SECTION 8

E42 MODIFICATION

ABBREVIATIONS, ACRONYMS AND GLOSSARY

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8.1 ABBREVIATIONS AND ACRONYMS

AEMR	Annual Environmental Management Report
AGO	Australian Greenhouse Office
AHD	Australian Height Datum
ANC	acid neutralising capacity
ANZECC	Australian and New Zealand Environmental and Conservation Council
ARI	annual recurrence interval
AS	Australian Standard
Barrick	Barrick Australia Limited
BDHS	Bland District Historical Society
Bland LEP	*Bland Local Environmental Plan, 1993*
BLMP	Blast Management Plan
BMP	Bushfire Management Plan
BOM	Bureau of Meteorology
BSC	Bland Shire Council
CaO	calcium oxide
CEMCC	Community Environmental Monitoring Consultative Committee
CGM	Cowal Gold Mine
cm	centimetre
CMP	Cyanide Management Plan
CN_{FREE}	free cyanide
CN_{WAD}	weak acid dissociable cyanide
$CO_{2\text{-}e}$pa	carbon dioxide equivalent per annum
Coffey Geotechnics	Coffey Geotechnics Pty Ltd
Coffy Partners International	Coffey Partners International Pty Ltd
CWHC	Cowal West Homestead Complex
CWMP	Compensatory Wetland Management Plan
dBA	A-weighted decibel
dBL	linear decibel
DCC	Department of Climate Chnage
DEC	Department of Environment and Conservation
DECC	Department of Environment and Climate Change
DEWHA	Department of the Environment, Water, Heritage and the Arts
DGRs	Director-General's Requirements
DLWC	Department of Land and Water Conservation
DMP	Dust Management Plan
DoL	Department of Lands
DoP	Department of Planning
DPI-MR	Department of Primary Industries – Mineral Resources
Draft Route Selection Guidelines	*Draft Route Selection: Guidelines for Land Use and Environmental Safety Planning for Hazardous Materials – Road Transport Considerations*
DUAP	Department of Urban Affairs and Planning
DWE	Department of Water and Energy
E42	Endeavour 42
EA	Environmental Assessment
ECRTN	*NSW Environmental Criteria for Road Traffic Noise*
EDAW	EDAW Australia
EEC	Endangered Ecological Community

EGi	Environmental Geochemistry International Pty Ltd
EIS	*Cowal Gold Project Environmental Impact Statement* (North Limited, 1998)
EL	Exploration Licence
EP&A Act	*Environmental Planning and Assessment Act, 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation, 2000*
EPBC Act	*Environment Protection and Biodiversity Conservation Act, 1999*
EPL	Environment Protection Licence
ERP	Emergency Response Plan
ESAP	Energy Savings Action Plan
ESCMP	Erosion and Sediment Control Management Plan
ESD	Ecologically Sustainable Development
ETL	Electricity Transmission Line
FFMP	Flora and Fauna Management Plan
FHA	Final Hazard Analysis
FM Act	*Fisheries Management Act, 1994*
FSC	Forbes Shire Council
FSS	Fire Safety Study
g	gram
$g/m^2/month$	grams per square metre per month
GWC	Groundwater Consulting Services
h	horizontal
H_2O_2	hydrogen peroxide
H_2SO_4	sulphuric acid
ha	hectare
HAZOP	Hazard and Operability Study
HCl	hydrochloric acid
HIPAP	Hazardous Industry Planning Advisory Paper
HMP	Heritage Management Plan
hPa	hectopascal
HWCMP	Hazardous Waste and Chemical Management Plan
IACHMP	Indigenous Archaeology and Cultural Heritage Management Plan
IBRA	Interim Biogeographic Regionalisation for Australia
ICDS	Internal Catchment Drainage System
IMP	Independent Monitoring Panel
INP	*NSW Industrial Noise Policy*
kg	kilogram
kg/bcm	kilograms per bank cubic metre
km	kilometre
km^2	square kilometre
km/h	kilometres per hour
kV	kilovolt
Lachlan River Catchment EEC	Aquatic Ecological Community in the Natural Drainage System of the Lowland Catchment of the Lachlan River Endangered Ecological Community
L_{Aeq}	equivalent continuous noise level
L_{AN}	noise exceedance level
LCCC	Lake Cowal Conservation Centre
LCF	Lake Cowal Foundation
LGA	local government area
LMP	Land Management Plan

LPBMP	*Monitoring Programme for Detection of any Movement of Lake Protection Bund, Water Storage and Tailings Structures and Pit/Void Walls*
LPG	liquid petroleum gas
LSC	Lachlan Shire Council
LSMP	Landscape Management Plan
m	metre
M	million
m^2	square metre
m/day	metres per day
m/s	metres per second
Major Projects SEPP	*State Environmental Planning Policy (Major Projects) 2005*
mg/L	milligrams per litre
MIC	maximum instantaneous charge
Mining SEPP	*State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*
ML	Mining Lease
ML	megalitre
ML/day	megalitre per day
mm	millimetre
mm/s	millimetres per second
MOP	Mining Operations Plan
Moz	million ounces
MREMP	*Guidelines to the Mining, Rehabilitation and Environmental Process*
Mt	million tonnes
Mtpa	million tonnes per annum
$N_2B_4O_7$	borax
NaCN	sodium cyanide
$NaCO_3$	soda ash
NAF	non-acid forming
NaOH	caustic soda
NEPM	National Environment Protection Measure
NGA Factors	*National Greenhouse Accounts Factors*
NH_2SO_3H	sulfamic acid
NHMRC	National Health and Medical Reseach Council
NMP	Noise Management Plan
NPW Act	*National Parks and Wildlife Act, 1974*
NSESD	*National Strategy for Ecologically Sustainable Development, 1992*
NSW	New South Wales
PAX	Potassium Amyl Xanthate
PHA	Preliminary Hazard Analysis
pH_W	pH 1 soil: 5 water
PM_{10}	particulate matter less than 10 microns in size
PVS	Peak Vector Sum
RBL	rating background level
REF	Review of Environmental Factors
RL	relative level
ROM	run-of-mine
RTA	Roads and Traffic Authority
SEPP	State Environmental Planning Policy
SEPP 14	*State Environmental Planning Policy No.14 (Coastal Wetlands)*
SEPP 26	*State Environmental Planning Policy No.26 (Littoral Rainforests)*
SEPP 33	*State Environmental Planning Policy No.33 (Hazardous and Offensive Development)*

SEPP 55	*State Environmental Planning Policy No.55 (Remediation of Land)*
SiO_2	silica flour
SIS	Species Impact Statement
SLA	Statistical Local Area
SMBS	sodium metabisulphite
SO_2	sulphur dioxide
SSD	Statistical Sub-division
SSMP	Soil Stripping Management Plan
SWGMBMP	Surface Water, Groundwater, Meteorological and Biological Monitoring Programme
SWMP	Site Water Management Plan
t/m^3	tonnes per cubic metre
TDS	total dissolved solids
THMS	Transport of Hazardous Materials Study
TNMP	Traffic Noise Management Plan
tph	tonnes per hour
TSC Act	*Threatened Species Conservation Act, 1995*
TSMP	Threatened Species Management Protocol
TSP	total suspended particulates
UCDS	Up-catchment Diversion System
USDA-FS	United States Department of Agriculture – Forestry Service
v	vertical
VCP	Vegetation Clearance Protocol
vph	vehicles per hour
W/m^2	watts per square metre
Waste Guidelines	*Waste Classification Guidelines Part 1: Classifying Watste*
μm	micrometre
$\mu g/m^3$	micrograms per cubic metre
μS/cm	micro Siemens per centimetre
°	degrees
°C	degrees Celsius

8.2 GLOSSARY

Alluvial

A general term for clay, silt, sand and gravel transported by water and deposited, on the bed of a flood plain, river or stream.

Adsorption

The adhesion of a molecule or particle to a surface.

Amenity

Useful and enjoyable quality.

Aquatic

Living in or on water, or concerning water.

Aquifer

A sub-surface rock formation containing water in recoverable quantities.

Average recurrence interval (ARI)

The expected value or average value of the periods between exceedances of a given event magnitude. A term used in water engineering. Also known as “return period”.

Backfilling

The refilling of mined areas.

Background

The condition (e.g. noise levels, bird populations) already present in an area before the commencement of a specific activity (e.g. a mining operation).

Barren slurry (tailings)

Liquid, ground, ore following removal of precious metal.

Baseline Data

A body of information collected over time to define specific, characteristics of an area (e.g. species occurrence or noise levels) prior to the commencement of an activity (e.g. a mining operation).

Batter

An engineered slope of soil or rock fill on either side upslope or downslope of a road, embankment or mine waste storage; the sloping banks of cut earth separating different levels in an open-cut pit.

Berm

A low bank or steep slope built onto a slope to improve its structural stability and reduce erosion.

Biological diversity

The diversity of different species of plants, animals and micro-organisms, including the genes they contain, in the ecosystem of which they are part.

Bund

An earth, rock or concrete wall or mound constructed to restrict the inflow or outflow of liquids or noise.

Capillary break layer

A layer of material placed specifically on a surface to intercept the upwards migration of moisture.

Carbon-in-leach process

Process of gold extraction where gold is leached from ore and adsorbed onto carbon in the same tanks.

Catchment

The entire land area from which water (e.g. rainfall) drains to a specific watercourse or waterbody.

Chalcopyrite

Copper-iron sulphide, $CuFES_2$.

CN_{FREE}

Free cyanide, generally includes the cyanide ion (CN-) and hydrogen cyanide (HCN).

CN_{WAD}

Weak acid dissociable cyanide; cyanide existing in complexes, generally with metal ions, which break up (dissociate) in the presence of weak acid; includes free cyanide.

Concentration

The amount of a substance per unit of mass or volume of the medium in which it occurs.

Conductivity

The measurement of the ability of a substance (either a measure of solid, liquid or gas) to transmit electricity; used to determine the amount of salt in a soil sample.

Copper sulphate

Cupric sulfate, CuSO4. 5H2O.

Cross-section

A two-dimensional diagram of an object presented as if the object had been cut along its length.

Crusher

That part of an ore-processing plant where the ore is mechanically crushed into smaller pieces.

Cut-off trench

Trench placed underneath and parallel to an embankment or dam wall and filled with material of low permeability (e.g. compacted clay) to prevent seepage underneath the embankment or wall.

Cyanate

A chemical species (CNO-) formed by the oxidation of cyanide.

Cyanide

A chemical (CN-) capable of dissolving gold and used in the extraction of gold from ore.

Cyanide leaching circuit

Circuit where gold is removed from ore by dissolution in cyanide solution.

dB

Decibel; unit used to express sound intensity.

dBA

Decibels, A-weighted scale; unit used for most measurements of environmental noise; the scale is based upon typical responses of the human ear to sounds of different frequencies.

Decant pond

A central pond, formed in a tailings storage by runoff of tailings supernatant liquor, from which water is pumped (decanted) from the pond and fed back to the processing plant as process water.

Decant water

Water available to be decanted (by gravity, or pumped from a tailings pond).

Decommissioning

Removal or reuse of infrastructure.

Drawdown

The localised lowering of groundwater level as a result of water extraction.

Ecologically sustainable development (ESD)

Development that improves the quality of life, in a way that maintains the ecological processes on which life depends.

Ecosystem

An interacting system of animals, plants, other organisms and non-living parts of the environment.

Edaphic

Pertaining to ecological formations or effects resulting from or influenced by local conditions of the soil or substrate; also an old term applied to any soil characteristic that affects plant growth.

Electrical conductivity

The ability of a substance (either solid, liquid or gas) to transmit electricity.

Electrowinning

The recovery of gold dissolved in cyanide solution by passing an electric current through the solution (electrolysis) to cause gold deposition on steel-wool cathodes.

Embankment lifts

An embankment is constructed by the placement of a series of progressively higher and narrower earth or rock layers; each separate layer is called a lift.

Emission

A discharge of a substance (e.g. dust) into the environment.

Endemic

Native plant or animal restricted to a specific locality or geographic region.

Fault

Major fracture of the earth's crust caused by the relative movement of the rock masses on either side.

Final void

A completed (mined-out) mine pit.

Flotation

The separation of a mixture (e.g. sulphide minerals and waste material) in water, often by the addition of chemicals that carry one component (e.g. sulphides) to the surface as a froth.

Flotation circuit

Circuit where material (e.g. sulphide minerals) are concentrated by removal of impurities (e.g. silicate minerals) during flotation.

Freeboard

Excess water storage capacity (usually designed to contain rainwaters).

Gilgai

Irregular land surface with alternating mounds and depressions. Microrelief is formed due to clay horizons shrinking and swelling with alternate drying and wetting cycles.

Grade

The concentration of gold either in an individual rock sample or averaged over a specified volume of rock; gold grade is usually given in grams per tonne.

Greenhouse gases

Gases with potential to cause climate change (e.g. methane, carbon dioxide and non-methane volatile organic compounds). Usually expressed in terms of global warming potential carbon dioxide equivalent.

Groundwater

All waters occurring below the land surface; the upper surface of the soils saturated by groundwater in any particular area is called the water table.

Habitat

The particular local environment occupied by an organism.

Hydraulic gradient

The change in static head (ie. elevation and pressure) per unit of distance in a given direction. (Units: dimension less)

ibid.

In the same place.

Income

The amount of money or its equivalent received during a period of time in exchange for labour or services, from the sale of goods or property, or as profit from financial investments.

Infrastructure

The supporting installations and services that supply the needs of the Project.

in-situ

A term used to distinguish material (e.g. soils, minerals, fossils, etc.) found in its original position of formation, deposition, or growth, as opposed to transported material.

Inter-generational equity

That the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

Intra-generational equity

The concept that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of their own generation.

LA_{10}

The noise exceeded by 10% of the measurement period. Commonly referred to as the average maximum.

Lacustrine

Pertaining to lakes.

L_{Aeq}

The equivalent continuous noise level – the level of noise equivalent to the energy-average of noise levels occurring over a measurement period.

Land capability

A method of landuse assessment used to estimate the ability of the land to support a particular landuse. Classification is based on an assessment of the land's biophysical characteristics.

Leach

Dissolution and removal of a soluble substance from a soil or a rock, e.g. the leaching of salt (by water) from a soil or the leaching of gold (by cyanide) from a rock.

Mine waste

By-products of mining operations with no economic value.

Mine water

All water used in mining and processing (for dust suppression, in leach tanks, etc.).

Noise contours

Theoretical lines connecting points of equal noise value.

Noxious weeds

Plants that are considered or declared a pest in a Shire or region.

Ore

Rock containing commercially viable quantities of metals (e.g. gold).

Orebody

A solid mass of ore (both high and low grade) that is geologically distinct from the rock that surrounds it and that is commercially extractable.

Overburden

Material that overlies a deposit of ore.

Oxidation

The process by which an element or compound undergoes a chemical reaction involving the removal of electrons; often involves reaction with oxygen to form an oxide (e.g. the rusting of iron).

Oxide ore

That component of the ore reserve composed of weathered (oxidised) rock.

Palaeochannel

An ancient stream channel that is now buried.

Permeability

The ability of a rock or soil to allow fluid to pass through it.

pH

A measure of the degree of acidity or alkalinity of a solution; expressed numerically (logarithmically) on a scale of 1 to 14, on which 1 is most acid, 7 is neutral acid, and 14 is most basic (alkaline).

Phytotoxic

Poisonous to plants.

Pit water

Water inflow into the open pit from incident rainfall or groundwater seepage from open pit walls.

Population

A group of individuals of one species In an area.

Pre-stripping

The removal of waste or overburden, before mining, to expose an orebody.

Primary crusher

The machine that crushes the excavated ore feed.

Primary ore

The compound of the ore which is composed of unweathered rock.

Process plant

The place where the extraction of the gold from the mined ore occurs.

Process reagents

The chemicals and solutions used in the process method.

Pyrite

A common, yellow, sulphide, mineral, FeS2.

Quartz

The most abundant and common mineral, consisting of crystalline silica (silicon dioxide, SiO_2), crystallizing in the trigonal system.

Rating Background Level (RBL)

The overall single-figure sound background level representing each assessment period (day/evening/night) over the whole monitoring period, and is the level used for assessment purposes.

Reagents

Chemicals used as part of an industrial process.

Receptor

A designated place at which an impact may occur (e.g. a dwelling).

Reclaim dam

A dam containing water reclaimed from the tailings storage prior to its recirculation back to the process plant.

Recoverable gold

Amount of gold that can be extracted from the ore by normal processing methods.

Rehabilitation

The restoration of a landscape and especially the vegetation following its disturbance.

Relative humidity

The ratio of actual moisture in the air to the amount the air could hold if saturated, at a given temperature.

Remnant vegetation

Native vegetation remaining after widespread clearing has taken place.

Riparian

Pertaining to, or situated on, the bank of a body of water, especially a watercourse such as a river.

ROM

Run-of-mine; see run-of-mine ore stockpile.

Run-of-mine (ROM) ore stockpile

The stockpile of freshly mined ore used to feed the mill and process plant.

Runoff

That portion of precipitation (rain, hail and snow) that flows across the ground surface as water.

Salinity

The total content of dissolved solids in groundwater, commonly expressed as parts of dissolved solids per million parts of solution, or milligrams of dissolved solids per litre of solution (mg/L); the significance of salinity depends on the nature as well as the amount of the dissolved solids.

Seepage

Liquid or fluid such as water, seeping or flowing from beneath the ground to the surface.

Sphalerite

Zinc-containing ore, ZnS (zinc sulphide).

Spigotted ring main

The tailings slurry pipe with spigot offtakes around a tailings storage facility.

Stream gauging

Determination of water level and velocity in a stream or river for the purpose of calculating the volume of flow.

Sub-aerial

Method of tailings deposition used at the CGM involving progressive peripheral discharge of tailings slurry around the storage (typically via a spigotted ring main) with thin-layer beaching resulting.

Substrate

An underlying layer (e.g. of sediment under water).

Supernatant

The layer of water above settled solids.

Tailings

Finely ground residue from processing and extraction of product from ore.

Temperature inversion

An atmospheric phenomenon in which air temperature increases with height over a particular interval.

Terrestrial

Living or growing on the land.

Total suspended particulate matter (TSP)

The mass of all particulate matter suspended in a solution.

Total suspended solids

A common measure used to determine suspended solids concentrations in a waterbody and expressed in terms of mass per unit of volume (e.g. milligrams per litre).

Underdrainage

Artificial drainage that removes infiltration or seepage ater from underneath a structure (e.g. a tailings storage or a stockpile).

WAD

Weak acid dissociable.

Waste rock

Uneconomic rock extracted from the ground during mining operation to gain access to the ore.