund, Water Storage and Tailings Structures and Pit/Void Walls prepared prior to the commencement of construction of the CGM will continue to be implemented during the operations and decommissioning phases of the CGO.	banks) were installed in accordance with the program. No significant movement has been recorded at any of the monument survey points.	
s.6.1/p.74	Water from the Lachlan River would continue to be accessed for the CGO by purchasing temporary water available from the regulated Lachlan River trading market.	Water has been purchased from the Lachlan Regulated River Water Source under Water Access Licences (WAL) obtained for the Cowal Gold Operations.	**Compliant**
s.9 / p.86	In accordance with Development Consent 14/98 MOD 11 Condition 4.4(a)(ii), waters that are captured behind the temporary perimeter bund will be recovered to a process water storage D6 for re-use.	Measures to manage and dispose of water captured behind the temporary perimeter bund are addressed in the Water Management Plan section 9.	**Compliant**
s.9 / p86	In accordance with Development Consent 14/98 MOD 11 Condition 4.3, there will be no disposal of water from the Internal Catchment Drainage System to Lake Cowal.	No water from the Internal Catchment Drainage System (ICDS) enters Lake Cowal. All water in the ICDS is directed to storage ponds and reused on site in the process plant.	**Compliant**
s.11 / p.89	In accordance with Development Consent condition 4.4(b), a strategy for decommissioning of water management structures, including water storages both in and around the mine site, the water pipeline and borefield infrastructure associated with the CGO, and the long-term management of the final void and lake protection bund, will be submitted five years before mine closure in consultation with DPI-Water, OEH, DRE and CEMCC and to the satisfaction of the Secretary.	The decommissioning plan for the water management structures, including water storages both in and around the mine site, the water pipeline and borefield infrastructure associated with the Cowal Gold Operations, and the long-term management of the final void and lake protection bund, will be prepared five years before mine closure.	**Not triggered**
s.12.3 / p.95	An Annual Review will be prepared in accordance with the requirements of Development Consent Condition 9.1(b) and will be submitted to the Secretary of the DP&E.	Annual Reviews prepared in accordance with Development Consent 14/98 MOD 13 condition 9.1(b), include reporting of site water components in section 7.	**Compliant**

5.13.4 Water Supply

[Consolidated Development Consent 14/98 MOD 13 condition 4.4(a)(ii)]

5.13.4.1 Environmental Assessment

5.13.4.1.1 Environmental Impact Statement Cowal Gold Project, 1998

The proposed raw water supply scheme for the Cowal Gold Project will involve collecting internal site runoff and developing groundwater resources:

- Internal Runoff Collection - Project area runoff would be collected by a series of bunds and collection ponds. Runoff from the waste rock emplacement, open pit area and other disturbed areas would be collected during rainfall events and transferred to the process water pond or other retention ponds for re-use in the processing plant or to satisfy other operational requirements.
- Open Pit Dewatering Borefield - A dewatering borefield would be constructed around the pit during the construction phase. The predicted dewatering rates are approximately 10 ML/day over the first three months, reducing to approximately 5 ML/day over the life of mine. The groundwater to be dewatered is highly saline and is not suitable for uses such as dust suppression on roads or potable water. Water obtained from the open pit dewatering would initially exceed make-up demands and would be stored in two transient storages constructed within each tailings storage until consumed in providing make-up process water.
- Bland Creek Palaeochannel Borefield - A borefield of four production bores would be developed within the Bland Palaeochannel located approximately 20 km to the east-northeast of the Project site. Groundwater investigations and supply feasibility assessments by Coffey Partners International Pty Ltd (1995b) indicate that the borefield could maintain a supply of up to 10 ML/day….The borefield reticulation system would include a break pressure/balancing storage after the final bore, a buried 600 mm (approx.) diameter pipeline to the Project site and power supply along existing road reserves. It is proposed to bury the pipeline, where possible, along its entire route.

5.13.4.1.2 Environmental Assessment - Mine Extension 2013

Water required for ore processing and related activities by the Cowal Gold Project would continue to be predominantly sourced from recycled process and site catchment water and pit dewatering and external water from the following sources:

- Site water supplies:
  - Return water from the tailings storage facilities.
  - Open pit sump and dewatering borefield.
  - Rainfall runoff from mine waste emplacements, and other areas, collected as part of the Internal Catchment Drainage System into on-site contained water storages.
- External water supplies:
  - Bland Creek Palaeochannel borefield comprises four production bores within the Bland Creek Palaeochannel is located approximately 20km east-northeast of the Cowal Gold ML 1535.
  - Saline groundwater borefield located in the south-east of ML 1535.
  - Eastern saline borefield located approximately 10 km east of Lake Cowal's eastern shoreline.
  - Licensed water accessed from the Lachlan River, supplied via a pipeline from the Jemalong Irrigation Channel Bore 4 pump station.

5.13.4.1.2 Environmental Assessment - Mine Life Extension 2016

Water supply modelling concluded there would be continued reliable supply of water available from the Lachlan River trading market and there would be negligible additional impacts to the catchment and hydrology of Lake Cowal due to the Modification 13.

5.13.4.2 External Water Sources

Bland Creek Palaeochannel Borefield

[Consolidated Development Consent 14/98 MOD 13 condition 4.1(b)]

The Bland Creek Palaeochannel Borefield supplies the majority of water required for the operation of the Cowal Gold Operations under the *Water Sharing Plan for the Lachlan Unregulated and Alluvial Water Sources 2012.*

Upper Lachlan Alluvial Groundwater Source, Upper Lachlan Alluvial Zone 7 Management Zone, with purchased water (delivered via the Jemalong irrigation channel), pit dewatering and captured surface run-off providing additional sources. The Bland Creek Palaeochannel borefield is located approximately 20 km to the east-northeast of the ML 1535 site, on the eastern side of Lake Cowal.

Consolidated Development Consent 14/98 MOD 13 condition 4.1(b) permits maximum daily water extraction from the bores (PB1 to PB4) under WAL 31864 of up to 15 ML/day and maximum annual extraction of up to 3,650 ML/year.

The Groundwater Contingency Strategy (i.e. that ceases pumping from the Bland Creek Palaeochannel Borefield when required to meet the groundwater trigger levels developed in consultation with the NSW Office of Water (now DPI-Water) and other groundwater users), was developed for the Cowal Gold Operations project. Groundwater levels in the Bland Creek Palaeochannel continue to be managed in accordance with the Groundwater Contingency Strategy, which involves the monitoring of groundwater levels with implementation of response measures should groundwater levels reach groundwater trigger levels.

No change to the existing daily or annual extraction limits from the Bland Creek Palaeochannel Borefield are required for Modification 11 and 13.

Eastern Saline Borefield

The Eastern Saline Borefield is located approximately 10 km east of the Lake Cowal eastern shoreline. Two (2) bores (SB01 and SB02) were drilled into the Cowra Formation within the Bland Creek Palaeochannel and are operated in accordance with Development Application (DA) 2011/0064 approved by the Forbes Shire Council. Building Certificates (No. 2010/0009) were issued by Forbes Shire Council for the two groundwater production bores and buried water supply pipeline associated with the Eastern Saline Borefield.

Saline Groundwater Supply Borefield

In July 2008, two approved production bores (1535WB01 and 1535WB39), were drilled in the Cowra Formation, forming the saline groundwater supply borefield within ML 1535 to the south-east of the Cowal Gold Operations open pit. Bore 1535WB20 was drilled and decommissioned, as it failed to yield and the bore was capped before inundation of Lake Cowal in August 2010.

Water extraction from the saline groundwater supply is licensed by Water Access Licence (WAL) 31904 under Water Sharing Plan for the Lachlan Unregulated and Alluvial Water Sources, 2012. WAL 31904 allows for an annual extraction limit of 3,660 units (~3,660 ML). (The two (2) existing saline groundwater supply bores were shut-down and capped when Lake Cowal was inundated in 2010 and had remained capped and unused for water supply up to the date of this audit (May 2017).

5.13.4.3 Surface water sources within ML 1535

Mine infrastructure and landforms for the Cowal Gold Operations have been constructed within a contained catchment (i.e. the Internal Catchment Drainage System) on the ML 1535 development area. The Up-Catchment Diversion System and the lake isolation bund system protect Lake Cowal from the Cowal Gold Operations activities.

The various Cowal Gold Operations water management system components and their linkages (via system transfers) are shown in schematic form in Figure 5.13.4.4.

The main water demand for the Cowal Gold Operations process plant has averaged 17.2 ML/day (of which up to approximately 8 ML/day has been supplied by on-site recycling of return water and incident rainfall from the Tailings Storage Facilities decant ponds).

The Site Water Management Plan (2003) was implemented for the Cowal Gold Operations, with all water management ponds and surface water drainage structures completed during initial construction of Cowal Gold Project development. The new process water supply pond D10 approved in Consolidated Development Consent

MOD 11 to provide storage of raw water for use in the Cowal Gold Operations process plant had not been constructed at the date of this audit (May 2017).

5.13.4.4 Water Storage on Site

[Consolidated Development Consent 14/98 MOD 13 condition 4.4(a)(ii)]

The Internal Catchment Drainage System (ICDS) comprises six internal drainage catchments (each served by a contained water storage for runoff collection) and two water supply storages (D6 and D9), which taken together provide for control of all Cowal Gold Operations site water within ML 1535. With the exception of D5, the contained water storages are designed to collect runoff generated from their contributing catchment during a 1 in 100 year ARI rainfall event of 48hours duration.

All water storages with the exception of D1 and D4, would if overtopped ultimately spill to the open pit. Storages D1 and D4 are equipped with pumps to enable dewatering of these storages to D6 and/or D9 between rainfall events. Runoff from the outer batters of the perimeter waste rock emplacement and ponds against the temporary isolation bund, would be pumped to D6 between rainfall events, if required.

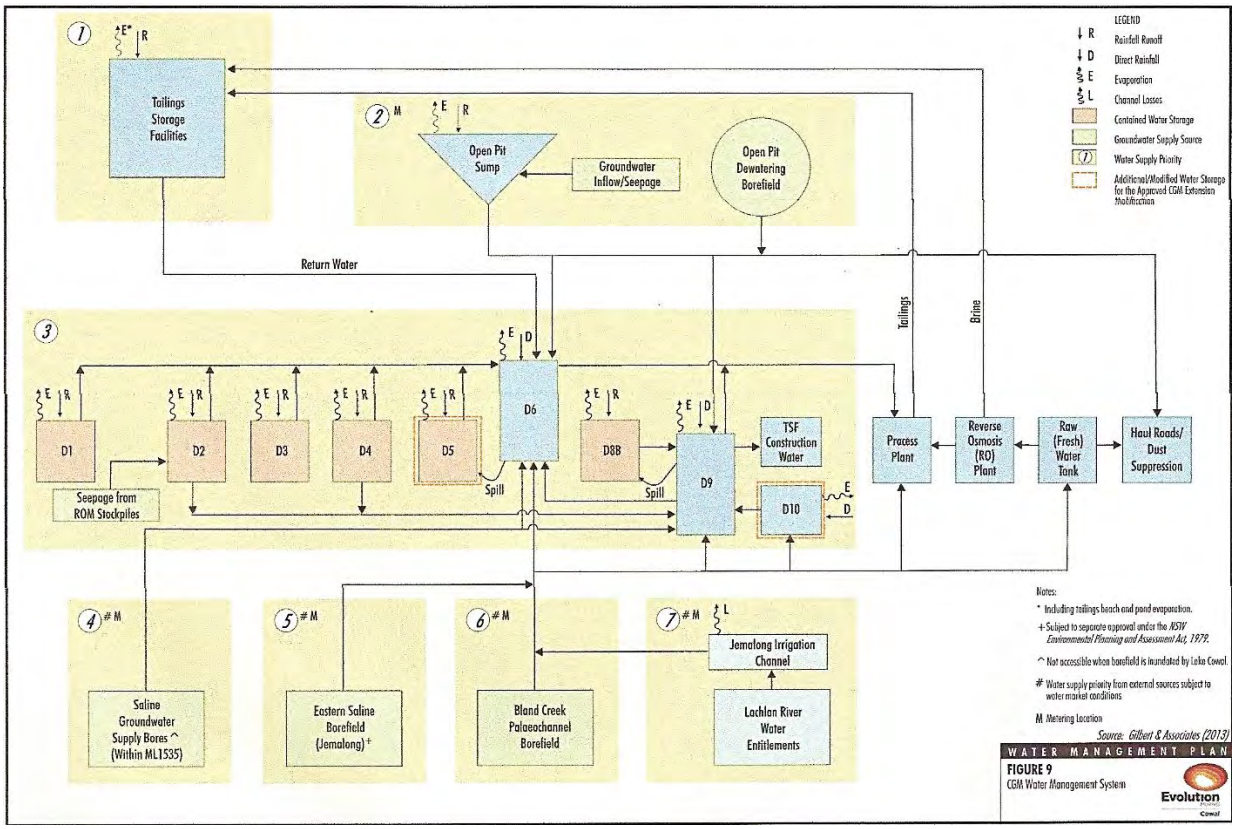


Figure 5.13.4.4: Cowal Gold Operations Water Management System and Linkages (via system transfers).

The mine water management containment storages that control site water are:

Storage No.	Catchment / Function	Approximate Storage Capacity
D1	Runoff from northern perimeter of the northern waste rock emplacement. Collected water is pumped to D6.	57 ML
D2	Runoff/seepage from run-of-mine (ROM) and low grade stockpile areas from the northern waste rock emplacement area, the batters of the northern tailings storage facility and other areas within the Internal Catchment Drainage system (ICDS). Collected water is pumped to D6 or D9.	195 ML
D3	Runoff from perimeter catchment surrounding the open pit and perimeter waste rock emplacement areas. Collected water is pumped to D6.	39 ML
D4	Runoff from the southern perimeter of the southern waste rock emplacement. Collected water is pumped to D6 or D9.	69 ML
D5	Process plant area drainage collection. Water is pumped to D6.	92 ML
D6	Process water supply storage. Main source of process plant make-up water requirements.	10 ML
D8B	Runoff from southern waste rock emplacement, the batters of the southern tailings storage facility and other areas within the ICDS (including ROM areas). Water is pumped to D9.	43 ML
D9	Process water supply storage. Storage for raw water. Water is pumped to D6. Some water used for tailings storage facilities lift construction.	726 ML
D10	Process water supply storage. Storage for raw water. Water is pumped to D9. ((Additional storage for the CGO Extension Modification 11).	1,500 ML

5.13.5 Water Management Plan – Water Supply

[Consolidated Development Consent 14/98 MOD 13 condition 4.4(a)(ii)]

The Water Management Plan prepared to satisfy Development Consent 14/98 MOD 11 condition 4.4, was prepared and submitted to DP&E in May 2015 and approved on 19 November 2015. Management measures in the Water Management Plan (2015) related to water storage are listed in Table 5.13.8.

Table 5.13.8: Water Management Plan – Water Supply

Section / Page No.	Water Management Plan (2015)	Comments	Implementation Status
s.4.2.1 / p40	The quantity of water approved for extraction from the Bland Creek Palaeochannel is 15ML/d and 3,650 ML/annum (Development Consent 14/98 condition 4.1(b)).	**Year** / **Annual Water extraction from Bland Creek Palaeochannel Bore-field** 2016: 948 2015: 1385 ML The water extraction from the Bland Creek Palaeochannel bore-field has not exceeded 15 megalitres (ML)/day or 3650 ML/year.	**Compliant**
s.4.2.1 / p40	Extraction from all the Bland Creek Palaeochannel bores will be metered to ensure the quantity of groundwater extracted from the Bland Creek Palaeochannel Borefield does not exceed the above limits.	All bores from the Bland Creek Palaeochannel Borefield are continuously metered to monitor the quantity of groundwater extracted from the Bland Creek Palaeochannel Borefield.	**Compliant Ongoing**
s.4.2.1 / p40	Groundwater levels associated with the Bland Creek Palaeochannel Borefield are monitored on a continuous basis	Groundwater level monitoring data is available from DPI-Water bore GW036553 on a continuous basis for groundwater	**Compliant**

Section / Page No.	Water Management Plan (2015)	Comments	Implementation Status
	by the DPI-Water monitoring bore GW036553.	levels associated with the Bland Creek Palaeochannel Borefield.	
S4.2.1/p45	Monitoring of groundwater abstraction and water levels for the eastern saline borefield will be undertaken to allow the future yield of the Cowra aquifer system to be assessed as part of the mine's ongoing water supply strategy.	Groundwater quality monitoring for the eastern saline borefield is conducted quarterly in parallel with monitoring of groundwater quality in the Bland Creek Palaeochannel Borefield, when extraction from the eastern saline borefield is occurring.	**Compliant**
s.4.2.1/ p.47	Surface water runoff within the CGO area will be collected by a series of bunds and collection ponds. Runoff from the waste emplacements, open pit area and other disturbed areas will be collected during rainfall events and transferred to the process water pond or other retention ponds for re-use in the process plant or other operational requirements.	The mine water management system includes nine (9) containment storages that provide for control and management of site water. A further process water supply pond D10 was approved under MOD 11 to provide storage of raw water for use in the Cowal Gold Operations process plant. D10 had not been constructed at the date of this audit (May 2017).	**Compliant**
s.6.2.2/p.77	Groundwater from the Bland Creek Palaeochannel would be used where make-up water from all other on-site sources (e.g. tailings storage facilities, pit dewatering, reuse of site runoff captured in the various site collection storages and pumping from the saline groundwater supply borefield) is inadequate.	Groundwater from the Bland Creek Palaeochannel is used where make-up water from all other on-site sources is inadequate. Groundwater levels in the Bland Creek Palaeochannel are managed in accordance with the Groundwater Contingency Strategy, monitoring program of groundwater levels.	**Compliant**
s.7.3 / p82	Compensation will be provided to affected landholders based on an assessment of the economic impact of any additional inundation of productive land. The long-term compensation package will be developed in consultation with the DPI-Water and the OEH and to the satisfaction of the Secretary of DP&E.	During 2010 short and medium to long term strategies for water management in the region were developed and components of the strategies presented to the landowners, with actions to be implemented agreed in consultation with the DPI-Water. Empirical data (e.g. measured changes to the Nerang Cowal flood regime and the consequent measured effect of the inundation of productive land) obtained from investigations undertaken to determine appropriate event based compensation would be utilised to determine an appropriate one-off long-term compensation package.	**Not triggered**

5.13.6 Water Monitoring Program

[Consolidated Development Consent 14/98 MOD 13 condition 4.5(b)]

Water monitoring has been conducted in accordance with the Water Management Plan section 4.3 and the Surface Water, Groundwater, Meteorological and Biological Monitoring Program section 4, in accordance with Development Consent 14/98 MOD 13 condition 4.5(b).

Management measures in the Water Management Plan related to water monitoring programs are provided in Table 5.11.6.

Table 5.11.6: Water Management Plan Commitments - Water Monitoring Programs

Section / Page No.	Water Management Plan Commitments (2015)	Comments	Implementation Status
s.4.3.1 / p.57	Meteorological monitoring will continue for the duration of the Cowal Gold project to provide site specific meteorological data for the on-going assessment of the site's water balance and effectiveness of relevant impact mitigation strategies	An automatic weather station providing continuous monitoring of rainfall, temperature, wind speed and direction, barometric pressure, humidity and solar radiation was installed at the Cowal Gold Operations site in accordance with Development Consent 14/98 MOD 13 condition 6.2. Meteorological data is also available from several local Bureau of Meteorology Stations.	**Compliant Ongoing**
s.4.3.2 / p58	Surface water monitoring will be undertaken at specific areas within the ML area including the contained water storages, Up-catchment Diversion System, Internal Catchment Drainage System, open pit and tailings storage facilities.	Surface water monitoring is undertaken in accordance with the Surface Water, Groundwater, Meteorological and Biological Monitoring Program and the requirements of EPL 11912.	**Compliant Ongoing**
s.4.3.2 / p61	Surface water monitoring will continue to be undertaken in Lake Cowal at monitoring sites along the six transects used during the baseline monitoring programme (described in the SWGWBMP) to enable evaluation of water quality data against records of baseline monitoring, in accordance with Development Consent Condition 4.4(a)(ii).	Surface water monitoring has been conducted at monitoring sites along the transects in Lake Cowal when the lake water level was at or above 204.5m AHD during 2010-2013 and 2016-2017.	**Compliant Ongoing**
S4.3.3/p62	Groundwater monitoring will continue to be undertaken at monitoring sites used during the baseline monitoring program (described in the SWGWBMP) (where those sites are still operational) and additional monitoring sites specifically related to CGM potential groundwater impacts.	Groundwater monitoring is undertaken at monitoring sites in accordance with the Water Management Plan and Surface Water, Groundwater, Meteorological and Biological Monitoring Programand the requirements of EPL 11912.	**Compliant Ongoing**
S4.3.3/p64	Groundwater monitoring results will be interpreted and reported in the Annual Review which will be made	Groundwater monitoring results are assessed / interpreted and reported in the Annual Review	**Compliant**

Section / Page No.	Water Management Plan Commitments (2015)	Comments	Implementation Status
	available on project website in accordance with Development Consent Condition 9.4(a)(vii).	(Section 7.3). The Annual Reviews are available on Evolution Mining website.	
S4.3.4/p64	The biological monitoring program will be used to assess the potential impact on fish and aquatic invertebrates and will be undertaken by suitably qualified and experienced personnel to the satisfaction of DPI-Fisheries as required by Development Consent Condition 4.5(b).	Biological monitoring to assess fish and aquatic invertebrates were undertaken in the waters of Lake Cowal by FRC Environmental between 2011 and February 2014, when water was present in the lake. Lake Cowal water monitoring resumed during 2016 following heavy rainfall events that resulted in inundation of the lake floor above the 204.5m AHD.	**Compliant Ongoing**
s.4.3.4/p.65	Analyses of sediment taken from lake monitoring points would be undertaken to assess the bio-availability of metals within the bed of Lake Cowal. The water quality monitoring program and sediment monitoring program will combine to provide data relevant to the bio-availability of metals.	Surface water and sediment monitoring of Lake Cowal was undertaken by McMahon Earth Science - D M McMahon Pty Ltd and reported in *"Surface Water and Sediment Sampling and Analysis Lake Cowal"* in 2013 and 2014 and a review completed in 2016 when the lake was again inundated.	**Compliant Ongoing**
S4.3.6/p66	Development Consent Condition 4.5(c) requires the preparation of a monitoring program for the detection of any movement of the lake protection bund, water storage and tailings structures and pit/void walls during the life of the CGO, with particular emphasis on monitoring after any seismic events. This program will continue to be implemented during operations and decommissioning phases of the Cowal Gold Operations.	A *Monitoring Program for the Detection of any Movement of Lake Protection Bund, Water Storage and Tailings Structures and Pit/Void Walls* was approved by the Director-General on 9 October 2003. Monitoring points in the Lake Protection Bund (located each 200m on top of the banks) were installed and monitoring conducted in accordance with the program. No significant movement has been recorded at any of the monument survey points.	**Compliant Ongoing**

5.13.7 Water Monitoring Results

5.13.7.1 General Water Monitoring Comments

A general summary of the monitoring of the Cowal Gold Operations site water management system and monitoring during 2016 and 2017 period indicated that:

- the Operational Water Budget for the Cowal Gold Operations is subject to an annual review and revision by process plant staff based on the available water usage from the previous 12 months.
- Water extracted from the Bland Creek Paleochannel Borefield has been compliant with the requirement under Development Consent 14/98 MOD 13 condition 4.1(b) of less than 15 ML/day between January 2016 and May 2017 and a maximum annual extraction of 3,650 ML/year between January 2016 and December 2017.

- The open pit dewatering bore-field established external to the perimeter of the E42 Open Pit and water from the open pit de-watering sumps are used in the process plant ore treatment via Pond D6. Some water has also been used for dust control in the open pit and on the internal haul roads.
- EPL trigger rainfall monitoring events (i.e. >20mm/24hrs) for the surface water monitoring program occurred on the following dates between April 2016 and May 2017 and surface water monitoring was conducted in accordance with the Water Management Plan monitoring program:

9 May 2016	28.2 mm
4 June 2016	37mm
20 June 2016	29.6mm
8 July 2016	20.2mm
3 September 2016	27mm
10 September 2016	22.6mm
19 September 2016	28mm
12 November 2016	24.6mm
21 arch 2017	25.4mm
31 March 2017	21.2 mm

- Surface water and sediment quality assessment of Lake Cowal was undertaken by McMahon Earth Science - D M McMahon Pty Ltd and reported in *"Surface Water and Sediment Sampling and Analysis Lake Cowal"* in 2016, following inundation of the lake after 484.2mm of rain between May and September 2016. The report concluded:

  "A comparison of the 2016 Lake Cowal surface water quality results against the baseline water quality results from 1991 – 1992 and 2010-2014 indicates that the 2016 monitoring results are generally similar.

  A comparison of the 2016 Lake Cowal surface water quality results against the ANZECC and ARMCANZ (2000) default trigger values for surface water (lakes) indicates that the 2014 monitoring results (totals and dissolved) were below or marginally above the default trigger values. Heavy metal readings are similar to historical data. Overall, the pH and Electrical Conductivity is within the range of values previously recorded.

  The 2016 sediment results compared against the ANZECC and ARMCANZ (2000) were all below the recommended trigger values and similar to historical data.

Summary comments on specific water monitoring is presented below:

5.13.7.2 Surface Water

[Consolidated Development Consent 14/98 MOD 13condition 4.5 (a)(i) and (b)]

Surface water monitoring conducted at specific areas within ML 1535 included the Internal Catchment Drainage System and contained water storages D1, D2, D3, D4, D5, D8A and D8B and Lake Cowal.

The surface water monitoring network was updated for MOD 11 to include water quality monitoring on the soil stockpile area sediment basin in the north of ML 1535 for parameters including pH, EC, suspended solids, at a frequency consistent with other sediment control structures on the Cowal Gold Operations site.

A review of the surface water monitoring program (including a review of the frequency of monitoring and program parameters) is conducted annually on the data entered into the monitoring database when water quality trends are identified for reporting in the Annual Review, and to validate the predicted performance of the site water management system.

The surface water quality monitoring results for 2016 indicated that the pH values of on-site water quality monitoring data remained consistent with previous year's results and Electrical Conductivity of all sites reflected rainfall affecting dam volumes.

5.13.7.2 Lake Cowal Water Quality

[Consolidated Development Consent 14/98 MOD 11 condition 4.5(b)]

Background water quality reported in the *Environmental Impact Statement Cowal Gold Project 1998* was based on results of an intensive sampling program conducted between 1991 and 1992.

The Lake Cowal water monitoring program was supplemented with additional quarterly monitoring campaign of Lake Cowal inflow water (including the Lachlan floodway, irrigation channel, Bland Creek and Sandy Creek inflow sites) when Lake Cowal was inundated.

A review of available surface water quality monitoring data for the lake-fill event (2010-2013) was undertaken by Gilbert & Associates (2013) and compared to the (pre-mining) baseline data.

Results from the recent lake-fill event monitoring program were compared with values obtained from sampling programs conducted in the baseline period (i.e. prior to commencement of mining operations) and to ANZECC/ARMCANZ (2000) guideline values.

During the 2016, Lake Cowal was completely inundated following high rainfall events throughout the winter months and subsequent flooding of the Lachlan River and Bland Creek. Lake Cowal peaked at a height of 207.49m RL on the 10th October, before receding to 205.9m by the end of December 2016.

The summary of results of the DMM surface water monitoring in October 2016 indicated:

Baseline / Background water quality	Recent Lake-fill event Monitoring Results - 2016
Analysis of lake surface water Baseline pH results for Lake Cowal water quality between 1991 to 1992, ranged from pH 7.72 to 9.8 with low to moderate suspended solids levels of 24 to 222 mg/L (North Limited, 1998). The average recorded pH level (pH 8.0) for the 201-2014 lake-fill event was lower than the average recorded for baseline conditions (pH 8.48), and slightly higher than the average pH level (pH 7.5) recorded at the Lake Cowal inflow sites (i.e. tributaries to Lake Cowal). No baseline data for turbidity from 1991 – 1992 is available.	The pH results recorded during the 2016 Lake Cowal inundation ranged from 7.05 to 8.76 with a mean of 7.8. This is slightly lower than the baseline water quality data collected in 1991 – 1992**,** with the maximum being slightly above the ANZECC and ARMCANZ (2000) upper level of 8.0 and 2011 results. The suspended solids results ranged from 13 to 417 mg/L with a mean of 145 mg/L which is similar to the 2013 results and below 2014 results. The ANZECC and ARMCANZ (2000) do not include a recommended guideline trigger value for suspended solids. Turbidity results ranged from 57 to 644 mg/L NTU with a mean of 366 mg/L. The turbidity results are above the ANZECC and ARMCANZ (2000) level of 20 mg/L for slightly disturbed ecosystems (lakes). ANZECC and ARMCANZ (2000) note that lakes in catchments with highly dispersive soils such as Lake Cowal will have high turbidity. These results are similar to upper values recorded in 2013 and 2014.
Baseline electrical conductivity (EC) varied between 222 and 1,557µS/cm (North Limited, 1998) and appeared to be inversely related to lake volume (i.e. solute concentrations increased as lake volumes decreased). Average EC in the Lake Cowal water over the 2010-2014 lake-fill event was lower than the average recorded for baseline conditions.	The 2016 Electrical conductivity EC results ranged from 119 to 1350 µS/cm with a mean of 583 µS/cm and is consistent with previous findings measured at the lake transect sites during the baseline period in 1991 to 1995 (881 µS/cm).
Metals Analysis Results of lake surface water - The mean 2014 monitoring results for total heavy metals marginally exceeded ANZECC and ARMCANZ (2000) default	The mean 2016 monitoring for total heavy metals marginally exceeded the ANZECC and ARMCANZ (2000) default trigger values for Nickel, Lead and Zinc as was the case in previous years.

Baseline / Background water quality	Recent Lake-fill event Monitoring Results - 2016
trigger values for Arsenic, Nickel, Lead and Zinc, as was the case in 2011 and 2012 for Lead and Zinc and in 2013 for Nickel.	
Lake inflow surface water results - The average pH level (pH 7.5) recorded at the Lake Cowal inflow sites (i.e. tributaries to Lake Cowal) were slightly lower than the Lake Cowal results.	Lake inflow surface water monitoring October 2016: **Heavy Metals** The mean water quality results for the lake inflow sites have generally been similar to the water quality results recorded at the lake surface water monitoring sites. All mean total and dissolved heavy metal readings for 2016 were equal to or lower than the 2014 readings.
Sediment sampling analysis The overall mean EC results for 2010 was 91 µS/cm. The mean heavy metal results 2010 – 2014 were below the ANZECC and ARMCANZ (2000) sediment trigger values for extractable metals.	***Electrical Conductivity (EC)*** EC results ranged from 45 to 218 µS/cm with a mean of 105 µS/cm. The overall mean EC for 2016 is lower than the 2012, 2013 and 2014 means. The ANZECC and ARMCANZ (2000) recommended guideline trigger values for sediments do not include a trigger value for EC however electrical conductivity trends continue to be monitored at Lake Cowal. ***Heavy Metals*** The mean heavy metal results for 2016 were similar to the mean heavy metals results for 2010 – 2014 with some minor variation noted. Mean heavy metals results were below the ANZECC and ARMCANZ (2000) sediment trigger values for extractable metals.

As surface runoff and water within the Cowal Gold Operations area is fully contained within the ICDS, there was no obvious link between the mining operations and the water quality in Lake Cowal, as groundwater including any seepage from on-site storages, would flow toward the mine pit (Coffey Geotechnics, 2013).

5.11.7.3 Lake Protection Bund

[Consolidated Development Consent 14/98 MOD 13 condition 4.5 (b)]

Water monitoring of sites P1, P2 and P3, close to the Lake Protection Bund exhibited elevated pH values in February 2011 compared to sites on the opposite side of Lake Cowal. Elevated pH levels were also recorded near the Cowal Gold Operations in February 2012 although similar levels were measured on the opposite side of the lake at that time at site C1, which indicated that pH was elevated at sites near and distant from the Cowal Gold Mine.

5.13.7.4 Other On-Site Water Quality Monitoring

Monitoring of pH, Electrical Conductivity (EC) and Total Suspended Solids (TSS) levels in the UCDS between 2007 and 2016 when water was present in the UDCS exhibited pH ranging from 6.1 to 9.7, EC ranged from 61 to 2,220 µS/cm, and TSS ranged from 4 to 1,300 mg/L.

pH, EC and TSS were also monitored at on-site contained water storages and the open pit from 2007 to 2016. Ranges of pH were recorded from 4.4 to 10.1, EC between 112 and 142,700 µS/cm and TSS from 1 to 1,630 mg/L. High recorded EC values reflect the use of water supplied from saline groundwater bores and saline groundwater inflow to the open pit. It should be noted that all this water is used on site (mainly in the process plant) and no discharge to the environment occurs from any of the contained water storages.

5.13.10 Groundwater

[Consolidated Development Consent 14/98 MOD 13 condition 4.5 (a)(ii)]

5.13.10.1 Environmental Assessment

[Environmental Assessment - Cowal Gold Mine Extension Modification 2013]

The Environmental Assessment - Cowal Gold Mine Extension Modification 20123 Appendix A - Hydrogeological Assessment, was conducted by Coffey Geotechnics and peer reviewed by Dr Frans Kalf (Kalf and Associates) in September 2013. The key findings of the Hydrogeological Assessment relevant to potential impacts associated with continued mining operations at the CGO were:

- Groundwater inflow to the open pit did not increase during the recent lake-fill event, 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 2013.
- Groundwater drawdown due to open pit mining and extraction from 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.
- There are no known users of the saline aquifers surrounding ML 1535.

Based on the above, negligible incremental impacts to Lake Cowal and other groundwater users were predicted from the open pit mining for the Modification 11 (2013).

In accordance with Development Consent 14/98 MOD 11 condition 4.5 (a)(ii), a groundwater monitoring program for CGO has been developed. Groundwater monitoring is undertaken at monitoring sites used during the baseline monitoring program for the mine development area. The groundwater monitoring program relates to aquifers beneath the ML area and regionally within the Bland Creek Palaeochannel aquifer.

Groundwater monitoring at and around the Cowal Gold Operations project area commenced as bore licences were obtained under the *Water Act, 1912* (NSW) Part 5.

5.13.10.2 Water Management Plan - Groundwater

[Consolidated Development Consent 14/98 MOD 13 condition 4.4(a)(ii)]

Management measures and commitments in the Water Management Plan (2015) are listed in Table 5.13.10.2.

Table 5.13.10.2: Water Management Plan (2015) - Groundwater

Section / Page No.	Water Management Plan (2015)	Comments Implementation Status	Implementation Status
s.6.2.2 / p74	The groundwater resource contained within the Bland Creek Palaeochannel is partially utilised by land holders in the area for irrigation and stock watering purposes. In the event that groundwater levels in GW036553 or GW036553 drop below the trigger levels in the Groundwater Contingency Strategy, contingency measures will be implemented in consultation with the DPI-Water The groundwater level associated with the Bland Creek Palaeochannel Bore-field is monitored on a continuous basis at the DPI-Water groundwater monitoring bore on Burcher Road (GW036553).	In the event that the groundwater level in GW036553 is below RL 137.5m AHD, contingency measures would be implemented in consultation with the DPI-Water: • investigate the groundwater level in the Trigalana bore (GW702286) or any other impacted stock and domestic bores; • determine the pump setting in relevant stock and domestic bores; • determine the drawdown rate in GW702286 and other impacted stock and domestic bores; • develop an impact mitigation plan for impacted stock and domestic bores; and/or • set up an alternative water supply for the owner of GW702286 and other	**Not triggered**

Section / Page No.	Water Management Plan (2015)	Comments Implementation Status	Implementation Status
		owners of stock and domestic bores, if necessary. In the event that the groundwater level in GW036553 was below RL 134 m AHD, one or both of the following contingency measures would be implemented in consultation with the DPI-Water: • alter the pumping regime to maintain the water level in the impacted stock and domestic bores; or • maintain a water supply to the owner/s of impacted stock and domestic bores.	
.6.2.2/p.77	Groundwater from the Bland Creek Palaeochannel would be used where make-up water from all other on-site sources (e.g. tailings storage facilities, pit dewatering, reuse of site runoff captured in the various site collection storages and pumping from the saline groundwater supply borefield) is inadequate.	Gropundwater from the Bland Creek Palaeochannel is used where make-up water from all other on-site sources is inadequate. Groundwater levels in the Bland Creek Palaeochannel are managed in accordance with the Groundwater Contingency Strategy, with monitoring of groundwater levels. Response measures would be implemented if groundwater levels reach trigger levels in the Groundwater Contingency Strategy that was developed in consultation with the NOW and other groundwater users.	**Compliant**
s.6.2.2 / p79	Groundwater levels in the Bland Creek Palaeochannel are managed in accordance with the existing Groundwater Contingency Strategy, which involves the monitoring of groundwater levels, and the implementation of response measures should groundwater levels reach trigger levels developed in consultation with the DPI-Water and other groundwater users. The trigger levels are: • Palaeochannel Borefield) – trigger levels of 137.5 and 134 m AHD. • Bore GW036597 (Billabong area) – trigger level 145.8 m AHD. • Bore GW036611 (Maslin area) – trigger level 143.7 m AHD.	Groundwater levels at Bore GW036553 are monitored on a continuous basis by DPI-Water. Monitoring of groundwater levels have not exhibited exceedance of the trigger levels so implementation of response measures developed in consultation with the DPI-Water have not been triggered.	**Not triggered**

Groundwater monitoring results are interpreted and reported annually. Monitoring data is entered on to the Cowal Gold Operations monitoring database to enable trends to be identified.

Coffey Geotechnics (2017) prepared a Groundwater Monitoring Review Report that provides a detailed description and interpretation of the groundwater level and water quality monitoring results during 2016. The groundwater monitoring results have demonstrated:

- The Cowal Gold Operations groundwater system generally shows limited response to rainfall. The main groundwater level response is to pumping for water supply and pit dewatering.
- Piezometric levels decline toward the pit with little reduction below the pre-mining level of approximately 200 m AHD at distances greater than approximately 2 km from the pit centre. The zone of influence after 11 years of mine dewatering at the Cowal Gold Operations is small (around 2 km in radius), indicating low lateral permeability;
- Monitoring of groundwater commenced for the tailings storage facilities prior to placement of any tailings. The dewatering piezometers installed around the mine pit area have been sampled in accordance with the EPL and results reported to the EPA in the EPL Annual Return and in the Annual Review. The monitoring of groundwater quality has continued in piezometers that have been retained on the mine lease area to provide background data, in addition to the EPL specified monitoring points.
- The groundwater quality results and trends reported in the Coffey's assessment illustrate that the water management control measures for containment of mine site water and control of runoff from the tailing storage facilities and waste rock emplacements appear to have prevented groundwater contamination.
- A localised increase in groundwater levels south of the southern tailing storage facility is related to the movement of seepage from the tailing storage facility. Groundwater chemistry has remained relatively stable at monitoring bores MON02A and MON02B and the direction of seepage flow towards the open pit is consistent with the seepage flow direction predicted in the EIS and previous hydrogeological assessments (Coffey, 2011b and 2012); and
- Physiochemical parameters pH and EC have generally remained stable for the groundwater data reviewed since mining operations began in 2004. Some pH results are below the ANZECC 2000 trigger value of pH 6.5, but groundwater pH levels have been similar to baseline EIS levels.
- Electrical Conductivity (EC) in groundwater within ML1535 generally remained stable between 2004 and 2017, and are similar to, or higher than, the baseline EIS levels.
- Trends in major ions have generally remained stable, though statistical analyses suggest slight increases in sodium concentrations for two of the seven Bland Creek Palaeochannel bores (BLPR1 and BLPR2) and some of the monitoring bores surrounding the pit and TSF areas. In general, a broad trend of increasing sodium concentrations is seen between 2004 and 2010, beyond which sodium concentrations begin falling. This trend is stronger for the mine site than for the Bland Creek Palaeochannel borefield, suggesting the cause may be related to severe drought conditions between 2004 and 2010.

- Mine site sulphate concentrations appear to show an inverse correlation with annual rainfall), with increasing concentrations during sustained dry conditions.

- Fluctuations in pH, EC, sodium, sulphate and iron levels at the Bland Creek Palaeochannel borefield at bore BLPR2 may be related to bore completion or localised ground conditions, as the trend is not reproduced in other monitoring bores.

- Fluctuations in pH, EC, sodium, sulphate and bicarbonate levels at MON01B to the east of the northern TSF may reflect a response to increased rainfall recharge over this period.

- Variations in metal concentrations were considered to reflect the natural heterogeneity in ground conditions, rather than direct impacts from mining, since the regional groundwater system is located in a naturally metalliferous geological terrain.
- Local fluctuations in manganese and iron concentrations were evident in the pit area and this may be related to ground disturbance and proximity to the pit.
- Monitoring results for cyanide in groundwater have demonstrated that the concentrations have generally been less than the 4 µg/L (i.e. Limit of Reporting (LoR)) at all groundwater monitoring locations. The groundwater monitoring results indicate that there is no trend that cyanide has leached from the tailing storage facilities into the surrounding groundwater.

5.13.10.3 Bland Creek Palaeochannel

The Bland Creek Palaeochannel monitoring bores (BLPR1 to BLPR7) have been monitored for water quality since 2004. The data show an average salinity of around 2000 µS/cm, except for BLPR 3 (about 5,000 µS/cm). BLPR3 has a higher salinity because it is screened higher in the profile of the Lower Cowra Formation.

Based on the groundwater data, EC has remained relatively stable at all locations within the Bland Creek Palaeochannel monitoring bores since the commencement of the Cowal Gold Mine operations.

Development Consent 14/98 permits maximum daily water extraction from the Bland Creek Palaeochannel bores (PB1 to PB4) of up to 15 ML/day and maximum annual extraction of up to 3,650 ML/year. Extraction of water from the Bland Creek Paleochannel bore-field has not exceeded the allowable extraction rates or volumes during the operation of the mine and process plant between May 2016 and April 2017.

5.13.9 Conclusion

The Water Management Plan prepared to satisfy Development Consent 14/98 MOD 13 conditions provides an adequate program for the management of water and controlling the surface water quality from the disturbed areas of the Cowal Gold Operations site and groundwater quality and levels. The water monitoring program has been conducted in accordance with the Surface Water, Groundwater, Meteorological and Biological Monitoring Program and Erosion and Sediment Control Management Plan.

The independent revision of surface water monitoring data (David McMahon of McMahon Earth Science - D M McMahon Pty Ltd) concluded that *"A comparison of the 2016 Lake Cowal surface water quality results against the baseline water quality results from 1991 – 1992 and 2010-2014 indicates that the 2016 monitoring results are generally similar. A comparison of the 2016 Lake Cowal surface water quality results against the ANZECC and ARMCANZ (2000) default trigger values for surface water (lakes) indicates that the 2016 monitoring results (totals and dissolved) were below or marginally above the default trigger values. Heavy metal readings are similar to historical data. Overall, the pH and Electrical Conductivity is within the range of values previously recorded.*

The 2016 sediment results compared against the ANZECC and ARMCANZ (2000) were all below the recommended trigger values, apart from total Antimony. They were all similar to historical data."

The groundwater monitoring data review conducted by Coffeys Geotechnics in 2016 concluded that *"the groundwater quality results and trends reported illustrated that the full* containment of mine site water and water management control measures, and control of runoff from the tailings storage facilities and waste rock emplacements, have been successful and appear to have prevented groundwater contamination."

5.14 Hazardous Materials and Tailings Management

[Consolidated Development Consent 14/98 MOD 13 condition 5.1 to 5.7]

5.14.1 Hazardous Waste and Chemical Management Plan

[Consolidated Development Consent 14/98 MOD 13 condition 5.7]

A Hazardous Waste and Chemical Management Plan was prepared to satisfy Development Consent 14/98 condition 5.7 and approved by the Director-General in 2003. The Hazardous Waste and Chemical Management Plan was revised in March 2006 and has been regularly reviewed and updated as necessary with addenda between 2006 and 2016.

The Hazardous Waste and Chemical Management Plan was reviewed following granting of Development Consent 14/98 MOD 11 and it was considered that the current document met the requirements of the MOD 11 approval, and no revision was proposed.

5.14.2 Chemical Management

The requirements of the Hazardous Waste and Chemical Management Plan were implemented (e.g. bunded fuel and lubricant storage, bunded chemical storage facilities, etc) as Cowal Gold Operations were developed.

The approved Operations Emergency Response Plan (OERP) now forms part of the hazardous waste and chemical management procedures. The OERP was revised and submitted to DoP on 19 November 2010.

The Emergency Response Team (ERT) and other members of the Cowal Gold Operations workforce receive training in emergency response procedures. Numerous training exercises have been carried out by ERT, including some with external emergency services personnel.

The Chem Alert III system is used for all existing chemicals on site and approval via the system applies to the acquisition of any new chemicals brought onto the Cowal Gold Operations site (by the Company or its contractors).

The management and recycling / disposal of all chemical and hazardous wastes occurs under contract by J R Richards and Sons, through the Cowal Gold Operations waste storage and disposal area adjacent to the maintenance workshop area.

5.14.3 Waste Rock Emplacement

[Consolidated Development Consent 14/98 MOD 13 condition 5.1]

The management of waste rock from the Cowal Gold open pit has been undertaken generally in accordance with the Environmental Assessment Cowal Gold Project 1998, Development Consent 14/98 and the Mining Operations Plan. Modifications to Development Consent 14/98 have included increases to the final height of some areas of the northern and southern waste emplacements.

Waste rock is managed on emplacements surrounding the open pit consisting of:

- Northern Waste Rock Emplacement (NWRE) designed to contain the majority of the waste rock generated from the Cowal Gold Operations. The emplacement is located to the north-west of the open pit, adjacent to the low grade ore stockpile. NWRE runoff from the external faces reports to contained water storage D1 constructed below the north-eastern toe of the NWRE area and is dewatered by pumping to storage D6;
- Southern Waste Rock Emplacement (SWRE) is located to the south-west of the open pit, adjacent to the processing plant. The SWRE runoff from the external faces reports to contained water storage D4 constructed below the south-eastern toe of the SWRE area and is dewatered by pumping to storage D6 or D9.
- Perimeter Waste Rock Emplacement has been constructed to approximately RL 223 m AHD and surrounds the open pit to the north, east and south. The perimeter waste rock emplacement area forms part of the permanent lake isolation system. It provides a continuous elevated landform linking the NWRE and SWRE areas. Runoff from the perimeter waste rock emplacement reports to the water storage between the toe of the perimeter waste rock emplacement and the Temporary Isolation Bund. Water that accumulates in this area is returned to D6 for reuse on site.

5.14.4 Tailings Emplacement

[Consolidated Development Consent 14/98 MOD 13 condition 5.2]

The Northern Tailings Storage Facility (NTSF) and Southern Tailings Storage Facility (STSF) have been progressively constructed in accordance with the requirements of the relevant agencies and Development Consent 14/98 MOD 13 condition 5.2. The Tailings Storage Facilities are raised above the surrounding natural surface and, as such, their catchment area comprises only the area inside the confining embankments.

The Dam Safety Committee (DSC) provided a response to the Construction Report for the Tailings Storage Facilities in January 2009 advising that the review satisfies the Committee's requirements. Additional lifts to the tailings storage facilities are progressively constructed as required to receive the tailings material from the process plant.

The NTSF and STSF initially received tailings between March 2006 and May 2007 respectively. Tailings material is deposited into the Tailings Storage Facilities (TSF) as a slurry, discharged to only one TSF at any one time. Once the tailings level has reached the design level, discharge is switched to the other TSF while the next lift of the TSF embankment is constructed.

Rainfall collected and free water liberated during settling and consolidation of the tailings, accumulate in an internal (central) decant pond. Supernatant water from the decant pond of the active TSF is pumped to storage dam D6 for re-use in the processing plant. The TSF's have been designed to maintain a minimum freeboard sufficient to store at least the contingency 1 in 1,000 year ARI rainfall event at all times.

5.14.5 Conclusion

The Hazardous Waste and Chemical Management Plan has been revised regularly to address the changes in Cowal Gold Operations under the various Modifications to the Development Approval 14/98. The management procedures and protocols have resulted in best practice for any mine waste materials, chemicals transported to, stored and/or used on the site. The Hazardous Waste and Chemical Management Plan provides the processes and procedures on site for the management of all hazardous chemicals transported to, stored on, used in the process plant, and management of hazardous wastes generated on site.

The handling of fuels, oils, and chemicals on site is managed in accordance with the plans, audits and reporting required under Development Consent 14/98 condition 5.4, the Emergency Response Management Plan and Safety Management System.

All mining generated wastes (i.e. waste rock, tailings, contaminated material) on site are managed under the Hazardous Waste Management Plan and Mining Operations Plan.

Recyclable wastes and administrative/putrescible wastes are managed under contract with JR Richards and Sons (licenced waste contractors).

5.15 Cyanide Management

[Consolidated Development Consent 14/98 MOD 13 condition 5.3]

5.15.1 Cyanide Management Plan

[Consolidated Development Consent 14/98 MOD 13 condition 5.3(b)]

The Cyanide Management Plan prepared to satisfy Development Consent 14/98 condition 5.3(b) was approved by DoP on 9 January 2006. Addenda to the Cyanide Management Plan have been subsequently prepared and approved the DP&I/DP&E related to:

- Cyanide monitoring and regular water quality sampling for CN_{WAD} levels;
- Fauna death reporting requirements were revised and approved in October 2008 for changes approved in Modification to the Development Consent granted on 13 March 2008 under Section 96(1A) of the *Environmental Planning and Assessment Act, 1979*;
- Cyanide analysis method and on-line monitoring of CN_{FREE} approved by EPA in October 2009;
- Location of tailings slurry stream CN_{WAD} monitoring within the process plant was approved in December 2010.
- Variation to the transportation route from the Queensland border to Dubbo was approved by the DoP Hazards Unit (dated 1 December 2010) and an emergency exemption was granted to allow use of the Cowra-Temora road whilst the Newell Highway was flooded in March 2012 and 2016.

The Cyanide Management Plan was reviewed in 2015 in relation to the requirements of Development Consent 14/98 MOD 11 condition 5.3(b), and it was considered that no revision was required. The management of cyanide at the Cowal Gold Operations is in accordance with the approved Cyanide Management Plan.

Development Consent Condition 5.3(a) establishes limits for the aqueous component of the tailings slurry (as monitored at the process plant via an automated sampler), such that cyanide levels do exceed 20 mg weak acid dissociable cyanide per litre ($CN_{WAD/L}$) (90percentile over six months) or 30 mg $CN_{WAD/L}$ (maximum permissible limit at any time). The Cyanide Management Plan also includes a cyanide monitoring program prepared in accordance with Development Consent Condition 5.3(b).

Management Measures in the Cyanide Management Plan are listed in Table 5.15.1.

Table 5.15.1: Cyanide Management Plan Management Measures

Section / Page No.	Cyanide Management Plan Management Measures	Comments	Implementation Status
s.4.1 / p.12	Delivery and storage of cyanide on site will take place in a controlled area. Cyanide delivery and storage will be within a concrete-bunded area located away from general work areas and incompatible reagents.	Delivery of cyanide on site takes place within a controlled concrete-bunded area. 	**Compliant**
s.4.1 / p.13	Storage areas, tanks, pipelines, pumps and valves will have high visibility labelling and will be inspected regularly for signs of leakage,presence of solution outside of the tanks in the bunded areas and integrity of the containment. Any aspects requiring maintenance or repair will be noted and records documenting the inspection and corrective measures will be kept.	Storage areas, tanks, pipelines, pumps and valves have high visibility labelling and are inspected regularly for any sign of leakage, presence of solution outside the tanks in the bunded areas and integrity of containment. Inspection of storage areas and bunding occurs daily by Cowal Gold Operations staff. A Bund Integrity Audit is conducted annually by an external consultant.	**Compliant**
s.4.2.2 / p.13	In accordance with MCoA 5.3(b)(ii), CN_{WAD} levels of the aqueous component of the tailings slurry stream will be maintained so that they do not exceed 20 mg/L CN_{WAD} (90 percentile over six months) and 30 mg/L CN_{WAD} (maximum permissible limit at any time) at the discharge point to the tailings storages.	Monitoring of the decant water quality and tailing discharge occurs twice daily with samples analysed at the on-site laboratory. Check analyses are conducted by an external NATA registered laboratory. All results have been compliant with the condition criteria and did not exceed 20 mg/L CN_{WAD} (90percentile over six months) or 30 mg/L CN_{WAD} (maximum permissible limit at any time).	**Compliant**
s.4.2.3.1 / p.14	Tanks holding process solutions (e.g. leach tanks) will be located on bunded concrete containments.	All tanks holding process solutions (e.g. leach tanks) are located within bunded concrete containments.	**Compliant**

Section / Page No.	Cyanide Management Plan Management Measures	Comments	Implementation Status
	The processing plant has been designed such that process water containing cyanide is recycled and therefore kept within the area encompassed by the processing plant run-off collection drain and storage. In the event of spillages, all solutions will be contained within the process plant bunding.	An annual audit of the process plant bunds is conducted by Extrin (external consultants) to assess the status of the bunds and provide an action plan for the maintenance of each facility. Any leakage or spillage from the tanks or their fittings is contained within the plant bunds.	
s.4.2.3.2 / p.14	The tailings delivery and return water lines will be contained within a bunded pipeline corridor that will run parallel to the service corridor between the processing plant and tailings storage facilities. The tailings slurry will be pumped to the tailings storages at ground level. The bunded corridor will drain back to the processing plant and will contain any spills in the event of pipeline rupture/failure.	 Tailings delivery/return water lines in a bunded pipeline corridor between the process plant and tailings storage facilities.	**Compliant**
s.4.2.3.3 / p.15	As required by Development Consent 143/98 condition 4.4(c)(i) and 5.2(a) the tailings storages will be constructed to the requirements of DLWC, EPA, DMR and the NSW Dams Safety Committee (DSC). Further, the floor of the tailings storages will be constructed and compacted to a permeability acceptable to the DMR and EPA in consultation with DLWC, in accordance with Development Consent 143/98 condition 5.2(b).	The northern and southern tailings storage facilities were constructed in accordance with the requirements of DLWC, EPA, DMR and the NSW Dams Safety Committee. The floor of the tailings storages was constructed and compacted to approved permeability criteria acceptable to the DMR and EPA in consultation with DLWC (DPI-Water).	**Compliant**
s.4.2.3.3/ p.15	Following tailings deposition, supernatant water will drain to the central pond and decant towers. The decant tower will be accessible via a causeway. The bulk of the water in each tailings storage will drain from the surface of the tailings and collect in the centre of each storage. This water as well as underdrainage water will be reclaimed and used within the processing plant. The decant system (including access causeway) will be progressively raised during the development of the tailings storage facilities.	Following tailings deposition, supernatant water that collects in a central pond of the TSF. The supernatant water is reclaimed at the decant tower for reuse within the processing plant  **Decant tower on Northern Tailings Storage Facility.**	**Compliant**
s.4.2.3.4/ p.15	Monitoring will be conducted for any movement of the tailings storages as described in the *Monitoring Program*	Quarterly Movement Monitoring reports have been prepared for the Northern and Southern Tailings	**Compliant Ongoing**

Section / Page No.	Cyanide Management Plan Management Measures	Comments	Implementation Status
	for Detection of any Movement of Lake Protection Bund, Water Storage and Tailings Structures and Pit/Void Walls, as follows: • Visual assessments of the tailings structures will be undertaken weekly, following review of surface and groundwater monitoring data, and following any seismic events to identify the initial signs of movement. • Survey assessment of the tailings structures will be routinely undertaken at six monthly intervals or following visual assessments that indicate movement of a structure and/or following seismic events to determine and quantify any movement of these structures.	Storage Facilities and infrastructure. The Tailings Storage Facilities have not exhibited significant erosion or subsidence issues from regular survey information. Minor remediation of cracks and / or small sinkholes has occurred as required. Survey pillars were installed on the third and fourth augmentation crest of the STSF. Dr Neil Mattes of URS has provided independent oversight for the Cowal Gold project *Movement Monitoring Program of the Lake Protection Bund, Water Storage and Tailings Structures and Pit Void Walls*. A geotechnical assessment *Geotechnical Assessment of Bund and Pit Walls*, is conducted annually by Dr Neil Mattes of URS to assess stability.	
s.5/p.16	The Flora and Fauna Management Plan and Implementation Plan to Protect Fauna from Interactions with the Tailings Storage Facilities will outline measures relevant to cyanide and wildlife management.	The Flora and Fauna Management Plan section 8 outlines contingency measures relevant to cyanide and wildlife management.	**Compliant**
s.6.1/p.17	In accordance with Consent Condition 8.2(b) a summary of the cyanide monitoring results will be provided to EPA, DRE and the Secretary of DP&E, on a three monthly basis, unless otherwise agreed by the Secretary. All monitoring results will be included in the AEMR.	A summary of the cyanide monitoring results is provided to EPA, DRE and DP&E, on a monthly basis. A summary of all monitoring results are also included in the Annual Review section 6.6.3.	**Compliant**
s.6.2.1/p.17	CN_{WAD} levels of the aqueous component of the tailings slurry stream will be monitored at the discharge point to the tailings storages twice daily (or as otherwise directed by the Director-General for Planning), in accordance with Development Consent 14/98 MOD 13 conditions 5.3(b). CN_{WAD} levels in the decant water of the tailings storages will be monitored twice daily (or as otherwise directed by the Secretary DP&E).	CN_{WAD} levels of the aqueous component of the tailings slurry stream at the process plant are monitored twice daily in accordance with Development Consent 14/98 MOD 13 conditions 5.3(d)(i) and (ii)and EPL 11912 condition M2.3. (The relocation of the automated sampler from the discharge point at the tailings storage facilities, to the process plant occurred in July 2010 to improve accessibility to the sampler for maintenance and sample collection).	**Compliant**
s.6.2.3.1 / p.18	In accordance with Development Consent 14/98 MOD 13 conditions 5.3(b) which requires provision of an on-site laboratory for quickly establishing CN_{WAD} levels in the liquid at the discharge point to the tailings	Free cyanide monitoring within the process plant area is conducted as part of the daily workplace monitoring program (refer to Cyanide Management Plan section 6.3).	**Compliant**

Section / Page No.	Cyanide Management Plan Management Measures	Comments	Implementation Status
	dams and in the decant ponds for monitoring purposes, CN_{WAD} samples collected twice daily in accordance with the USEPA (1999) Method OIA-1677 at the discharge point to the tailings storages and in the decant water of the tailings storages will be analysed at the on-site laboratory. The samples will be analysed for CN_{WAD} in the on-site laboratory using an Orion Instruments Analytical CN Solution TM FS 3100 analyser (or other instrumentation considered appropriate in consultation with DMR, EPA and the Director-General for Planning). The Orion FS 3100 analyser complies with US EPA (1999) Method OIA-1677 requirements.	The on-site laboratory used the VELP distillation method using the Orion FS 3100 analyser for analysis of CN_{WAD}, plus a picric acid method of analysis for analysis of cyanide. Use of the picric acid method was approved by the relevant agencies in 2007. The Cyanide Management Plan was amended in August 2007 to reflect the approval of the use of the picric acid method. CN results are verified by an off-site NATA registered laboratory in West Wyalong with results available to CGM within 24hours.	
s.6.2.3.2/ p.18	CN_{WAD} samples collected twice daily at the discharge point to the tailings storages and in the decant water of the tailings storages in accordance with AS/NZS 5667:1:1998 Water Quality – Sampling and APHA (1998 or subsequent version) Standard Methods for the Examination of Water and Wastewater will be analysed at an off-site NATA registered laboratory located in West Wyalong.	The samples of discharge from the process plant to the tailings storage facilities (as required under Consolidated Development Consent 14/98 MOD 13 condition 5.3(d)(iii)) are collected in accordance with standard methods for cyanide analysis and transported as required to the NATA registered laboratory in West Wyalong, for confirmatory analysis.	**Compliant**
s.6.2.3.2 / p.19	For samples sent to laboratories, a sample chain-of-custody (CoC) form will be completed for each sample collected. A copy of the CoC will be provided to the laboratory with the samples. A copy of the CoC will be held on site.	Samples collected for cyanide analysis are forwarded to the NATA registered laboratory in West Wyalong with Chain-of-Custody forms. The results for analysis of cyanide at the external NATA registered laboratory provide confirmation of on-site laboratory testing with results available within 24 hours.	**Compliant**
s.6.2.4 / p.19	Data obtained by the monitoring of CN_{WAD} levels at the discharge point to the tailings storages and in the decant water of the tailings storages will be maintained on site by the Environmental Manager.	Monitoring result data for CN_{WAD} and CN_{FREE} is retained on site in the monitoring database.	**Compliant**
s.6.4/p.20	Development Consent 14/98 MOD 11 conditions 5.3(d)(v) requires a monitoring program to be established for the detection of cyanide movement beneath and adjacent to the tailings storages. Monitoring of CN_{WAD} levels will be undertaken at a network of groundwater monitoring bores to	A monitoring program for the detection of cyanide movement beneath and adjacent to the tailings storages has been implemented with a network of groundwater monitoring bores: • process plant area - PP01 to PP06;	**Compliant**

Section / Page No.	Cyanide Management Plan Management Measures	Comments	Implementation Status
	monitor cyanide movement beneath and adjacent to the tailings storages, namely: • down-gradient bores P412A & B, P414A & B, P418A & B; • up-gradient bores P555A & B, P558; • tailings storage monitoring bores MON-01 and MON-02.	• down-gradient bores P412A & B, P414A & B, P418A & B; • up-gradient bores P555A & B, P558; • tailings storage monitoring bores MON-01 and MON-02 Additional groundwater quality bores P415A, P415B, P416A, P416B, P417A and P417B are also monitored for CN_{WAD} in accordance with EPL 11912 .  **Groundwater bores for monitoring Cyanide (CN_{WAD}).**	
s.6.4 / p.20	In addition to the above bores, groundwater quality monitoring of bores P415A, P415B, P416A, P416B, P417A and P417B (Figure 3) will also be monitored for CN_{WAD} in accordance with EPL 11912. The CN_{WAD} results that are obtained for the groundwater bores will be recorded and retained as required by EPL 11912.		**Compliant**
s.7 / p.22	Development Consent 14/98 MOD 13 condition 3.2(b)(ii)) requires the Cyanide Management Plan to provide contingency measures for reducing cyanide levels.	The Cyanide Management Plan: • section 7.1.2 provides contingency measures for reduction of HCN levels in areas where employees are operating; • section 7.2 provides contingency measures for reducing CN_{WAD} levels in the event CN_{WAD} levels exceed 20 mg/L (90percentile over six months) or 30 mg/L (at any time) at the discharge point from the process plant; • section 7.3 outlines contingency measures for reducing cyanide levels in the tailings dams in the event it is established that fauna deaths are occurring from cyanide in tailings dam water; and • section 7.4 describes the process for EPA review of cyanide levels in the event of wildlife deaths occurring due to cyanide.	**Compliant**
s.8.2.2/p.28	EPL 11912 Condition M4 requires maintenance of a record of all complaints made in relation to pollution arising from any activity to which EPL 11912 applies.	Records of all complaints received on the community complaints line are recorded in the Cowal Gold Operations complaints register.	**Compliant**
s.9.1/p.28	An Annual Review will be prepared in accordance with the requirements of Condition of Authority 26 and Development Consent 14/98 MOD 13	Annual Reviews have been prepared for the CGO in accordance with Development Consent 14/98 MOD 13 condition 9.1(b).	**Compliant**

Section / Page No.	Cyanide Management Plan Management Measures	Comments	Implementation Status
	condition 9.1(b)and submitted to the Director-General for DRE and the Secretary DP&E, respectively. The AEMR will report on cyanide management and use and the cyanide monitoring program. In accordance with Development Consent 14/98 MOD 13 condition 5.3	The cyanide management and monitoring program results are reported in the Annual Review section 6.6.3.	
s.9.3/p.29	In accordance with Consent Condition 8.2(b)(i), any CN_{WAD} measurements of the aqueous component of the tailings slurry stream at the discharge point to the tailings storages verified by the off-site laboratory in West Wyalong as exceeding 20 mg/L CN_{WAD} will be assessed daily (to ensure that CN_{WAD} levels do not exceed 20 mg/L [90 percentile over six months]) and reported monthly to the DMR and EPA, unless otherwise agreed by the Director-General.	The cyanide levels in the aqueous component of the tailings slurry stream at the process plant did not exceed <20mg CN_{WAD}/L (90%ile) between May 2016 and April 2017. Cyanide monitoring results were forwarded to the DP&E, DRE and EPA and provided to the CEMCC quarterly between May 2016 and April 2017.	**Compliant**
s.10.1/p.30	In accordance with Development Consent 14/98 condition 5.4(e), 12 months after the commencement of the Cowal Gold Operations, conduct a comprehensive hazard audit of the proposed development and submit a report of the audit to the Director-General. Further audits must be carried out every three years and a report of each audit will be submitted to the Director-General within a month of the audit. Hazard audits will be carried out in accordance with the Department's Hazardous Industry Planning Advisory Paper No. 5, "*Hazard Audit Guidelines*".	A Hazard Audit was conducted by Dean Shewring of Pinnacle Risk Management Pty Ltd, 12 months after commencement of operation of process plant (i.e. April 2007) and accepted by DoP on 6 August 2007. Subsequent Hazard Audits of the Cowal Gold Operations have been conducted on 19-22 April 2010, 8 to 12 April 2013 and May 2016.	**Compliant**

5.15.2 Cyanide Criteria

[Consolidated Development Consent 14/98 MOD 13 condition 5.3(a)

Cyanide levels of the aqueous component of the tailings slurry stream at the process plant must not exceed 20mg CN_{WAD}/L (90percentile over six months), and 30mg CN_{WAD} /L (maximum permissible limit at any time).

5.15.3 Cyanide Monitoring

[Consolidated Development Consent 14/98 MOD 13 condition 5.3(a)

Monitoring of cyanide in the aqueous component of the tailings slurry stream at the process plant is conducted twice daily. During May 2016 to April 2017, no cyanide results exceeded the 20mg CN_{WAD}/L level or the maximum 30mg CN_{WAD}/L level.

Donato Environmental Services prepare a six monthly report on wildlife visitation to the tailings storage facilities. On 13 August 2016 one wildlife death occurred on the active STSF, described as an unknown bird species stuck

in mud. Retrieval of the bird was not possible for veterinary assessment. WAD cyanide concentrations measured at the spigot and in the supernatant of the TSF for the seven days prior to the discovery, were at a maximum of 7.2 mg/L and 0.3 mg/L respectively, i.e. well within condition limits. The recorded cyanide concentrations were reported by Donato to be below the level that would be expected to cause fauna mortality. The cause of the one avifauna death in August 2016 could not be determined.

No other wildlife deaths attributable to cyanide, occurred on or near the tailings storage facilities during the January to December 2016 period. All recorded cyanide concentrations in the tailings facilities were reported to be below the level that would be expected to cause mortality throughout the reporting period.

5.15.4 Conclusion

The Cyanide Management Plan prepared to satisfy Development Consent 14/98 condition 5.3(b), and subsequent addenda have been approved by DP&I/DP&E. The management of cyanide at the Cowal Gold Operations site and process plant is representative of best practice. Cowal Gold Operations is a signatory to the *"International Cyanide Management Code for the Manufacture, Transport, and Use of Cyanide in the Production of Gold"* and regular third party audits of the site practices and record keeping have confirmed compliance with the requirements of the *International Cyanide Management Code*.

Between May 2016 and April 2017 no cyanide results exceeded the 20mg CN_{WAD}/L or the maximum 30mg CN_{WAD}/L level.

Donato Environmental Services reported six monthly on wildlife visitation to the tailings storage facilities and noted that deaths of avifauna attributable to cyanide in the tailings storage facilities had not occurred between May 2016 and April 2017. It was also noted that the monitored cyanide concentrations were all below the level that would be expected to cause mortality.

5.16 Air Quality

[Consolidated Development Consent 14/98 MOD 13 condition 6.1]

5.16.1 Environmental Impact Assessment

5.16.1.1 Environmental Impact Assessment – Cowal Gold Project 1998

Air quality modelling conducted for the Environmental Impact Assessment – Cowal Gold Project 1998 indicated that at all stages of development predicted levels of less than 0.5 g/m^2/month with a single small portion of land immediately adjacent to ML 1535 receiving greater than 2 g/m^2/month. Total Suspended Particulate (TSP) modelling showed that at all stages of the Cowal Gold Project development, TSP levels expected to be less than 10 µg/m^3. Investigations conducted concluded that dust emissions from the Cowal Gold Project would have no adverse influence on waterbirds, livestock or plants. Active management of dust generation through regular watering of haul roads and active construction areas would occur to manage any fugitive dust generation from active project areas.

5.16.1.2 Environmental Assessment - Mine Extension Modification 2013

An Air Quality Impact Assessment prepared for the Environmental Assessment - Cowal Gold Mine Extension Modification by Pacific Environment Limited (dated 7 September 2013) concluded no exceedances of the relevant air quality criteria were predicted at any privately-owned receiver around the Cowal Gold Operations. Existing mitigation, management and monitoring measures described in the Dust Management Plan would continue for MOD 11.

5.16.1.2 Environmental Assessment - Mine Life Extension 2016

An Air Quality and Greenhouse Gas Assessment prepared for the Environmental Assessment - Cowal Gold Mine Extension Modification by Pacific Environment Limited (dated 8 November 2016) concluded no exceedances of the relevant criteria for 24-hour PM_{10} or $PM_{2.5}$ criteria, or annual average TSP, PM_{10}, $PM_{2.5}$ or dust deposition criteria were predicted at any privately-owned receiver due to the Modification 13 only or cumulatively with other non-mining sources.

A greenhouse gas assessment indicated that average annual Scope 1 and 2 emissions from Modification 13 (0.24 million tonnes carbon dioxide equivalent [Mt CO_{2-e}]) would represent approximately 0.041 percent of Australia's commitment under the Kyoto Protocol (591.5 Mt CO_{2-e}) and a very small proportion of global greenhouse emissions.

5.16.2 Air Quality Management Plan

[Consolidated Development Consent 14/98 MOD 13 condition 6.1(c)]

An Air Quality Management Plan prepared to satisfy the requirement of Development Consent 14/98 MOD 13 condition 6.1(c), was submitted to DP&E on 20 April 2015 and approved on 18 February 2016.

The Air Quality Management Plan has been implemented to control dust generation from the mining operations. Management of dust generation includes the use of water trucks for disturbed surface areas and internal haulage roads, speed restriction of vehicles on unsealed surfaces (to 20kph), and limiting soil stripping to areas to those required immediately for the development of the mine activities.

The management measures in the Air Quality Management Plan are summarised in Table 5.16.2.

Table 5.16.2: Air Quality Management Plan Management Measures

Section / Page No.	Air Quality Management Plan Management Measures	Audit Finding / Comment	Implementation Status
s.6.1 / p15	Meteorological data (in particular, wind speed, wind direction and rainfall) will be used for the review of air quality management practices.	The on-site meteorological station located near the southern ML 1535 boundary provides meteorological data for: • real-time wind speed and direction, temperature (2m and 10 m), • barometric pressure, humidity, • solar radiation and rainfall (in accordance with the requirements under Development Consent 14/98 MOD 13 condition 6.2 and EPL 11912 condition M4). The meteorological data is available to Cowal Gold Operations personnel on the internal computer network.	**Compliant Ongoing**
s.6.2 / p15	Continue dust deposition monitoring for life of the mine.	A network of dust gauges agreed in consultation with the EPA and NWPS, established for the EIS baseline program continues to monitor dust deposition in the vicinity of the Cowal Gold Operations.	**Compliant Ongoing**
s.6.2 / p.18	All collection and analysis of dust gauge samples will be conducted in accordance with AS/NZS 3580.10.1:2003.	All dust samples are collected and analysed in accordance with AS/NZS 3580.10.1:2003 and the EPA *Guideline Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.	**Compliant Ongoing**
s.6.2 / p18	Dust deposition samples are analysed monthly for ash	Dust samples are collected monthly in the dust deposition gauges in accordance with	**Compliant Ongoing**

Section / Page No.	Air Quality Management Plan Management Measures	Audit Finding / Comment	Implementation Status
	content, combustible matter and insoluble solids.	the Air Quality Management Plan section 6.2, are analysed for ash content, combustible matter and insoluble solids.	
s.6.2.1 / p18	Analyse composite dust samples for select metals at six monthly intervals for comparison to average crustal abundance levels.	Dust monitoring data has been assessed annually by an independent consultant from the University of Sydney (Dr Stephen Cattle) for the Cowal Gold Operations. If the analysis of dust gauge network data indicates potential adverse effects of dust on surface water or sediment quality within Lake Cowal, additional dust control measures would be implemented in accordance with the Air Quality Management Plan section 7.	**Compliant Ongoing**
s.6.3 / p18	Monitoring TSP by high volume sampler in accordance with procedures established with the EPA namely *Approved Methods for Sampling and Analysis of Air Pollutants in NSW* will continue for the life of the mine.	The TSP monitoring site (HV1) is located proximal to the 'Coniston' residence to the north of the ML 1535 and was located taking into consideration the prevailing meteorological conditions at the Cowal Gold Operation site. TSP is monitored in accordance with the EPA guideline *"Approved Methods for the Sampling and Analysis of Air Pollutants in NSW"*.	**Compliant Ongoing**
s.6.2 / p18	The dust deposition results will be compared with the criteria presented in Section 3 of the Air Quality Management Plan. All dust deposition monitoring results will be reported in the Annual Review prepared in accordance with requirements of Development Consent 14/98 MOD 13 condition 9.1 and will be submitted to the Secretary of the DP&E.	The Annual Reviews have been prepared in accordance with the requirements of Development Consent 14/98 MOD 13 condition 9.1(b) and submitted to the DP&E each year. Results for dust management are presented in the Annual Review in section 6.1.	**Compliant**
Air Quality Management Plan Table 7: Management Measures for Mining Generated Dust Sources			
s.7.1 / p22	**Haul Roads and Material Transport** • All roads and trafficked areas will be watered (using Water trucks or other methods) and/or treated with an alternative dust suppressant and regularly maintained (using graders) to minimise the generation of dust. • Routes will be clearly marked. • Obsolete roads will be ripped and revegetated.	All internal haul roads and trafficked areas in the mine pit and surrounds are watered regularly using water tankers for dust suppression. Increased watering of exposed disturbed surfaces using water trucks occurs as required. Application of water emulsified bitumen (PetroTac) has also been used to reduce dust generation from light vehicle traffic on access roads around the administration area, process plant and maintenance areas. Obsolete haul roads and minor roads are ripped and revegetated when no longer required for current mining activities.	**Compliant Ongoing**
s.7.1 / p20	**Materials Handling - Trucks**	• Loading of trucks at the mine pit face is managed to reduce spillage during ore loading/unloading and hauling from the	**Compliant Ongoing**

Section / Page No.	Air Quality Management Plan Management Measures	Audit Finding / Comment	Implementation Status
	• Prevention of truck overloading to reduce spillage during ore loading/unloading and hauling. • Water spray dust suppression system will be used at the primary crusher bin during truck dumping of raw ore. • Freefall height during ore waste stockpiling will be limited.	open pit to the ore stockpiles and low grade ore emplacement areas. • A dust suppression system operates during truck dumping of raw ore at the primary crusher bin.	
s.7 / p20	**Soil Stripping** • Soil stripping will be limited to areas required for mining operations	Soil stripping has only occurred on areas of the Cowal Gold site, as required for mining purposes.	**Compliant Ongoing**
s.7 / p20	**Drilling** • Dust aprons will be lowered during drilling for collection of fine dust. • Water injection or dust suppression sprays will be used when high levels of dust are being generated.	Drill rigs used for establishment of blast patterns in the mine pit or exploration drilling on ML 1535, are fitted with dust aprons, water injection or dust suppression sprays for use as required to reduce dust generation during drilling activities.	**Compliant Ongoing**
s.7.1 / p20	**Blasting** Mine material collected during drilling will not be used for blast stemming. • Adequate stemming will be used at all times. • Blasting will only occur following an assessment of weather conditions to ensure that wind speed and direction will not result in excess dust emissions from the site towards adjacent residences.	The Blast Management Plan section 5 addresses stemming material type, adequacy of length and measures for blast overpressure management. Blast Management Plan Table 5 addresses use of a stemming length of no less than the burden dimension and use of aggregate of an appropriate size which "locks" in the blast hole to prevent the escape of the gases from the explosives and orientation of the blast area face, away from receivers where possible, to minimise the forward movement of the blast face that generates the major component of airblast, is also included in the plan.	**Compliant Ongoing**
s.7.1 / p27	Equipment Maintenance • Emissions from mobile equipment exhausts will be minimised by the implementation of a maintenance programme to service equipment in accordance with the equipment manufacturer specifications	All mobile equipment used at the Cowal Gold Operations site is maintained at the on-site Maintenance Workshops, with checking of emissions from the exhausts undertaken in accordance with the equipment manufacturer specifications.	**Compliant Ongoing**
Air Quality Management Plan Table 8 - Management Measures for Exposed Area Dust Sources			
s.7.4 / p23	**General Areas Disturbed by Mining** • Only the minimum area necessary for mining will be disturbed. •Exposed areas will be reshaped topsoiled and revegetated as soon as practicable in accordance with Development Consent	The area disturbed for the Cowal Gold mining operations is associated with the current mining operations. Rehabilitation measures described in the Rehabilitation Management Plan are implemented to minimise the exposed areas with establishment of cover crop on newly rehabilitated landforms/areas and on	**Compliant Ongoing**

Section / Page No.	Air Quality Management Plan Management Measures	Audit Finding / Comment	Implementation Status
	Condition 2.4(b) to minimise the generation of wind erosion dust.	long-term soil stockpiles to manage and reduce the potential for dust generation.	
S7.3 / p23	**Waste Emplacement Areas** • Exposed active areas on waste emplacement surfaces will be watered to suppress dust where practicable. • Rehabilitation (i.e. reshaping topsoil placement and revegetation) of waste emplacement areas will be conducted progressively as soon as practicable following completion of landform in accordance with Development Consent Condition 2.4(b).	Waste emplacement areas that have been established to the final specifications are progressively reshaped, topsoiled and revegetated as soon as practicable, to reduce potential for wind generated dust. Rehabilitation measures are described in detail in the Rehabilitation Management Plan and MOP. Interim rehabilitation measures are implemented to minimise the area exposed for dust generation and include establishment of a cover crop on newly rehabilitated landforms and long-term soil stockpiles.	**Compliant Ongoing**
s.7.4 / p24	**Tailings Storage Facilities** During nonoperational periods dust suppression measures will be undertaken to minimise dust emissions from dry exposed areas on the surface of the tailings storage facilities.	Review of measures to minimise dust from dry tailings storage facility surfaces occurs based on available relevant literature, site personnel experience and specialist input. Rock mulch is applied as soon as practicable following the completion of shaping of the tailings storage facility batters to minimise the potential for windblown dust.	**Compliant Ongoing**
s.7.3 / p23	**Soil Stockpiles** Long-term soil stockpiles will be revegetated with a cover crop.	Long-term soil stockpiles have the application of fertiliser/mulch/seeding to promote vegetative cover and control potential dust generation, erosion and surface runoff.	**Compliant Ongoing**
s.7 / p19	Where practicable, seed disturbed areas and stabilise with groundcover immediately following construction.	The disturbed areas completed on the batters of the waste emplacement areas and TSF's have been rehabilitated to stabilise the batters and reduce potential for dust generation.	**Compliant**
s.7 / p19	Dust monitoring will include sites outside of the Project MLA area to assist in management of dust generated from mine operations.	Dust deposition gauges DG1 to DG10, DG15, and McLintock Shed are located outside the project MLA.	**Compliant**

5.16.2 Air Quality Criteria

[Consolidated Development Consent 14/98 MOD 13 condition 6.1(a)]

Criteria for particulate matter emissions generated by the Cowal Gold Operations are specified in Development Consent 14/98 MOD 13 condition 6.1(a). The criteria are the maximum levels allowed to reach any residence on privately-owned land.

Long term impact assessment criteria for particulate matter

Pollutant	Averaging Period	Criterion
Total suspended particulate (TSP) matter	Annual	90 µg/m^3
Particulate matter <10µm (PM_{10})	Annual	30 µg/m^3

Short term impact assessment criterion for particulate matter

Pollutant	Averaging Period	Criterion
Particulate matter <10µm (PM_{10})	24hour	50 µg/m^3

Long term impact assessment criteria for deposited dust

Pollutant	Averaging Period	Max increase in deposited dust level	Max total deposited dust level
Deposited dust	Annual	2g/m^2/month	4g/m^2/month

5.16.3 Meteorological Monitoring

[Consolidated Development Consent 14/98 MOD 13 condition 6.2]
[Environment Protection Licence condition P1.4 and M4]

An automated meteorological station is located near the exploration office on the southern boundary of ML 1535 and records 15minute continuous data for rainfall, wind speed, wind direction and temperature in accordance with requirements in the *Approved Methods for Sampling of Air Pollutants in New South Wales* guideline. Data is available on a continuous basis for use at the site and is downloaded and reported monthly by Sentinel. Calibration of the meteorological station equipment is provided quarterly by Sentinel Pty Ltd.

Parameter	Units of Measure	Continuous Averaging Period	Sampling Method
Rainfall	mm	24hr	AM-4
Temperature @ 2m	°C	15min	
Temperature @ 10m	°C		
Wind speed @ 10m	m/s		AM-2 & AM-4
Wind direction @ 10m	o		AM-2 & AM-4
Sigma theta @ 10m	o		AM-2 & AM-4
Solar radiation	W/m^2		AM-4
Siting Requirements			AM-1 &AM-4

5.16.4 Dust Monitoring Program

Dust monitoring is carried out in accordance with the Air Quality Management Plan at depositional dust (static or gravimetric) monitoring sites within and surrounding the Cowal Gold Operations site. Dust deposition gauges are located at residential locations and bird breeding sites, with four (4) gauges located within the ML 1535 site. The high-volume air sampler (HV1) is located at 'Coniston' Homestead to the north of the Cowal Gold Operations monitors Total Suspended Particulate (TSP).

Table 5.16.4(a): Dust monitoring sites outside the CGO Mine Lease Area

Dust Gauge	Site Location Rationale
DG 1	Coniston residence
DG 2	Bird breeding area
DG 3	General Monitoring Site (proximal to bird breeding area)
DG 4	Native flora area and Bird Breeding Area (Lake Cowal)
DG 5	Lake Cowal
DG 6	Gumbelah residence
DG 7	Lake Cowal residence
DG 8	Native flora area
DG 9	Hillgrove residence, native flora area
DG 10	Native flora area
McLintock's Shed	General monitoring site
Geology Site Office and Lakeside	General monitoring sites
DG I5	General monitoring site

Table 5.14.4(b). Dust monitoring sites within the CGO Mine Lease Area

Dust Gauge	Site Location Rationale
DG 11	General monitoring site (proximal to site infrastructure areas)
DG 12	General monitoring site (proximal to site infrastructure areas)
DG 13	General monitoring site (proximal to site infrastructure areas)
Site 52	Continuation of baseline monitoring prior to development consent

Figure 5.16.4: Dust deposition gauge locations – Cowal Gold Operations

Dust gauge on the lake bed 2015.

Dust gauge location on the lake bed 2016 when Lake Cowal was inundated.

5.16.5 Review of Dust Monitoring Results[4]

An annual review of the air quality monitoring results for the Cowal Gold Operations has been conducted by Associate Professor Stephen Cattle of the Faculty of Agriculture and Environment, University of Sydney. The

[4] Interpretation and Discussion of 2016 Air Quality Monitoring Results, Assoc. Prof. Stephen Cattle University of Sydney

annual review conclusions in the *Interpretation and Discussion Air Quality Monitoring Results Cowal Gold Operations* in relation to dust deposition and Total Suspended Particulates for 2016 were:

- Due to high rainfall and inundation of Lake Cowal, the following gauges could not be accessed for sampling over the following time periods during 2016;
    - DG2 gauge could not be accessed in June or July
    - DG3 gauge could not be accessed in May, or July to November
    - DG4 gauge could not be accessed between May and July, in September, or in November
    - DG5 gauge could not be accessed between May and July, or in September
    - DG6 gauge could not be accessed in September or October
    - DG13 gauge could not be accessed in September
    - DG14 gauge could not be accessed in May or June, in September, or in November
    - Site 52 gauge could not be accessed in September

- The annual review of dust deposition results provided the following conclusions:
    - The veracity of the reported dust deposition data in 2016 was severely compromised by the inundation of at least eight gauges with sediment-laden lake waters during the period of heavy rainfall.
    - Compliance with the assessment criterion of 4 g/m^2/month average annual deposited dust was achieved at five of the seven gauges located at residences, bird-breeding and native fauna areas outside the ML 1535 during 2016.
    - For other gauges external to ML 1535 that exceeded the assessment criterion of 4 g/m^2/month (*DG2*, *DG3*, *DG5*, *DG6*, *McLintocks Shed*, *Lakeside*), four of the exceedances were due to inundation of the gauge with sediment-laden lake water for at least one sampling period. Exclusion of the combustible fractions of these dust deposits from the interpretation of the data results in the annual average dust deposition rate dropping below the assessment criterion.
    - The HVAS, located to the north of ML 1535, yielded TSP levels less than the relevant NSW EPA amenity criterion of 90 µg/m^3. The annual average of the TSP data collected by the HVAS for 2016 was 33 µg/m^3. As with the previous years of TSP measurements, the 2016 data exhibited moderately strong seasonality, with measurements of TSP level higher during the drier summer and early autumn months, and lower during the moist winter and early spring months. In 2016, the TSP appeared to be strongly negatively correlated with rainfall at CGO.
    - The annual average PM_{10} collected by the HVAS was calculated to be less than the 30µg/m^3 long term impact assessment criteria and less than the short term impact assessment criteria for PM_{10} of 50 µg/m^3, in Consolidated Development Consent 14/98 MOD 13 condition 6.1(a) during the May 2016 to April 2017 period.

- No complaints related to dust were received from surrounding land owners between May 2016 and April 2017.

5.16.6 Conclusions

The Air Quality Management Plan (dated February 2015) was prepared to satisfy Consolidated Development Consent 14/98 MOD 11 and implemented for the Cowal Gold Operations. Compliance with the dust attributable to the Cowal Gold Operations was assessed with the criteria achieved at all residences and all bird-breeding areas between May 2016 and May 2017. Where dust results were recorded above the criteria the veracity of the reported dust deposition data was compromised by inundation of the gauges with sediment-laden lake waters during the period of heavy rainfall.

The air quality data collected from the air quality monitoring program was independently reviewed annually by Dr Stephen Cattle of University of Sydney and it was reported that no exceedance of the air quality TSP and PM_{10} criteria occurred between May 2016 and May 2017

No community complaints in relation to dust were received between May 2016 and May 2017.

5.17 Blasting

[Consolidated Development Consent 14/98 MOD 13 condition 6.3]
[Environment Protection Licence 11912 condition L5]
[Mining Lease 1535 condition 27]

5.17.1 Environmental Assessment

5.17.1.1 Environmental Impact Statement – Cowal Gold Project 1998

Modelling conducted by Richard Heggie and Associates for the Environmental Impact Statement – Cowal Gold Project 1998, showed that blast emission criteria would be met at all times at sensitive receivers. Blast levels at known wetland bird breeding areas were predicted to be many times lower than those levels considered or known to cause nuisance or disturbance to birds. Noise and ground vibration monitoring would be undertaken at nearby residences and key bird breeding areas.

5.17.1.2 Environmental Assessment - Mine Extension Modification 2013

Environmental Assessment Appendix E – Noise and Blasting Impact Assessment was prepared by SLR in September 2013. The Noise and Blasting Impact Assessment section 8, predicted that the Cowal Gold Operations would continue to operate in compliance with relevant blast overpressure and vibration criteria at all privately-owned dwellings for MOD 11.

The predicted results in Environmental Assessment Appendix E – Noise and Blasting Impact Assessment section 8.4.2 indicated that the maximum air-blast level at the closest monitored bird breeding area (Bird Breeding Area South [NO3]) would be 110dBL. Given the proposed continuation of blast and bird behaviour monitoring in accordance with the Flora and Fauna Management Plan as well as the contingency measures in place by Cowal Gold Operations, the assessment and monitoring results indicated that *"adverse blast impacts would be unlikely to significantly affect any fauna species".*

5.17.1.3 Environmental Assessment - Mine Life Extension Modification 2016

Environmental Assessment Appendix D – Noise and Blasting Assessment was prepared by Renzo Tonin & Associates in November 2016. 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.

5.17.2 Blast and Vibration Management Plan

[Consolidated Development Consent 14/98 MOD 13 condition 6.3(e)]

The Blast Management Plan prepared to satisfy Development Consent 14/98 MOD 11 condition 6.3(e) was submitted to DP&E on 29 January 2015 and approved on 10 December 2015.

The Blast Management Plan provides a sound basis for the control of noise and vibration impacts and the procedures and blast methodology conform with best practice as outlined in current regulatory guidelines (*Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration*, ANZECC, *Assessing Vibration: a technical guideline* DECCW, and Australian Standards).

Blasting activities at the Cowal Gold Operations site are undertaken in accordance with the Blasting Standard Operating Procedure, that includes control procedures for priming, loading and stemming operations to minimise blast emissions. These procedures involve conducting a review of risk factors by the Blasting Supervisor prior to blasting including meteorological conditions (e.g. prevailing winds or heavy rain) and ground conditions (e.g. presence of heavily rain affected ground).

The airblast overpressure management measures implemented (as necessary) at the Cowal Gold Operations mine, are included in the Blast Management Plan section 5 and are generally consistent with AS 2187.2-2006

Explosives – Storage and Use. The Blast Management Plan section 5 management measures are summarised in Table 5.17.2(a).

Table 5.17.2(a): Blasting Standard Operating Procedure Management Measures

Blasting Standard Operating Procedure Management Measures	Blasting Standard Operating Procedure Effect
Reduce the Maximum Instantaneous Charge (MIC) or charge mass per delay, to the lowest possible level.	The level of airblast is directly proportional to the MIC, the lower the MIC the lower the airblast.
Keep face heights to a practical minimum.	As the face height determines the blast hole depth and therefore in turn the MIC, reducing the bench height consequently reduces the MIC.
Ensure stemming type and length is adequate.	Use a stemming length of no less than the burden dimension and use aggregate of an appropriate size which "locks" in the blast hole to prevent the escape of the gases from the explosives.
Eliminate exposed detonating cord. Investigate alternative initiation methods.	Detonating cord has a very high velocity of detonation generating high airblast levels. NONEL initiation "burns internally" and does not contribute to the airblast level from blasting.
Eliminate secondary blasting (, use rock breaker or drop hammer).	Secondary blasting of oversize rock should be minimised as the explosives are less confined and may result in high airblast levels.
Reduce the need for toe shots (e.g. better control of drill patterns).	Drill the blast holes below the level of the bench floor (subdrill) so that no rock is left at the base of the blast bench (toe).
Orientate faces where possible so that they do not face directly towards residences.	The forward movement of the blast face generates the major component of airblast so orientate the face away from receivers where possible.
Ensure that all delays are designed to eliminate wave front reinforcement.	Design the detonator delay sequence to provide at least 8 ms between the blast holes on a given delay time to avoid overlap.
Vary the direction of initiation.	Airblast levels are reinforced in the direction of initiation of the detonators. Orientate initiation direction away from receivers.
Exercise strict control over the burden, spacing and orientation of all blast drill holes.	Less than design burden and spacing (i.e. reduced rock cover) facilitates "blow outs" resulting in high airblast levels.
Take particular care where the face is already broken or where it is strongly jointed, sheared, or faulted.	This requires either "lighter" charging or "decking" with an inert material across the respective zones in order to avoid blowouts resulting in high airblast levels.
Consider deck loading where appropriate to avoid broken ground or cavities in the face.	Decking refers to separating explosives within a blast hole using an inert material, usually stemming (see above).

Blasting management measures outlined in the approved Blast Management Plan are summarised in Table 5.15.2(b).

Table 5.17.2(b): Blast Management Plan - Management Measures

Section/ Page No.	Blast Management Plan Management Measures	Comments	Implementation Status
s.3.1/p.8	In accordance with Development Consent Condition 6.3(a), Evolution Mining will comply with the blast impact assessment criteria in Table 2, as part of best management practice, which is required to be implemented in	Blast overpressure and vibration monitoring conducted at the Cowal Gold Operations has demonstrated compliance with the blast impact assessment criteria for all blasts conducted Monday to Saturday.	**Compliant**

Section/ Page No.	Blast Management Plan Management Measures	Comments	Implementation Status
	accordance with Development Consent Condition 6.3(d)(i).	Exceedance of the 95dBL criteria imposed for Sundays and Public Holidays, has occurred as a result of weather conditions, with the small number of blasts exceeding the criteria less than 5% of the total blast during the May 2016 to April 2017 period.	
s.4.1 /p.12	Monitoring of bird breeding behaviour will continue to be conducted and the contingency measures outlined in the Flora and Fauna Management Plan will be implemented should impacts be identified, in accordance with Development Consent Condition 3.2(b).	Independent observations of bird breeding areas were conducted by Professor Peter Gell of the Water Research Network, Federation University Ballarat when water was present in Lake Cowal 2016. Monitoring and reporting on waterbird populations and breeding activities at Lake Cowal found that there was no abrupt change in the behaviour of any bird species to any blast and no discernible reaction to the noise (or other effects) observed, associated with blasts .	**Compliant**
s.4.2/p.12	AS 2187.2:2006 details general operating practices that provides guidance of the various options available for controlling ground vibration and airblast. The Cowal Gold Operations Blasting Standard Operating Procedure 'Blasting MIN-SOP-35' has been prepared in consideration of the AS 2187.2:2006 general operating practices.	The Cowal Gold Operations Blasting Standard Operating Procedure 'Blasting MIN-SOP-35' was prepared in consideration of the AS 2187.2:2006 (Refer to Airblast Overpressure Management Measures included in the Blast Management Plan 2015 section 5).	**Compliant**
s.5/p.15	Blasting activities at the CGM will be undertaken in accordance with CGM's Blasting SOP which includes control procedures for priming, loading and stemming operations to minimise blast emissions.	Blasting is undertaken in accordance with the Blasting Standard Operating Procedure (SOP) with a review of risk factors including meteorological conditions and ground conditions, conducted by the Blasting Supervisor prior to blasting. Where risk factors are known to increase the likelihood of a blast producing unacceptable dust or fume emissions, the blast design is modified, and management measures implemented to minimise blast emissions, where practicable.	**Compliant**
s.6.3/p.16	Protection of livestock - Blasting operations at the Cowal Gold Operations are restricted to within the open pit.	No livestock grazing is permitted within ML 1535. The perimeter Travelling Stock Reserve and agistment of any livestock on mine-owned land (outside ML 1535), are located approximately 2 km from the open pit, so livestock would not be affected by flyrock.	**Compliant**
s.6.4/p.16	The Blasting SOP details the procedures to be undertaken to	Blast Management Plan 2015 prescribes an exclusion zone of greater	**Compliant**

Section/ Page No.	Blast Management Plan Management Measures	Comments	Implementation Status
	control personal safety during blasting with implementation of a minimum 400 m exclusion zone for all blasts in addition to personal protective equipment requirements and emergency and evacuation procedure	than 400m for all blasts within the Cowal Gold Mine open pit. The Blast Supervisor ensures no personnel are within the exclusion zone before the blast is initiated.	
s.7.1/p.17	Each blast monitoring unit will be fitted with suitable equipment to monitor all blasts. As required by EPL Condition M7.1(b), blast monitoring units / instruments will comply with requirements of AS 2187.2/2006.	Each blast monitoring unit / instrumentation complies with the requirements of AS 2187.2-2006. Blast monitoring occurs for all blasts at each monitoring location: • BM01 – 'Gumbelah' residence; • BM02 – 'Hillgrove' residence; • BM03 – 'Coniston' residence; • BM08.1 – 'Cowal North' residence; • BM10 – CGO open pit (reference).	**Compliant**
s.7.1/p.17	Detailed climatic and atmospheric conditions including temperature, wind speed and direction at the time of blasting will be monitored at the CGM meteorological station and will be recorded for each blast. Periodic calibration of all monitoring units including the meteorological station will be undertaken in accordance with the manufacturer's specifications.	Temperature, wind speed and direction at the time of blasting are monitored at the meteorological station and are recorded for each blast. Calibration of all blast monitoring units is undertaken by SAROS in accordance with the manufacturer's specifications. Calibration of the meteorological station equipment occurs quarterly by Sentinel Pty Ltd.	**Compliant**
s.7.2.2/p.17	Meteorological conditions will be examined as soon as practicable prior to blasting and a prediction made as to whether air blast overpressure levels (and dust and/or fume emissions) outside of the ML 1535 area (i.e. at non-company owned residences) are likely to be increased. If an exceedance of the blast impact assessment criteria is predicted blasting will be rescheduled until more favourable weather conditions prevail.	The Blast Supervisor (and ESR Manager if required) assess meteorological conditions prior to each blast. If an exceedance of the blast impact assessment criteria is predicted, blasting may be rescheduled until more favourable weather conditions prevail. The recording and interpretation of blast overpressure data is assessed by SAROS for each blast and interpretation of any exceedance(s) reported to Cowal Gold Operations for notification to the relevant authorities if required.	**Compliant**
s.7.3/p.19	Blast monitoring results will be reviewed on a monthly basis and an annual Blast Monitoring Report will be prepared by an independent specialist which includes a summary of the annual monitoring results and a review and analysis of the results against the blast impact assessment criteria.	Blast Management Plan 2015 section 8 provides for all blast monitoring results to be reviewed monthly and an annual Blast Monitoring Report is prepared by SAROS that includes a summary of the annual monitoring results and a review and analysis of the results against the blast impact assessment criteria.	**Compliant**

Section/ Page No.	Blast Management Plan Management Measures	Comments	Implementation Status
s.8.2/p.20.	In the event the compliance assessment protocol determines a non-compliance with the blast impact assessment criteria the incident notification protocol will be implemented.	The Compliance Assessment Protocol described in Blast Management Plan section 8.1, has been triggered when exceedance of the blast impact assessment criteria has occurred, to exclude non-mine related or external factors that may have resulted in the exceedance (including consideration of the meteorological conditions at the time of the blast).	**Compliant**
s.8.2/p.21	In accordance with Development Consent Condition 9.3(a) and EPL 11912 condition R2.2, written details of the incident to the Secretary of the DP&E and the EPA within seven days of the date the incident occurred, will be provided including details of measures taken or proposed to be taken to prevent or mitigate recurrence of the incident.	Reporting to the Secretary, EPA and other relevant agencies of any exceedance of the blast impact assessment criteria with details of measures taken to prevent or mitigate recurrence of the incident, has occurred and the monthly compliance summary prepared. SAROS provides results and interpretation of the blast overpressure exceedance(s) in relation to meteorological effects and/or blasting practices.	**Compliant**
s.13/p.27	An Annual Review will be prepared in accordance with the requirements of Development Consent Condition 9.1 and will be submitted to the Secretary of the DP&E.	Annual Reviews prepared in accordance with Development Consent MOD 11 condition 9.1(b) address Blast Management and overpressure/ vibration in section 6.10.	**Compliant**

5.17.3 Blast and Vibration Criteria

[Consolidated Development Consent 14/98 MOD 13 condition 6.3(a)]
[Environment Protection Licence 11912 condition L5]
[Mining Lease 1535 condition 27]

Blast impact assessment criteria are specified in Development Consent 14/98 MOD 11 condition 6.3(a) and Environment Protection Licence 11912 condition L5.

Table 5.15.2: Blasting impact assessment criteria

Location	Time of Blasting	Air-blast over pressure dBL	Ground Vibration mm/s	Allowable exceedance
Residence on privately owned land	Any time	120	10	0%
	Monday to Saturday during day	115	5	5% of total number of blasts over a period of 12 months
	Monday to Saturday during evening	105	2	
	Monday to Saturday at nights	95	1	
	Sundays and Public Holidays	95	1	

The Sunday and Public Holiday overpressure level of 95dB(L) is a significant reduction to the normal Monday to Saturday limit of 115dB(L). The 20dB(L) reduction is equivalent to reducing the Monday to Saturday limit by 90% for Sunday and Public Holiday blasting (reference the SAROS Group Report, section 3.2, March 2015).

5.17.4 Blast Monitoring Program

All blasts were monitored for overpressure and vibration at the following fixed locations, with one mobile/portable monitor available for random checks.

Table 5.15.3(a): Fixed blast monitoring locations (EPL 11912 condition M7.1)

Blast Monitor No.	Blast Monitor Location	Blast Location Classification
BM01 BM02 BM03 BM08.1	Gumbelah residence Hillgrove Residence Coniston Residence Cowal North	Locations categorised as '*residence on privately owned land*' [Development Consent 14/98 MOD 11 condition 6.3(a)]
BM09 BM10	Southern Lake Near Field Monitor – CGO Open Pit	'*Reference monitoring*' location

Enhanced technology has been installed in the land-based cabinets of blast monitoring units around Lake Cowal. (Note: Inundated blast monitoring units in Lake Cowal (i.e. BM04, BM05 and BM06) were removed from the blast monitoring program as the monitoring site was unable to be accessed safely as a result of Lake Cowal inundation.

5.17.5 Review of Blast Overpressure Monitoring

The Annual Review of Blast Monitoring Results (conducted by The Saros Group) concluded that all blast overpressure and vibration levels were compliant with the Development Consent 14/98 MOD 13 condition 6.3(a), EPL conditions L7.3 and L7.4, and Mining Lease condition 27 (i.e. less than 5% of total blasts must not exceed 115dBL or vibration levels must not exceed 2mm/sec) for the total number of blasts between May 2016 and April 2017 for the Monday to Saturday criteria.

Non-compliance related to blast overpressure that exceeded the 95 dB(L) criteria on Sundays and Public Holidays was assessed by SAROS and determined to have mainly occurred as a result of ambient wind speed and direction (as determined by meteorological data assessed), or noise related events exceeding the 95 dB(L) due to local environmental factors that were not able to be differentiated from background levels. The Saros Report for January to December 2016 identified eight (8) events as having a peak overpressure level above the Sunday and Public Holiday criteria of 95dB(L). Of the 8 events that exceeded the compliance levels, only three were assessed to be related to blasting, with the other five identified as resulting from localised environmental factors such as wind. The three events are 1.79% of the total number of blasts for the January to December 2016 period. The Consolidated Development Consent 14/98 MOD 13 condition 6.3(a) allows for up to 5% of total number of blasts over a period of 12 months to exceed the specified overpressure and vibration criteria.

Monitoring Location	Date	Overpressure dB(L)	Compliance Limit	Comments
BM02 – Hillgrove Residence	Sunday 31 Jan 2016	95.9	95dB(L) – Sundays and Public Holidays	Not blast related, localised environmental factors likely
BM08.1 – Cowal North		97.5	95dB(L) – Sundays and Public Holidays	Not blast related, localised environmental factors likely
BM02 – Hillgrove Residence	Sunday 13 Mar2016	95.6	95dB(L) – Sundays and Public Holidays	Likely blast related

BM01 – Gumbelah Residence	Easter Saturday 26 Mar 2016	95.9	95dB(L) – Sundays and Public Holidays	Likely blast related
BM01 – Gumbelah Residence	Sunday 3 Apr 2016	100.0	95dB(L) – Sundays and Public Holidays	Not blast related, localised environmental factors likely
BM02 – Hillgrove Residence	Sunday 20 Nov 2016	97.5	95dB(L) – Sundays and Public Holidays	Not blast related, localised environmental factors likely
BM01 – Gumbelah Residence	Sunday 4 Dec 2016	100.0	95dB(L) – Sundays and Public Holidays	Likely blast related
BM02 – Hillgrove Residence	Sunday 18 Dec 2016	95.9	95dB(L) – Sundays and Public Holidays	Not blast related, localised environmental factors likely
BM02 – Hillgrove Residence	Public Holiday 26 Dec 2016	106.5	95dB(L) – Sundays and Public Holidays	Not blast related, localised environmental factors likely

The SAROS Group Report for January to December 2016 concluded in summary that of a total of 168 blasts:

- No blast related events exceeded the maximum compliance level of 120dB(L);
- No blast events exceeded the 115dB(L) criteria on normal weekdays and Saturdays; and
- Exceedance of the 95dBL assessment criteria that were blast related occurred on three occasions.
- Three (3) blast related events were assessed as exceeding the 95dB(L) level between January and December 2016 from a total of 21 Sunday and Public Holiday blasts.

Between January and April 2017, blast monitoring demonstrated:

- No blast related events exceeded the maximum compliance level of 120dB(L);
- Blast exceeding the 115dB(L) criteria occurred less than 5% of the total blasts on normal weekdays and Saturdays; and
- No blast related exceedances occurred between January and April 2017, exceeding the 95.0dB(L) criteria for Sundays and Public Holidays.

5.17.5 Review of Vibration Results

Based on the monitoring data and blasting information available, recorded levels of ground vibration from blasting activities conducted at the Cowal Gold Operations mine were 100% compliant with Development Consent 14/98 MOD 13 condition 6.3(a), Environment Protection Licence 11912 condition L5, and Mining Lease 1535 condition 27.

5.17.6 Blast Complaints

Two complaints related to blasts were received between May 2016 and April 2017:

Date of Complaint	Complaint	CGO Response
13 Jul 2016	Resident of Lake Cowal – called the CGM Community Complaints and Enquiry Number reporting shaking of	CGO Senior Environment Advisor contacted Saros Consultants to conduct an investigation into the blasting impacts on BM08.1.

	his house at the approximate time of the blast in the Pit.	No vibration was recorded at BM8.1 monitor and overpressure levels at the time of blasting were only 101.0 dB(L).
24 Oct 2016	The Complainant called the CGO Senior Environmental Advisor (SEA) to say that they had just felt the blast at their home and it had given the house "a fair old shake".	Preliminary blast results were received from external consultants indicated that the blast was within compliance limits (105.5 dB(L)). When compared with historical data, results indicated that the overpressure was not attenuating at the same rate as when Lake Cowal is dry.

5.17.7 Conclusion

The Blast Management Plan implemented for the Cowal Gold Operations provides a sound basis for the control of overpressure noise and vibration impacts from the mining activities and the procedures and blast methodology in the Blast Management Plan and Standard Operating Procedure conform to best practice as outlined in current regulatory guidelines.

Blast overpressure and vibration monitoring from May 2016 to April 2017 demonstrated compliance for all blasts conducted between Monday and Saturday with the criteria specified in the Development Consent 14/98, EPL 11912, and ML 1535 conditions. Exceedance of the Sunday/Public Holiday blast assessment criteria occurred on three occasions that were blast related but less than 5% of the total number of blasts.

5.18 Noise

[Consolidated Development Consent 14/98 MOD 13 condition 6.4]

5.18.1 Environmental Assessment

5.18.1.1 Environmental Impact Statement – Cowal Gold Project 1998

Noise modelling conducted by Richard Heggie and Associates for the Environmental Impact Statement – Cowal Gold Project (1998) showed that noise contributions during day and night time meet noise level design goals set by the EPA, even under adverse conditions. In terms of traffic movements, noise levels set by the EPA would be met at all residences during day time and night time except for five residences situated within 30m of the road near West Wyalong where a small exceedance of the night time design goal was predicted. Noise levels at known wetland bird breeding areas were predicted to be lower than those levels considered or known to cause nuisance or disturbance to birds.

Noise monitoring would be undertaken at nearby residences and key bird breeding areas. Bland Shire Council advised that the 60 km/h zone would be extended further north along Ungarie Road where it exits West Wyalong to reduce traffic noise levels.

5.18.1.2 Environmental Assessment - Cowal Gold Mine Extension 2013

[Environmental Assessment - Cowal Gold Mine Extension Modification 2013]

A Noise and Blasting Assessment was prepared by SLR Consulting for the Environmental Assessment - Cowal Gold Mine Extension Modification - Appendix E in September 2013. No increase in the approved noise levels at privately-owned dwellings was expected due to the Modification. In summary, it was predicted:

- seven (7) privately-owned dwellings would be within the MOD 11 Noise Management Zone (i.e. 1 to 5 dBA above the project specific noise limit); and
- one (1) privately-owned dwelling would be within the MOD 11 Noise Affectation Zone (i.e. greater than 5 dBA above the project specific noise limit).

Noise management measures would continue to be implemented by Cowal Gold Operations and the noise monitoring program would continue as detailed in the Noise Management Plan.

Noise mitigation agreements to all privately-owned dwellings predicted to be within the Noise Management and Noise Affectation Zones, would continue to be available to affected property owners in accordance with Development Consent (DA 14/98) condition 6.4(b).

5.18.1.3 Environmental Assessment - Cowal Gold Mine Life Extension 2016

Environmental Assessment Appendix D – Noise and Blasting Assessment was prepared by Renzo Tonin & Associates in November 2016. 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.

The Modification would require additional mobile plant items (particularly haul trucks) due to the proposed deeper open pit that may result in a minor increase in noise levels at privately-owned dwellings.

The predictive noise modelling indicated:

- eight privately-owned receivers would be within the Modification Noise Management Zone (i.e. 1 to 5 A-weighted decibels [dBA] above the project-specific noise limit); and
- two privately-owned receivers would be within the Modification Noise Affectation Zone (i.e. greater than 5 dBA above the project specific noise limit).

Evolution Mining would continue to implement the noise management measures and the monitoring program detailed in the Cowal Gold Operations Noise Management Plan.

5.18.2 Noise Management Plan

[Consolidated Development Consent 14/98 MOD 11 condition 6.4(e)]

A Noise Management Plan prepared to satisfy condition Development Consent 14/98 MOD 11 condition 6.4(e) was submitted to DP&E on 14 November 2014 and approved on 5 March 2015.

The Noise Management Plan provides the procedures implemented for the management and monitoring of noise from the Cowal Gold Operations activities.

Management measures in the Noise Management Plan are listed in Table 5.18.2.

Table 5.18.2: Noise Management Plan Management Measures

Section/ Page No.	Noise Management Plan Management Measures	Comments	Implementation Status
s.6.1/p20	Monitoring will be conducted to evaluate, assess and report the $LAeq_{(15\ minute)}$ noise emission levels due to normal operations of the mine. Noise generated by the CGO will be measured in accordance with the relevant requirements and exemptions (including meteorological conditions) of the Industrial Noise Policy (INP).	Operator attended noise monitoring has been conducted by Spectrum Acoustics and reported quarterly between January 2016 and January 2017 at near-by residences and bird breeding areas to evaluate noise emissions from the Cowal Gold Operations. Monitoring locations have been: • N01 – New Lake Foreshore (ref); • NO5 – "Gumbelah" residence; • N13 – "Bungabulla" residence;	**Compliant**

Section/ Page No.	Noise Management Plan Management Measures	Comments	Implementation Status
s.6.2.2/p21	Operator attended noise monitoring will be conducted at quarterly intervals at the locations identified in Noise Management Plan section 6.1.	• NO9 – "Lakeview III" residence; • N10 – "Bramboyne" residence; • N11 – "Laurel Park" residence; • N12 – "The Glen" residence; and • N14 – "Hillgrove" (mine-owned) (ref site). Operator attended noise monitoring was conducted on 11 January, 10 April, 6 July and 28 November 2016, and 16 January 2017.	**Compliant**
s.6.2.3/p21	Data from the on-site meteorological station will be used for predicting noise impacts on nearby residences.	The on-site meteorological station is located near the southern ML 1535 boundary and provides meteorological data for real-time wind speed and direction, temperature (2m and 10 m), barometric pressure, humidity, solar radiation and rainfall, in accordance with Development Consent 14/98 MOD 13 condition 6.2) and EPL 11912 condition M4.	**Compliant**
s.6.2.7 /p23	Compliance will assessed against noise criteria given in the Noise Management Plan section 3. Exceedances of the noise criteria will be determined in consideration of the meteorological conditions under which they apply in accordance with the INP.	The quarterly noise reports prepared by Spectrum Acoustics between January 2016 and January 2017 have assessed compliance against the noise impact assessment criteria in Development Consent 14/98 MOD 13 condition 6.4(c) and EPL 11912 condition L4.	**Compliant**
s.6.3/24	An operational noise monitoring report will be prepared following the quarterly operational noise monitoring surveys.	The quarterly operational noise monitoring reports prepared by Spectrum Acoustics for the operational noise monitoring surveys, contain details of monitoring methodology, monitoring results, a summary of the key findings and any recommended mitigation measures (if necessary).	**Compliant**
s.8.1/p26	In the event that monitoring indicates an exceedance of the noise impact assessment criteria, mitigation measures will be implemented.	Mitigation measures have been implemented in accordance with the Industrial Noise Policy section 7.4 for noise reduction at any receiver, following receipt of a written request from the owner of an affected residence (Development Consent 14/98 MOD 13 condition 6.2(b)).	**Compliant**
s.9/p28	A complaints register will be maintained by the Community Relations Manager (EPL Cond. M5.1).	A 24hour complaints line (02) 6975 3454 and a Complaints Register maintained under the External Communications component of the Responsibility Information Management System (RIMS), tracks community complaints.	**Compliant**
s.12/p32	A CEMCC has been established for the Cowal Gold Operations in accordance with Development Consent 14/98 MOD 11 condition 9.1(d).	The CEMCC was established in 2003 and the inaugural meeting of the CEMCC occurred on 15 October 2003. The CEMCC has continued meeting quarterly since October 2003.	**Compliant**
s.14/p53	The Annual Review will be prepared (Development Consent Schedule condition 9.1).	The Annual Review prepared in accordance with Development Consent 14/98 MOD 10 condition 9.2, includes noise management and monitoring results in section 6.3.	**Compliant**

5.18.3 Noise Criteria

[Consolidated Development Consent 14/98 MOD 13 condition 6.4(c)]
[Environment Protection Licence 11912 condition L4]

Noise impact assessment criteria specified in Development Consent 14/98 MOD 13 condition 6.4(c) requires that noise emitted from the Cowal Gold Operations activities does not exceed the following levels at any residence on privately-owned land:

Noise Impact Assessment Criteria – Consolidated Development Consent 14/98 MOD 13 condition 6.4(c)	
Land	**Day/Evening/Night**
Laurel Park, Lakeview III	39 dB(A) $L_{Aeq\ (15\ min)}$
Bramboyne, The Glen, Caloola II	38 dB(A) $L_{Aeq\ (15\ min)}$
Lakeview, Lakeview II, Foxham Downs II	37 dB(A) $L_{Aeq\ (15\ min)}$
All other privately-owned land	35 dB(A) $L_{Aeq\ (15\ min)}$

Noise impact assessment criteria specified in Environment Protection Licence 11912 condition L4 requires that noise generated from the premises must not exceed criteria outlined in condition L4.1 Table 1 at any residence on privately owned land:

Noise Criteria - Environment Protection Licence 11912 condition L4.1	
Location	**Day/Evening/Night**
Gumbelah residence (SE)	36 dB(A) $L_{Aeq\ (15\ min)}$
Bramboyne residence (NW)	36 dB(A) $L_{Aeq\ (15\ min)}$
The Glen (N)	36 dB(A) $L_{Aeq\ (15\ min)}$
Bungabulla (SE)	36 dB(A) $L_{Aeq\ (15\ min)}$
All other privately-owned land	35 dB(A) $L_{Aeq\ (15\ min)}$

Recommendation: A Variation to EPL 11912 condition L4.1 Table 1 be requested to ensure consistency with the Development Consent 14/98 MOD 13 condition 6.4(c) Noise impact assessment criteria limits.

5.18.3 Noise Monitoring Program

[Consolidated Development Consent 14/98 MOD 13 condition 6.4(e)(iii)]
[Environment Protection Licence 11912 condition L4.5]

Quarterly attended noise monitoring surveys conducted by Spectrum Acoustics in accordance with Noise Management Plan section 6 – Noise Monitoring Program and Environment Protection Licence 11912 condition L4.5, assesses noise levels at the nominated locations and potential impact of noise on privately owned residences and wildlife:

Location No.	Location	Monitoring Source	Noise Assessment Criteria dB(A) $L_{Aeq\ (15\ min)}$	Noise Monitoring Results, May 2016 - April 2017
N01	New Lake Foreshore	NMP (reference site)	44	All <44
N05	Gumbelah residence (SE)	EPL condition L4.1	36	All < 36
N09	Lakeview III residence (W)	NMP (reference site)	36	All <36
N10	Bramboyne residence (NW)	EPL condition L4.1 DC 14/98 MOD 13	36 38	All < 36
N11	Laurel Park (NW)	DC 14/98 MOD 13	39	All <39
N12	The Glen (N)	EPL condition L4.1	36	All <36

		DC 14/98 MOD 13	38	
N13	Bungabulla (SE)	EPL condition L4.1	36	All <36
N14	Hillgrove" (mine-owned) (SW)	NMP (reference site)	35	All <35

5.18.4 Review of Noise Monitoring Results

The results of the quarterly operator attended noise monitoring surveys conducted between January 2016 and January 2017 (Spectrum Acoustics), demonstrated that mine noise dB(A)$L_{Aeq\ (15\ min)}$ did not exceed the operational noise criteria at any of the monitoring locations.

Data from monitoring when Cowal Gold Operations were audible at the monitoring location were analysed using the Bruel & Kjaer *"Evaluator"* software. This analysis showed the noise did not contain any tonal, impulsive or low frequency components as per definitions of *"modifying factor corrections"* in the NSW Industrial Noise Policy.

The dB(A) $L_{1eq\ (1\ min)}$ noise results under the operating and meteorological conditions did not exceed the sleep disturbance criterion at any monitoring location during the night time measurement periods. A summary of attended noise monitoring surveys between January 2016 and January 2017 indicated:

- No noise impact assessment criteria exceedances were recorded by the noise monitoring surveys between the January 2016 and January 2017.
- Attended noise monitoring results for the Laurel Park, Bramboyne, Bungabulla, The Glen and Gumbelah properties were generally less than 20 dB(A)$L_{Aeq\ (15\ min)}$, well below the noise impact assessment criteria defined in Development Consent Condition 6.4(c) and EPL 11912 condition L4.1.
- The quarterly reports by Spectrum Acoustics January 2016 to January 2017 surveys concluded that: "*under the operating and meteorological conditions at the times, for the 15minute compliance measurement periods, the mine noise did not exceed the operational noise assessment criterion at any monitoring location at any time*."
- Noise Mitigation Agreements were settled with "Gumbelah", "Laurel Park" and "Cowal North" land owners in accordance with Development Consent 14/98 MOD 10 condition 6.4(c) during 2014. No new agreements were negotiated in 2016/2017.

5.18.5 Conclusions

The Noise Management Plan prepared to satisfy the requirements of Development Consent 14/98 MOD 13 condition 6.4(e) was approved by DP&E on 5 March 2015.

The implementation of the control strategies outlined in the Noise Management Plan have minimised noise emissions from the Cowal Gold Operations and are considered best practice and effective as demonstrated by the noise monitoring data and environmental performance indicators.

Operational noise surveys have demonstrated that Cowal Gold Operations is in compliance with the noise assessment criteria imposed in the Development Consent 14/98 and EPL conditions. No operator attended noise monitoring results exceeded the noise impact assessment criteria, between the May 2016 and April 2017.

5.19 Community Complaints

Community complaints recorded during the May 2016 to April 2017 period are reported in the Annual Review section 9. The complaints received by Cowal Gold Operations have been:

Date of Complaint	Complaint	CGO Response
May 2016	No complaints recorded	
June 2016	No complaints recorded	
13 Jul 2016	Resident of Lake Cowal – called the CGM Community Complaints and Enquiry Number reporting shaking of his house at the approximate time of the blast in the Pit.	CGO Senior Environment Advisor contacted Saros Consultants to conduct an investigation into the blasting impacts on BM08.1. No vibration was recorded at BM8.1 monitor and overpressure levels at the time of blasting were only 101.0 dB(L).
August 2016	No complaints recorded	
September 2016	No complaints recorded	
24 Oct 2016	The Complainant called the CGO Senior Environmental Advisor (SEA) to say that they had just felt the blast at their home and it had given the house "a fair old shake".	Preliminary blast results were received from external consultants indicated that the blast was within compliance limits (105.5 dB(L)). When compared with historical data, results indicated that the overpressure was not attenuating at the same rate as when Lake Cowal is dry.
31 October and 9 Nov 2016	Employee behaviour - CGO employee that had parked their car blocking deliveries and preventing the business from accessing garbage bins.	The CGO Senior Social Responsibility Advisor visited the business, spoke to the owner and waited for the owner of the vehicle. The CGO employee was identified and spoken to regarding appropriate parking locations at the rear of the business.
December 2016	No complaints recorded	
January 2017	No complaints recorded	
February 2017	No complaints recorded	
March 2017	Truck driver was sprayed with rocks from an overtaking mine vehicle.	The truck driver didn't leave a name, but followed up with Mine driver who advised that the truck had slowed down, and he thought, the truck had pulled across for him to pass.
April 2017	No complaints recorded	

No noise or air quality complaints were received between May 20-16 and April 2017.

5.19.2 Conclusion

Four complaints were received between 1 May 2016 and 30 April 2017. Two of the complaints that were potentially related to the Cowal Gold Operations (blast related) were investigated and the blast monitor results verified that the blast overpressure was less than the 115dBL assessment criteria. All responses to the complaints occurred the same day as the complaint was received.

5.20 Independent Monitoring Panel

[Consolidated Development Consent 14/98 condition 9.2(b)]

The Independent Monitoring Panel (IMP) established in accordance with Development Consent 14/98 has prepared Annual Reports for the Cowal Gold Project between 2005 and 2016. Each IMP Report provides an overview of the annual reviews and independent audits required by Development Consent 14/98 conditions 9.1(b) and 9.2(a) and reviews the environmental management and results of monitoring undertaken by Cowal Gold Operations.

5.19.1 Independent Monitoring Panel Reports

The IMP visited the Cowal Gold Mine on the 15th September 2016 to examine progress on rehabilitation and

other environmental management activities, and to discuss operations with Cowal Gold Operations Environmental staff. The IMP also met onsite with senior Executives to confirm the ongoing commitment of Evolution Mining to best practice environmental management.

The 2016 Twelfth IMP Report made three recommendations that were responded to by Evolution Mining on 24 March 2017.

Table 5.17: Twelfth IMP Report (2016) Recommendations and Cowal Gold Operations Responses

Twelfth IMP Report (2016) Recommendations IMP Recommendation October 2016	Evolution Mining Response to IMP Recommendations (dated 24 March 2017)	Action and Status
Recommendation 1: *CGM should establish a research trial to investigate the most efficient method of controlling rye grass allowing for the successful establishment of native plant species by direct seeding, as first recommended in 2015. The trial design should be developed following a literature review on methods of establishing native species by direct seeding in the presence of rye and other exotic grasses.*	A trial will be established over a hectare on the upper south-western slopes of the Southern Waste Rock Emplacement and upper north-eastern slopes of the Northern Waste Rock Emplacement. The trial design by DnA will involve: 1. Immediate application of native seed mix onto newly profiled waste rock emplacement surface prior to any germination or establishment of Rye Grass, to assess the effectiveness of immediate seed application following profiling of the waste rock emplacement surface. 2. Application of a native seed mix once a Rye Grass cover and mulch/litter layer has been established, to assess the effectiveness of cultivation of the surface e to create bae gaps between the Rye Grass for seeding establishment whilst retaining the mulch/litter cover. Evolution Mining will also undertake a literature review of the methods of establishing native species via direct seeding in the presence of Rye Grass and exotic grass species.	Direct seeding trials commenced in Q1 2017 on the Southern Waste Rock Emplacement. Some germination of the native seeds that were spread on the upper south-western slopes of the Southern Waste Rock Emplacement was noted during the current audit in May 2017.
Recommendation 2: *CGM should (1) endeavour to establish the Substrate Profile Trial in boxes (described in the 10th Annual IMP Report) giving due consideration to the practicalities of watering in dry seasons and (2) excavate near established native trees and shrubs in the SWRE trials to determine root growth into subsoil materials and document the pH and EC trends in each profile. Results from these experiments should provide CGM with essential data on subsoil properties for future rehabilitation planning.*	(1) The Substrate Profile Trial, designed by DnA Environmental, is planned for commencement in June 2018 on the top surface of the Southern Waste Rock Emplacement and will involve the application of a number of cover systems and substrate treatments. (2) Evolution undertook an investigation into root penetration of tube-stock on the Northern Waste Rock Emplacement in November 2016. Initial results indicated that the roots are not particularly influenced by depth of topsoil. Rather the underlying hard and compacted oxide layer was providing a physical barrier resulting in tree and shrub roots growing laterally on top of the oxide layer.	Root penetration and soil characteristics including pH and EC will continue to be monitored as part of the rehabilitation program to understand the long term implication of substrate layers on the health and longevity of trees and shrubs.

Twelfth IMP Report (2016) Recommendations IMP Recommendation October 2016	Evolution Mining Response to IMP Recommendations (dated 24 March 2017)	Action and Status
Recommendation 3: *CGM should (1) ensure suppliers of bulk gypsum provide an analysis of gypsum purity with each bulk shipment and (2) recalculate the appropriate rate of gypsum to add to the various topsoil and subsoil materials to ensure the rates meet the specifications provided by McKenzie Pty Ltd in its 2013 report on "Soil Stockpile Characterisation Assessment".*	Analysis of the gypsum products for calcium, sulphur and X-ray diffraction to identify any mineral contaminants was undertaken by ALS in 2016. Gypsum application will be calculated based on the gypsum product, results from the gypsum quality assurance program and recommendation in the *"Soil Stockpile Characterisation Assessment".*	Evolution had analysis of gypsum products conducted and will implement a quality assurance program for gypsum purchased for the Cowal Gold Operations site.

5.19.2 Conclusion

The Independent Monitoring Panel Reports prepared for 2015 provided a useful third party review of the status of the Cowal Gold Operations activities in relation to environment management and rehabilitation. Cowal Gold Operations have responded to the Independent Monitoring Panel recommendations in a timely manner and developed programs to address the IMP recommendations.

6. Conclusions

The Cowal Gold Operations are being developed and operated generally in accordance with the Environmental Assessments and generally demonstrate a high level of compliance with Consolidated Development Consent 14/98 MOD 13.

The documentation and files held at the Cowal Gold Operations site and interviews/discussions with relevant site personnel provided the auditors with the required information and documentation for the verification of compliance of the operations with the Development Consent 14/98 MOD 13 and other statutory environmental approvals. The Cowal Gold Operations are being developed and operated generally in accordance with the Environmental Assessments and generally demonstrate a high level of compliance with Consolidated Development Consent 14/98 MOD 13.

Recommendations from the findings of the independent environmental audit are:

- All future revisions of the environmental management plans, strategies and monitoring programs should amend reference to Barrick where relevant and ensure the Development Consent condition numbers in the documents are consistent with Consolidated Development Consent 14/98 MOD 13 condition numbering.

- Consideration should be given to further controlling overabundant macropod numbers on the Fellman's Hill Revegetation Enhancement area.

- A Variation to EPL 11912 condition L4.1 Table 1 be requested to ensure consistency with the Development Consent 14/98 MOD 13 condition 6.4(c) Noise impact assessment criteria limits.

Attachments

Attachment A	Consolidated Development Consent 14/98 MOD 13 Conditions
Attachment B	Environment Protection Licence 11912 Conditions
Attachment C	Mine Lease 1525 Environmental Conditions

Assessment of compliance with the intent of the Development Consent 14/98, Environment Protection Licence 11912 and Mining Lease 1535 conditions are expressed in these Attachments to the Environmental Audit Report as:

Status	Description
Compliant	Where verifiable evidence has been collected to demonstrate that the intent of the elements of the requirements of the regulatory approval and appropriateness of implementation against the Project Approval Condition has occurred.
Compliant Ongoing	The intent and specific requirements of the condition have been met and the requirements are ongoing for the operation of project.
Administrative Non-compliance	A technical non-conformance with a condition of the consent that would not result in any risk or material harm to the environment (e.g. the submission of a report to government later than required under the approval conditions).
Non-Compliance – Low Risk	Non-compliance with the potential for moderate environmental consequences, but is unlikely to occur, or, potential for low environmental consequence but is likely to occur.
Non-Compliance – Moderate Risk	Non-compliance with the potential for serious environmental consequences but unlikely to occur, or, potential for moderate environmental consequence but likely to occur.
Non-Compliant – High Risk	Non-compliance with the potential for significant environmental consequences, regardless of the likelihood of occurrence.
Not active / Not triggered	A regulatory approval requirement / condition has an activation or timing that had not been triggered at the time of the audit, therefore a determination of compliance could not be made.
Noted	A statement or fact where no assessment of compliance is required.

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Attachment A

Consolidated Development Consent 14/98 Mod 13

Light blue type represents April 2016 modification – MOD 12
Green type represents January 2017 modification – MOD 13

Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
1	**General**			
1.1	***Adherence to terms of DA, EIS, SIS, etc.***			
1.1(a)	The development is to be carried out generally in accordance with the: (i) EIS; and (ii) conditions of this consent. *Note: The general layout of the development is shown in Appendix 1.*	• EIS, North Gold (WA) Ltd, prepared by Resource Strategies, 13 Mar 1998; • Administrative Modification (MOD 12), Evolution Mining, 16 May 2016 • Environmental Assessment – Mine Life Modification (Mod 13) 7 February 2017	The Cowal Gold Operations project has been developed generally in accordance with the 1998 EIS, Commission of Inquiry submissions, supporting documentation, and Consolidated Development Consent 14/98 Conditions of Approval and Modifications granted under the *Environment Planning and Assessment Act 1979*. MOD 12 Application was submitted to DP&E on 24 March 2016 the Notice of Modification was received by Evolution Mining on 16 May 2016. MOD 13 Application was submitted to DP&E on 11 November 2016 and Notice of Modification was received on 7 February 2017.	**Compliant Ongoing**
1.1(b)	If there is any inconsistency between the above documents, the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this consent shall prevail to the extent of any inconsistency.		No inconsistencies were noted between the documents during May 2016 to May 2017.	**Noted**
1.1(c)	The Applicant shall comply with any reasonable requirement/s of the Secretary arising from the Department's assessment of: (i) any strategies, plans, programs, reviews, reports, audits or correspondence that are submitted in accordance with this consent (including any stages of these documents); (ii) any reviews, reports or audits commissioned by the Department regarding compliance with this consent; and (iii) the implementation of any actions or measures contained in these documents.			**Noted**
1.2	**Limits on Consent**			
1.2(a)	The Applicant may only carry out mining operations until 31 December 2032. *Note: Under this consent, the Applicant is required to rehabilitate the site and perform additional undertakings to the satisfaction of the Secretary and DRE. Consequently, this consent will continue to apply in all other respects other than the right to conduct mining*	• Letter from DMR re Mining Application No. 45 – Cowal Gold Project, 18 June 2003 • Mining Lease 1535 issued with conditions, June 2003	Mining Lease (ML 1535) for the Cowal Gold Mine was granted on 13 June 2003 and mining operations commenced on 21 April 2005. The mining operations may continue until 31 December 2032.	**Noted**

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
	operations until the rehabilitation of the site and these additional undertakings have been carried out satisfactorily.			
1.2(b)	The Applicant shall not process more than 7.5 million tonnes of ore on site in any calendar year.		Processed ore has not exceeded 7.5 million tonnes in any calendar year since 2005.	**Compliant**
1.2(c)	The Applicant shall comply with the following maximum heights: (i) Northern Rock Emplacement - 308 m AHD; (ii) Southern Rock Emplacement - 283 m AHD; (iii) Southern Tailings Storage Facility - 272 m AHD; (iv) Northern Tailings Storage Facility - 264 m AHD; (v) Perimeter Rock Emplacement - 233 m AHD; and (vi) Mineralised Material Stockpile - 288 m AHD.		The maximum height of the waste emplacements and tailings storage facilities development will occur in accordance with the requirements of the Development Consent 14/98 MOD 13 condition 1.2(c).	**Compliant Ongoing**
1.2(d)	The Applicant shall not carry out any construction work on the Tailings Storage Facility embankments or rock buttress outside of the hours of 7 am to 6 pm.		Construction work on the Tailings Storage Facility(s) embankments are only conducted between 7 am to 6 pm.	**Compliant Ongoing**
1.3	**Structural Adequacy** The Applicant shall ensure that all new buildings and structures on site, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA. *Note: Under Part 4A of the EP&A Act, the Applicant is required to obtain construction and occupation certificates (where applicable) for the proposed building works. Part 8 of the EP&A Regulation sets out the requirements for the certification of the development.*		No new buildings or structures were constructed on the Cowal Gold Operations site between May 2016 and April 2017.	**Not triggered**
1.4	**Demolition** The Applicant shall ensure that all demolition work undertaken on site is carried out in accordance with *AS 2601-2001: The Demolition of Structures,* or its latest version.	• Letter from BSC re Demolition and Removal of Structures, 25 May 2015 • BSC Consent (ACDC/2015/007) for Demolition and Removal of Derelict Structure, 419 Uncle Bills Road, Lake Cowal (Lot 64 DP753083, 4 Jun 2015 • Email re Demolition of Derelict Buildings at Corringle, 15 Sep 2015	Bland Shire Council issued ACDC/2015/007 for the demolition and removal of derelict structure at 419 Uncle Bills Road, Lake Cowal (Lot 64 DP753083, on 4 Jun 2015. Approval to proceed with the demolition of derelict buildings at "Corringle" Bonehams Lane was received from BSC on 21 September 2015. No demolition of work was conducted at the Cowal Gold Operations site between May 2016 and April 2017.	**Not triggered**
1.5	**Protection of Public Infrastructure** Unless the Applicant and the applicable authority agree otherwise, the Applicant shall: (a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by the development; and (b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development.		No public infrastructure was damaged or relocated between May 2013 and April 2016.	Not triggered

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
	Note: This condition does not apply to any damage to roads caused as a result of general road usage			
1.6	**Operation of Plant and Equipment** The Applicant shall ensure that all plant and equipment used on site, or to monitor the performance of the development, is maintained and operated in a proper and efficient manner.		Plant and equipment used on site is maintained in the on-site workshops, and equipment and instruments used to monitor the performance of the Cowal Gold Operations, is maintained and operated in a proper and efficient manner.	**Compliant Ongoing**
1.7	**Staging and Updating Strategies, Plans or Programs** To ensure the strategies, plans and programs under this consent are updated on a regular basis, and that they incorporate any appropriate additional measures to improve the environmental performance of the development, the Applicant may at any time submit revised strategies, plans or programs to the Secretary for approval. With the agreement of the Secretary, the Applicant may also submit any strategy, plan or program required by this consent on a staged basis. The Secretary may approve a revised strategy, plan or program required under this consent, or the staged submission of any of these documents, at any time. With the agreement of the Secretary, the Applicant may prepare a revision of or a stage of a strategy, plan or program without undertaking consultation with all parties nominated under the applicable condition in this consent. *Note: While any strategy, plan or program may be submitted on a staged basis, the Applicant will need to ensure that the existing operations on site are covered by suitable strategies, plans or programs at all times. If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage to which the strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program.*		The strategies, plans and programs under Development Consent 14/98 have been revised and updated on a regular basis as necessary. The strategies, plans and programs to meet the requirements of Development Consent 14/98 MOD 11 were revised and updated as required in 2015. The revised documents were submitted to the relevant agencies for approval. Review and revision (as required) of the strategies, plans and programs to meet the requirements of Development Consent 14/98 MOD 13 had commenced at the date of this audit (May 2017).	**Compliant Ongoing**
1.8	**Dispute Resolution** In the event that the Applicant and the BSC or any Government agency, other than the Department, cannot agree on the specification or requirements applicable under this consent, the matter shall be referred by either party to the Secretary for resolution. The Secretary's determination on the dispute shall be final and binding on the parties.			**Not triggered**
2	**MINE MANAGEMENT**			
2.1	**Mine Management Plan, Operations and Methods** The Applicant shall prepare and implement a Mining Operations Plan for the development to the satisfaction of DRE. This plan must be prepared in accordance with any current guidelines issued for	• MOP Oct 2012 to Jan 2014 • Letter to DT&I- DRE re Extension of MOP to 31 Jan 2015, 27 Sep 2013	The Mining Operations Plans (MOP) have been prepared in accordance with the requirements of the Mining Lease 1535 condition 25, Development Consent 14/98 condition 2.1 and the NSW Department of Trade and Investment, Regional	**Compliant Ongoing**

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<table>
<tr><th>Condition No.</th><th>Consolidated Development Consent 14/98 MOD 13 Conditions</th><th>Verification</th><th>Comments</th><th>Compliance</th></tr>
<tr><td></td><td>such plans by DRE, and should include a geotechnical analysis and review of ongoing open pit development, the management of waste rock emplacements, and continued monitoring of the lake protection bund.</td><td>• Letter from DT&I-DRE re Approval of MOP Extension, 4 Oct 2013
• MOP April 2014 to April 2016
• MOP 1 Sep to 31 Aug 2018</td><td>Infrastructure and Services – Division of Resources and Energy (DTIRIS-DRE) ESG3: Mining Operations Plan (MOP) Guidelines, September 2013 (the MOP Guidelines) (DTIRIS-DRE, 2013).
The MOP for the period 30 April 2014 to 30 April 2016 describes the proposed operational mining activities for the approved Cowal Gold Operations.
The current MOP for 1 September to 31 August 2018 has been prepared and approved by DRE.</td><td></td></tr>
<tr><td>2.2</td><td>Ore, Waste and Concentrate Production
The Applicant shall not transport ore or other excavated materials not required for either construction or maintenance works from other mines or locations to the mine site without the written approval of the relevant councils.</td><td></td><td>No ore or excavated materials from other mines or locations have been transported to the Cowal Gold Operations site between May 2016 and May 2017.</td><td>Compliant Ongoing</td></tr>
<tr><td>2.3</td><td>Mine and Public Safety
The Applicant shall secure the mine site as described in the EIS. The fence for the mining lease boundary shall be designed to minimise the impact on water birds and aquatic species.</td><td></td><td>A 1.3m wire strand fence was erected around the Mining Lease 1535 area in 2004 in accordance with the design requirements. The ML 1535 boundary fence is maintained by Cowal Gold Operations.</td><td>Compliant</td></tr>
<tr><td>2.4</td><td>Rehabilitation</td><td></td><td></td><td></td></tr>
<tr><td>2.4(a)</td><td><u>Rehabilitation Objectives</u>
The Applicant shall rehabilitate the site to the satisfaction of DRE. This rehabilitation must be generally consistent with the proposed rehabilitation in the EIS (which is depicted in the Figure in Appendix 2) as amended by the approved rehabilitation strategy (see condition 3.8), and comply with the objectives in Table 1.
Table 1: Rehabilitation objectives
<table>
<tr><th>Feature</th><th>Objective</th></tr>
<tr><td>Mine site
(as a whole)</td><td>• Safe, stable and non-polluting. Final landforms designed to incorporate micro-relief and integrate with surrounding natural landforms.
• Constructed landforms are to generally drain to the final void.
• Minimise long term groundwater seepage zones.
• Minimise visual impact of final landforms as far as is reasonable and feasible</td></tr>
<tr><td>Final void</td><td>• Minimise to the greatest extent practicable:
- the size and depth of final void;
- the drainage catchment of final void;</td></tr>
</table></td><td>• Rehabilitation Management Plan, April 2016
• MOP 1 Sep 2016 to 31 Aug 2018</td><td>The Rehabilitation Management Plan (dated April 2016) was prepared to satisfy Development Consent 14/98 MOD 11 and 13 condition 2.4(c).
The overall objectives of the rehabilitation program to meet the requirements of Development Consent 14/98 MOD 11 and 13 condition 2.4(a) are described in the Rehabilitation Management Plan section 3:
<table>
<tr><th>Feature</th><th>Objective</th></tr>
<tr><td>Mine site
(as a whole)</td><td>• The waste emplacement landform design includes terraces that assists with integration into the natural landscape.
• The constructed landforms around the mine void generally drain to the active pit. The drainage to the void is collected in a sump that is dewatered for operation reasons
• Progressive rehabilitation of tailings storage facilities outer batter and waste emplacements reduce the visual impacts of the landforms.</td></tr>
<tr><td>Final void</td><td>Not yet triggered.</td></tr>
</table></td><td>Compliant Ongoing</td></tr>
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<table>
<tr><th>Condition No.</th><th>Consolidated Development Consent 14/98 MOD 13 Conditions</th><th>Verification</th><th>Comments</th><th>Compliance</th></tr>
<tr><td></td><td>
<table>
<tr><td></td><td>- risk of flood interaction for all flood events up to and including the Probable Maximum Flood;
• To be permanently separated from Lake Cowal by the Lake Protection Bund.
• Highwall to be long term stable</td></tr>
<tr><td>Surface infrastructure</td><td>• To be decommissioned and removed, unless DRE agrees otherwise</td></tr>
<tr><td>Agriculture</td><td>• Restore or maintain land capability generally as described in the EIS</td></tr>
<tr><td>Rehabilitation and other vegetated land</td><td>• Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems</td></tr>
<tr><td>Community</td><td>• Ensure public safety
• Minimise adverse socioeconomic effects associated with mine closure</td></tr>
</table>
</td><td></td><td>
<table>
<tr><td>Surface infrastructure</td><td>Not yet triggered</td></tr>
<tr><td>Agriculture</td><td>Not yet triggered</td></tr>
<tr><td>Rehabilitation areas and other vegetated land</td><td>Rehabilitation and native ecosystems are being established on waste dumps and monitoring is being undertaken using Ecosystem Function Analysis to assess progression against key indicators.</td></tr>
<tr><td>Community</td><td>Security fencing, signage and personnel are in place preventing unauthorised access to mining operations.
Socioeconomic effects associated with mine closure will be addressed in the Mine Closure Plan.</td></tr>
</table>
</td><td></td></tr>
<tr><td>2.4(b)</td><td><u>Progressive Rehabilitation</u>
The Applicant shall rehabilitate the site progressively as soon as reasonably practicable following disturbance. All reasonable and feasible measures must be taken to minimise the total area exposed for dust generation at any time. Interim stabilization and rehabilitation strategies shall be employed when areas prone to dust generation cannot be permanently rehabilitated.
Note: It is accepted that some parts of the site that are progressively rehabilitated may be subject to further disturbance at some later stage of the development.</td><td></td><td>Progressive rehabilitation of disturbed areas of the Cowal Gold Operations MLA is occurring as soon as reasonably practicable in accordance with the MOP.
Progressive rehabilitation of waste dumps, tailings storage facility outer slopes and the Lake Protection Bund has been undertaken. The mine has modified rehabilitation techniques to take into the results from site rehabilitation trials and expert advice. Waste rock and topsoil are now blended to form an erosion resistant surface that encourages deep infiltration of water. Waste rock is placed over dispersive subsoil and then topsoil is placed over the waste rock and deep ripped. The placement of waste rock over the dispersive subsoil significantly reduces the potential for dust generation and erosion from waste dumps.</td><td>Compliant Ongoing</td></tr>
<tr><td>2.4(c)</td><td><u>Rehabilitation Management Plan</u>
The Applicant shall prepare and implement a Rehabilitation Management Plan for the development to the satisfaction of DRE. This plan must:
(i) be prepared in consultation with the Department, DPI (Water), OEH, DPI, BSC and the CEMCC;
(ii) be prepared in accordance with any relevant DRE guideline;
(iii) describe how the rehabilitation of the site would be integrated with the biodiversity offset strategy for the development;</td><td>• Rehabilitation Management Plan, Feb 2015
• Letter to OEH re Rehabilitation Management Plan, 13 Feb 2015
• Letter to NOW/DPI (Water) re Rehabilitation Management Plan, 13 Feb 2015</td><td>A Rehabilitation Management Plan to satisfy Development Consent 14/98 MOD 11 condition 2.4(c) was prepared in accordance with DRE guidelines in February 2015 and submitted for consultation to the relevant agencies on 13 February 2015:
<table>
<tr><th></th><th colspan="2">Rehabilitation Management Plan</th></tr>
<tr><th>Agency for comments</th><th>Date Submitted for Comment</th><th>Date Response Received</th></tr>
</table>
</td><td>Compliant</td></tr>
</table>

<table>
<tr><th>Condition No.</th><th>Consolidated Development Consent 14/98 MOD 13 Conditions</th><th>Verification</th><th>Comments</th><th>Compliance</th></tr>
<tr><td></td><td>(iv) include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, and triggering remedial action (if necessary);
(v) describe the measures that would be implemented to ensure compliance with the relevant conditions of this consent, and address all aspects of rehabilitation including mine closure, final landform (including final voids) and final land use;
(vi) include interim rehabilitation where necessary to minimise the area exposed for dust generation;
(vii) include a program to monitor, independently audit and report on the effectiveness of the measures, and progress against the detailed performance and completion criteria; and
(viii) build to the maximum extent practicable on the other management plans required under this consent.</td><td>• Letter to DP&E re Rehabilitation Management Plan, 24 Feb 2015
• Letter from DP&E re Rehabilitation Management Plan, 24 Feb 2015
• Letter from DRE re Approval of MOP and Rehabilitation Management Plan, April 2016</td><td><table><tr><td>DP&E</td><td>13 Feb 2015</td><td>24 Feb 2015</td></tr><tr><td>OEH</td><td>13 Feb 2015</td><td>13 Mar 2015</td></tr><tr><td>NOW</td><td>13 Feb 2015</td><td>18 Feb 2015</td></tr><tr><td>DPI(Fisheries)</td><td>13 Feb 2015</td><td>26 Feb 2015</td></tr><tr><td>BSC</td><td>13 Feb 2015</td><td>18 Feb 2015</td></tr><tr><td>CEMCC</td><td>13 Feb 2015</td><td>27 Mar 2015</td></tr></table>The Rehabilitation Management Plan was revised to address the responses from the agencies and the revised Rehabilitation Management Plan submitted to DRE for approval. The Cowal Gold Operations amended MOP (2014-2016) was submitted with the revised Rehabilitation Management Plan to DRE on 2 October 2015.
Approval of the Rehabilitation Management Plan and MOP from DRE was received in April 2016.</td><td></td></tr>
<tr><td>2.5</td><td>Security Deposits and Bonds
Security deposits and bonds will be paid as required by DRE under mining lease approval conditions.</td><td>• DPI Tax Invoice for ML 1535 Area 2636ha, 10 Jul 2016</td><td>Security deposits and bonds required under Mining Lease 1535 have been lodged with DRE as required. The Annual Rent for ML 1535 lodged with DPI was sighted during the audit.</td><td>Compliant</td></tr>
<tr><td>3</td><td>HERITAGE, FLORA AND FAUNA AND LAND MANAGEMENT</td><td></td><td></td><td></td></tr>
<tr><td>3.1</td><td>Heritage Management</td><td></td><td></td><td></td></tr>
<tr><td>3.1(a)</td><td>The Applicant shall:
(i) prepare and implement a Heritage Management Plan for the development to the satisfaction of the Secretary. The plan shall be prepared in consultation with Bland District Historical Society, BSC, and Lake Cowal landholders/residents and address non-indigenous cultural heritage issues associated with the development;
(ii) prepare and implement an Indigenous Archaeology and Cultural Management Plan for the development to the satisfaction of the Secretary. The plan shall be prepared in consultation with NPWS, the Local Aboriginal Land Council, a consultant archaeologist, any other stakeholders identified by NPWS; and identify future salvage, excavation and monitoring of any archaeological sites within the DA area prior to and during development, and to address Aboriginal cultural heritage issues; and
(iii) retain a Cultural Heritage Officer approved by the West Wyalong Local Aboriginal Land Council who is to be available on site during construction earthworks.</td><td>• Heritage Management Plan Sept 2003
• Letter to DP&E re Heritage Management Plan, 2 Mar 2015
• Letter to DP&E re Indigenous Archaeology and Cultural Heritage Management Plan, 2 Mar 2015
• Letter from DP&E re Indigenous Archaeology and Cultural Heritage Management Plan, 10 Mar 2015</td><td>(a)(i) A Heritage Management Plan was prepared and approved on 25 September 2003 in consultation with the Bland District Historical Society, BSC, and Lake Cowal landholders/ residents. The Heritage Management Plan was reviewed during 2015 and DP&E was advised on 10 March 2015 no revision was necessary.
(a)(ii) The Indigenous Archaeology and Cultural Management Plan prepared in consultation with the NPWS, Wiradjuri-Condobolin Cultural Heritage Company. Dr Colin Pardoe (Principal Consulting Archaeologist) was approved by DoP on 11 November 2003. The Indigenous Archaeology and Cultural Management Plan was reviewed in 2015 and a letter to DP&E provided to advise no revision was required. DP&E responded on 10 March 2015 with comment that “reference to approvals, and requirement for monitoring results to be published on the company website.”
(a)(iii) Cultural Heritage Officers are provided by WCC, (under the guidance of the Principal Consulting</td><td>Compliant</td></tr>
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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
			Archaeologist) to undertake archaeological site survey/ investigations prior to any land disturbance or earthworks at the Cowal Gold Operations ML 1535 site, as required.	
3.1(b)	The Applicant shall monitor the effectiveness of measures outlined in the Heritage Management Plan and Indigenous Archaeology and Cultural Management Plan to the satisfaction of the Secretary. A summary of the monitoring results is to be published annually on the Applicant's website for the development.	• Indigenous Archaeology and Cultural Heritage Management Plan 2003 • 2014 Annual Review • 2015 Annual Review • 2016 Annual Review	The management of Aboriginal heritage has been undertaken in accordance with the Indigenous Aboriginal and Cultural Heritage Management Plan. The majority of cultural heritage work continues to be surface and subsurface monitoring for topsoil removal. The monitoring of management actions and registered sites/items have been reported in the Annual Reviews section 6.11.	**Compliant**
3.2	**Flora and Fauna Management**			
3.2(a)	(a) The Applicant shall: (i) minimise the removal of trees and other vegetation from the mine site and restrict any clearance to the areas occupied by the mine activity, buildings and paved surfaces, and those areas necessary for fire control in accordance with BSC's requirements, and have regard to the draft Mid-Lachlan Regional Vegetation Management Plan (or its final version); (ii) not locate topsoil stockpiles within any area of Wilga Woodland in the DA area as identified in Figure 3-13 in the 1998 EIS (Appendix 3); and (iii) not disturb any area of Belah Woodland in the DA area as identified in Figure 3-13 in the 1998 EIS.		(i) The Flora and Fauna Management Plan (2015) section 9.8 outlines the procedures to avoid removal of vegetation within ML 1535 to the areas occupied by the mine activity, buildings and paved surfaces, and areas necessary for fire control including delineating vegetation that shall not be cleared prior to any works occurring on site. The Vegetation Clearance Protocol includes the management of enhancement of remnant vegetation. The Flora and Fauna Management Plan (2015) section 9.3, outlines the Remnant Vegetation Enhancement Program for the Cowal Gold Operations. The Vegetation Clearance Protocol (VCP) has ensured that clearance of vegetation has been restricted to areas on ML 1535 required for mine activity, buildings, paved surfaces and areas necessary for fire control. (ii) No topsoil stockpiles have been located on Wilga Woodland areas. Cowal Gold Operations avoids stockpiling topsoil within the areas of vegetation, (that includes the areas of Weeping Myall – Belah – Poplar Box Shrubland and Woodland within the Cowal Gold Operations site); (iii) Belah Woodland areas within the ML 1535 have not been disturbed.	
3.2(b)	The Applicant shall prepare and implement a Flora and Fauna Management Plan for the development to the satisfaction of the Secretary. The shall be prepared in consultation with DPI (Fisheries) and OEH, and cover the mining lease area and monitoring of bird breeding areas as identified by the Applicant in consultation with OEH.	• Letter from OEH re Comments on Flora and Fauna Management Plan, 8 May 2015 • Letter to OEH re Revised Flora and Fauna	The Flora and Fauna Management Plan was approved by the Director General on 30 October 2003 with an amended Flora and Fauna Management Plan was approved on 30 October 2008.	**Compliant**

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
		Management Plan, 19 May 2015 • Email from NSW DPI-Fisheries re Flora and Fauna Management Plan, 6 May 2015. • Flora and Fauna Management Plan, May 2015 • Letter to DP&E re Finalised Flora and Fauna Management Plan,19 May 2015 • Letter from DP&E re Approval of the Flora and Fauna Management Plan, 21 March 2016	A revised Flora and Fauna Management Plan for Development Consent 14/98 MOD 10, including a Threatened Species Management Strategy was submitted to DP&I in 13 November 2012. The Flora and Fauna Management Plan to satisfy the requirements of Development Consent 14/98 MOD 11 condition 3.2(b) was prepared in consultation with DPI (Fisheries) and OEH and approved by DP&E on 21 March 2016.	
3.2(b)	The plan shall include, but not be limited to: (i) methods for monitoring daily and seasonal fauna usage of tailings dams (eg. species, number, location, habits), and whether deaths or other effects or incidents are occurring. Usage of the tailings dams shall be reported to the OEH on a six monthly basis, unless otherwise directed by the Secretary;	• Seasonal Wildlife Use Pattern of the CGM Tailings Facility, Donato Environmental Services: • Jan to Jun 2015 • Jul to Dec 2015 • Jan to Apr 2016 • May to Dec 2016	(i) Flora and Fauna Management Plan Section 4 prepared for Development Consent 14/98 MOD 11 has the protocol for the monitoring and reporting of any native fauna deaths or other incidents involving native fauna on the mining lease. Twice daily patrols of the perimeter of the dams occur to observe and record fauna usage, fence integrity and or maintenance requirements. Patrols occur after dawn and in late afternoon. The patrols check for any dead animals or other effects or incidents occurring. A range of data is collected during each patrol including the behaviour of fauna on/near/over the dams, fauna effects and incidents (as defined in the Flora and Fauna Management Plan) and fauna deaths. The six-monthly Donato reports on seasonal wildlife use of the tailings facility have been submitted to EPA/OEH and the reports conclude: *"No deaths due to cyanide have been recorded on the tailings storage facilities and cyanide concentrations have been consistently below the level that would expected to cause mortality"*.	**Compliant Ongoing**
3.2(b)	(ii) development of a protocol for the reporting of any native fauna deaths or other incidents involving native fauna on the mining lease to the OEH, DRE, CEMCC and in the case of fish, DPI (Fisheries). Native fauna deaths (except those attributable to	• Seasonal Wildlife Use Pattern of the CGM Tailings Facility, Donato Environmental Services:	(ii) a protocol for the reporting of any native fauna deaths or other incidents involving native fauna on the mining lease has been developed to satisfy the requirements of Development Consent 14/98 condition 3.2(b) and is	**Compliant Ongoing**

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	physical trauma such as vehicle strike) must be reported as per this protocol within 24 hours (or next working day). The Applicant shall maintain a record of any native fauna deaths or other incidents and this record must be published annually on the Applicant's website for the development;	• Jan to Jun 2015 • Jul to Dec 2015 • Jan to Apr 2016 • May to Dec 2016 • Flora and Fauna Management Plan, section 6, May 2015	presented in the Flora and Fauna Management Plan section 6, approved by DP&E on 21 March 2016. Any reportable fauna deaths are notified to the relevant government authorities (OEH, DRE and DPI(Fisheries) in the case of fish deaths) and the CEMCC, in accordance with Development Consent Condition 3.2(b)(ii) (except for fauna deaths attributable to physical trauma such as vehicle strike). Fauna deaths and incidents at Cowal Gold Operations site are also reported in the Annual Reviews.	
3.2(b)	(iii) provision for fauna autopsy facilities to enable the cause of any deaths to be quickly determined. The protocol required in sub clause (ii) above shall also detail collection and autopsy of fauna. This shall include but not be limited to collection and recording procedures, autopsy procedures and laboratory tests;	• Flora and Fauna Management Plan Section 6.3, May 2015 • Letters to DPI/DECC/DoP re Native Fauna Incident Notifications • West Wyalong Veterinary Clinic Incident Report 11142, Mar 2015	(iii) arrangements for fauna autopsies by the West Wyalong Veterinary Clinic is in place to determine the cause of any fauna death at the Cowal Gold Operations site. Any fauna for autopsy are transported to the West Wyalong Veterinary Clinic on the same day as they are recorded/found or on the morning following their discovery. Autopsy reports are prepared by the West Wyalong Veterinary Clinic and the reports provided to Evolution Mining.	**Compliant Ongoing**
3.2(b)	(iv) provision of contingency measures for reducing cyanide levels in the tailings dams in the event it is established that fauna deaths are occurring from cyanide in tailings dam water;	• Flora and Fauna Management Plan Section 8, May 2015 • Monthly Cyanide Monitoring Data, May 2016 to May 2017 • 2014 Annual Review • 2015 Annual Review • 2016 Annual Review	(iv) Cyanide levels in the discharge to the tailings storage facilities have been compliant with the approved concentration criteria for all samples collected between May 2016 and May 2017. One potential cyanide related death was reported during this audit period. The affected bird could not be retrieved form the TSF.	**Compliant Ongoing**
3.2(b)	(v) development of effective mechanisms to keep fauna and avifauna away from the tailings storages, which shall include, but not be limited to: • minimising the area of open water in the tailings dams; • fencing to prevent both medium and large fauna, terrestrial and amphibians, from entering the area. Mesh will have holes no greater than 5cm in diameter; • making the area non conducive to the establishment of wildlife habitats, as far as possible; • use of netting where practical; and • use of current best practice methods for avifauna deterrence;	• Flora and Fauna Management Plan Section 3, May 2015 • Implementation Plan to Protect Fauna from Interactions with the Tailings Storage Facilities, Feb 2005 • Seasonal Wildlife Use Pattern of the CGM Tailings Facility, Donato Environmental Services: o Jan to Jun 2015 o Jul to Dec 2015 o Jan to Apr 2016 o May to Dec 2016	(v) Flora and Fauna Management Plan section 3 outlines the mechanisms to keep fauna and avifauna away from the tailings dams. The mechanisms include: a. minimising the area of open water in the tailings dams (by maximising dry densities and reuse of supernatant water) b. Fencing to prevent fauna accessing the tailings dam. c. Making the area non-conducive to establishment of wildlife habitat. d. Use of netting; e. Avifauna deterrence mechanisms. A security fence was erected around the tailings storage facilities in 2005, to restrict the entry of terrestrial fauna. The security fence entrance gate to the TSF is closed except	**Compliant Ongoing**

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
			during entrance of vehicles and equipment to the tailings facilities. Deterrent devices have been installed at the tailings storage facilities with radar activated audio units, sonic gas guns and other passive devices to avifauna visitation to the tailings storage facilities. The monitoring of wildlife visitation to the tailings storage facilities have been reported by Donato and the reports stated that cyanide levels were consistently below the level that would be expected to result in faunal mortality. The six monthly Donato reports monitored wildlife visitation to the tailings storage facilities to assess the implementation of measures to protect fauna from interaction with the Tailings Storage Facilities.	
3.2(b)	(vi) development of plans for the rescue and rehabilitation of wildlife that may become bogged/sick/trapped in the tailings dams or elsewhere within the mining lease area;	• Flora and Fauna Management Plan Section 5, May 2015	(vi) Flora and Fauna Management Plan section 5 outlines plans for the rescue and rehabilitation of wildlife from the tailings storage facilities and elsewhere within the mining lease area. A small number of fauna have been rescued from the tailings storage facilities between May 2016 and May 2017. Management of water on the tailings storage facilities has kept the area of exposed water to a minimum (by returning supernatant water to the process plant). The number of birds attracted to the tailings storage facilities has been small because of the lack of water on the storages.	**Compliant Ongoing**
3.2(b)	(vii) methods to conserve and enhance wildlife values around Lake Cowal, within the mine lease area, including: protection and enhancement of existing retained habitats;	Flora and Fauna Management Plan Section 9, May 2015	(vii) Flora and Fauna Management Plan section 9 outlines the methods employed by the Cowal Gold Operations to conserve and enhance wildlife values around Lake Cowal and within the mining lease area. Methods used include: a. Compensatory Wetland Management Plan initiatives. b. Remnant vegetation enhancement program. c. Rehabilitation of ML 1535 disturbance areas. d. Threatened species management protocol. e. Vegetation clearance protocol. f. Weed management. g. Pest control. Protection of habitat around the Lake Cowal foreshore within ML 1535 has resulted in establishment of	**Compliant Ongoing**

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
			native tree species following the inundation of Lake Cowal in 2010-2012.	
3.2(b)	(viii) provision to continue fauna and flora, fish, and aquatic invertebrate monitoring of the Lake Cowal region as documented in the EIS including investigation of fauna deaths off site if requested by the Secretary where it is considered the deaths are attributable to activities on the site;	• Surface, Groundwater, Meteorological and Biological Monitoring Program	(viii) Biological monitoring has occurred on Lake Cowal during periods of inundation of the Lake when the water level was above the 204.5 AHD trigger level. Fish and aquatic invertebrate monitoring was undertaken between 2010 and 2012 when Lake Cowal was inundated. No monitoring was conducted between 2013 and 2016 as the lake was dry throughout. A further biological survey monitoring report was prepared following inundation of Lake Cowal during 2016.	**Compliant Ongoing**
3.2(b)	(ix) details to relocate any threatened species and/or its habitat away from disturbed areas that are created by mine operations. This will include placement and maintenance of suitable types and numbers of artificial roosting boxes for bats such as the Greater Long-eared Bat and other animals (eg birds/possums) in undisturbed areas of the mine site; and	• Flora and Fauna Management Plan, May 2015 • Threatened Species Management Protocol	(ix) Flora and Fauna Management Plan Section 10 presents the details to relocate any threatened species and/or habitat from CGO disturbance areas. The Flora and Fauna Management Plan Section 10 outlines the commitment to provide habitat for herpetofauna, install nest boxes and the provision of bat roosts. The Threatened Species Management Protocol was initiated during 2006 and 2007 for the relocation of active Grey-Crowned Babblers (a threatened species under the NSW *Threatened Species Conservation Act*) nesting sites in an area of the Cowal Gold Mine development where vegetation clearance (including Grey-Crowned Babblers habitat) was required. A revision of the Threatened Species Management Protocol in 2012 occurred to include the Inland Forest Bat, Sloanes Froglet and Woodland birds. The revised Threatened Species Management Protocol was accepted by the DECCW on 23 February 2011 and submitted to DoP on 13 November 2012. The Threatened Species Management Protocol was not triggered between May 2016 and April 2017.	**Compliant Ongoing**
3.2(b)	(x) details of monitoring the mine's impacts particularly on birdlife in bird breeding areas identified by the Applicant in consultation with OEH, threatened fauna and flora, and fish and aquatic invertebrates around Lake Cowal, and outline contingency measures should impacts be identified as occurring.	• Flora and Fauna Management Plan may 2015 • Surface Water, Groundwater, Meteorology and Biological Monitoring Program, May 2015	(x) Flora and Fauna Management Plan section 12 outlines the program to monitor impacts of the mine on birdlife in bird breeding areas, threatened flora and fauna and fish and aquatic invertebrates The fauna, flora, fish and aquatic invertebrates monitoring has been conducted in accordance with the Surface Water, Groundwater, Meteorology and Biological Monitoring Program.	Compliant Ongoing

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
		• Waterbird Monitoring Survey Progress Report, Water Research Network, Federation University, Ballarat, August 2016 • Fish and Aquatic Invertebrate Surveys, frc Envirtonmental, Dec 2016	Monitoring surveys of waterbirds and bird breeding areas was conducted around the mine site and Lake Cowal area by Dr Peter Gell Water Research Network, Federation University, Ballarat, following filling of Lake Cowal in 2016. The report dated August 2016 provided survey results of species and estimates of numbers of individual species identified at the monitoring locations. A fish and aquatic invertebrate surveys was conducted by frc Environmental in December 2016 - the primary findings of the survey were that the fish communities in the study area were species-poor and were dominated by eastern Gambusia that accounted for 98% of the catch, with the remaining 2% comprising goldfish and common carp. The Donato reports on seasonal wildlife use patterns at the Cowal Gold Operations site have not provided evidence that any impacts from the mine operations have occurred on any threatened fauna on the site.	
3.2(c)	The Applicant shall implement a Threatened Species Management Protocol for the development to the satisfaction of the Secretary, which will include provisions for targeted searches prior to construction and proposed mitigation measures where threatened flora or fauna species are found.	• Flora and Fauna Management Plan Appendix A - Threatened Species Management Protocol, Oct 2003 • Letter from DECCW re Threatened Species Management Strategies for Inland Forest Bat, Sloanes Froglet and Woodland Birds, 23 Feb 2011 • Flora and Fauna Management Plan, May 2015	A Threatened Species Management Protocol was prepared for implementation (if required) as part of the Flora and Fauna Management Plan. The threatened species management strategies for the Inland Forest Bat, Sloanes Froglet and Woodland Birds were submitted to and accepted by DECCW without objections on 23 February 2011 and submitted to DP&I. The Threatened Species Management Protocol and Vegetation Clearance Protocol are current in the Flora and Fauna Management Plan (May 2015) and would be implemented for any new areas where clearance of vegetation and/or disturbance of threatened species would occur.	**Compliant Ongoing**
3.2(d)	The Applicant shall monitor the effectiveness of measures outlined in the Flora and Fauna Management Plan and Threatened Species Protocol to the satisfaction of the Secretary. A summary of these monitoring results shall be published annually on the Applicant's website for the development.	• Flora and Fauna Management Plan, May 2015 • Surface Water, Groundwater, Meteorology and Biological Monitoring Program, May 2015	The monitoring of fauna, flora, fish and aquatic invertebrates is conducted in accordance with the Flora and Fauna Management Plan and Surface Water, Groundwater, Meteorology and Biological Monitoring Program. The monitoring results are reported in the Annual Reviews and are available on the company website: http://www.evolutionmining.com.au/cowal/.	**Compliant**
3.3	**Compensatory Wetland Management Plan**			
	The Applicant shall prepare and implement a Compensatory Wetland Management Plan for the development to the satisfaction of the **Secretary**. The plan shall be prepared in consultation with OEH and DPI (Fisheries), Lake Cowal Landowners Association, and	• Compensatory Wetland Management Plan,25 Sep 2003	A Compensatory Wetland Management Plan was submitted and approved by the Director-General on 25 September 2003. The Plan was reviewed in 2008 and 2015 and no revision was required.	**Compliant**

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<table>
<tr><th>Condition No.</th><th>Consolidated Development Consent 14/98 MOD 13 Conditions</th><th>Verification</th><th>Comments</th><th>Compliance</th></tr>
<tr><td></td><td>Lake Cowal Environmental Trust, and detail compensation measures for the loss of 120 hectares of wetland, through the enhancement of at least the equivalent area of existing wetland within the mine lease area during operation and following closure of the mine. The plan shall include, but not be limited to:
(a) a definition of wetland which shall be all land up to the high water mark of Lake Cowal recognising that river red gum habitat is below high water mark;
(b) measures to manage the enhanced wetlands without adversely impacting adjoining private properties; and
(c) measures to improve habitats for wildlife including waterbirds, fish, aquatic organisms etc, in the wetlands covered by the plan.</td><td>• Compensatory Wetland Management Plan, Oct 2008
• Compensatory Wetland Regeneration Monitoring Results Report, DnA Environmental, 2013
• Compensatory Wetland Regeneration Monitoring Results Report, DnA Environmental, Feb 2014</td><td>The Compensatory Wetland Management Plan addresses the requirements of this condition:
(a) section 3 of the Compensatory Wetland Management Plan defines a wetland in accordance with the NSW Wetlands Management Policy;
(b) section 7 addresses the measures to manage the enhanced wetlands without adversely impacting adjoining private properties; and
(c) section 6 addresses the measures to improve habitats for wildlife in the wetlands covered by the plan. (a)(i) (not Compensatory Wetland Management Plan Section 6.1 notes that the compensatory wetland area covers approximately 140 ha of wetland. Annual vegetation monitoring of the compensatory wetland area has been undertaken annually.</td><td></td></tr>
<tr><td>3.4</td><td>Biodiversity Offset Strategy</td><td></td><td></td><td></td></tr>
<tr><td>3.4(a)</td><td>The Applicant shall implement the biodiversity offset strategy summarised in Table 2, shown conceptually in Appendix 4, and described in detail in the EIS to the satisfaction of the Secretary.
Table 2: Summary of Biodiversity Offset Strategy
<table><tr><th>Area</th><th>Minimum Size (ha)</th></tr><tr><td>Northern Offset Area (Enhancement Area)</td><td>80</td></tr><tr><td>Southern Offset Area (Enhancement Area) (including 230 ha Mod 11 extension)</td><td>260</td></tr><tr><td>Area (Revegetation Area)</td><td>100</td></tr><tr><td>Total</td><td>440</td></tr></table></td><td>• Rehabilitation and Offset Strategy, Dec 2010
• Letter to DP&I re Long Term Security of Offset Areas, 19 Jun 2012
• Letter to DP&I re draft Planning Agreement, 8 Dec 2015</td><td>The proposed offset land is owned by Evolution Mining (part of the ‘Lakeview’ and ‘Hillview’ properties) and is secured for long term use as offset areas.
Cowal Gold proposed preparation of a Voluntary Conservation Agreement in consultation with OEH in December 2011. The OEH responded on 17 May 2012 stating that “from a preliminary assessment the proposed Northern Offset Area appears to be of low conservation value and is not likely to be suitable for a Conservation Agreement.”
A draft Planning Agreement was prepared and submitted to the DP&E as an appropriate mechanism for securing the offset areas and submitted a draft Planning Agreement for the offset areas to DP&E on 8 December 2015.
Evolution Mining was awaiting a response from DP&E (at the date of this audit May 2017) in relation to the Planning Agreement for the long term protection of the biodiversity offset areas.</td><td>Compliant Ongoing</td></tr>
<tr><td>3.4(b)</td><td>By the end of July 2015, unless the Secretary agrees otherwise, the Applicant shall make suitable arrangements for the long term protection of the biodiversity offset areas in Table 2 to the satisfaction of the Secretary.</td><td>• Letter to DP&E re Timing for Securing Biodiversity Offset Security and Lodgement of Conservation Bond, 8 Dec 2015
• Letter from DP&E re Timing Biodiversity Offset Area</td><td>Extensions of time have been requested for the submission and approval of the Planning Agreement, and granted by DP&E.</td><td>Compliant Ongoing</td></tr>
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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
		Security and Bond, 18 Dec 2015		
3.4(c)	The Applicant shall prepare and implement a Biodiversity Offset Management Plan for the development to the satisfaction of the Secretary. This plan must be prepared in consultation with OEH, and include: (i) a description of the short, medium, and long term measures that would be implemented to: • implement the biodiversity offset strategy; and • manage the remnant vegetation in the offset areas; and • integrate the implementation of the biodiversity offset strategy to the greatest extent practicable with the rehabilitation of the site. (ii) -(iii) detailed performance and completion criteria for evaluating the performance of the biodiversity offset strategy, and triggering remedial action (if necessary); (iv) a detailed description of the measures that would be implemented for: • enhancing the quality of existing vegetation and fauna habitat in the biodiversity offset areas; • creating native vegetation and fauna habitat in the biodiversity offset areas; • maximising the salvage of resources from the disturbance areas on site, including the vegetative and soil resources – for beneficial use in the biodiversity offset areas; • collecting and propagating seed; • controlling weeds and feral pests; • controlling erosion; • managing any grazing; • controlling access; and • bushfire management; (v) a seasonally-based program to monitor and report on the effectiveness of these measures, and progress against the detailed performance and completion criteria; (vi) a description of the potential risks to successful implementation of the biodiversity offset strategy, and the contingency measures that would be implemented to mitigate against these risks; and (vii) details of who would be responsible for monitoring, reviewing, and implementing the plan.	• Letter to OEH re Biodiversity Offset Management Plan, 25 Feb 2015 • Letter from OEH re Comments on Biodiversity Offset Management Plan,13 Mar 2015 • Letter to DP&E re Biodiversity Offset Management Plan Rev B, 19 May 2015 • Letter from DP&E re Approval of Biodiversity Offset Management Plan, 21 March 2016	A Biodiversity Offset Management Plan was prepared to satisfy Development Consent 14/98 MOD 11 condition 3.4(c) and submitted to the DP&E in May 2015. Approval was provided by DP&E on 10 September 2015. The Biodiversity Offset Management Plan includes: (i) section 4.3 provides a description of the short, medium, and long term measures to implement the biodiversity offset strategy and manage remnant vegetation in the offset areas. Section 4.4 addresses integration of the biodiversity offset strategy with rehabilitation of the site. (ii) - (iii) Section 4.6 discusses performance indicators and completion criteria for evaluating the performance of the biodiversity offset strategy, and triggering remedial action (if necessary); (iv) Section 4.3 provides a description of the measures that would be implemented for: enhancing the quality of existing vegetation and fauna habitat in the biodiversity offset areas; creating native vegetation and fauna habitat in the biodiversity offset areas and includes detailed descriptions of measures that will be implemented for the Biodiversity Offset Areas; o Remnant vegetation enhancement; o Revegetation implementation; o Collection and propagation of seed for revegetation works; o Weed and feral pest control; o Erosion control; o Management of grazing; o Access control; o Bushfire management; o Bushfire management; o Salvage and re-use of material for habitat. (v) section 4.5 outlines the seasonally-based monitoring program that is conducted annually to report on the effectiveness of the measures, and progress against the performance and completion criteria; (vi) Section 5 addresses potential risks to implementation of the biodiversity offset strategy, and section 8 addresses	**Compliant**

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
			contingency measures to mitigate against these risks (None of the contingency measures were required to be implemented between May 2013 and April 2016); (vii) monitoring, reviewing, and implementing the plan are addressed in section 6. (DnA Environmental were engaged by Cowal Gold Operations to develop the detailed rehabilitation and offset area monitoring program).	
3.4(d)	By the end of July 2015, unless otherwise agreed by the Secretary, the Applicant shall lodge a Conservation Bond with the Department to ensure that the biodiversity offset strategy is implemented in accordance with the performance and completion criteria in the Biodiversity Offset Management Plan. The sum of the bond shall be determined by: (i) calculating the full cost of implementing the biodiversity offset strategy (other than land acquisition costs); and (ii) employing a suitably qualified and experienced person to verify the calculated cost to the satisfaction of the **Secretary**. The calculation of the Conservation Bond must be submitted to the Department for approval at least 1 month prior to the lodgement of the bond. If the offset strategy is completed generally in accordance with the completion criteria in the Biodiversity Offset Management Plan to the satisfaction of the Secretary, the Secretary will release the bond. If the offset strategy is not completed generally in accordance with the completion criteria in the Biodiversity Offset Management Plan, the Secretary will call in all, or part of, the conservation bond, and arrange for the completion of the relevant works. *Note: Alternative funding arrangements for long-term management of the biodiversity offset strategy, such as provision of capital and management funding as agreed by OEH as part of a Biobanking Agreement or transfer to conservation reserve estate can be used to reduce the liability of the conservation and biodiversity bond. The sum of the bond may be reviewed in conjunction with any revision to the Biodiversity Offset Management Plan.*	• Letter from DP&E Approval of Quantity Surveyor, 12 Nov 2015 • Email to DP&E re Conservation Bond Estimation, 30 Nov 2015 • Letter from DP&E re Lodgement of Conservation Bond, 3 Dec 2015 • Letter from Evolution Mining re Timing for Securing Biodiversity Offset Security and Lodgement of Conservation Bond, 8 Dec 2015 • Letter from DP&E re Timing Biodiversity Offset Area Security and Bond, 18 Dec 2015	A proposed total offset bond amount of $339,570.00 for implementation for the offset strategy within the mine closure security bond was submitted to DII Titles as part of the MOP Rehabilitation bond (dated April 2010). The draft Planning Agreement submitted to DP&E on 8 December 2015 included a calculation of $1.7M (determined by Greening Australia) for an offsets bank guarantee to be lodged with DP&E. Evolution Mining submitted the calculation of the Conservation Bond for the biodiversity areas to the DP&E on 8 December 2015. DP&E granted an extension of time for securing the offset areas, consulting on the Planning Agreement and lodging the conservation bond.	**Compliant Ongoing**
3.5	**Prevention of Soil Erosion**			
3.5(a)	The Applicant shall prepare and implement the following plans to the satisfaction of the **Secretary**: (a) an erosion and sediment control management plan for the site which shall include, but not be limited to:	• Revised and Amended Erosion and Sediment Control Plan Dec 2009	(a)The Erosion and Sediment Control Plan prepared for the Cowal Gold Operations site development was approved in 2003. Amendments and revisions to the Erosion and Sediment Control Plan were approved on 10 March 2010.	**Compliant**

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	(i) details of temporary and permanent sediment and erosion control systems to be used during both mine construction and operation, including for earthworks associated with landscaping; (ii) details of salinity management; and (iii) a program for reporting on the effectiveness of the sediment and erosion control systems and performance against objectives contained in the approved erosion and sediment control management plan, and EIS; and	• Letter from DoP re Revised Erosion and Sediment Control Plan, 10 March 2010 • Letter to DP&E re Addendum to Erosion and Sediment Control Plan, 24 Feb 2015	A further Addendum to the Erosion and Sediment Control Plan was provided to DP&E on 24 February 2015 and approved in March 2016: (i) section 3 addresses temporary and permanent sediment and erosion control systems to be used during both mine construction and operation; (ii) section 6 addresses details of salinity management; (iii) section 11 addresses reporting on effectiveness and performance of sediment and erosion control systems.	
3.5(b)	(b) a soil stripping management plan for the site which shall include, but not be limited to: (i) details of the management of soil stockpiles, soil stripping techniques and scheduling; (ii) any further requirements of DRE; and (iii) a program for reporting on the effectiveness of the soil stripping methods and performance against objectives contained in the soil stripping management plan, and EIS.	• Soil Stripping Management Plan, Revision L Feb 2015 • Topsoil-Subsoil Stockpile Map Apr 2012 • Topsoil-Subsoil Stockpile Map Mar 2013 • Topsoil-Subsoil Stockpile Map Mar 2014 • Letter to DP&E re Revised Soil Stripping Management Plan, 4 Feb 2015 • Letter from DP&E re Approval of the Soil Stripping Management Plan, 21 Mar 2016	An original Soil Stripping Management Plan was approved by DPNIR in 2003 and the Soil Stripping Management Plan revised to reflect Development Consent 14/98 MOD 11 in February 2015. The requirements of the Soil Stripping Management Plan have been implemented for any new area of clearance within the Cowal Gold Operations ML 1535: (i) sections 4.1, 4.2 and 4.3 of the Soil Stripping Management Plan describe soil stripping techniques. section 4.4 describes stockpile management. (ii) section 1 of the Soil Stripping Management Plan outlines DRE requirements for stripping of topsoil and stockpiles. (iii) section 8 Annual Review addresses the program for reporting the effectiveness of the soil stripping methods and performance against objectives contained in the soil stripping management plan, and section 4.4.3 describes the topsoil stockpile database and soil stockpile register, that is updated annually as new stockpile information is obtained and a location map developed for the site. The segregation of topsoil and other infill material occurs as the material is stripped.	**Compliant**
3.6	**Bushfire Management** The Applicant shall: (a) ensure the development is suitably equipped to respond to any fires on site; and (b) assist the RFS and emergency services as much as practicable if there is a fire in the vicinity of the site.	• Bushfire Management Plan, Aug 2003 • Letter from BSC re Bushfire Management Plan, 5 Aug 2003 • Memorandum of Understanding, Bland-Temora Rural Fire Zone NSW Rural Fire Service and Cowal Gold Mine, 20 Feb 2007	(a) A Bushfire Management Plan was prepared for the Cowal Gold Operations site and approved by DMR and BSC on 24 July 2003. The Bushfire Management Plan has been regularly reviewed and no revision of the document has been required. (b) Cowal Gold Operations has two Category 7 fire tenders and two emergency firefighting units of approximately 1000L each, housed in an Emergency Response Station near the main maintenance workshop. Cowal Gold Operations can assist RFS brigades (Wamboyne, Clear Ridge and Blow Clear) with response to fire in the vicinity of the Cowal Gold site if requested.	**Compliant**
3.7	**Land Management**	• Land Management Plan Oct 2008	A Land Management Plan was prepared and approved by the Director General in October 2003. An addendum to the	**Compliant**

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<tr><th>Condition No.</th><th>Consolidated Development Consent 14/98 MOD 13 Conditions</th><th>Verification</th><th>Comments</th><th>Compliance</th></tr>
<tr><td></td><td>The Applicant shall prepare and implement a Land Management Plan for all its land holdings to the satisfaction of the Secretary. The plan shall be prepared in consultation with OEH, DPI (Water), DPI (Agriculture) and BSC, be consistent with the Flora and Fauna Management Plan, provide for proper land management including, but not limited to:
(a) pastures and remnant vegetation management;
(b) control of vermin and noxious weeds as required by the Local Lands Services, BSC and other relevant authorities;
(c) integration of the latest versions of the Jemalong Land and Water Management Plan and the Lake Cowal Land and Water Management Plan; and
(d) feral animal control.</td><td>• Compensatory Wetland Management Plan Oct 2008
• Land Management Plan (Addendum), May 2015
• Letter from DPI-Water re Land Management Plan Addendum, 27 Apr 2015</td><td>Land Management Plan to satisfy Development Consent 14/98 MOD 11 condition 3.7 was prepared and submitted to DP&E and approved on 27 April 2015.
The current Land Management Plan includes:
(a) sections 4 and 5 address pasture and remnant vegetation management;
(b) sections 6 and 7 address control of vermin and noxious weed control; and
(c) section 2 integration of the Jemalong and Lake Cowal Land and Water Management Plan; and
(d) section 7 addresses feral animal control.</td><td></td></tr>
<tr><td>3.8</td><td>Rehabilitation Strategy
The Applicant shall develop a strategy for the long term land use of the DA area on decommissioning of the mine site. The strategy shall include, but not be limited to: appropriate landuses within the DA area, which may include areas for conservation, agriculture or recreation, long term management of the area, environmental impacts of any uses and maintenance of necessary drainage characteristics and other features provided on the site. The strategy for long term land use of the DA area shall be submitted by Year 7 of mining operations or five years before mine closure, whichever is the sooner, in consultation with DRE, DPI (Water), OEH, BSC, CEMCC, and to the satisfaction of the Secretary.</td><td>• Land Management Plan, Addendum, May 2015
• Rehabilitation Management Plan, Revision D, Apr 2015
• Consultation correspondence related to the Rehabilitation Strategy:
o DTI, 20 Aug 2013
o DPI-NOW, 11 Jun 2013
o NSW EPA, 11 Jun 2013
o OEH, 13 Jul 2013
o Bland Shire Council 11 Jun 2013.
o CEMCC, 13 June 2013.</td><td>The Rehabilitation Strategy for the long term land use for the Cowal Gold Operations has been outlined in the Land Management Plan section 9.2 – Long Term Land Use. and the Rehabilitation Plan section 3.2.
The Rehabilitation Strategy includes land uses within the ML 1535 area, that may include areas for conservation, agriculture or recreation, long term management of the area, environmental impacts of any uses and maintenance of necessary drainage characteristics and other features provided on the site.
The Rehabilitation Strategy for the long term land use of the DA area is due for submission to the Secretary DP&E by Year 7 of mining operations or five years before mine closure.</td><td>Ongoing</td></tr>
<tr><td>4</td><td>WATER MANAGEMENT</td><td></td><td></td><td></td></tr>
<tr><td>4.1</td><td>Water Supply</td><td></td><td></td><td></td></tr>
<tr><td>4.1(a)

4.1(b)</td><td><u>General</u>
The Applicant shall ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of operations on site to match its available water supply.
Note: Under the Water Act 1912 and/or the Water Management Act 2000, the Applicant is required to obtain all necessary water licences for the development.

<u>Bland Creek Palaeochannel Borefield</u>
The maximum daily extraction of water from the Bland Creek Palaeochannel Borefield shall not exceed 15ML/day or 3650ML/year.</td><td></td><td>(a) Current Bore License Certificates have been granted under Section 115 of the Water Act 1912 to provide sufficient water for all stages of the development,
(b) Water extraction from the Bland Creek Palaeochannel bore-field has not exceeded 15ML/day or 3650 ML extracted in any year. Calendar year Bland Creek Palaeochannel bore-field extraction was:
<table><tr><th>Year</th><th>Bland Creek Palaeochannel bore-field Extraction</th></tr><tr><td>Jan – Dec 2016</td><td>948</td></tr><tr><td>Jan - Dec 2015</td><td>1385.38 ML</td></tr><tr><td>Jan - Dec 2014</td><td>1317.45ML</td></tr><tr><td>Jan - Dec 2013</td><td>1376.85 ML</td></tr></table></td><td>Compliant</td></tr>
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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
4.2	**Pipeline & Borefield Infrastructure**			
4.2(a)	All pipeline and borefield infrastructure for the development shall be: (i) constructed in consultation with DPI (Fisheries), and in accordance with the requirements of NOW; (ii) laid in such a way so as not to impede the passage of fish or other animals, or interfere with flood behaviour or the passage of boats and vehicles; and (iii) equipped with an automatic shutdown device so water pumping is immediately stopped in the event of any pipe rupture. The water supply shall not be restarted until the rupture is located and repaired.		(i) The pipeline and borefield infrastructure constructed for the Cowal Gold Operations was designed and constructed in accordance with the requirements of DPI (Fisheries and NOW (DPI-Water); (ii) The pipelines have been buried in a trench below the lake bed so as not to impede the passage of fish or other animals, or interfere with flood behaviour or the passage of boats and vehicles; (iii) Automatic shutdown devices are fitted to the water pipeline from the production bores to the process plant. The automatic shutdown devices were tested prior to commencement of processing. No pipe ruptures had occurred between May 2014 and May 2017.	**Compliant**
4.3	**Disposal of Excess Water** There shall be no disposal of water from the internal catchment drainage system on site to Lake Cowal under any circumstances.	• Water Management Plan, Revision T, May 2015	The Water Management Plan (2015) section 4.2.1 and Water Management Plan (2015) section 4.1.2 describe the lake isolation system for water management on the ML 1535 site. The water management system is constructed to collect all water from the mine operations area and direct it to holding ponds for reuse within the process plant or on site for the mine operations (dust control etc.). No release of water to Lake Cowal from the Cowal Gold Operations internal catchment system occurred between May 2015 and May 2017.	**Compliant**
4.4	**Water Management**			
4.4(a)	The Applicant shall prepare a Water Management Plan for the development to the satisfaction of the Secretary. This plan must: (i) be prepared in consultation with DPI (Water) and **EPA;** (ii) include, but not be limited to, the following matters: • management of the quality and quantity of surface and groundwater within and around the mine site, including water in the up catchment diversion system, internal catchment drainage system, dewatering bores, Bland Creek Palaeochannel borefield and water supply pipeline from the borefield, which shall include preparation of monitoring programs (see below); • measures to prevent the quality of water in Lake Cowal or any surface waters being degraded below the relevant ANZECC water quality classification prior to construction due to the construction and/ or operation of the mine; • identification of any possible adverse effects on water supply sources of surrounding land holders, and land holders near the Bland Creek Palaeochannel Borefield as a result of the mining	• Water Management Plan Revision T, May 2015 • Letter from DP&E re Approval of Water Management Plan, 19 Nov 2015 • Surface Water, Groundwater, Meteorological and Biological Monitoring Program – Mining Operation Phase, May 2015 • Letter from DoP re Approval of Revised Surface Water, Groundwater, Meteorological and	A Site Water Management Plan was approved by DoP in 2003. Amendments to the original plan were the Water Management Plan revised to satisfy Development Consent 14/98 MOD 11. Revision T was approved by DP&E on 19 November 2015. (i) The Water Management Plan was prepared in consultation with the DPI-Water and EPA; (ii) The current Water Management Plan includes: • section 4 addresses management of the quality and quantity of surface and ground water within and around the mine site; • section 5 addresses measures to prevent the quality of water in Lake Cowal or any surface waters; • section 6 addresses identification of any possible adverse effects on surrounding land holders water supply sources;	**Compliant**

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
	operations, and implementation of mitigation measures as necessary; • identification of changes in flood regime on productive agricultural land in Nerang Cowal as a result of the mine perimeter bund intruding into Lake Cowal, and provision of appropriate compensation measures for affected landholders based on inundation of productive land caused by the changed flood regime; • construction and operation of water storages D1 and D4 as first flush systems with initial captured run-off waters from the outer batters of northern and southern emplacement dumps reporting to water storage D6; • measures to manage and dispose of water that may be captured behind the temporary perimeter bund during construction of that bund; • integration of the latest versions of the Jemalong Land and Water Management Plan and the Lake Cowal Land and Water Management Plan; • measures to evaluate water quality data obtained from monitoring under this consent against records of baseline monitoring undertaken prior to the consent; and • a program for reporting on the effectiveness of the water management systems and performance against objectives contained in the approved site water management plan, and EIS.	Biological Monitoring Program, Nov 2015	• section 7 addresses identification of changes in flood regime on productive agricultural land in Nerang Cowal; • section 8 addresses construction and operation of water storages; • section 9 addresses measures to manage and dispose of water captured behind the temporary perimeter bund; • section 10 addresses integration of the Jemalong Land and Water Management Plan and the Lake Cowal Land and Water Management Plan into the Site Water Management Plan; • section 4.3 addresses measures to evaluate water quality data obtained from monitoring; and • section 12.2.1 addresses program for reporting the effectiveness of the water management systems and performance.	
4.4(b)	The Applicant shall develop a strategy for the decommissioning of water management structures, including water storages both in and around the mine site, the water pipeline and borefield infrastructure associated with the development, and long term management of final void and Lake protection bund. The strategy shall include, but not be limited to, long term monitoring of the water quality in the final void and stability of Lake protection bund and void walls, and options for alternate uses of the water pipeline. The strategy for the final void shall be submitted by Year 7 of mining operations or five years before mine closure, whichever is the sooner, in consultation with DPI (Water), EPA, DRE and CEMCC, and to the satisfaction of the Secretary.	• Water Management Plan Nov 2015 • Draft Strategy for Decommissioning of Cowal Gold Operations Water Management Structures, May 2013 • Letter to DP&E re Draft Strategy for Decommissioning of Cowal Gold Operations Water Management Structures, 8 Aug 2013	The development of a strategy for the decommissioning of water management structures will be addressed in the Mine Closure Plan for the project, when it is developed. A draft strategy for the decommissioning of the Cowal Gold water management structures was distributed to the DTIRIS, DPI-Water, EPA, DPI-Fisheries and CEMCC. Comments were then collated and submitted to the DP&I on 8 August 2013. The strategy for decommissioning of water management structures, including water storages, is not required until Year 7 of the mining operations or five (5) years before mine closure.	**Not yet triggered**
4.4(c)	The Applicant shall: (i) construct the Lake protection bund and site water and tailings storages to the requirements of DPI (Water), EPA and DSC; and (ii) provide a geotechnical report on pit/void wall construction/stability to DRE prior to commencement of mining operations and construct pit/void in accordance with the requirements of DRE.	• Site Water Management Plan Apr 2013 • Lake Protection Bund Operation and Maintenance Manual, Jun 2005	A geotechnical report on the pit/void wall construction/ stability was prepared by URS and submitted to DPI in March 2005. A Lake Protection Bund Operation and Maintenance Manual was produced by URS in June 2005. Remedial maintenance works on the Lake Protection Bund to repair any eroded areas and the stabilisation of the access track have been undertaken and rock armouring of	**Compliant Ongoing**

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
		• 2006 Surveillance Report for Lake Protection Bund, URS, 11 Dec 2006 • Rock Amour Suitability Geotechnical Assessment for the Cowal Gold Mine, Geo-Environmental Management, Dec 2008 • Geotechnical Assessment of Bund and Pit Walls, Dr Neil Matte URS, 2015-2016	the bund walls occurred to stabilise and reinforce the walls of the bund. Several reports were commissioned to investigate the stabilisation, rehabilitation and revegetation of the reactive surface materials on the bunds. The conclusions and recommendations in these reports were assessed and the optimal actions taken for the long term stabilisation of the bunds. A geotechnical assessment of the bund and pit walls is conducted annually by Dr Neil Mattes of URS to assess stability.	
4.5	**Water Monitoring**			
4.5(a)	(a) The Applicant shall construct and locate: (i) surface water monitoring positions in consultation with DPI (Water) and EPA, and to the satisfaction of the Secretary, at least three months prior to the commencement of construction works unless otherwise directed by the Secretary; and (ii) groundwater monitoring positions in consultation with DPI (Water) and EPA, and to the satisfaction of the Secretary at least six months prior to the commencement of construction works unless otherwise directed by the Secretary.	• Surface Water, Groundwater, Meteorological & Biological Monitoring Program May 2015	Surface and groundwater monitoring locations were selected and constructed following consultation with the with DPI-Water and EPA: (a)(i) Surface water monitoring locations were approved by the Director-General in March 2003. (a)(ii) Groundwater monitoring locations were selected and constructed following consultation with the with DPI (Water) and EPA and monitoring has been conducted in accordance with the EPL conditions P1.3 and M2.1.	**Compliant Ongoing**
4.5(b)	The Applicant shall prepare and implement a detailed monitoring program for the development to the satisfaction of the Secretary. This plan must be prepared in consultation with DPI (Water), EPA, DPI (Fisheries), and be directed towards monitoring the potential water impacts of the mine, including water in the up catchment diversion system, internal catchment drainage system, dewatering bores, all borefields associated with the development, and water supply pipeline, pit/void, Lake Cowal, and any other waters in and around the mine site for all stages of the development. The monitoring program will include the development of adequate chemical and biological monitoring in the waters of Lake Cowal, when water is present, by suitably qualified and experienced staff or consultants to the satisfaction of the DPI (Water) and EPA, and in the case of biological monitoring DPI(Fisheries), DPI (Water) and EPA must be satisfied as to sampling design, including sample locations, sample frequency, sample handling, transport and analysis, sampling parameters and reporting of analysis results. The results and interpretation of surface and ground water monitoring (including biological monitoring) are to be published on the Applicant's website for the development on a regular basis, or as directed by the Secretary.	• Surface Water, Groundwater, Meteorological & Biological Monitoring Program, Revision L, May 2015 • Monitoring Data Reports to EPA, DPI-Water, DPI-E and - Jan to Mar, Apr-Jun, Jul-Sep, Oct-Dec 2007 to 2016 • Monthly Cyanide Monitoring Reports to EPA DME and DP&E, May 2015 to May 2017	The Surface Water, Groundwater, Meteorological & Biological Monitoring Program was subjected to an independent review as recommended by the Independent Monitoring Panel. The review concluded: *"it provides a robust program of monitoring that will contribute to the assessment of the effectiveness of environmental impact mitigation measures during the operations phase of the Project".* The Surface Water, Groundwater, Meteorological & Biological Monitoring Program to satisfy the monitoring requirements in Development Consent 14/98 MOD 11 condition 4.5 was prepared and submitted to DP&E in May 1015 and approved on 19 November 2015. Conformance with the water monitoring program has occurred between May 2016 and May 2017 with water sampling on the mine site and in the Lake Cowal area conducted in accordance with the revised Surface Water, Groundwater, Meteorological and Biological Monitoring Program 2015. The surface and groundwater monitoring results have been provided to the agencies and all monitoring results (including	**Compliant Ongoing**

Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
			cyanide monitoring) is reorted in the Annual Reviews and EPA Annual Return.	
4.5(c)	The Applicant shall prepare and implement a monitoring program for the detection of any movement of the Lake protection bund, water storage and tailings structures and pit/void walls during the life of the mine, with particular emphasis on monitoring after any seismic events prior to commencement of construction works, in consultation with DPI (Water) and DRE, and to the satisfaction of the Secretary.	• Monitoring Program Results for the Detection of any Movement of the Lake Protection Bund, Water Storage and Tailings Structures and Pit/Void Walls, Jan 2015 to May 2017	The program for the detection of any movement in the lake protection bund, water storage and tailings structures and pit/void walls was approved by the Director-General on 9 October 2003. Monitoring points in the Lake Protection Bund (located each 200m on top of the banks) were installed in accordance with the program. No significant movement has been recorded at any of the monument survey points. The Monitoring Program was reviewed for MOD 11 and submitted to DP&E on 15 May 2015.	**Compliant Ongoing**
4.6	**Catchment Areas and Watercourses** The Applicant shall as a landowner have on-going regard for the provisions of the latest versions of the Jemalong Land and Water Management Plan, Lake Cowal Land and Water Management Plan, Mid-Lachlan Regional Vegetation Management Plan, and any future catchment/land and water management plans that may become relevant to the area.	• Water Management Plan, Revision T, section 10, Nov 2015 • Land and Water Management Plan for Lake Cowal and Associated Wetlands, 1999 • Jemalong Land and Water Management Plan 2000	The provisions in the Jemalong Land and Water Management Plan, Lake Cowal Land and Water Management Plan, and Mid-Lachlan Regional Vegetation Management Plan were considered and have been included where relevant in the Water Management Plan.	**Compliant**
5	**HAZARDOUS MATERIALS AND TAILINGS MANAGEMENT**			
5.1	**Waste Rock Emplacement and Management** The Applicant shall construct and manage the waste rock emplacement as set out in the EIS, and to the satisfaction of DRE.	• MOP (draft) Apr 2014 to Apr 2016, dated Apr 2014 • Letter from DRE re Approval of MOP Apr 2014 to Apr 2016, 9 Oct 2014	The waste rock emplacements are being established and managed generally in accordance with the EIS and the current MOP.	**Compliant Ongoing**
5.2	**Tailings Emplacement and Management** (a) construct the tailings dams to the requirements of DRE, EPA and DSC and in consultation with DPI (Water); and (b) construct and compact the floor of the tailings storages as required to a permeability acceptable to the DRE and EPA in consultation with DPI (Water).	• Letter to DEC re Permeability Test Report for STSF, Dec 2005 • Letter from Dam Safety Committee re STSF Stage 2 Construction, 9 Jan 2009 • NTSF Surveillance Report 2013, URS, 18 Dec 2013 • STSF Surveillance Report, URS, 18 Mar 2014 • NTSF Surveillance Report 2013, URS, 18 Dec 2015 • STSF Surveillance Report, URS, 18 Mar 2016	(a) The NTSF and STSF were constructed in accordance with the requirements of the DECC (EPA) /DSC and DPI (Minerals). The STSF initially received tailings between March 2006 and April 2007. Tailings disposal then occurred to the NTSF while construction of the first lift of the STSF walls was occurring during 2008. Subsequent lifts of the tailings storage activities have continued in accordance with the construction requirements of the relevant agencies. The Dam Safety Committee provided a response to the Construction Report in January 2009 advising that the review of the NTSF and STSF satisfies the Committee's requirements. (b) Permeability Test Reports have been submitted to EPA, DRE, DSC and DP&E.	**Compliant Ongoing**
5.3	**Cyanide Management**			

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
5.3(a)	Cyanide levels The Applicant shall ensure that cyanide levels of the aqueous component of the tailings slurry stream do not exceed: 20mg CN_{WAD}/L (90percentile over six months), and 30mg CN_{WAD}/L (maximum permissible limit at any time), at the process plant.	• Letters to DRE/DP&E/EPA re Quarterly Cyanide Monitoring Results, April 2015 to March 2016 • Letters to DRE/DP&E/EPA re Quarterly Cyanide Monitoring Results, April 2016 to March 2017	The cyanide levels in the slurry stream at the process plant have not exceeded <20mg CN_{WAD}/L (90 percentile) or 30mg CN_{WAD}/L (maximum permissible limit) between May 2016 and April 2017. CN_{WAD} levels at the Cowal Gold have been forwarded to DREI/DP&E/EPA and the CEMCC quarterly between May 2015 and April 2017.	**Compliant**
5.3(b)	Cyanide Management The Applicant shall prepare and implement a cyanide management plan for the development to the satisfaction of the Secretary. The plan is to be prepared in consultation with DRE, EPA and DPI (Water) and include monitoring and reporting on cyanide use on the site. The plan shall make provision for, but is not limited to: (i) containing cyanide contaminated waters entirely within the mine site; (ii) maintaining weak acid dissociable (WAD) cyanide levels at the process plant to the levels stated in condition 5.3(a); (iii) contingency measures for cyanide reduction.	• Cyanide Management Plan, Jan 2006 • Letter from DECC re Addendum to Cyanide Management Plan, 24 Aug 2007 • Letter from DoP re Amendments to Cyanide Management Plan, 24 Mar 2010 • Letter from DECCW re Proposed Change to Cyanide Monitoring Point, 11 Jun 2010 • Letter from NoW re Addendum to Cyanide Management Plan, 23 Aug 2010 • Letter from DoP re Proposed Amendments to Cyanide Management Plan, 20 Dec 2010 • Cyanide Management Plan Addendum, Dec 2010	The Cyanide Management Plan prepared in accordance with Development Consent 14/98 condition 5.3(b) was approved by the Director-General of DoP on 9 January 2006. Amendments to the Cyanide Management Plan and monitoring program in relation to the analysis method (i.e. use of the picric acid analysis procedure) was agreed with the DPI, DECC (EPA), and DP&E in December 2006, January 2007, October 2008 / 2009 and 20 December 2010. The cyanide levels in the slurry stream at the process plant have not exceeded 20mg CN_{WAD}/L (90 percentile) or 30mg CN_{WAD}/L (maximum permissible limit) between May 2015 and May 2017.	**Compliant Ongoing**
5.3(c)	Wildlife Deaths In the event of wildlife deaths occurring due to cyanide, review of cyanide levels shall occur by the EPA in consultation with the Applicant and DRE. Any decision to require cyanide reduction shall include, but not be limited to, consideration of the number of fauna deaths, the species involved, antecedent condition of species, methods employed at the time to prevent use of tailings dams by fauna, and antecedent climatic and surface water conditions of the Lake and surrounding area. The Applicant shall notify the CEMCC of any reductions in cyanide levels as soon as practicable.	• Letter from DECC re Fauna Reporting Protocol, Feb 2009 • Environmental Incident Register, Jan 2014 to Apr 2015 • Seasonal Wildlife Use Pattern of the CGM Tailings Facility, Donato Environmental Services: o Jan to Apr 2016 o May to Dec 2016 o Jan to Apr 2017	Cowal Gold Operations Environmental and Process plant personnel have attended avifauna training workshops presented by Donato Environmental Services on Wildlife Monitoring and the International Cyanide Management Code. The training module provided procedures, reporting requirements, observation records and species list/reference images. No wildlife deaths proven to be attributable to the tailings storage facilities occurred between May 2016 and April 2017. (One bird death was observed between May 2016 and April 2017, but the body was not able to be recovered.	**Compliant**

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<table>
<tr><th>Condition No.</th><th>Consolidated Development Consent 14/98 MOD 13 Conditions</th><th>Verification</th><th>Comments</th><th>Compliance</th></tr>
<tr><td>5.3(d)</td><td>Cyanide Monitoring
The Applicant shall prepare and implement a cyanide monitoring program for the development to the satisfaction of the Secretary. The plan must be prepared in consultation with EPA and DRE, and shall include, but not be limited to, provision for:
(i) monitoring of CN_{WAD} levels of the aqueous component of the tailings slurry stream at the process plant twice daily or as otherwise directed by the Secretary, with any increases above 20mg CN_{WAD}/L to be assessed daily to ensure compliance and reported in the Annual Review, unless otherwise agreed by the Secretary. If the CN_{WAD} levels of 30mg/L are exceeded in the liquid at any time, discharge to the tailings dams shall cease until CN_{WAD} levels can be achieved below the levels stated in condition 5.3(a) and such exceedance shall be reported to the EPA within 24 hours;
(ii) monitoring CN_{WAD} levels in the decant water of the tailings dams twice daily or as otherwise directed by the Secretary;
(iii) an on-site laboratory for quickly establishing CN_{WAD} levels in the liquid at the process plant and in the decant ponds for monitoring purposes;
(iv) on-line monitoring of $CN_{(FREE)}$ at locations where employees are operating;
(v) establishing a monitoring regime for detection of cyanide movement beneath and adjacent to the tailings impoundments.
A summary of the cyanide monitoring results shall be provided on the Applicant's website for the development on a regular basis, or as directed by the Secretary.</td><td>• Cyanide Management Plan, 2010, section 6.2
• Process Plant Cyanide Monitoring Data, Cyanide Management Plan, section 6.2
• Cyanide Monitoring Results, Monthly Reports, April 2011 to March 2015
• 2009 AEMR 19 Apr 2010
• Letters to DoP, DECCW, DII re Monthly Cyanide Monitoring Results, May 2011 to April 2015</td><td>(i) The cyanide monitoring program was approved as part of the Cyanide Management Plan (Development Consent 14/98 5.3(b) by DoP on 9 January 2006.
(ii) Monitoring of the aqueous component of the tailings slurry stream at the process plant occurs twice daily with the samples analysed at the on-site laboratory. The cyanide results between May 2015 and April 2017 demonstrated compliance with the CN criteria:
<table><tr><th>Period</th><th>>20mg CN_{WAD}/L</th><th>>30mg CN_{WAD}/L</th></tr><tr><td>Jan-Mar 2015</td><td>0</td><td>0</td></tr><tr><td>Mar-Jun 2015</td><td>0</td><td>0</td></tr><tr><td>Jul-Sep2015</td><td>0</td><td>0</td></tr><tr><td>Sep–Dec 2015</td><td>0</td><td>0</td></tr><tr><td>Jan-Mar 2016</td><td>0</td><td>0</td></tr><tr><td>Mar-Jun 2016</td><td>0</td><td>0</td></tr><tr><td>Jul-Sep2016</td><td>0</td><td>0</td></tr><tr><td>Sep–Dec 2016</td><td>0</td><td>0</td></tr><tr><td>Jan-Mar 2017</td><td>0</td><td>0</td></tr></table>(iii) monitoring and on site analysis for CN_{WAD} levels is conducted on the liquid at the process plant and in the decant ponds;
(iv) Free cyanide monitoring within the process plant area is conducted as part of the daily workplace monitoring program (refer to section 6.3 of the Cyanide Management Plan).
(v) Cyanide Management Plan section 6.4 describes the quarterly groundwater monitoring program designed to detect cyanide movement beneath and adjacent to the tailings storage facilities. No cyanide has been detected in the groundwater monitoring bores between May 2015 and May 2017.
The reporting of the cyanide monitoring results occurs on a monthly basis and results are provided on the Evolution Mining website. All results have demonstrated compliance with the criteria.</td><td>Compliant Ongoing</td></tr>
<tr><td>5.4</td><td colspan="3">Hazards Management
Note: The development consent conditions under 5.4(a)-(f) are related to offsite risk to people and the biophysical environment. The safety of all persons and operations on site is the responsibility of the DRE under the Mines Inspection Act and Dangerous Goods Act.</td><td></td></tr>
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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
5.4(a)	Pre-Construction Studies The Applicant shall prepare and submit for the approval of the Secretary, the studies set out under subsections 5.4(a)(i) to 5.4(a)(iii) (the pre-construction studies), at least one month prior to the commencement of construction of the proposed development, (except for construction of those preliminary works that are outside the scope of the hazard studies), or within such further period as Secretary may agree. Construction, other than of preliminary works, shall not commence until approval has been given by the Secretary and, with respect to the fire safety study, approval has also been given by the Commissioner of the NSW Fire Brigades.:			
5.4(a)(i)	(i) *Fire Safety Study* This study shall cover all aspects detailed in the Department's Hazardous Industry Planning Advisory Paper No. 2, "Fire Safety Study Guidelines" and the New South Wales Government's "Best Practice Guidelines for Contaminated Water Retention and Treatment Systems". The study shall also be submitted for approval to the New South Wales Fire Brigades. The study should, in particular, address the fire related issues associated with the storage and use of Ammonium Nitrate, Sodium Isobutyl Xanthate, and Cyanide.	• Hazardous Industry Planning Advisory Paper No. 2, "Fire Safety Study Guidelines • Letter to NSW Fire Brigades – Submission of Fire Safety Study for approval, 22 Dec 2004 • Letter to DIPNR – Submission of Fire Safety Study, 22 Dec 2004 • Letter from NSW Fire Brigades re Satisfaction with the Fire Safety Study, 15 September 2005	Fire Safety Study prepared by Pinnacle Risk Management for Cowal Gold Mine was submitted to the Commissioner of the NSW Fire Brigade for approval on 22 December 2004 in accordance with Development Consent 14/98 condition 5.4(a)(i). The NSW Fire Brigades provided a letter expressing satisfaction with the fire safety measures within the study in September 2005. The Final Hazard Analysis was approved by DIPNR in March 2005 and a Fire Hazard Audit of the CGM site and facilities was carried out in November 2008.	**Compliant**
5.4(a)(ii)	(ii) *Hazard and Operability Study* The study is to be chaired by an independent qualified person approved by the Director-General prior to the commencement of the study. The study shall be carried out in accordance with the Department's Hazardous Industry Planning Advisory Paper No. 8, "HAZOP Guidelines". The HAZOP shall in particular address the monitoring, control, alarm and shutdown systems associated with xanthate and cyanide process streams.	• Hazardous Industry Planning Advisory Paper No. 8, "HAZOP Guidelines • Letter to DIPNR – Submission of HAZOP Study, 22 Dec 2004 • HAZOP Supplementary Studies, Sep 2005 • Letter from DoP re HAZOP Supplementary Studies, Sep 2005 • Letter to DoP re HAZOP Study Action Closeout Status, 16 Jan 2006	The Hazard and Operability Study for the main plant area was prepared and submitted to DIPNR in Dec 2004 and the HAZOP Study Action Item Closeout Status Report (Action Program) prepared by Aker Kvaerner Australia Pty Ltd, was submitted in Dec 2004. Supplementary HAZOP Studies for the oxygen system, LPG system and cyanide leach package were notified to be to the satisfaction of the Director-General in Jan 2006.	**Compliant**
5.4(a)(iii)	(iii) *Final Hazard Analysis* The analysis should be prepared in accordance with the Department's Hazardous Industry Planning Advisory Paper No. 6, "Guidelines for Hazard Analysis".	• Hazardous Industry Planning Advisory Paper No. 6, "Guidelines for Hazard Analysis	The Final Hazard Analysis for the development of the project was submitted to DIPNR on 22 December 2004 and approved by DIPNR in March 2005.	**Compliant**

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
		• Final Hazard Analysis, 2004 • Letter to DIPNR – Submission of Final Hazard Analysis, 22 Dec 2004 • Letter from DIPNR re Final Hazard Analysis, 30 Mar 2005	Construction related to Development Consent 14/98 MOD 11 had not commenced at the date of this audit (May 2017).	
5.4(b)	Pre-Commissioning Studies The Applicant shall prepare and submit for the approval of the Secretary the following studies (the pre-commissioning studies), no later than two months prior to the commencement of commissioning of the proposed development, or within such period as the Secretary may agree. Commissioning shall not commence until approval has been given by the Secretary.		Pre-commissioning studies were conducted and reports prepared and submitted to the Director-General. Approval of the studies and plans by the Director-General was obtained prior to commencement of the plant commissioning.	**Compliant**
5.4(b)(i)	*Transport of Hazardous Materials* The study comprises arrangements covering the transport of hazardous materials including details of routes to be used for the movement of vehicles carrying hazardous materials to or from the proposed development. The study shall be carried out in accordance with the Department's draft "Route Selection" guidelines. Suitable routes identified in the study shall be used except where departures are necessary for local deliveries or emergencies. The study should also address (1) the issues associated with spills, cleanup procedures, training of clean-up teams, communication, and liaison with organisations such as the fire brigades, District Emergency Management Coordinator (and Committee), Local Emergency Management Committee(s), and state emergency services; (2) inspection and monitoring procedures for chemicals such as explosives, xanthates and cyanides prior to commencement of a trip, to verify the integrity of the packaging; and (3) measures to be taken to ensure that the temperature of the materials does not rise above safe levels.	• Route Selection Guidelines Advisory Paper No. 9, DIPNR • Transport of Hazardous Material Study, 2006 • Letter from DoP re Approval of Transport of Hazardous Materials Plan, 9 Jan 2006 • Letter from DoP re Approval for Transport of Flotation Chemicals, 28 Feb 2007 • Letter from DoP re Addendum to Transport of Hazardous Materials Study, 13 Oct 2010 • Letter from DoP re Addendum to Transport of Hazardous Materials Study, 1 Dec 2010 • Letter from DP&I re Notification of Change to Transport of Hazardous Chemicals (Ammonium Nitrate), 13 Jan 2012 • Emails to DP&I re Emergency Routing of Sodium Cyanide to CGM due to Road Conditions, Mar 2012	Route evaluation for hazardous materials studies were conducted and consultation with the affected Councils in accordance with Guideline No.9. The Transport of Hazardous Materials Study was approved by the Director-General on 9 January 2006 and transport of flotation chemicals was approved by DoP in February 2007. An amendment of the Transport of Hazardous Materials Study in relation to an alternative storage transfer location at Botany Bay commenced, and consultation with the relevant Council(s) and government departments occurred in 2009. An amendment to the route for the transport of hydrogen peroxide from the Solvay Interox Banksmeadow facility to CGM was proposed and accepted by DoP on 13 October 2010. Approval for a variation to the transport route for hydrogen peroxide from the Queensland border to Dubbo (via Goondiwindi) was granted by DoP on 1 December 2010. Approval for a change to the transport route for Ammonium Nitrate by road from Maxam Australia Depot Goulburn to CGM endorsed by DP&I on 13 January 2012. Emergency route change permission was sought and granted by DP&I in November 2011, and in January and March 2012 due to road conditions following heavy rainfall events.	**Compliant Ongoing**
5.4(b)(ii)	*Emergency Plan* A comprehensive emergency plan and detailed emergency procedures for the proposed development. This plan shall include detailed procedures for the safety of all people outside of the development who may be at risk from the development.	• Emergency Response Plan, 4 Oct 2013 • Letter to DP&I re Emergency Response Plan Revision, 4 Oct 2013	The initial Operations Emergency Plan was approved by DoP on 14 December 2005. and the revised plan was submitted to DoP on 23 March 2007.	**Compliant**

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
	The plan should be in accordance with the Department's Hazardous Industry Planning Advisory Paper No. 1, "Industry Emergency Planning Guidelines", and include procedures for spillage, cleanup, control and protection, and rescue of wildlife during the emergency.	• Emergency Response Plan, 13 Jan 2016	The CGM Emergency Plan was revised and updated in February 2007 and April 2008 and DoP approved the updated plan on 18 June 2008. A revision of the Emergency Response Plan to update to Evolution Mining occurred on 13 January 2016.	
5.4(b)(iii)	*Safety Management System* A document setting out a comprehensive safety management system, covering all operations on-site and associated transport activities involving hazardous materials. The document shall clearly specify all safety related procedures, responsibilities and policies, along with details of mechanisms for ensuring adherence to procedures. Records shall be kept on-site and should be available for inspection by the Secretary upon request. The safety management system should be developed in accordance with the Department's Hazardous Industry Planning Advisory Paper No. 9, "Safety Management".	• Hazardous Industry Planning Advisory Paper No. 9, "Safety Management • Safety Management System Oct 2005 • Letter from DoP re Approval of the Safety Management System, 14 Dec 2005 • Letter from DoP re Revised Safety Management System, 18 Jun 2009	The Safety Management System was approved by DoP on 14 December 2005 and a major review of the Safety Management System was conducted in February 2007. The Safety Management System was updated and DoP approved the updated plan on 18 June 2009. No further updates to the Safety Management System have occurred.	**Compliant**
5.4(c)	Hazard Audit Twelve months after the commencement of operations of the proposed development or within such further period as the Secretary may agree, the Applicant shall carry out a comprehensive hazard audit of the proposed development and submit a report of the audit to the Secretary. The audit shall be carried out at the Applicant's expense by a duly qualified independent person or team approved by the Secretary prior to commencement of the audit. Further audits shall be carried out every three years or as determined by the Secretary and a report of each audit shall within a month of the audit be submitted to the Secretary. Hazard audits should be carried out in accordance with the Department's Hazardous Industry Planning Advisory Paper No. 5, "Hazard Audit Guidelines".	Hazardous Industry Planning Advisory Paper No. 5, "Hazard Audit Guidelines" • Pre-Operation Compliance Report, Feb 2006 • Hazard Audit Report, Cowal Gold Project, Pinnacle Risk Management Pty Ltd, 6 Jun 2007 • Letter from DoP re Approval of the 2010 Hazard Audit Report, 15 Feb 2011 • Hazard Audit Report Cowal Gold Project, Pinnacle Risk Management Pty Ltd, 11 Apr 2013 • Hazard Audit Report Cowal Gold Project, Pinnacle Risk Management Pty Ltd, May 2016	A Hazard Audit was conducted by Dean Shewring of Pinnacle Risk Management Pty Ltd, 12 months after commencement of operation of process plant (i.e. April 2007). The Hazard Audit was accepted by DoP on 6 August 2007. The second Hazard Audit of the CGM operations was conducted on 19-22 April 2010. The third Hazard Audit Report of the CGM operations was conducted on 11 April 2013. The fourth Hazard Audit of the Cowal Gold Operation was conducted on 20 May 2016.	**Compliant**
5.5	**Domestic Waste** The Applicant shall dispose of all solid waste and putrescible matter from the site to the satisfaction of BSC.		All solid and putrescible waste from the Cowal Gold Operations site is collected by JJ Richards licenced waste contractor, for disposal at an approved landfill.	**Compliant**
5.6	**Sewage and Associated Waste Management** The Applicant shall install the site sewage treatment facility, and dispose of treated sewage and sullage to the satisfaction of BSC	• Construction Certificate No.6, 4 Apr 2005 for	The permanent on-site sewage management system was installed west of the Mine Workshop and Administration	**Compliant**

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<table>
<tr><th>Condition No.</th><th>Consolidated Development Consent 14/98 MOD 13 Conditions</th><th>Verification</th><th>Comments</th><th>Compliance</th></tr>
<tr><td></td><td>and EPA, and in accordance with the requirements of the Department of Health.</td><td>Package Sewage Treatment Plant, DIPNR</td><td>Complex in the 1st quarter 2006 in accordance with the requirements of the Department of Health, BSC and EPA.</td><td></td></tr>
<tr><td>5.7</td><td>Asbestos and Other Hazardous or Toxic Waste Management
The Applicant shall prior to commencement of construction works prepare a Hazardous Waste and Chemical Management Plan as set out in section 6.4.1 of the EIS in consultation with EPA and BSC, and to the satisfaction of the Secretary.</td><td>• Hazardous Waste and Chemical Management Plan, May 2011
• Letter from DECCW re Hazardous Waste and Chemical Management Plan, 23 Feb 2011
• Letter from DP&I re Update to Hazardous Waste and Chemical Management Plan, 13 May 2011
• Letter from BSC re Update to Hazardous Waste and Chemical Management Plan, 19 Apr 2011</td><td>The initial Hazardous Waste and Chemical Management Plan was approved by the Director General in October 2003. The Plan was revised and the changes were accepted by DECCW in December 2007, and April and December 2009.
BSC accepted the revised Hazardous Waste and Chemical Management Plan on 19 April 2011.
DP&I approved the revised document on 13 May 2011.
Revision of the Hazardous Waste and Chemical Management Plan in May 2015 did not identify any requirements for amendment or revision.</td><td>Compliant</td></tr>
<tr><td>6</td><td>AIR, BLAST, NOISE AND VISUAL IMPACT MANAGEMENT</td><td></td><td></td><td></td></tr>
<tr><td>6.1</td><td>Air Management</td><td></td><td></td><td></td></tr>
<tr><td>6.1(a)</td><td>Impact Assessment Criteria
The Applicant shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the development do not cause exceedances of the criteria listed in Tables 3, 4 and 5 at any residence on privately-owned land.
Table 3: Long term impact assessment criteria for particulate matter
<table>
<tr><th>Pollutant</th><th>Averaging Period</th><th>Criterion</th></tr>
<tr><td>Total suspended particulate (TSP) matter</td><td>Annual</td><td>90 µg/m^3</td></tr>
<tr><td>Particulate matter <10µm (PM_{10})</td><td>Annual</td><td>30 µg/m^3</td></tr>
</table>
Table 4: Short term impact assessment criterion for particulate matter
<table>
<tr><th>Pollutant</th><th>24 hour</th><th>Criterion</th></tr>
<tr><td>Particulate matter <10µm (PM_{10})</td><td>24 hour</td><td>50 µg/m^3</td></tr>
</table>
Table 5: Long term impact assessment criteria for deposited dust</td><td>• Air Quality Management Plan. Feb 2015
• Interpretation and Discussion of Air Quality Monitoring Results, CGM, Prof. Stephen Cattle Uni of Sydney, 2015
• Interpretation and Discussion of Air Quality Monitoring Results, CGM, Prof. Stephen Cattle Uni of Sydney 2016
• 2014 Annual Review
• 2015 Annual Review
• 2016 Annual Review</td><td>Air quality management at the Cowal Gold Operations continues to generally control dust emissions from the site in accordance with the Air Quality Management Plan 2015, to within the criteria specified in Development Consent 14/98 6.1(a).

Monitoring of dust deposition and PM_{10} as outlined in the Air Quality Management Plan and the Surface Water, Groundwater, Meteorological and Biological Monitoring Program continues with review of the data annually by Dr Stephen Cattle, University of Sydney and reported in the AEMR.

The dust monitoring results have generally been compliant with the criteria in Development Consent 14/98 6.1(a).

The eight dust gauges external to the mine lease area have exhibited significant proportion of contamination from insects, bird droppings and vegetative matter, that when removed from the total deposition data demonstrate annual average dust deposition results that are less than the assessment criterion of 4g/m^2/mth.</td><td>Compliant Ongoing</td></tr>
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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
	<table><tr><th>Pollutant</th><th>Averaging Period</th><th>Max increase in deposited dust level</th><th>Max total deposited dust level</th></tr><tr><td>Deposited dust</td><td>Annual</td><td>2g/m^2/mth</td><td>4g/m^2/mth</td></tr></table> *Notes to Tables 3-5:* *a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources).* *b Incremental impact (i.e. incremental increase in concentrations due to the development on its own).* *c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method.* *d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Secretary.*		The HVAS located north of the mine lease area has demonstrated TSP levels below the criterion in Table 3 (i.e. less than 90µg/m^3) between May 2015 and April 2017. The annual average PM_{10} results collected by the HVAS was calculated to be less than the 30µg/m^3 long term impact assessment criteria and less than the short term impact assessment criteria for PM_{10} of 50 µg/m^3, during the May 2016 to April 2017 period.	
6.1(b)	Operating Conditions The Applicant shall: (i) implement best management practice to minimise the off-site odour, fume, spontaneous combustion and dust emissions of the development; (ii) implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site; (iii) minimise any visible off-site air pollution generated by the development; (iv) minimise the surface disturbance on the site; (v) minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events (see Note - d above under Tables 3-5); and (vi) carry out regular monitoring to determine whether there is compliance with the relevant conditions of this consent, to the satisfaction of the Secretary.	• Air Quality Management Plan, Feb 2015 • 2015 Annual Review • 2016 Annual Review • Interpretation and Discussion of Air Quality Monitoring Results, Uni of Sydney, Dr Stephen Cattle, 2012, 2013 and 2014	Air quality management at the Cowal Gold Operations has controlled emissions from the site to within the criteria specified in Consolidated Development Consent 14/98 MOD 13 condition 6.1(a). The area of the Cowal Gold Operations site disturbed is restricted to the area required for the active mining and associated activities. Monitoring data of dust deposition and PM_{10} as outlined in the Air Quality Management Plan, and Surface Water, Groundwater, Meteorological and Biological Monitoring Program continues. Data is reviewed annually by Dr Stephen Cattle, University of Sydney and reported in the Annual Reviews. The dust monitoring results have generally been compliant with the criteria in Consolidated Development Consent 14/98 MOD 13 condition 6.1(a).	**Compliant Ongoing**
6.1(c)	Air Quality Management Plan The Applicant shall prepare and implement an Air Quality Management Plan for the development to the satisfaction of the Secretary. This plan must: (i) be prepared in consultation with the EPA; (ii) describe the measures that would be implemented to ensure compliance with the relevant air quality criteria and operating conditions of this consent:	• Air Quality Management Plan Feb 2015 • Letter to EPA re Revised Air Quality Management Plan, 20 Feb 2015 • Letter from EPA re Comments on Air Quality Management Plan, 6 Mar 2015	An Air Quality Management Plan to satisfy Development Consent 14/98 MOD 11 condition 6.1(c) was submitted to DP&E on 20 April 2015 and approved on 18 February 2016. (i) Dust deposition gauges were installed at the locations identified in the Dust Management Plan. A high volume air sampler operates at the nearest residences (sensitive receptor) and operates on a 6day cycle for TSP.	**Compliant**

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<table>
<tr><th>Condition No.</th><th>Consolidated Development Consent 14/98 MOD 13 Conditions</th><th>Verification</th><th>Comments</th><th>Compliance</th></tr>
<tr><td></td><td>(iii) include an air quality monitoring program that: • evaluates and reports on the:
- the effectiveness of the air quality management system;
- compliance with the air quality criteria;
- compliance with the air quality operating conditions; and • defines what constitutes an air quality incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any air quality incidents.</td><td>• Letter to EPA re Revised Air Quality Management Plan, 10 Apr 2015
• Letter to DP&E re Air Quality Management Plan, 20 Apr 2015
• Letter from DP&E re Approval of Air Quality Management Plan, 18 Feb 2016</td><td>Baseline monitoring of dust has continued with the dust deposition gauges maintained and samples collected each month. Dust monitoring has continued at the sites specified in EPL condition P1.1.
(ii) Dust deposition and TSP monitoring related to Lake Cowal water quality was not activated from 2007 to 2010 as there was no water in the lake.
Dust monitoring around the Cowal Gold Operations area is reported in the Annual Reviews. Dust deposition monitoring at six sites and PM_{10} monitoring at the locations specified in the EPL condition P1.1, has continued.
(iii) The dust monitoring results are reviewed annually by Dr Stephen Cattle, University of Sydney and results are presented in the Annual Reviews.</td><td></td></tr>
<tr><td>6.2</td><td>Meteorological Monitoring
For the life of the development, the Applicant shall ensure that there is a meteorological station in the vicinity of the site that complies with the requirements in the Approved Methods for Sampling of Air Pollutants in New South Wales guideline.</td><td>• Approved Methods for Sampling of Air Pollutants in New South Wales
• Cowal Quarterly Calibration Reports, Sentinel Pty Ltd, 2013 to 2015
• Monthly Weather Station Reports – January 2015 to March 2017, Sentinel Pty Ltd</td><td>The permanent meteorological station installed on the southern boundary of the mine lease in June 2004 continues to operate and provide continuous monitoring results for use for the site operations.
The meteorological station is checked and calibrated quarterly by Sentinel Pty Ltd and a monthly summary report of the meteorological data is provided to Cowal Gold Operations.</td><td>Compliant Ongoing</td></tr>
<tr><td>6.3</td><td>Blast Management</td><td></td><td></td><td></td></tr>
<tr><td>6.3(a)</td><td><u>Impact Assessment Criteria</u>
The Applicant shall ensure that blasting on site does not cause any exceedance of the criteria in Table 6.
Table 6: Blasting impact assessment criteria
<table>
<tr><th>Residence on privately owned land and Time</th><th>Air-blast over pressure dBL</th><th>Ground Vibration mm/s</th><th>Allowable exceedance</th></tr>
<tr><td>Any time</td><td>120</td><td>10</td><td>0%</td></tr>
<tr><td>Mon to Sat during day</td><td>115</td><td>5</td><td rowspan="2">5% of total number of blasts over a period of 12 months</td></tr>
<tr><td>Mon to Sat during evening</td><td>105</td><td>2</td></tr>
<tr><td>Mon to Sat at night, Sundays</td><td>95</td><td>1</td><td>5% of total number of blasts over a</td></tr>
</table></td><td>• Review of Blast Monitoring Report 2015, The Saros Group, Mar 2016
• Review of Blast Monitoring Report 2016, The Saros Group, Mar 2017</td><td>Blast monitoring conducted at the fixed monitor locations around the Cowal Gold Operations site has demonstrated compliance with the overpressure and vibration Day and Evening criteria in Development Consent 14/98 6.3(a).
No blast overpressure results exceeded 120dBL, and less than 5% of the total blasts overpressure results were greater than 115dBL.
No night time blasts have occurred between May 2016 and May 2017.
Blast related exceedance of the 95dB(L) criteria (Development Consent 14/98 6.3(a)) on Sundays and Public Holidays occurred on three (3) occasions between March and December 2016:
• 13 March (BM02-Hillgrove residence 95.9dBL); 26 March (BM01-Gumbelah residence 95.9dBL); and 4 December 2016 ((BM01-Gumbelah residence 100dBL)</td><td>Compliant Ongoing</td></tr>
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<tr><th>Condition No.</th><th>Consolidated Development Consent 14/98 MOD 13 Conditions</th><th>Verification</th><th>Comments</th><th>Compliance</th></tr>
<tr><td></td><td>
<table>
<tr><td>and public holidays</td><td></td><td></td><td>period of 12 months</td></tr>
</table>
However, these criteria do not apply if the Applicant has a written agreement with the relevant owner to exceed the limits in Table 6, and the Applicant has advised the Department in writing of the terms of this agreement.</td><td></td><td>No blast related exceedances occurred between January and April 2017.
<table>
<tr><th rowspan="2">Total No. of Blasts</th><th colspan="3">Blast Overpressure Results (dB(L))</th></tr>
<tr><th>>115dBL</th><th>>120dBL</th><th>>95dBL*</th></tr>
<tr><td>Jan to Dec 2016</td><td></td><td></td><td></td></tr>
<tr><td>168</td><td><5%</td><td>0</td><td>3</td></tr>
<tr><td>Jan to April 2017</td><td></td><td></td><td></td></tr>
<tr><td>41</td><td><5%</td><td>0</td><td>0</td></tr>
</table>
* Sundays and Public Holidays blast overpressure criteria the 95dB(L) criteria (Development Consent 14/98 6.3(a)).
No complaints were received in relation to the Sundays and Public Holidays blast overpressure results.</td><td></td></tr>
<tr><td>6.3(b)</td><td><u>Blasting Frequency</u>
The Applicant may carry out a maximum of 1 blast a day on site. This condition does not apply to blasts required to ensure the safety of the mine or its workers.
Note: For the purposes of this condition a blast refers to a single blast event, which may involve a number of individual blasts fired in quick succession in a discrete area of the mine.</td><td>• Blast Management Plan, Revision L, Jan 2015
• Review of Blast Monitoring Results 2015, The Saros Group, Feb 2016
• Review of Blast Monitoring Results 2016, The Saros Group, Mar 2017</td><td>A maximum of 1 blast event per day is planned to occur on the Cowal Gold Operations site.
Occasional two blast events only occur if required to ensure the safety of the mine or its workers.
During 2016 - 2017, blasts initiated in quick succession as a single blast event, occurred on twelve occasions. No occurrence of more than one blast event in a discrete area of the mine (as described in the Note to condition 6.3(b)) was recorded between January 2016 and May 2017.</td><td>Compliant</td></tr>
<tr><td>6.3(c)</td><td><u>Property Investigations</u>
If the owner of any privately-owned land claims that buildings and/or structures on his/her land have been damaged as a result of blasting on the site, and the Secretary agrees an independent investigation of the claim is warranted, then within 2 months of receiving this claim the Applicant shall:
(i) commission a suitably qualified, experienced and independent person, whose appointment is acceptable to both parties to investigate the claim; and
(ii) give the landowner a copy of the property investigation report.
If this independent property investigation confirms the landowner's claim, and both parties agree with these findings, then the Applicant shall repair the damage to the satisfaction of the Secretary.
If there is a dispute over the selection of the suitably qualified, experienced and independent person, or the Applicant or the landowner disagrees with the findings of the independent property investigation, then either party may refer the matter to the Secretary for resolution.</td><td></td><td></td><td>Noted
Not triggered</td></tr>
<tr><td>6.3(d)</td><td><u>Operating Conditions</u>
The Applicant shall:
(i) implement best management practice to:</td><td>• Blast Management Plan, Revision L, Jan 2015</td><td>(i) The blasting practices outlined in the Blast Management Plan are consistent with best management practice.</td><td>Compliant</td></tr>
</table>

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
	• protect the safety of people and livestock in the areas surrounding blasting operations; • protect public or private infrastructure/property in the surrounding area from damage from blasting operations; and • minimise the dust and fume emissions of any blasting; (ii) operate a suitable system to enable the public to get up-to-date information on the proposed blasting schedule on site; and (iii) carry out regular monitoring to determine whether the development is complying with the relevant conditions of this consent, to the satisfaction of the Secretary.	• Letter to DP&E re Blast Management Plan, 9 Feb 2015 • Letter from EPA re revised Blast Management Plan, 4 Feb 2015	(ii) Notification of the blasting schedule at the Cowal Gold Mine is provided to potentially affected residents. (iii) All blasts are monitored for overpressure and ground vibration and the data reviewed to assess compliance.	
6.3(e)	Blast Management Plan The Applicant shall prepare and implement a Blast Management Plan for the development to the satisfaction of the Secretary. This plan must: (i) be prepared in consultation with the EPA; (ii) describe the measures that would be implemented to ensure compliance with the blast criteria and operating conditions of this consent; and (iii) include a monitoring program for evaluating and reporting on compliance with the blasting criteria and operating conditions of this consent.	• Blast Management Plan Revision L, Jan 2015 • Letter to DP&E re Blast Management Plan, 9 Feb 2015 • Letter from EPA re revised Blast Management Plan, 4 Feb 2015 • Letter from DP&E re Approval of Blast Management Plan, 10 Dec 2015	The Blast Management Plan Revision L was prepared to satisfy Development Consent MOD 11 condition 6.3(e) and dated January 2015. The Blast Management Plan was submitted to the relevant authorities, and approved by DP&E on 12 December 2015. (i) The Blast Management Plan was prepared in consultation with the EPA; (ii) section 5 describes the measures that would be implemented to ensure compliance with the blast criteria and operating conditions of this consent; and (iii) section 7 describes the monitoring program for evaluating and reporting on compliance with the blasting criteria and operating conditions.	**Compliant**
6.4	**Noise Management**			
6.4(a)	(a) Acquisition Upon Request Upon receiving a written request for acquisition from the owner of any land listed in Table 7, the Applicant shall acquire the land in accordance with the procedures in condition 8.3. *Table 7: Land subject to acquisition upon request* Westalla Westlea *Note: To interpret the location referred to Table 7, see the map in Appendix 6.*		Consultation with the land owner of Westlea occurred during 2016 in relation to acquisition. No written request for acquisition had been received from Westalla land owner at the date of this audit (May 2017).	**Ongoing**
6.4(b)	Additional Noise Mitigation Upon receiving a written request from the owner of the residences listed in Tables 7 and 7A, the Applicant shall implement additional noise mitigation measures (such as double-glazing, insulation, and/or air conditioning) at the residence in consultation with the landowner. These measures must be reasonable and feasible, and		No written requests to activate this condition have been received by Evolution Mining at the date of this audit (May 2017).	**Not triggered**

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<table>
<tr><th>Condition No.</th><th>Consolidated Development Consent 14/98 MOD 13 Conditions</th><th>Verification</th><th>Comments</th><th>Compliance</th></tr>
<tr><td></td><td>directed towards reducing the noise impacts of the development on the residence.
If within 3 months of receiving this request from the owner, the Applicant and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.
Table 7A: Land subject to mitigation upon request<table><tr><td>Laurel Park</td></tr><tr><td>Lakeview III</td></tr><tr><td>Bramboyne</td></tr><tr><td>The Glen</td></tr><tr><td>Caloola II</td></tr></table>Note: To interpret the location referred to Table 7A, see the map in Appendix 6.</td><td></td><td></td><td></td></tr>
<tr><td>6.4(c)</td><td><u>Impact Assessment Criteria</u>
The Applicant shall ensure that the noise generated by the development does not exceed the noise impact assessment criteria in Table 8 at any residence on privately-owned land.
Table 8: Noise Impact Assessment Criteria dB(A) $L_{Aeq\ (15min)}$<table><tr><td>Land</td><td>Day/Evening/Night</td></tr><tr><td>Laurel Park, Lakeview III</td><td>39</td></tr><tr><td>Bramboyne, The Glen, Caloola II</td><td>38</td></tr><tr><td>Lakeview, Lakeview II, Foxham Downs II</td><td>37</td></tr><tr><td>All other privately-owned land</td><td>35</td></tr></table>Note: To identify the land referred to in Table 8, see the map in Appendix 6.
Noise generated by the development is to be measured in accordance with the relevant requirements of the NSW Industrial Noise Policy (as may be updated from time-to-time). Appendix 5 sets out the meteorological conditions under which these criteria apply, and the requirements for evaluating compliance with these criteria.
However, these criteria do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to generate higher noise levels, and the Applicant has advised the Department in writing of the terms of this agreement.</td><td>• Attended Noise Monitoring Cowal Gold Operations, Jan 2015 to Jan 2016, Spectrum Acoustics
• Noise Mitigation Deed – ‘Gumbelah’, 9 Dec 2013
• Letter to DP&I re Noise Mitigation Deed- Gumbelah’, 16 Dec 2014
• Noise Mitigation Deed – ‘Cowal North’, 16 Jan 2014
• Letter to DP&I re Noise Mitigation Deed- Cowal North, 17 Jan 2014
• Letter to DP&I re Noise Mitigation Deed – Laurel Park, 3 Feb 2014</td><td>The quarterly monitoring results reported by Spectrum Acoustics during 2016 concluded that:

“the mine noise did not exceed the operational noise criterion at any monitoring location at any time (i.e. daytime, evening or night).”

Noise Mitigation Deeds were agreed and signed with the owners of Laurel Park (dated 13 August 2012), Gumbelah (dated 6 December 2013), and Cowal North (dated 16 January 2014).</td><td>Compliant Ongoing</td></tr>
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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
6.4(d)	Operating Conditions The Applicant shall: (i) implement best management practice, including all reasonable and feasible mitigation measures, to minimise the operational, low frequency, and road noise of the development, including mitigation measures to: (ii) minimise the noise impacts of the development during meteorological conditions when the noise limits in this consent do not apply (see Appendix 5); and (iii) carry out regular attended monitoring to determine whether the development is complying with the relevant conditions of this consent, to the satisfaction of the Secretary.	• Noise Management Plan, Revision S, Nov 2014	(i) Noise Management Plan Section 8 - Implementation of Noise Mitigation Measures describes the noise management practices that are consistent with best management practice. (ii) Noise Management Plan Section 6.2.3 addresses noise management during abnormal meteorological conditions to reduce potential impact to surrounding residents. (iii) Noise Management Plan Section 6 outlines attended noise monitoring program to determine whether the development is complying with the relevant conditions and the data reviewed to assess compliance. The quarterly monitoring results reported by Spectrum Acoustics during 2016 concluded that: *"the mine noise did not exceed the operational noise criterion at any monitoring location at any time (i.e. daytime, evening or night)."*	**Compliant**
6.4(e)	Noise Management Plan The Applicant shall prepare and implement a Noise Management Plan for the development to the satisfaction of the Secretary. This plan must: (i) be prepared in consultation with the EPA, and submitted to the Secretary for approval prior to carrying out any development under this consent, unless the Secretary agrees otherwise; (ii) describe the measures that would be implemented to ensure compliance with the noise criteria and operating conditions in this consent; and (iii) include a monitoring program that: • evaluates and reports on: - compliance with the noise criteria in this consent; and - compliance with the noise operating conditions; • defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.	• Noise Management Plan, Revision S, Nov 2014	The initial Noise Management Plan approved in 2003 has been revised and amended between 2003 and 2014. The Noise Management Plan Revision S, to satisfy Development Consent 14/98 MOD 11, was: (i) prepared in consultation with the EPA, submitted to the Secretary DP&E and approved on 5 March 2015; (ii) section 8 describes the measures that would be implemented to ensure compliance with the noise criteria and operating conditions in this approval in section 8; and (iii) section 6 outlines a monitoring program that: • evaluates and reports on compliance with the noise criteria; and compliance with the noise operating conditions (section 6.2); • sections 7 defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.	**Compliant**
6.5	**Visual Management**			
6.5(a)	Additional Visual Impact Mitigation Upon receiving a written request from the owner of any residence on privately-owned land which has, or would have, significant direct views of the mining operations and infrastructure on-site during the development, the Applicant shall implement additional visual impact	• Letter from DP&E re DAC Conditions 6.5 and 8.1, 19 Sep 2014	No requests for additional visual impact mitigation measures were received between May 2014 and April 2016.	**Not triggered**

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
	mitigation measures (such as landscaping treatments or vegetation screens) to reduce the visibility of the mining operations and infrastructure from the residences on the privately-owned land. These mitigation measures must be reasonable and feasible, and must be implemented within a reasonable timeframe. If the owner of the residence and the Applicant cannot agree whether there are significant direct views from the residence, then either party may refer the matter to the Secretary for resolution. If within 3 months of receiving this request, the Applicant and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution. *Notes:* • *The additional visual impact mitigation measures must be aimed at reducing the visibility of the mining operations on site from affected residences, and do not require measures to reduce the visibility of the mining operations from other locations on the affected properties.* • *The additional visual impact mitigation measures do not necessarily have to include the implementation of measures on the affected property itself (i.e. the additional measures could involve the implementation of measures outside the affected property boundary that provide an effective reduction in visual impacts).*			
6.5(b)	Operating Conditions The Applicant shall: (i) implement all reasonable and feasible measures to minimise the visual and off-site lighting impacts of the development; (ii) ensure no fixed outdoor lights shine directly above the horizontal or above the building line or any illuminated structure; (iii) ensure no in-pit mobile lighting rigs shine directly above the pit wall and other mobile lighting rigs do not shine directly above the horizontal; (iv) ensure that all external lighting associated with the development complies with relevant Australian Standards including *Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting,* or its latest version; and (v) take all reasonable and feasible measures to shield views of mining operations and associated equipment from users of public roads and privately-owned residences, to the satisfaction of the Secretary.		(i) measures to minimise the visual and off-site lighting impacts from the Cowal Gold Operations have been implemented; (ii) no fixed outdoor lights shine directly above the horizontal or above the building line; (iii) no in-pit mobile lighting rigs shine above the pit wall; (iv) external lighting associated with the development (particularly around the process plant) complies with Australian Standard A54282 (INT) 1997 - Control of Obtrusive Effects of Outdoor Lighting; and (v) measures to shield views of mining operations and associated equipment from users of public roads and privately-owned residences are implemented where practicable.	**Compliant**
7	**TRANSPORT MANAGEMENT**			
7.1(a)	***Road Transport*** (a) Mine site access road	• Bland Shire Council Decision -Notification of Approval of	The access road route to the Cold Gold Operations mine site from West Wyalong was approved by the Bland Shire	**Compliant**

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
	The Applicant shall use its best endeavours to ensure that the preferred mine access road routes as described in the EIS are the only routes used by employees and contractors travelling to and from the mine site.	CGM Access Rd Upgrade, 21 Apr 99 • Letter to BSC re Mine Access Road Route, 31 Jan 05	Council in 1999 and road works completed and in use in 2006. Access from the south to the Cowal Gold Operations site by employees and contractors, only occurs along this new road.	
8	**ADDITIONAL PROCEDURES**			
8.1	**Notification of Landowners/Tenants**			
8.1(a)	By the end of September 2014, unless the Secretary agrees otherwise, the Applicant shall notify in writing the owners of: (i) the land listed in Table 7 that they have the right to ask the Applicant to: • acquire their land at any stage during the development; and • install additional noise mitigation measures at any residence on their land; (ii)any residence on privately-owned land which has, or would have, significant direct views of the mining operations and infrastructure on-site during the development, that they have the right to ask the Applicant to implement additional visual impact mitigation measures (such as landscaping treatments or vegetation screens) to reduce the visibility of the mining operations and infrastructure from the affected residences on the land.	• Letter to Westlea re Notification in Accordance with Conditions 6.4 and 8.1/8.3, 18 Sep 2014 • Letter to McClintock Property re Notification in Accordance with Conditions 6.4 and 8.1/8.3, 18 Sep 2014	Owners of the land listed in Table 7 were notified that they have the right to ask the Applicant to acquire their land at any stage during the development, and/or install additional noise mitigation measures at any residence on their land. No requests were received between May 2013 and April 2017 to acquire any property listed in Table 7.	**Compliant**
8.1(b)	As soon as practicable after obtaining monitoring results showing: (i) an exceedance of any relevant criteria in this consent, the Applicant shall notify the affected landowners in writing of the exceedance, and provide regular monitoring results to the landowner until the development is again complying with the relevant criteria; and (ii) an exceedance of the relevant air quality criteria in this consent, the Applicant shall send a copy of the NSW Health fact sheet entitled "Mine Dust and You" (as may be updated from time to time) to the affected landowners and/or existing tenants of the land.			**Noted**
8.2	**Independent Review**			
8.2(a)	If an owner of privately-owned land considers the development to be exceeding the criteria in this consent, then he/she may ask the Secretary in writing for an independent review of the impacts of the development on his/her land. If the Secretary is satisfied that an independent review is warranted, then within 2 months of the Secretary's decision, the Applicant shall: (a) commission a suitably qualified, experienced and independent expert, whose appointment has been approved by the Secretary, to: • consult with the landowner to determine his/her concerns; • conduct monitoring to determine whether the development is			**Not triggered**

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
	complying with the relevant impact assessment criteria in condition 6 of this consent; and • if the development is not complying with these criteria then: o determine if more than one mine or development is responsible for the exceedance, and if so the relative share of each mine or development regarding the impact on the land; and o identify the measures that could be implemented to ensure compliance with the relevant criteria; and (b) give the Secretary and landowner a copy of the independent review.			
8.3	**Land Acquisition** (a) Within 6 months of receiving a written request from a landowner with acquisition rights, the Applicant shall make a binding written offer to the landowner based on: (i) the current market value of the landowner's interest in the property at the date of this written request, as if the property was unaffected by the development, having regard to the: • existing and permissible use of the land, in accordance with the applicable planning instruments at the date of the written request; and • presence of improvements on the property and/or any approved building or structure which has been physically commenced at the date of the landowner's written request, and is due to be completed subsequent to that date, but excluding any improvements that have resulted from the implementation of any additional noise and/or visual mitigation measures under this consent; (ii) the reasonable costs associated with: • relocating within the same local government area, or to any other local government area determined by the Secretary; • obtaining legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is to be acquired; and (iii) reasonable compensation for any disturbance caused by the land acquisition process. However, if at the end of this period, the Applicant and landowner cannot agree on the acquisition price of the land and/or the terms upon which the land is to be acquired, then either party may refer the matter to the Secretary for resolution. Upon receiving such a request, the Secretary shall request the President of the NSW Division of the Australian Property Institute to appoint a qualified independent valuer to: (1) consider submissions from both parties;			**Not triggered**

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
	(2) determine a fair and reasonable acquisition price for the land and/or the terms upon which the land is to be acquired, having regard to the matters referred to in paragraphs (i)-(iii) above; (3) prepare a detailed report setting out the reasons for any determination; and (4) provide a copy of the report to both parties. Within 14 days of receiving the independent valuer's report, the Applicant shall make a binding written offer to the landowner to purchase the land at a price not less than the independent valuer's determination. However, if either party disputes the independent valuer's determination, then within 14 days of receiving the independent valuer's report, they may refer the matter to the Secretary for review. Any request for a review must be accompanied by a detailed report setting out the reasons why the party disputes the independent valuer's determination. Following consultation with the independent valuer and both parties, the Secretary shall determine a fair and reasonable acquisition price for the land, having regard to the matters referred to in paragraphs (i)-(iii) above, the independent valuer's report, the detailed report of the party that disputes the independent valuer's determination and any other relevant submissions. Within 14 days of this determination, the Applicant shall make a binding written offer to the landowner to purchase the land at a price not less than the Secretary's determination. If the landowner refuses to accept the Applicant's binding written offer under this condition within 6 months of the offer being made, then the Applicant's obligations to acquire the land shall cease, unless the Secretary determines otherwise. (b) The Applicant shall pay all reasonable costs associated with the land acquisition process described in condition 8.3(a) above. (c) If the Applicant and landowner agree that only part of the land shall be acquired, then the Applicant shall also pay all reasonable costs associated with obtaining Council approval for any plan of subdivision (where permissible), and registration of the plan at the Office of the Registrar-General.			
9	**ENVIRONMENTAL MANAGEMENT, AUDITING AND REPORTING**			
9.1	**Environmental Management**			
9.1(a)	**Environmental Management Strategy** The Applicant shall prepare and implement an Environmental Management Strategy for the development to the satisfaction of the Secretary. This strategy must:	• Environmental Management Strategy, Oct 2014 • Letter from DP&E re Approval of Environmental	The Environmental Management Strategy prepared in October 2014 to satisfy Development Consent 14/98 MOD 11 was approved by DP&E on 28 November 2014:	**Compliant**

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
	(i) be submitted to the Secretary for approval by the end of October 2014, unless the Secretary agrees otherwise; (ii) provide the strategic framework for environmental management of the development; (iii) identify the statutory approvals that apply to the development; (iv) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development; (v) describe the procedures that would be implemented to: • keep the local community and relevant agencies informed about the operation and environmental performance of the development; • receive, handle, respond to, and record complaints; • resolve any disputes that may arise; • respond to any non-compliance; • respond to emergencies; and (vi) include: • copies of any strategies, plans and programs approved under the conditions of this consent; and • a clear plan depicting all the monitoring to be carried out in relation to the development.	Management Strategy, 28 Nov 2014	(i) The Environmental Management Strategy was submitted to the Secretary on 30 October 2014 and approved on 28 November 2014; (ii) Section 1 addresses purpose and scope of the Environmental Management Strategy; (iii) Section 2 identifies statutory requirements; (iv) Section 3 provides site environmental management structure; (v) Section 5 presents environmental management plans and monitoring programs; section 7 information dissemination; section 8 complaints and dispute resolution; section 9 non-compliances; and section 10 emergency or incident response. The monitoring programs are collated into the Surface Water, Groundwater, Meteorological and Biological Monitoring Plan. Appendix C of the Environmental Management Strategy provides Environmental Management Plans, Strategies and Programs.	
9.1(b)	**Annual Review** By the Applicant shall review the environmental performance of the development to the satisfaction of the Secretary. This review must: (i) describe the development that was carried out in the previous calendar year, and the development that is proposed to be carried out over the next year; (ii) include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, which includes a comparison of these results against the: • the relevant statutory requirements, limits or performance measures/criteria; • the monitoring results of previous years; and • the relevant predictions in the EIS; (iii) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance; (iv) identify any trends in the monitoring data over the life of the development; (v) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and (vi) describe what measures will be implemented over the next year to improve the environmental performance of the development.		The draft 2016 Annual Review was prepared to satisfy condition 9.1(b): (i) section 4 describes the development during in the previous calendar year, and the section 12 outlines activities that is proposed to be carried out over the next year; (ii) section 6 presents a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, with a comparison of these results against the: • the relevant statutory requirements, limits or performance measures/criteria; • the monitoring results of previous years; and • the relevant predictions in the EIS; (iii) section 6 – Performance Outcomes addresses any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance; (iv) section 6 – Performance Outcomes addresses trends in the monitoring data; (v) section 6 – Performance Outcomes addresses any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and	**Generally Compliant Ongoing**

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
			(vi) section 6 describes any measures that may be implemented over the next year to improve the environmental performance.	
9.1(c)	Revision of Strategies, Plans and Programs Within 3 months of: (i) the submission of an annual review under condition 9.1(b) above; (ii) the submission of an incident report under condition 9.3(a) below; (iii) the submission of an audit under condition 9.2 (a) below; (iv) the submission of an Annual State of the Environment Report under condition 9.2(b) below; (v) the approval of any modification to the conditions of this consent; or (vi) a direction of the Secretary under condition 1.1(c) of this consent; the Applicant shall review and, if necessary, revise the strategies, plans, and programs required under this consent to the satisfaction of the Secretary. Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted to the Secretary for approval, unless otherwise agreed with the Secretary.	• Letter to DP&E re Revision of Strategies, Plans and Programs, 20 Oct 2014 • Letter from DP&E re Revision of Strategies, Plans and Programs, 1 Dec 2014 • Letter to DP&E re Status of Revision of Environmental Management Plans, 26 Feb 2015 Letter from DPI-Water re Management Plan Reviews, 15 May 2015	The revision/development of the Strategies, Plans and / or Programs for Development Consent 14/98 MOD 11 are progressively being developed for the Cowal Gold Mine Extension Project. The requirement for submission to DP&E within 3 months of the approval of the modification (i.e. October 2014) was granted an extension to the timeframe on 1 December 2014. The Environmental Management Strategy, Noise Management Plan, and Indigenous Aboriginal Heritage Management Plan were submitted to DP&E in October 2014 and the revised documents approved by DP&E. The review of the required management plans for MOD 11 was completed in May 2015 and the documents submitted to DP&E for approval. All the reviewed and revised Plans for MOD 11 were approved by DP&E prior to this audit (May 2017).	**Compliant Ongoing**

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
9.1(d)	Community Environmental Monitoring and Consultative Committee (i) The Applicant shall establish and operate a Community Environmental Monitoring and Consultative Committee (CEMCC) for the development to the satisfaction of the Secretary. This CEMCC must: • be comprised of an independent chair and at least 2 representatives of the Applicant, 1 representative of BSC, 1 representative of the Lake Cowal Environmental Trust (but not a Trust representative of the Applicant), 4 community representatives (including one member of the Lake Cowal Landholders Association); • be operated in general accordance with the *Guidelines for Establishing and Operating Community Consultative Committees for Mining Projects* (Department of Planning). • monitor compliance with conditions of this consent and other matters relevant to the operation of the mine during the term of the consent. (ii) The Applicant shall establish a trust fund to be managed by the Chair of the CEMCC to facilitate the functioning of the CEMCC, and pay $2000 per annum to the fund for the duration of gold processing operations. The annual payment shall be indexed according to the Consumer Price Index (CPI) at the time of payment. The first payment shall be made by the date of the first Committee meeting. The Applicant shall also contribute to the Trust Fund reasonable funds for payment of the independent Chairperson, to the satisfaction of the Secretary (iii) At least four years prior to mine closure the Applicant shall, in consultation with the CEMCC, identify and discuss post-mining issues, particularly in relation to reduced employment and consequent impacts on West Wyalong, and develop a mine workforce phase out plan. This plan shall be reviewed and updated in consultation with the CEMCC at the commencement of the final year of mining operations. (iv) The Applicant shall, in consultation with the CEMCC, develop appropriate strategies to support activities which promote special interest tourism related to the co-existence of mining and the Lake Cowal environment.	• CGM CEMCC Charter • CEMCC Minutes Mar 2015 • CEMCC Minutes Jun 2015 • CEMCC Minutes Sep 2015 • CEMCC Minutes Dec 2015 • CEMCC Minutes Mar 2016 • CEMCC Minutes Jun 2016 • CEMCC Minutes Aug 2016 • CEMCC Minutes Dec 2016 • CEMCC Minutes Mar 2017	(i)The Community Environmental Monitoring and Consultative Committee (CEMCC) was established in 2003 and the inaugural meeting of the CEMCC occurred on 15 October 2003. The CEMCC meets quarterly and the meeting minutes are made available at Bland Shire Council library for public inspection. • Chairperson of CEMCC - Margaret MacDonald-Hill. • Nominated Evolution Mining CGO representatives may include the Environment Manager, Environmental Co-ordinator and Community Relations Manager • A representative of Bland Shire Council • A representative of the Lake Cowal Environmental Trust o Community representatives including one member of the Lake Cowal Landholders Association; • Copies of complaints and other relevant documentation is provided to the CEMCC. • CGO supplies information to the Committee on environmental performance as requested. • Site inspections are arranged as requested by the CEMCC • The CEMCC Meetings are held at the Cowal Gold Operations offices. (ii) An annual contribution of $2000 (plus CPI) has been paid to Bland Shire Council, and the funds are held in trust for the purpose of the CEMCC. (iii)and (iv) are not yet applicable.	**Compliant Ongoing** **Not triggered**
9.2	**Independent Auditing and Review**			
9.2(a)	Independent Environmental Audit (i) By the end of July 2016, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:	• Independent Environmental Audit, Trevor Brown & Associates, April 2015 • Letter from DP&E re Approval of Audit Team, 20 Jan 2016	An Independent Environmental Audit was conducted by the end of July 2016 to satisfy Consolidated Development Consent 14/98 MOD 11 condition 9.2(a). This current Environmental Audit is additional to the requirement of Consolidated Development Consent 14/98	**Compliant Ongoing**

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
	• be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary; • include consultation with the relevant agencies, BSC and the CEMCC; • assess the environmental performance of the development and assess whether it is complying with the requirements in this consent and any other relevant approvals (such as environment protection licences and/or mining lease (including any assessment, plan or program required under this consent); • review the adequacy of any approved strategy, plan or program required under this consent or the abovementioned approvals; and • recommend measures or actions to improve the environmental performance of the development, and/or any strategy, plan or program required under this consent. *Note: This audit team must be led by a suitably qualified auditor, and include ecology and rehabilitation experts, and any other fields specified by the Secretary.* (ii) Within 3 months of commissioning this audit, or as otherwise agreed by the Secretary, the Applicant shall submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of these recommendations as required. The Applicant must implement these recommendations, to the satisfaction of the Secretary.	• Independent Environmental Audit, Trevor Brown & Associates, May 2016	condition 9.2(a) and has been conducted for Evolution Mining: • conducted by Trevor Brown, Audit Leader and Robert Drury, Environmental Expert - Gold Projects during May 2017; • assessed the environmental performance of the Cowal Gold Operations development and compliance with the requirements in Independent Environmental Audit is additional to the requirement of Consolidated Development Consent 14/98 MOD 13 and other relevant environmental approvals (e.g. Environment Protection Licence and/or Mining Lease; • review the approved strategy, plans or programs required under Consolidated Development Consent 14/98 MOD 13; • recommend measures or actions if required, to improve the environmental performance of the development, strategy, plans or programs required under this consent.	
9.2(b)	Independent Monitoring Panel (i) The Applicant shall at its own cost establish an Independent Monitoring Panel prior to commencement of construction. The Applicant shall contribute $30,000 per annum for the functioning of the Panel, unless otherwise agreed by the Secretary. The annual payment shall be indexed according to the Consumer Price Index at the time of payment. The first payment shall be paid by the date of commencement of construction and annually thereafter. Selection of the Panel representatives shall be agreed by the Secretary in consultation with relevant government agencies and the CEMCC. The Panel shall at least comprise two duly qualified independent environmental scientists and a representative of the Secretary (ii) The panel shall: • provide an overview of the annual reviews and independent audits required by conditions 9.1(b) and 9.2(a) above;	• Ninth Independent Monitoring Panel Report, Oct 2013 (received by Barrick 2 Jun 2014) • Tenth Independent Monitoring Panel Report, 1 Dec 2014 • Letter from DP&E re Independent Monitoring Panel Report, 27 Oct 2015 • Eleventh Independent Monitoring Panel Report, Sep 2015 • Letter to DP&E re Eleventh IMP report, 15 Jan 2016 • Twelfth Independent Monitoring Panel Report, Oct 2016	(i)The Independent Monitoring Panel (IMP) was established in accordance with Development Consent 14/98 condition 8.8(b)for the Cowal Gold Project in 2003 with the first IMP Report issued in February 2005. The IMP has prepared a report for the DP&E annually between 2006 and 2016. The current members of the IMP are: Dr Craig Miller CSIRO Sustainable Ecosystems Emeritus Prof. Clive Bell University of Queensland; and NSW Department of Planning and Infrastructure (DP&E) (b)(ii)(a) The Independent Monitoring Panel has commented on the Independent Environmental Audit in each of the annual reports; (b)(ii)(b) environmental monitoring procedures and monitoring results are commented on in the annual IMP reports; (b)(ii)(c) The IMP has prepared an Annual Report for the Cowal Gold Project. The report is submitted to the	**Compliant Ongoing**

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
	• regularly review all environmental monitoring procedures undertaken by the Applicant, and monitoring results; and • provide an Annual State of the Environment Report for Lake Cowal with particular reference to the on-going interaction between the mine and the Lake and any requirements of the Secretary. The first report shall be prepared one year after commencement of construction. The report shall be prepared annually thereafter unless otherwise directed by the Secretary and made publicly available on the Applicant's website for the development within two weeks of the report's completion.	• Letter to DP&E re Twelfth IMP report, 24 Mar 2017	Secretary DP&E and agencies that receive the Annual Reviews required under Consolidated Development Consent 14/98 MOD 11 condition 9.1 (b). The report is also made publicly available at the Bland Shire Council and on the Project website.	
9.3	**Reporting**			
9.3(a)	Incident Reporting The Applicant shall immediately notify the Secretary and any other relevant agencies of any incident related to the development. Within 7 days of the date of the incident, the Applicant shall provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.	• Emergency Response Plan, 5 Jul 2015 Pollution Incident Response Management Plan, Jul 2015	Reporting of any incident including details of measures taken or proposed to be taken to prevent or mitigate recurrence of the incident has occurred to the Secretary, EPA and other relevant agencies within 7 days of the date of the incident.	**Compliant Ongoing**
9.3(b)	Regular Reporting The Applicant shall provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.		The Annual Review provides regular reporting on the environmental performance for the Cowal Gold Operations in accordance with the reporting arrangements in the environmental management plans and programs approved under the Development Consent 14/98 conditions. Monitoring results related to environmental performance are also posted on the company website.	**Compliant Ongoing**
9.4	**Access to Information** The Applicant shall: (a) make the following information publicly available on its website: (i) the EIS; (ii) current statutory approvals for the development; (iii) approved strategies, plans or programs required under the conditions of this consent; (iv) a comprehensive summary of the monitoring results of the development, which have been reported in accordance with the various plans and programs approved under the conditions of this consent; (v) a complaints register, which is to be updated on a monthly basis; (vi) minutes of CEMCC meetings; (vii) the last five annual reviews; (viii) any independent environmental audit, and the Applicant's response to the recommendations in any audit; and (ix) any other matter required by the Secretary; and (b) keep this information up to date, to the satisfaction of the Secretary.	**www.evolutionmining.com.au/cowal/**	The following information is publicly available on the project website: • Mine Life Modification Environmental Assessment, 2016 • Environmental Management Plans • Annual Reviews • Environment Monitoring Data • Complaints Register • Independent Environmental Audits • Independent Monitoring Panel Reports • CEMCC Minutes • Statutory Approvals – Consolidated Development Consent 14/98 MOD 13	**Compliant Ongoing**

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Condition No.	Consolidated Development Consent 14/98 MOD 13 Conditions	Verification	Comments	Compliance
	APPENDIX 5 - NOISE COMPLIANCE ASSESSMENT			
	Applicable Meteorological Conditions			
A1	The noise criteria in the conditions are to apply under all meteorological conditions except the following: (a) during periods of rain or hail; (b) average wind speed at microphone height exceeds 5 m/s; or wind speeds greater than 3 m/s measured at 10 m above ground level.			**Noted**
	Determination of Meteorological Conditions			
A2	Except for wind speed at microphone height, the data to be used for determining meteorological conditions shall be that recorded by the meteorological station located on the site.	• Noise Management Plan, Mar 2015 • Attended Noise Monitoring Reports, Spectrum Acoustics	The meteorological conditions at the time of noise surveys is reported in the Noise Monitoring Reports, as recorded by the meteorological station located on the site and reported in the Attended Noise Monitoring Reports section 3.3.	**Compliant**
	Compliance Monitoring			
A3	Attended monitoring is to be used to evaluate compliance with the relevant conditions of this approval.	• Noise Management Plan, Mar 2015 • Attended Noise Monitoring Reports, Spectrum Acoustics	Attended noise monitoring surveys are conducted quarterly by Spectrum Acoustics and reported providing evaluation of compliance with Development Consent 14/98 condition 6.4(c).	**Compliant**
A4	This monitoring must be carried out quarterly, unless the Secretary directs otherwise. *Note: The Secretary may direct that the frequency of attended monitoring increase or decrease at any time during the life of the development.*	• Noise Management Plan, Mar 2015	Noise monitoring is conducted quarterly with Development Consent 14/98 MOD 11 condition 6.4(e) and EPL 11912 condition L4.5.	**Compliant**
A5	Unless the Secretary agrees otherwise, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the *NSW Industrial Noise Policy* (as amended from time to time), in particular the requirements relating to: (a) monitoring locations for the collection of representative noise data; (b) meteorological conditions during which collection of noise data is not appropriate; (c) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and (d) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.	• Noise Management Plan, Mar 2015 • EPL 11912 condition L4.2	Noise monitoring is conducted in accordance with the relevant requirements for reviewing performance set out in the NSW Industrial Noise Policy	**Compliant**

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Attachment B Environment Protection Licence No. 11912

(Variation No. 1550488, 4 April 2017)

Attachment B - Environment Protection Licence No. 11912

(Variation No. 1550488, 4 April 2017)

<table>
<tr><th>EPL No.</th><th>EPL Condition</th><th>Audit Evidence</th><th>Comments</th><th>Compliance</th></tr>
<tr><td>A1</td><td>What the licence authorises and regulates</td><td></td><td></td><td></td></tr>
<tr><td>A1.1</td><td>This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.
Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.
<table>
<tr><th>Scheduled Activity</th><th>Fee Based Activity</th><th>Scale</th></tr>
<tr><td>Concrete works</td><td>Concrete works</td><td>0-13000m^3 produced</td></tr>
<tr><td>Crushing, grinding or separating</td><td>Crushing, grinding or separating</td><td>>2000000 T processed</td></tr>
<tr><td>Extractive activities</td><td>Land-based extractive activity</td><td>> 2000000 T extracted, processed or stored</td></tr>
<tr><td>Mineral processing</td><td>Mineral processing</td><td>> 2000000 - T processed</td></tr>
<tr><td>Mining for minerals</td><td>Mining for minerals</td><td>> 5000000 - T produced</td></tr>
</table></td><td></td><td>Scheduled activities undertaken at the Cowal Gold Operations have not exceeded the maximum scale specified in condition A1.1.

Cowal Gold Mine has not exceeded the scale of minerals mined or mineral processed between May 2016 and April 2017.</td><td>Compliant</td></tr>
<tr><td>A1.2</td><td>The licensee may carry out scheduled development works necessary for the activity of mineral processing to be undertaken at the premises.</td><td></td><td></td><td>Noted</td></tr>
<tr><td>A2</td><td>Premises to which this licence applies</td><td></td><td></td><td></td></tr>
<tr><td>A2.1</td><td>Cowal Gold Project 38km North East of West Wyalong.
Lake Cowal Road, West Wyalong NSW 2671
Premises include the land defined by ML 1535.</td><td></td><td></td><td>Noted</td></tr>
<tr><td>A3</td><td>Other activities</td><td></td><td></td><td></td></tr>
<tr><td>A3.1</td><td>This licence applies to all other activities carried on at the premises, including:
Chemical storage, contaminated soil treatment, sewage treatment, waste disposal (application to land).</td><td></td><td></td><td>Noted</td></tr>
<tr><td>A4</td><td>Information supplied to the EPA</td><td></td><td></td><td></td></tr>
<tr><td>A4.1</td><td>Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.In this condition the reference to "the licence application" includes a reference to:
(a) the applications for any licences (including former pollution control approvals) which this licence replaces under the POEO (Savings and Transitional) Regulation 1998; and
(b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.</td><td></td><td></td><td>Noted</td></tr>
</table>

<table>
<tr><td>A4.2</td><td>For the purposes of condition A4.1, the licence application includes:
1) Development Consent Cowal Project
2) Cowal Gold Project EIS
3) List of Initial development activities associated with the construction of the Cowal Gold Project.
4) Cowal Gold Project – SIS (Appendix A in Vol 2 of the Cowal Gold Project EIS)
5) Modifications to the Cowal Gold Project approved by the DoP.</td><td>• Development Consent Cowal Project and Modifications to the Cowal Gold Project
• Cowal Gold Project – EIS
• Cowal Gold Project – SIS
• Modifications 1-13 to Cowal Gold Project</td><td>The Cowal Gold Operations project has been developed generally in accordance with the 1998 EIS, Commission of Inquiry submissions, supporting documentation, and Consolidated Development Consent 14/98 MOD 13 conditions of approval and Modifications granted under the Environment Planning and Assessment Act 1979.</td><td>Noted</td></tr>
<tr><td colspan="5">Discharges to air and water and applications to land</td></tr>
<tr><td>P1</td><td colspan="3">Location of monitoring/discharge points and areas</td><td></td></tr>
<tr><td>P1.1</td><td>The following points referred to in the table are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.
<table>
<tr><th>EPA ID No.</th><th>Type of Monitoring</th><th>Location Description</th></tr>
<tr><td>1</td><td>Dust Monitoring</td><td>Dust gauge located approximately 1km west of ML1535 boundary, labelled as "McLintock's Shed" in Figure 5 'Dust Monitoring Locations' of the addendum to the "Cowal Gold Operations Air Quality Management Plan" dated August 2015.</td></tr>
<tr><td>2</td><td>Dust Monitoring</td><td>Dust gauge located south of the southern waste emplacement, labelled as "Site Office" in Figure 5 'Dust Monitoring Locations' of addendum to the "Cowal Gold Project Operations Air Quality Management Plan" dated August 2015.</td></tr>
<tr><td>3</td><td>Dust Monitoring</td><td>Dust gauge located approximately 5.5km east of ML1535 boundary, labelled as "DG6" in Figure 5 'Dust Monitoring Locations' of the addendum to the "Cowal Gold Operations Air Quality Management Plan" dated August 2015.</td></tr>
<tr><td>4</td><td>Dust Monitoring</td><td>Dust gauge located approximately 3.5km south of ML1535 boundary, labelled as "DG9" in Figure 5 'Dust Monitoring Locations' of the addendum to the "Cowal Gold Project Operations Air Quality Management Plan" dated August 2015.</td></tr>
<tr><td>5</td><td>Dust Monitoring</td><td>Dust gauge located within ML1535 and north of the open pit, labelled as "Site 52" in Figure 5 'Dust Monitoring Locations' of the addendum to the "Cowal Gold Project Operations Air Quality Management Plan" dated August 2015</td></tr>
<tr><td>6</td><td>Dust Monitoring</td><td>Dust gauge and high volume sampler located approximately 3.5 km north of</td></tr>
</table></td><td>• Air Quality Management Plan, Aug 2015
• Quarterly Monitoring Reports
• 2015 Annual Review
• 2016 Annual Review</td><td>The dust deposition gauges and high volume sampler monitoring has continued between May 2016 and April 2017 in accordance with the requirements of the EPL conditions at locations 1 to 6 and 49, nominated in EPL condition P1.1 and the Air Quality Management Plan, August 2015.

Due to the inundation of Lake Cowal between May 2011 and April 2012, and in 2016, monitoring within the lake area was suspended due to access and safety issues.

The dust deposition gauge locations were revised in the Air Quality Management Plan dated August 2015 with the gauges within the lake bed removed due to accessibility during inundation of Lake Cowal locations for monitoring purposes. These changes in monitoring locations were approved by DP&E in the Air Quality Management Plan August 2015 and in EPL 11912 Variation No. 1550488 dated 4 April 2017.</td><td>Compliant Ongoing</td></tr>
</table>

			ML1535 boundary, labelled as "DG1" and "HV1" in Figure 5 'Dust Monitoring Locations' of the addendum to the "Cowal Gold Operations Air Quality Management Plan" dated August 2015.		
	49	TSP Monitoring	High volume sampler located approximately 3.5 km north of ML1535 boundary, labelled as 'HV1' in Figure 4 'Air Quality Monitoring Sites' of the " Cowal Gold Operations Air Quality Management Plan" February 2015.		
P1.2	The utilisation areas referred to in the table if identified in this licence are for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.				**Noted**
P1.3	The points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.			• Water Management Plan, May 2015 • Surface Water, Groundwater, Meteorological and Biological Monitoring Program May 2015	Cowal Gold Operations water monitoring has been conducted at the EPL nominated locations and in accordance with the Water Management Plan and Surface Water, Groundwater, Meteorological and Biological Monitoring Program May 2015.	**Compliant**
	Water and Land			• Cowal Gold Project Site Rainfall Records • Surface Water Event Monitoring Field Sheets (for rainfall events of 20mm or greater). • Water Management Plan, May 2015 • Surface Water, Groundwater, Meteorological and Biological Monitoring Program, May 2015 • 2015 Annual Review • 2016 Annual Review	Surface water monitoring occurred in accordance with the Water Management Plan and Surface Water, Groundwater, Meteorological and Biological Monitoring Program, Table 8 (May 2015), with weekly monitoring of the surface water monitoring program, conducted following EPL trigger rainfall events (i.e. >20mm rainfall/24hrs). Trigger events between May 2016 and April 2017 occurred on: 9 May 2016 28.2 mm 4 June 2016 37 mm 20 June 2016 29.6 mm 8 July 2016 20.2 mm 3 September 2016 27 mm 10 September 2016 22.6 mm 19 September 2016 28 mm 12 November 2016 24.6 mm 21 March 2017 25.4mm 31 March 2017 21.2 mm Groundwater monitoring has been conducted from piezometers listed in P1.3 at EPA Identification Points 19-45 and 50 to 56, in accordance with the EPL requirements and the Water Management Plan and Surface Water, Groundwater, Meteorological and Biological Monitoring Program.	**Compliant**

EPA ID No.	Type of Monitoring	Location Description
12	Stormwater quality monitoring	Northern waste emplacement contained water storage labelled as "D1" in Figure 8 'Water Management Plan Operations Phase Year 3' of the "Cowal Gold Operations Water Management Plan" dated May 2015.
13	Stormwater quality monitoring	Southern waste emplacement contained water storage labelled as "D4" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.
14	Ambient Water quality monitoring	Surface water point within Lake Cowal labelled as "P1" in Figure 14 titled 'Regional Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.
15	Ambient Water quality monitoring	Surface water point within Lake Cowal labelled as "P2" in Figure 14 titled 'Regional Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.
16	Ambient Water quality monitoring	Surface water point within Lake Cowal labelled as "P3" in Figure 14

			titled 'Regional Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.			
	17	Ambient Water quality monitoring	Surface water point within Lake Cowal labelled as "B1" in Figure 14 titled 'Regional Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.			
	18	Ambient Water quality monitoring	Surface water point within Lake Cowal labelled as "B6" in Figure 14 titled 'Regional Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.			
	19	Groundwater monitoring	Piezometer located up gradient of southern tailings storage labelled as "P555A-R" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.			
	21	Groundwater monitoring	Piezometer located up gradient of northern tailings storage labelled as "P558A-R" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.			
	22	Groundwater monitoring	Piezometer located down gradient of southern tailings storage labelled as "P412A-R" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.			
	23	Groundwater monitoring	Piezometer located down gradient of southern tailings storage labelled as "P412A" in Figure 14 titled 'Regional Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.			
	24	Groundwater monitoring	Piezometer located down gradient of southern tailings storage labelled as "P414A" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.			
	25	Groundwater monitoring	Piezometer located down gradient of southern tailings storage labelled as "P414B" in Figure 13 titled 'ML 1535 Surface Water and Groundwater			

			Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.			
	26	Groundwater monitoring	Piezometer located near the process plant area labelled as "PP03" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.			
	27	Groundwater monitoring	Piezometer located near the process plant area labelled as "PP04" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015			
	30	Groundwater monitoring	Piezometer located down gradient of southern tailings storage labelled as "P417A" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.			
	31	Groundwater monitoring	Piezometer located down gradient of southern tailings storage labelled as "P417B" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.			
	32	Groundwater monitoring	Piezometer located down gradient of northern tailings storage labelled as "P418A" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.			
	33	Groundwater monitoring	Piezometer located down gradient of northern tailings storage labelled as "P418B" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.			
	34	Groundwater monitoring	Piezometer located down gradient of northern tailings storage labelled as "TSFNA" in Figure 13 titled 'ML1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.			
	36	Groundwater monitoring	Pit dewatering bore labelled as "PDB1A" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal			

			Gold Operations Water Management Plan" dated May 2015.			
	38	Groundwater monitoring	Pit dewatering bore labelled as "PDB3A" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.			
	40	Groundwater monitoring	Pit dewatering bore labelled as "PDB5A" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.			
	41	Northern waste emplacement leachate quality monitoring	Exact site to be determined upon commencement of waste rock dump.			
	42	Southern waste emplacement leachate quality monitoring	Exact site to be determined upon commencement of waste rock dump.			
	43	Perimeter waste emplacement leachate quality monitoring.	Exact site to be determined upon commencement of waste rock dump.			
	44	Groundwater quality monitoring	Groundwater monitoring bore east of the northern tailings storage labelled as "MON-01A" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" datedMay 2015			
	45	Groundwater quality monitoring	Groundwater monitoring bore south of the southern tailings storage labelled as "MON-02A" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" datedMay 2015.			
	48	Water quality monitoring point	Automated sampler at the process plant labelled as "Monitoring Point 48" on Figure 1 "Monitoring Location for CNwad levels in Tailings Slurry Stream at the Process Plant" submitted to the DECCW on 3-12-2010 held on file LIC07/2610-08.			
	50	Groundwater quality monitoring	Piezometer located down gradient of northern tailings storage labelled as "TSFNB" in Figure 13 titled 'ML1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.			

	51	Groundwater quality Monitoring	Piezometer located down gradient of northern tailings storage labelled as "TSFNC" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.		
	52	Groundwater quality Monitoring	Pit dewatering bore labelled as "PDB1B" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.		
	53	Groundwater quality Monitoring	Pit dewatering bore labelled as "PDB3B" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.		
	54	Groundwater quality Monitoring	Pit dewatering bore labelled as "PDB5B" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.		
	55	Groundwater quality Monitoring	Groundwater monitoring bore located to the east of the northern tailings storage labelled as "MON-01B" in Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.		
	56	Groundwater quality monitoring	Groundwater monitoring bore located south of the southern tailings storage labelled "MON-02B" on Figure 13 titled 'ML 1535 Surface Water and Groundwater Monitoring Locations' in the "Cowal Gold Operations Water Management Plan" dated May 2015.		
P1.4	The following points in the table are identified in this licence for the purposes of the monitoring of weather parameters at the point.				
	EPA No.	**Type of Monitoring Point**	**Description of location**	• Monthly Weather Station Reports – May 2016 to April 2017, Sentinel P/L • Cowal Calibration Report, Sentinel Pty Ltd, Jan/Apr/ Jul/Sep/Nov 2016 • Cowal Calibration Report, Sentinel Pty Ltd, Jan/Apr/ 2017	The meteorological station installed at the CGO site provides continuous 15-minute data recording for each parameter, and this data is available on the CGO computer system. The meteorological station is checked quarterly for calibration and maintenance by Sentinel Pty Ltd and a monthly summary report of the meteorological data is provided to CGO by Sentinel.	**Compliant**
	7	Weather analysis	Weather monitoring station labelled as "Cowal Gold Mine Meteorological Station" on Figure 4 titled 'Air Quality Monitoring Sites' in the "Cowal Gold Operations Air Quality Management Plan" dated February 2015.		

<table>
<tr><td colspan="5">3. Limit conditions</td></tr>
<tr><td>L1</td><td>Pollution of waters</td><td></td><td></td><td></td></tr>
<tr><td>L1.1</td><td>Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.</td><td>• Protection of the Environment Operations Act 1997 section 120</td><td></td><td>Noted</td></tr>
<tr><td>L2</td><td>Concentration limits</td><td></td><td></td><td></td></tr>
<tr><td>L2.1</td><td>For each monitoring/discharge point or utilisation area specified in the tables the concentration of a pollutant discharged at that point or applied to the area, must not exceed the concentration limits specified for that pollutant in the table.</td><td></td><td></td><td>Noted</td></tr>
<tr><td>L2.2</td><td>Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.</td><td></td><td></td><td>Noted</td></tr>
<tr><td>L2.3</td><td>To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table/s.</td><td></td><td></td><td>Noted</td></tr>
<tr><td></td><td>Point 48
<table>
<tr><th>Pollutant</th><th>Units of measure</th><th>90percentile concentration limit</th><th>100 percentile concentration limit</th></tr>
<tr><td>CN_{WAD}</td><td>mg/l</td><td>20</td><td>30</td></tr>
</table></td><td>• Cyanide Management Plan, revision, Dec 2010
• Monthly Cyanide Monitoring Results, May 2016 to April 2017</td><td>Monitoring of cyanide in the aqueous component of the tailings slurry stream at the process plant is conducted twice daily. All cyanide monitoring has exhibited results < 20mg CN_{WAD}/L (90 percentile), with no CN_{WAD} results exceeding the 30mg CN_{WAD}/L criteria between May 2015 to April 2017.
The cyanide results are reported to the EPA, DRE and DP&E on a monthly basis.</td><td>Compliant</td></tr>
<tr><td>L3</td><td>Waste</td><td></td><td></td><td></td></tr>
<tr><td>L3.1</td><td>The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.</td><td></td><td>No waste material from outside the Cowal Gold Operations premises has been received onto the Cowal Gold Operations site.</td><td>Compliant</td></tr>
<tr><td>L3.2</td><td>For the purposes of condition L3.1:
(a) Effluent, waste rock and tailings generated at the premises are not defined as “waste”.</td><td></td><td></td><td>Noted</td></tr>
</table>

L3.2	(b) Waste generated at the premises described in Attachment A 'Cowal Gold Project Proposed Bioremediation Facility' of the licence variation application supplementary material received by DECC on 16 June 2008 and classified as general solid waste (putrescible) in accordance with the *Waste Classification Guidelines* (DECC, 2008) is permitted by this licence to be disposed of at the premises. Disposal of this waste must be undertaken in accordance with the methods described in Attachment A of the licence variation application supplementary material received by DECC on 16 June 2008, and the *Cowal Gold Project - Hazardous Waste and Chemical Management Plan*.	• Email to DECC/DPI-Minerals re Bioremediation Facility, 10 Dec 2008 • *Waste Classification Guidelines* (EPA Nov 2014) • Waste Classification Report – Bioremediation Area, Barson, Mar 2012	The location co-ordinates and layout plans for the on-site bioremediation treatment area were provided to and approved by DECC/DPI-Minerals in December 2008 following Cultural Heritage Clearance of the proposed area in November 2008. The Cowal Gold Operations bioremediation bed involves contaminated soil being mixed with straw to promote biological breakdown of hydrocarbons. The bioremediation treatment area continues to be used for treatment and management of minor amounts of hydrocarbon contaminated soils from the site. A Waste Classification Report – Bioremediation Area (Barson, dated March 2012) concluded that: "*Based on the findings of this waste classification, tested soils collected from cell A and cell C are suitable for on-site disposal at Cowal Gold Mine, in accordance with all relevant disposal conditions and practices".*	**Compliant**
L3.2	(c) Waste generated at the premises described in Attachment B 'Cowal Gold Project Proposed Trash Screen Oversize Waste Management' of the licence variation application supplementary material received by DECC on 16 June 2008 and classified as general solid waste (putrescible) in accordance with the *Waste Classification Guidelines* (DECC, 2008) is permitted by this licence to be disposed of at the premises. Disposal of this waste must be undertaken in accordance with the methods described in Attachment B of the licence variation application supplementary material received by DECC on 16 June 2008, and the *Cowal Gold Project - Hazardous Waste & Chemical Management Plan*.	• Waste Classification Report – Bioremediation Area, Barnson, Mar 2012	All wastes described in Attachment B of EPL 11912 Variation on 16 June 2008 have been managed at the Cowal Gold Operations premises in accordance with EPL condition L3.2(c).	**Compliant**
L3.3	(d) Waste generated at the premises described in Attachment D 'Cowal Gold Project Proposed On-site Waste Management' of the licence variation application supplementary material received by DECC on 16 June 2008 and classified as general solid waste (putrescible) and/or general solid waste (non-putrescible) in accordance with the *Waste Classification Guidelines* (DECC, 2008) is permitted by this licence to be disposed of at the premises. Disposal of this waste must be undertaken in accordance with the conditions of this licence and within the waste rock emplacements only.	• Waste Classification Report – Bioremediation Area, Barson, Mar 2012	All wastes described in Attachment D of the EPL 11912 Variation on 16 June 2008 have been disposed of at the Cowal Gold Operations premises in accordance with EPL condition L3.2(d).	**Compliant**
L3.4	(e) Waste generated at the premises as described in Attachment A 'Cowal Gold Mine Proposed On-Site Waste Tyre Management' of the licence variation application supporting documentation received by the DECC on the 4 February 2009 and classified as special waste in accordance with the Waste Classification Guidelines (DECC 2008), is permitted by this licence to be disposed at the premises.		Disposal of wastes generated at the Cowal Gold Operations premises is undertaken in accordance with the conditions of EPL 11912 within the waste rock emplacements.	**Compliant**

<table>
<tr><td></td><td>Disposal of this waste must be undertaken in accordance with the conditions of this licence and within the waste rock emplacements only.</td><td></td><td></td><td></td></tr>
<tr><td>L4</td><td>Noise Limits</td><td></td><td></td><td></td></tr>
<tr><td>L4.1</td><td>Noise generated from the premises must not exceed criteria outlined in Table 1 at any residence on privately owned land, as shown on the plan Appendix 6 of the Cowal Gold Mine development consent DA 14/98, as modified on 22 July 2014.
Table 1
<table>
<tr><th>Location</th><th>Day/Evening/Night dB(A) LAeq(15 minute)</th></tr>
<tr><td>Laurel Park</td><td>37</td></tr>
<tr><td>Gumbelah</td><td>36</td></tr>
<tr><td>Bramboyne</td><td>36</td></tr>
<tr><td>The Glen</td><td>36</td></tr>
<tr><td>Bungabulla</td><td>36</td></tr>
<tr><td>All other privately owned residences</td><td>35</td></tr>
</table>
Note: • The noise impact assessment criteria do not apply if the Licensee has an agreement with the owner/s of the relevant residence or land to generate higher noise levels, and the Licensee has advised the NSW DP&E in writing of the terms of the agreement.
• The noise impact assessment criteria do not apply to property and land subject to acquisition upon request as iL4.1dentified in Table 7 of Development Consent DA 14/98.</td><td>• Noise Management Plan, Nov 2014
• Operating Noise Monitoring, Spectrum Acoustics, Oct 2015
• Operating Noise Monitoring, Spectrum Acoustics, Jan 2016
• Operating Noise Monitoring, Spectrum Acoustics, Oct 2015
• Operating Noise Monitoring, Spectrum Acoustics, Jan 2017</td><td>The Noise Management Plan prepared to satisfy Development Consent 14/98 MOD 11 Condition 6.4(e) was implemented with six monthly mine operating noise monitoring conducted in 2015, and quarterly attended noise monitoring has been conducted during in 2016-2017 in accordance with the approved Noise Management Plan section 6.

Results from the day-time, evening and night-time operator attended survey showed that the measured noise levels were compliant with the relevant noise assessment criteria at all measurement locations.

The results from the quarterly Spectrum Acoustics January 2016 to January 2017 surveys were reported as:
….“under the operating and meteorological conditions and the 15minute compliance measurement periods, the mine noise did not exceed the operational noise criterion at any monitoring location at any time.”</td><td>Compliant</td></tr>
<tr><td>L4.2</td><td>Noise generated from the premises is to be measured in accordance with the relevant requirements and exemptions of the "NSW Industrial Noise Policy".</td><td>• Industrial Noise Policy, EPA Jan 2000
• Noise Management Plan, Nov 2014</td><td>The noise monitoring procedures described in the Noise Management Plan developed for the Cowal Gold Operations were consistent with and in accordance with the NSW Industrial Noise Policy.</td><td>Compliant</td></tr>
<tr><td>L4.3</td><td>The noise criteria identified in condition L4.1 apply under meteorological conditions of temperature inversion conditions of up to 8.0°C/100 metres and wind speed up to 1 metre per second at 10 metres above ground level.
The 1 metre per second drainage-flow wind applies where the development is at higher altitude than the residential receiver, with no intervening higher ground. These criteria will not apply during rainfall.
The noise criteria identified in condition L4.1 do not apply during:
a) periods of rain or hail;
b) average wind speeds at microphone height that exceed 5 metres per second; or
c) average wind speeds that exceed 3 metres per second measured at 10 metres above ground level.</td><td rowspan="2">• Operating Noise Monitoring, Spectrum Acoustics, Jan 2016
• Operating Noise Monitoring, Spectrum Acoustics, Apr 2016
• Operating Noise Monitoring, Spectrum Acoustics, Jul 2016
• Operating Noise Monitoring, Spectrum Acoustics, Oct 2016
• Operating Noise Monitoring, Spectrum Acoustics, Jan 2017</td><td>Weather conditions are noted during noise surveys and reported in each monitoring report.</td><td>Compliant</td></tr>
<tr><td>L4.4</td><td>Attended monitoring is to be used to evaluate compliance with conditions L4.1 to L4.3.</td><td>Attended noise monitoring was conducted quarterly between May 2016 and January 2017 to assess compliance of the Cowal Gold Operations.</td><td>Compliant</td></tr>
</table>

L4.5	Monitoring is to be carried out quarterly unless otherwise directed by the Secretary of NSW Department of Planning and Environment.		Noise monitoring has been conducted quarterly under Development Consent 14/98 MOD 11 and MOD 13.	**Compliant**
L5	**Blasting**			
L5.1	The airblast overpressure level from blasting operations at the premises at residences on privately owned land, when measured at the locations defined in condition M7.1 must not exceed 120 dB(Lin Peak) at any time at any noise sensitive locations. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.	• Blast Management Plan, Dec 2015 • Review of Blast Monitoring Report 2015, The Saros Group, Feb 2016 • Review of Blast Monitoring Report 2016, The Saros Group, Feb 2017	Monitoring of blasts between January 2016 and April 2017 demonstrated compliance with the overpressure and vibration Monday to Saturday Day and Evening criteria for all blasts. No blasts occurred at night. The Saros Group Report for January to December 2016 concluded that of the total of 168 blasts: • No blast related events exceeded the maximum compliance level of 120dB(L); • No blast events exceeded the 115dB(L) criteria on normal weekdays and Saturdays. Between January and April 2017, blast monitoring demonstrated: • No blast related events exceeded the maximum compliance level of 120dB(L); • Blast exceeding the 115dB(L) criteria occurred less than 5% of the total blasts on normal weekdays and Saturdays.	**Compliant**
L5.2	The overpressure level from blasting operations at the premises at residences on privately owned land, when measured at the locations defined in condition M7.1 must not exceed 115dB (Lin Peak) during the day for more than five per cent of the total number of blasts over a period of 12 months. The overpressure level from blasting operations at the premises at residences on privately owned land, when measured at the locations defined in condition M7.1 must not exceed 105dB (Lin Peak) during the evening for more than five per cent of the total number of blasts over a period of 12 months. The overpressure level from blasting operations at the premises at residences on privately owned land, when measured at the locations defined in condition M7.1 must not exceed 95dB (Lin Peak) at night or on Sundays and public holidays (24 hours) for more than five per cent of the total number of blasts over a period of 12 months. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.		Blast events on Sundays and Public Holidays were compliant except for: • Three (3) blast events exceeded the 95dB(L) level on Sundays and Public Holidays between January to December 2016 • Two (2) blast events between January and April 2017 - (13 March 2016 at BM02-Hillgrove residence - 95.9dBL and one blast at BM01-Gumbelah residence on 26 March 2016 recorded 95.9dBL), exceeded the 95.0dBL criteria for Sundays and Public Holidays.	**Non-Compliant (Low Risk)**
L5.3	Ground vibration peak particle velocity from the blasting operations at the premises at residences on privately owned land, when measured at the locations defined in condition M7.1 must not exceed 10 mm/sec at any time at any noise sensitive locations. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.	• Blast Management Plan, Dec 2015 • Review of Blast Monitoring Report 2016, The Saros Group, Feb 2017 • Blast Monitoring Results January to April 2017	No blast monitoring results exceeded the ground vibration criteria of 10mm/sec between January 2016 and April 2017.	**Compliant**
L5.4	Ground vibration peak particle velocity from the blasting operations at the premises at residences on privately owned land, when measured at the locations defined in condition M7.1 must not	• Blast Management Plan, Dec 2015	No blast monitoring results exceeded the ground vibration criteria of 5mm/sec during the day between January 2016 and	**Compliant**

	exceed 5 mm/sec during the day for more than five per cent of the total number of blasts over a period of 12 months. Ground vibration peak particle velocity from the blasting operations at the premises at residences on privately owned land, when measured at the locations defined in condition M7.1 must not exceed 1 mm/sec during the evening for more than five per cent of the total number of blasts over a period of 12 months. Ground vibration peak particle velocity from the blasting operations at the premises at residences on privately owned land, when measured at the locations defined in condition M7.1 must not exceed 1 mm/sec at night and on Sundays and public holidays (24 hours) for more than five per cent of the total number of blasts over a period of 12 months. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.	• Review of Blast Monitoring Report 2016, The Saros Group, Feb 2017 • Blast Monitoring Results January to April 2017	April 2017. No evening or night time blast occurred between January 2016 and April 2017.	
L6	**Potentially Offensive Odour**			
L6.1	No condition of this licence identifies a potentially offensive odour for the purposes of section 129 of the *Protection of the Environment Operations Act 1997*.	• *Protection of the Environment Operations Act 1997* section 129	No odour complaints have been received in relation to the operation of the Cowal Gold Operations process plant.	**Compliant**
Operating conditions				
O1	**Activities must be carried out in a competent manner**			
O1.1	Licensed activities must be carried out in a competent manner. This includes: (a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and (b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.		The processing, handling, movement and storage of materials and substances used on the Cowal Gold Operations site and the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity have been carried out in a competent manner.	**Compliant**
O2	**Maintenance of plant and equipment**			
O2.1	All plant and equipment installed at the premises or used in connection with the licensed activity: (a) must be maintained in a proper and efficient condition; and (b) must be operated in a proper and efficient manner.	• CGM Bund Audit, Extrin, Jul 2015 • CGM Bund Audit, Extrin, 10 Jul 2016	All equipment used for the mining operations is maintained by Cowal Gold Operations in the onsite Maintenance Workshops, with noise and vehicle emission controlled to meet the vehicle and equipment specifications. Blast monitoring equipment undergoes maintenance and annual calibration in February/March by the Saros Group. Calibration of the meteorological station equipment occurs quarterly by Sentinel Pty Ltd. Annual audits of the bunded areas are conducted for Cowal Gold Operations, with the floor tank bunded areas maintained and resurfaced if required in response to the actions identified in the Extrin Bund Audits.	**Compliant**

		 **Hydrochloric acid tank bunded area resurfaced.**		
O2.2	All persons associated with the licensee including employees, agents' licensee, contractors and subcontractors must be advised of their responsibilities and liabilities under the *Protection of the Environment Operations Act* 1997.	• Induction Training package • Training Course Register for Cowal Gold personnel • Training Course Summary for Cowal Gold Operations • Environmental Awareness Handbook • Oil and Chemical Spill Response Awareness Handbook	Training of Cowal Gold personnel in the responsibilities and liabilities under the *Protection of the Environment Operations Act* has been conducted regularly. Induction occurs for all CGO personnel and contractors and the Environmental Awareness Handbook and Oil and Chemical Spill Response Awareness Handbook, prepared for the Cowal Gold Operations are available and provided to site personnel.	**Compliant**
O3	**Dust**			
O3.1	Activities occurring in or on the premises must be carried out in a manner that will minimise the generation, or emission from the premises, of wind-blown or traffic generated dust		Activities occurring at the Cowal Gold Operations site are carried out in a manner that minimises the generation or emission of wind-blown or traffic generated dust from the premises.	**Compliant Ongoing**
O4	**Waste Management**			
O4.1	The waste rock emplacements areas and the perimeter waste emplacement must be located on a base drainage control zone with a minimum slope towards the open pit of 1 (vertical):200 (horizontal) and be designed to ensure all seepage from beneath the waste rock emplacement areas and the perimeter waste emplacement is directed towards the open pit.		The waste rock emplacements are located on a base drainage control zone with a minimum slope towards the open pit. (Note: The base drainage control zone minimum slope towards the open pit of 1 (vertical):200 (horizontal) beneath the waste rock emplacement areas and perimeter waste emplacement was not verified during this audit). Any seepage from the northern and southern waste emplacement areas is directed to the internal water collection system and water storage ponds. The waste emplacement areas have been designed to ensure that runoff and seepage is directed and collected in the site water management ponds for reuse in the process plant or for onsite dust control.	**Compliant Ongoing**
O4.2	The tailings storage facilities and contained water storage facilities must have a basal barrier or impermeable liner with an equivalent	• NTSF Surveillance Report, URS, Dec 2013	The approved design of the tailings storage facilities and contained water storage facilities, have included a basal barrier	**Compliant**

	permeability of 1x10-9 metres per second over a thickness of 1 metre.	• STSF Surveillance Report, URS, Mar 2014 • NTSF Surveillance Report, URS, Dec 2014 • STSF Surveillance Report, URS, Mar 2015	or impermeable liner that has been the subject of geotechnical reports following construction. Surveillance Reports have been prepared by URS for the Tailings Storage Facilities (TSF) in accordance with the Dams Safety Committee requirements for the High C category TSF. The NTSF and STSF continue to be assessed annually by Dr Neil Matte of URS to satisfy the requirements of the DSC with annual reports prepared and submitted to the DSC.	
O5	**Other operating conditions**			
O5.1	All above ground storage facilities containing flammable and combustible liquids must be bunded in accordance with Australian Standard AS 1940-2004.	• AS 1940-2004	All above ground storage facilities containing flammable and combustible liquids are bunded in accordance with Australian Standard AS 1940-2004.	**Compliant**
5	**Monitoring and Recording Conditions**			
M1	**Monitoring records**			
M1.1	The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.	• Environmental Management File 5.09 - Monitoring		**Noted**
M1.2	All records required to be kept by this licence must be: a) in a legible form, or in a form that can readily be reduced to a legible form; b) kept for at least 4 years after the monitoring or event to which they relate took place; and c) produced in a legible form to any authorised officer of the EPA who asks to see them.	• Environmental Management File 5.09 - Monitoring • RIMS database	All monitoring data collected by Cowal Gold Operations is entered into a database system where the data is retained for reporting and filing. This system also generates reports for the EPA/, DRE, DP&E and any other agencies as required.	**Compliant**
M1.3	The following records must be kept in respect of any samples required to be collected for the purposes of this licence: a) the date(s) on which the sample was taken; b) the time(s) at which the sample was collected; c) the point at which the sample was taken; and d) the name of the person who collected the sample.	• RIMS database	All monitoring data collected by Cowal Gold Operations to meet the requirements of the EPL is entered into the computerised database and includes all information required by this condition. Chain of Custody forms are completed for all samples collected for monitoring programs and are submitted to the NATA registered laboratories with the samples.	**Compliant**
M2	**Requirement to monitor concentration of pollutants discharged**			
M2.1	For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:			**Noted**
M2.2	**Air Monitoring Requirements**			

<table>
<tr>
<td></td>
<td>
Points 1,2,3,4,5,6
<table>
<tr><th>Pollutant</th><th>Units</th><th>Frequency</th><th>Sampling Method</th></tr>
<tr><td>Particulates – Deposited Matter</td><td>g/m^2/mth</td><td>Monthly</td><td>AM-19</td></tr>
</table>
Point 49
<table>
<tr><th>Pollutant</th><th>Units</th><th>Frequency</th><th>Sampling Method</th></tr>
<tr><td>Total Suspended Particles</td><td>µg/m^3</td><td>Monthly</td><td>Special Method 1</td></tr>
</table>
</td>
<td>
• Monthly Weather Reports, Apr 2015 to May 2016, Sentinel Pty Ltd
• Monthly Weather Reports, Jun 2016 to April 2017, Sentinel Pty Ltd
</td>
<td>All monitoring conducted by Cowal Gold Operations is generally undertaken in compliance with the requirements of the EPL. All sampling occurred in accordance with the frequency specified in EPL condition M2.1/2.2 using standard methods and analysis is conducted by NATA registered laboratories using the latest edition of the USEPA.

Monitoring data is reported in the Annual Returns to the EPA, and interpretation of monitoring results data is reported in the Annual Reviews submitted to DP&E and EPA.

Any instances when monitoring of dust samples was not conducted or reported in accordance with the condition was notified to the EPA. These instances did not result in environmental harm.</td>
<td>Compliant</td>
</tr>
<tr>
<td>M2.3</td>
<td>Water and/ or Land Monitoring Requirements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>
Points 12,13
<table>
<tr><th>Pollutant</th><th>Units</th><th>Frequency</th><th>Sampling Method</th></tr>
<tr><td>Conductivity</td><td>µS/cm</td><td>Monthly</td><td>In situ</td></tr>
<tr><td>Total suspended particles</td><td>mg/l</td><td>Quarterly</td><td>Representative sample</td></tr>
<tr><td>pH</td><td>pH units</td><td>Monthly</td><td>In situ</td></tr>
</table>
Points 14,16,
<table>
<tr><th>Pollutant</th><th>Units</th><th>Frequency</th><th>Sampling Method</th></tr>
<tr><td>Alkalinity (as $CaCO_3$)
Antimony
Arsenic
Cadmium
Copper
Lead
Mercury
Selenium
Zinc</td><td>mg/l</td><td>Quarterly</td><td>Representative sample</td></tr>
<tr><td>Total suspended particles</td><td>mg/l</td><td>Special Frequency 1</td><td>Representative sample</td></tr>
<tr><td>pH</td><td>pH units</td><td>Special Frequency 1</td><td>In situ</td></tr>
<tr><td>Conductivity</td><td>µS/cm</td><td>Special Frequency 1</td><td>In situ</td></tr>
</table>
Points 15,17,18
<table>
<tr><th>Pollutant</th><th>Units</th><th>Frequency</th><th>Sampling Method</th></tr>
<tr><td>Alkalinity (as $CaCO_3$)
Antimony
Arsenic
Cadmium</td><td>mg/l</td><td>Quarterly</td><td>Representative sample</td></tr>
</table>
</td>
<td>
• Water Management Plan, May 2015
• Surface Water, Groundwater, Meteorological and Biological Monitoring Program, May 2015
</td>
<td>Surface water monitoring has occurred in accordance with the Surface Water, Groundwater, Meteorological and Biological Monitoring Program – sections 4 and 5 and Water Management Plan section 4.3, and following EPL rainfall trigger events (i.e. >20mm rainfall/24hrs) for the surface water monitoring program between January 2016 and May 2017.

Trigger events occurred on the following occasions between May 2016 and April 2017:

9 May 2016 28.2 mm
4 June 2016 37 mm
20 June 2016 29.6 mm
8 July 2016 20.2 mm
3 September 2016 27 mm
10 September 2016 22.6 mm
19 September 2016 28 mm
12 November 2016 24.6 mm
21 March 2017 25.4mm
31 March 2017 21.2 mm</td>
<td></td>
</tr>
</table>

Copper Lead Mercury Selenium Zinc	mg/l	Quarterly	Representative sample
Total suspended particles	mg/l	Quarterly	Representative sample
pH	pH units	Monthly	In situ
Conductivity	µS/cm	Monthly	In situ

Points 19,20,21,22,23,24,25,26,27,30,31,32,33,34,44,45,50,51,55,56

Pollutant	Units	Frequency	Sampling Method
Alkalinity (as $CaCO_3$) Antimony Arsenic Cadmium Calcium Chloride	mg/l	Quarterly	Representative sample
Copper	mg/l	Quarterly	Representative sample
Cyanide (weak acid dissociable)	mg/l	Quarterly	WAD cyanide from water samples - CN-1 recovery by 20th Ed APHA 4500-CN-1 method E, D or F
Lead Magnesium Potassium Selenium Sodium	mg/l	Quarterly	Representative sample
Sulfate Total Hardness Total suspended particles Zinc	mg/l	Quarterly	Representative sample
pH	pH units	Monthly	In situ
Conductivity	µS/cm	Monthly	In situ
Standing water level	metres	Monthly	In situ

Points 36,38,40,52, 53,54

Pollutant	Units	Frequency	Sampling Method
Alkalinity (as $CaCO_3$) Antimony Arsenic Cadmium Calcium Chloride	mg/l	Quarterly	Representative sample
Copper Lead Magnesium Potassium	mg/l	Quarterly	Representative sample

	Selenium Sodium			
	Sulfate Total Hardness Total suspended particles Zinc	mg/l	Quarterly	Representative sample
	pH	pH units	Monthly	In situ
	Conductivity	µS/cm	Monthly	In situ
	Standing water level	metres	Monthly	In situ
	Point 48			
	Pollutant	**Units**	**Frequency**	**Sampling Method**
	Cyanide (total)	mg/l	Weekly	Other Approved Method 2
	Cyanide (weak acid dissociable)	mg/l	2x daily during discharge	Other Approved Method 2
				VELP distillation method using the Orion FS 3100 analyser for analysis of CNWAD, plus a picric acid method of analysis for analysis of cyanide at the on-site laboratory (was approved by the relevant agencies in 2007). Amendments to the Cyanide Management Plan monitoring program in relation to the analysis method was agreed with the DPI in December 2006, and DECC in January 2007.	
M2.4	For the purposes of the table(s) above • Special Frequency 1 means "the collections of samples every 7 days". • Special Frequency 2 means "the collection of samples monthly and following rainfall events of 20mm or greater in a 24hour period". • Special Method 1 means "the collection and analysis of samples generally in accordance with AS/NZS 3580.9.6:2015, subject to Special Frequency 1". • Other Approved Method 1 means "methods based on 22nd Ed. APHA 4500-CN Method O (or most contemporary APHA methods for analysing WAD cyanide), or as otherwise approved under EPL Condition M3.2". • Other Approved Method 2 means "methods based on 22nd Ed. APHA 4500-CN Method B, C, E and/or O (or most contemporary APHA methods for analysing total cyanide), or as otherwise approved under EPL Condition M3.2". • Other Approved Method 3 means "methods based on 22nd Ed. APHA 4500-CN Method B, C, E, and/or O (or most contemporary APHA methods for analysing WAD cyanide), or as otherwise approved under EPL Condition M3.2". • Monitoring at points 14, 15, 16, 17 & 18 is not required when the monitoring site is dry or if the water level of Lake Cowal is at or below 204.5 metres Australian Height Datum. • Monitoring at points 36, 38, 40, 52, 53 & 54 is not required where a piezometer is lost or destroyed as a result of mine growth.	• Surface Water, Groundwater, Meteorological and Biological Monitoring Program, May 2015 • Water Management Plan May 2015	The surface water monitoring program has occurred in accordance with the Surface Water, Groundwater, Meteorological and Biological Monitoring Program – sections 4 and 5 and Water Management Plan section 4.3, May 2015.	**Noted**
M3	**Testing methods - concentration limits**			

<table>
<tr><td>M3.1</td><td>Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with:
(a) any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or
(b) if no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or
(c) if no such requirement is imposed by or under the Act or by a condition of this licence, any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place.</td><td>• Approved Methods for the Sampling and Analysis of Air Pollutants in NSW
• USEPA Method 29 (2000) and 201 (1997)
• Interpretation and Discussion of 2012 Air Quality Monitoring Results, Prof Stephen Cattle, University of Sydney, 12 Apr 2015
• Interpretation and Discussion of 2013 Air Quality Monitoring Results, Prof Stephen Cattle, University of Sydney, 31 May 2016</td><td>Dust samples for ‘Total Suspended Particles’ are collected from the high volume sampler in accordance with AS 3580.9.3-2003. Ecowise Environmental Pty Ltd supply and maintain the high volume air sampler for the TSP program.
• Analysis of dust deposition samples has been carried out by NATA registered laboratories (Australian Laboratory Services (ALS) between 2016 and 2017, for analysis required to be tested to meet the regulatory requirements, based on the Approved Methods for the Sampling and Analysis of Air Pollutants in NSW, and/or the latest editions of APHA and USEPA methods.
Dust data is reviewed annually by Dr Stephen Cattle of University of Sydney.
The results of the monitoring and dust analysis program are reported in the Annual Reviews and EPA Annual Report.</td><td>Compliant</td></tr>
<tr><td>M3.2</td><td>Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA before any tests are conducted.</td><td></td><td>ALS conducts the majority of the analysis for water samples required by Cowal Gold Operations. ALS is NATA registered for the analysis of metals and the methods used are based on the current updated editions of APHA and USEPA documentation (e.g. Standard Methods for Water and Wastewater. 22nd Edition, 2012).</td><td>Compliant</td></tr>
<tr><td>M4</td><td>Weather Monitoring</td><td></td><td></td><td></td></tr>
<tr><td>M4.1</td><td>For each monitoring point specified in the table below, the licensee must monitor (by sampling and obtaining results by analysis) the parameters specified in Column 1. The licensee must use the sampling method, units of measure, averaging period and sample at the frequency, specified opposite in the other columns.
Point 7
<table>
<tr><th>Parameter</th><th>Units</th><th>Continuous Averaging Period</th><th>Method</th></tr>
<tr><td>Rainfall</td><td>mm</td><td>24hr</td><td rowspan="2">AM-4</td></tr>
<tr><td>Temperature @ 2m</td><td></td><td rowspan="6">15min</td></tr>
<tr><td>Temperature @ 10m</td><td></td><td></td></tr>
<tr><td>Wind speed @ 10m</td><td>m/s</td><td>AM-2 & AM-4</td></tr>
<tr><td>Wind direction @ 10m</td><td>o</td><td>AM-2 & AM-4</td></tr>
<tr><td>Sigma theta @ 10m</td><td>o</td><td>AM-2 & AM-4</td></tr>
<tr><td>Solar radiation</td><td>W/m^2</td><td>AM-4</td></tr>
<tr><td>Siting</td><td colspan="2"></td><td>AM-1 &AM-4</td></tr>
<tr><td>Measurement</td><td colspan="2"></td><td>AM-2 & AM-4</td></tr>
</table></td><td>• Monthly Weather Station Reports – May 2013 to April 2017, Sentinel P/L
• Cowal Calibration Report, Sentinel Pty Ltd, Mar/Jun/ Sep/Nov 2015
• Cowal Calibration Report, Sentinel Pty Ltd, Jan/Apr/ Jun/Sep 2016</td><td>The meteorological station installed at CGO is equipped with the required instrumentation to provide continuous 15minute data recording to the CGO site for the parameters in EPL condition M4.
Data is available to Cowal Gold Operations and is also downloaded and reported monthly to Cowal Gold Operations, by Sentinel.
Calibration of the meteorological station equipment occurs quarterly by Sentinel Pty Ltd.</td><td>Compliant</td></tr>
<tr><td>M5</td><td>Recording of pollution complaints</td><td></td><td></td><td></td></tr>
<tr><td>M5.1</td><td>The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.</td><td>• Responsibility Information Management System (RIMS)</td><td>A complaints register is maintained by Cowal Gold Operatyions in accordance with the EPL condition. A summary of the complaints is provided in the Annual Reviews and the EPL Annual Returns.</td><td>Compliant</td></tr>
</table>

M5.2	The record must include details of the following: (a) the date and time of the complaint; (b) the method by which the complaint was made; (c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect; (d) the nature of the complaint; (e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and (f) if no action was taken by the licensee, the reasons why no action was taken.	• Letters to DP&E, DPI/DII, DECC/OEH, BSC and CEMCC re Complaints Register: o Jan to May 2015 o May to Dec 2015 o Jan to Jun 2016 o Jul to Dec 2016 o Monthly Complaints Reporting on website	Complaints are recorded in the Cowal Gold Operations Complaints register that includes the information in accordance with each of the requirements of this condition. A summary of the Complaints is submitted to the relevant authorities each 6 months and a full summary is included in the Annual Reviews. As per Development Consent 14/98 MOD 13 condition 9.4, the Complaints Register is posted at Cowal Gold Operations website. Complaints are also discussed quarterly at CEMCC meetings.	**Compliant**
M5.3	The record of a complaint must be kept for at least 4 years after the complaint was made.		All complaints received are retained on the Cowal Gold Operations site computer system Complaints Register and area available if requested.	**Compliant**
M5.4	The record must be produced to any authorised officer of the EPA who asks to see them.			**Noted**
M6	**Telephone complaints line**	•		
M6.1	The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.	• Responsibility Information Management System (RIMS) • Letters to DECC/OEH re Complaints Register: o Jan to May 2015 o May to Dec 2015 o Jan to Jun 2016 o Jul to Dec 2016	(a) A 24hour complaints line (02) 6975 3454 for Cowal Gold Operations is active. (b) Six monthly reports of complaints received by Cowal Gold are prepared and submitted to EPA /BSC / CEMCC and DP&E.	**Compliant**
M6.2	The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.		The complaints line is advertised in the West Wyalong Advocate on a regular basis and is available on the Cowal Gold Operations website and any community newsletters.	**Compliant**
M6.3	Conditions M6.1 and M6.2 do not apply until 3 months after: (a) the date of the issue of this licence or (b) if this licence is a replacement licence within the meaning of the Protection of the Environment Operations (Savings and Transitional) Regulation 1998, the date on which a copy of the licence was served on the licensee under clause 10.			**Noted**
M7	**Blasting monitoring**			

M7.1	To determine compliance with condition(s) L5.1, L5.2, L5.3 and L5.4: (a) Airblast overpressure and ground vibration levels must be measured at nearby residences labelled as "BM01", "BM02", "BM03" and "BM08.1" on Figure 1 titled 'Blast Monitoring Locations' in the "Cowal Gold Operations Blast Management Plan" dated January 2015 for all blasts carried out on the premises; and (b) Instrumentation used to measure the airblast overpressure and ground vibration levels must meet the requirements of Australian Standard AS 2187.2-2006. (c) Monitoring at blast monitor BM01 is not required when the monitoring site is unable to be accessed safely. Monitoring is required to recommence when the outcome of a risk assessment determines a low or acceptable risk is associated with accessing the monitoring site.	• Blast Management Plan Dec 2015 • Review of Blast Monitoring Report 2015, The Saros Group, Feb 2016 • Review of Blast Monitoring Report 2016, The Saros Group, Feb 2017	(a) All blasts were monitored for overpressure and vibration at the following fixed locations, with one mobile/portable monitor available for random checks. Blast monitoring locations are: o BM01 - Gumbelah residence and BM03 - Coniston Residence residences on privately owned land' . o BM02 Hillgrove residence (mine owned) positioned to assess the impacts on and around Lake Cowal o BM08.1 Cowal North residence (mine owned) positioned to assess the impacts on and around Lake Cowal. o BM10 CGM open pit near-field reference monitor. (b) Blast monitoring equipment undergoes maintenance and annual calibration in February/March by the Saros Group.	**Compliant**
	Reporting Conditions			
R1	**Annual return documents**			
R1.1	The licensee must complete and supply to the EPA an Annual Return in the approved form comprising: 1. a Statement of Compliance, 2. a Monitoring and Complaints Summary, 3. a Statement of Compliance - Licence Conditions, 4. a Statement of Compliance - Load based Fee, 5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan, 6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and 7. a Statement of Compliance - Environmental Management Systems and Practices At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.	• Annual Return to EPA 23 Dec 2015 to 22 Dec 2016, 20 Feb 2017	The Annual Returns have been prepared for the Cowal Gold Operations on the approved EPA forms and submitted to the EPA in accordance with condition R1.1. Signed Statements of Compliance, Monitoring and Complaints summaries are included with the Annual Returns.	**Compliant**
R1.2	An Annual Return must be prepared in respect of each reporting period, except as provided below. Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.	• Annual Return to EPA 23 Dec 2015 to 22 Dec 2016, 20 Feb 2017	The Annual Returns for Cowal Gold Operations cover the period of 23 December to 22 December in accordance with EPL condition R1.2. The Annual Return for 23 December 2015 to 22 December 2016 was submitted to the EPA 20 February 2017 in accordance with EPL condition R1.2.	**Compliant**
R1.5	The Annual Return for the reporting period must be supplied to the EPA by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').		The Annual Returns for the CGO for the period 23 December to 22 December have been submitted to the EPA in accordance with the requirement of EPL condition R1.5.	**Compliant**
R1.6	The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was supplied to the EPA.		A copy of each Annual Return is retained within the Cowal Gold Operations document system in the EPA files.	**Compliant**

R1.7	Within the Annual Return, the Statement of Compliance must be certified and the Monitoring and Complaints Summary must be signed by: (a) the licence holder; or (b) by a person approved in writing by the EPA to sign on behalf of the licence holder.		The Annual Returns have been completed and certified by senior Cowal Gold Managers as required by EPL R1.8.	**Compliant**
R1.8	The results of the blast monitoring required by condition M7.1 must be submitted to the EPA at the end of each reporting period.		The results of the blast monitoring prepared by the Saros Group are provided to the EPA annually.	**Compliant**
R1.9	The licensee must report any exceedance of the licence blasting limits to the regional office of the EPA as soon as practicable after the exceedance becomes known to the licensee or to one of the licensee's employees or agents. *Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.* *Note: An application to transfer a licence must be made in the approved form for this purpose.*		Any exceedance of the blasting limits has been reported to the regional office of the EPA as soon as practicable after the exceedance is known to have occurred.	**Compliant Ongoing**
R2	**Notification of environmental harm**			
R2.1	*Note: The licensee or its employees must notify the EPA of incidents causing or threatening material harm to the environment as soon as practicable after the person becomes aware of the incident in accordance with Part 5.7 of the Act. Notifications must be made by telephoning the EPA's Pollution Line service on 131 555.*			**Noted**
R2.2	The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.	• Letter from EPA re New Requirements for All Licensees, 16 Jan 2012 • Pollution Incident Response Management Plan (PIRMP) submitted to the EPA in Sep 2012	Changes to the environment protection legislation in relation to notification of pollution incidents, was advised to Cowal Gold on 16 January 2012. The changes required the preparation of a Pollution Incident Response Management Plan. The Pollution Incident Response Management Plan was prepared and submitted to the EPA in September 2012. The Pollution Incident Response Management Plan would be triggered in the event of any reportable incident resulting in environmental harm.	**Noted**
Written report				
R3.1	Where an authorised officer of the EPA suspects on reasonable grounds that: (a) where this licence applies to premises, an event has occurred at the premises; or (b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence, and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to		Not triggered	**Noted**

	which the licence applies), the authorised officer may request a written report of the event.			
R3.2	The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.		Not triggered	**Noted**
R3.3	The request may require a report which includes any or all of the following information: (a) the cause, time and duration of the event; (b) the type, volume and concentration of every pollutant discharged as a result of the event; (c) name, address, business hours telephone, number of employees or agents of the licensee, or a specified class who witnessed the event; (d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort; (e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants; (f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; (g) any other relevant matters.		Not triggered	**Noted**
R3.4	The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.		Not triggered	**Noted**
7	**General conditions**			
G1	**Copy of licence kept at the premises**			
G1.1	A copy of this licence must be kept at the premises to which the licence applies.		A copy of the EPL is kept in the Environment Section at the Cowal Gold Project site administration offices and workplace copies are available in Crib Rooms and Office areas.	**Compliant**
G1.2	The licence must be produced to any authorised officer of the EPA who asks to see it.			**Noted**
G1.3	The licence must be available for inspection by any employee or agent working at the premises.			**Noted**

ATTACHMENT C MINING LEASE 1535 CONDITIONS

Attachment C Mining Lease 1535 Conditions

No.	ML 1535 Condition	Audit Evidence	Comments	Compliance
1	**Notice to Landholders**			
	The lease-holder must serve on each landholder of the land a notice in writing indicating that this lease has been granted / renewed and whether the lease includes the surface.		Evolution Mining is the registered proprietor of all the land on which the mining lease is located.	**Not applicable**
6	**Reports**			
	The lease holder shall provide within a period of 28 days after each anniversary of the date this lease has effect …. a progress report to the satisfaction of D-G……..		Progress Reports have been prepared for submission to DRE annually and the Annual Reviews required under Consolidated Development Consent 14/98 MOD 13 condition 9.2(b also includes reporting on rehabilitation status in section 8.	**Compliant**
11	**Safety**			
	Operations are to be carried out in a manner that ensures safety of persons or stock in the vicinity of the operations…….		Protective fences have been constructed around ML 1535, the active mine areas, tailing storage facilities, process plant, and the mine lease boundary to restrict entry of persons and stock.	**Compliant**
12	**Rehabilitation**			
12 (a)	Land disturbed must be rehabilitated to a stable and permanent form suitable for a subsequent land use acceptable to the Director-General and in accordance with the Mining Operations Plan so that: • there is no adverse environmental effect outside the disturbed area and that the land is properly drained and protected from soil erosion • the state of the land is compatible with the surrounding land and land use requirements. • the landforms, soils, hydrology and flora require no greater maintenance than that in the *surrounding land.* • in cases where revegetation is required and native vegetation has been removed or *damaged, the original species must be re-established with close reference to the flora survey included in the Mining Operations Plan. If the original vegetation was not native, any re-established vegetation must be appropriate to the area and at an acceptable density.* • the land does not pose a threat to public safety	• MOP Jan 2011 to Sep 2012 • MOP Oct 2012 to Jan 2014 • MOP 31 Jan 2014 to 31 Jan 2015 • MOP Apr 2014 to Apr 2016 • MOP 1 Sep 2016 to 31 Aug 2018	The proposed rehabilitation activities are described in section 5 of the current approved Mining Operations Plan for 1 September 2016 to 31 August 2018. The MOP includes: • Section 3.2.2 discusses Erosion and Sediment Control, and sections 3.6.4 and 7 address surface water management and land drainage to ensure there is no adverse environmental effect outside the disturbed area; • Section 8 addresses rehabilitation and research to assess if the ML 1535 land is compatible with the surrounding land and land use requirements; • Section 7 describes rehabilitation implementation to address maintenance of the landforms, soils, hydrology and flora; • ML1535 prior to mining had been largely cleared of native vegetation for grazing purposes. CGO committed to improve biodiversity by establishing Eucalypt Woodlands on the Northern and Southern Waste Rock Emplacements, Riverine and Eucalypt Woodland on the Northern and Southern Tailings Storage Facilities and Wetland and Riverine Species on the new lake foreshore. • ML 1535 is fully fenced and does not currently pose a threat to public safety	**Compliant Ongoing**

No.	ML 1535 Condition	Audit Evidence	Comments	Compliance
12(b)	Any topsoil that is removed must be stored and maintained in a manner acceptable to the Director-General.	• CGO Soil Stockpile Map	All topsoil stripped is managed to ensure availability for rehabilitation and the stockpile locations and volumes are annually recorded and mapped for the Cowal Gold Operations site.	**Compliant Ongoing**
13	The lease holder must comply with any direction given by the D-G regarding the stabilisation and revegetation of any mine residues, tailing or overburden dumps situated on the lease area.		No additional direction was provided to Evolution Mining by the during 2016. The Independent Monitoring Panel has provided an Annual Report on the CGO rehabilitation status.	**Noted**
14	**Prevention of Soil Erosion and Pollution**			
	Operations must be carried out in a manner that does not cause or aggravate air pollution, water pollution (including sedimentation) or soil contamination or erosion, unless otherwise authorised by a relevant approval, and in accordance with an accepted Mining Operations Plan. For the purpose of this condition, water shall be taken to include any watercourse, waterbody or groundwater. The lease holder must observe and perform any instructions given by the Director-General in this regard.	• Erosion and Sediment Control Management Plan (revised) submitted to DP&E 24 Feb 2015 • Air Quality Management Plan, Feb 2015 • Water Management Plan, May 2015	The operations were observed as being undertaken in accordance with the Erosion and Sediment Control Management Plan and other environmental management plans, Mining Operations Plan and Addenda. Soil erosion primarily due to the dispersive subsoils, was observed in the upper sections of the open cut mine void. Sediment and turbid run-off from these areas is captured within the open pit sump therefore there is no potential for any off-site water quality impacts from this erosion. Cowal Gold Operations have implemented a program of works to stabilise dispersive soils that result in erosion, by reshaping, gypsum treatment and rock mulching/blending of the soils on the batters of the perimeter waste emplacement where appropriate.	**Compliant Ongoing**
15	**Transmission lines, Communication lines and Pipelines**			
	Operations must not interfere with or impair the stability or efficiency of any transmission line, communications line or pipeline or other utility on the area ……		Relocation of Telstra cables and power lines within the ML boundary occurred during construction in the 1st quarter of 2004.	**Compliant**
16	**Fences and gates**			
	(a) Activities on the lease must not interfere with or damage fences without the prior written approval of the owner …..		Evolution Mining is the registered proprietor of all the land on which the mining lease is located.	**Not applicable**
17	**Roads and Tracks**			
	Operations must not affect any road unless in accordance with an accepted Mining Operations Plan or with the prior approval of the Director-General…… The lease holder must pay the local council, DLWC or the RTA the cost incurred in fixing any damage to roads caused by the operations carried out under this lease……		The external road access route to the CGO site from West Wyalong as approved in the Development Consent, is complete and in use for all traffic to and from the mine site.	**Compliant**
18	Access tracks must be kept to a minimum and be positioned so that they do not cause any unnecessary damage to the land……		Access tracks within the mining lease area have been established in accordance with the mine plan development and any temporary access tracks are rehabilitated when they are no longer required.	**Compliant Ongoing**
19	**Trees and Timber**			
	The lease holder must not cut, destroy, ringbark or remove any timber or other vegetative cover	• Vegetation Clearance Protocol Nov 2008	Evolution Mining is retaining any trees within the mining lease not in the path of the project development. Approval to remove any trees or vegetative cover within the mining lease area is obtained	**Compliant**

No.	ML 1535 Condition	Audit Evidence	Comments	Compliance
	on the lease except such as directly obstructs or prevents the carrying out of operations…..	• Letter from DoP re Inland Greybox Woodland, 10 Aug 2007 • Letter from DECC re Inland Greybox Woodland, 27 Aug 2007 • Letter from DECC re Myall Woodland, 29 Aug 2007	from the Environmental Manager prior to removal of any vegetation. EPA, DPI and DoP accepted the implementation of the Vegetation Clearance Protocols related to the Inland Grey Box Woodland, dated 9 August 2007, and Myall Woodland dated 20 August 2007.	
24	**Mine Safety Plan**			
	Prior to commencement of any construction activities on the lease area and as required by the Director-General the lease holder must prepare a Mine Safety Plan to ensure the Mine Safety General Rule 2000 is adhered to.	• CGM Mine Safety Plan, Jun 2009 • Letter from DoP re Revised CGM Mine Safety Plan, 18 Jun 2009	The Safety Management System for Cowal Gold Operations was approved on 14 December 2005 and a major review of the Safety Management System was conducted in February 2007 with the revised Safety Management System approved on 18 June 2009.	**Compliant**
25	Mining Rehabilitation, Environmental Management Process (MREMP) Mining Operations Plan (MOP)	• MOP Jan 2011 to Sep 2012 • MOP Oct 2012 to Jan 2014 • MOP 31 Jan 2014 to 31 Jan 2015 • MOP Apr 2014 to Apr 2016 • MOP 1 Sep to 31 Aug 2018	The Annual Review is submitted to the DRE, EPA, DPI-Water, Councils, and Dam Safety Committee and a presentation provided at the Cowal Gold Operations site for representatives each year. Mining Operations Plans for the have been prepared and approved by DRE for the September 2016 to August 2018 period.	**Compliant**
	(1) Mining operations, including mining purposes, must be conducted in accordance with the MOP satisfactory to the Director-General……	• MOP 1 Sep to 31 Aug 2018	The current approved Mining Operations Plan covers the period of 1 September 2016 to 31 August 2018.	Compliant
	(2) An Initial Mining Operations Plan must be submitted prior to commencement of construction on the site ……..	• Initial Mining Operations Plan Cowal Gold Project Mar 2004	The Initial Mining Operations Plan was submitted to DMR prior to commencement of construction of the mine on the CGP site.	**Compliant**
26	**Annual Environmental Management Report (AEMR)**			
	(1) Within 12 months of the commencement of mining operations and thereafter annually the lease holder must lodge an AEMR with the Director-General.	• 2015 Annual Review • 2016 Annual Review	The Annual Reviews for the CGO have been prepared in accordance with the agency Guidelines. A presentation of the Annual Review has been provided to the relevant government authorities each year.	**Compliant**
27	**Blasting**			
	(a) Ground Vibration The lease holder must ensure that ground vibration peak particle velocity generated by any blasting within the lease area does not exceed 10mm/sec and does not exceed 5mm/sec in more than 5% of the total number of blasts over a period of 12 months at any dwelling or occupied premises, not owned by the lease holder or a related corporation, unless determined otherwise by the EPA.	• Blast Management Plan, Jan 2015 • 2015 Review of Blast Monitoring Report, The Saros Group, Mar 2016 • 2016 Review of Blast Monitoring Report, The Saros Group, Feb 2016 • Blast Monthly Monitoring Reports, January to April 2017	Blast overpressure and vibration monitoring has demonstrated compliance of all blasts (conducted Monday to Friday) with the Day and Evening criteria specified in the Development Consent/EPL/ML conditions. No ground vibration exceeded the 5mm/sec criteria between May 2016 and April 2017. No blast results exceeded 120dBL between May 2016 and April 2017, and less than 5% of the total blasts exceeded the 115dB (Lin peak) overpressure criteria for the 12month period. Exceedance of the 95dB(L) blast results overpressure criteria (Development Consent condition 6.3(a) - Sunday and Public Holiday criteria) occurred between May 2016 and April 2017, but accounted for less than 5% of the total blasts.	**Compliant**

No.	ML 1535 Condition	Audit Evidence	Comments	Compliance
	(b) Blast Overpressure The lease holder must ensure that the blast overpressure noise level generated by any blasting within the lease area does not exceed 120dB (linear) and does not exceed 115 db(linear) in more than 5% of the total number of blasts over a period of 12 months, at any dwelling or occupied premises, not owned by the lease holder or a related corporation, unless determined otherwise by the EPA.		Blast overpressure and vibration monitoring has demonstrated compliance of all blasts (conducted Monday to Friday) with the Day and Evening criteria specified in the Development Consent/EPL/ML conditions. No blast results exceeded 120dBL between May 2016 and April 2017, and less than 5% of the total blasts exceeded the 115dB (Lin peak) overpressure criteria for the 12month period. Exceedance of the 95dB(L) blast results overpressure criteria (Development Consent condition 6.3(a) - Sunday and Public Holiday criteria) occurred between May 2016 and April 2017, but accounted for less than 5% of the total blasts.	**Compliant**
28	**Use of Cyanide**			
	The lease holder must not use cyanide or any solution containing cyanide for the recovery of minerals on the lease area without the prior written approval of the Minister and subject to any conditions he may stipulate.	• Letter from DPI re Approval of Cyanide Use on Mining Lease 1535, Cowal Gold Mine, 17 Jan 2006	Letter of approval received from DPI in January 2006 for use of cyanide in the CGP process plant.	**Compliant**
29	**Control of Operations**			
	(a) If an Environmental Officer of the DMW believes that the lease holder is not complying with any provision of the Act or any condition of this lease relating to the working of the lease, he may direct the lease holder to: (i) cease working the lease; (ii) cease that part of the operation not complying with the Act or conditions; Until in the opinion of the Environmental Officer the situation is rectified. The lease holder must comply with any written direction given. The Director-General may confirm, vary or revoke any such direction. A written direction referred to in this condition may be served on the Mine Manager.			**Noted**