



Mount Kelly Project Environmental Management Plan

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CopperCo Limited

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Appendix A: Soils and Land Use Suitability Study
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A
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VOLUME 3 - LIST OF APPENDICES

Appendix C: Stream Sediment and Morphology Survey
Appendix D: Waste Rock Characterisation Report
Appendix E: European Cultural Heritage Assessment Report
Appendix F: Water Quality Data from Greenstone Creek – DNRM Stations
Appendix G: Environmental Risk Assessment Report

C
D
E
F
G

LIST OF ABBREVIATIONS

AARC	AustralAsian Resource Consultants Pty Ltd
ARI	Annual Recurrence Interval
DNRM	Department of Natural Resources and Mines
DSA	Design Storage Allowance
EA	Environmental Authority
EMOS	Environmental Management Overview Strategy
EMM	Environmental Monitoring Manual
EM Plan	Environmental Management Plan
EMS	Environmental Management System
EPBC Act 1999	<i>Environmental Protection & Biodiversity Conservation Act, 1999</i>
EP Act 1994	<i>Environmental Protection Act, 1994</i>
ERA	Environmentally Relevant Activity
EW	Electro-winning
ha	hectares
HDPE	High Density Polyethylene
ILS	Intermediate Leach Solution
ILUA	Indigenous Land Use Agreement
km	kilometres
kL	kilolitre
MW	Megawatt
LIG	Low Intensity Grazing
LME	London Metals Exchange
m	metre
m ³	cubic metres

Mtpa	Million tonnes per annum
ML	Mining Lease
MLA	Mining Lease Application
NAF	Non Acid Forming
NCWR 1994	<i>Nature Conservation (Wildlife) Regulation, 1994</i>
PAF	Potentially Acid Forming
PLS	Pregnant Leach Solution
QEPA	Queensland Environmental Protection Agency
ROM	Run of Mine
SX	Solvent Extraction
t	tonne
tpa	tonnes per annum

1.0 INTRODUCTION AND OVERVIEW

The Mount Kelly Project¹ (PJM90084) is owned and operated by CopperCo Limited. The Project has a Level 2 project approval Environmental Authority (EA) No M2499, which covers eight granted Mining Leases (MLs). Operations to date on these leases by CopperCo Limited have included exploration drilling and feasibility studies. Small scale historical mining has been carried out on some of the MLs by previous owners. The focus of this Environmental Management Plan (EM Plan) is to bring the Project into full operation as a copper oxide mining and processing project.

The proposed Project will include the open cut mining of copper oxide ore to extract up to 1.9 Million tonnes per annum (Mtpa) from the Mount Clarke and Flying Horse/Mount Kelly, deposits, over a mine life of eight years. Processing of the ore will be by heap leach, solvent extraction (SX) and electrowinning (EW) to produce up to 19,000 tonnes per annum (tpa) of London Metals Exchange (LME) Grade A copper cathode.

Ore from the Lady Annie deposit located approximately 20 km to the north of Project leases will also be hauled for processing on the Project site. The Lady Annie deposit will be a separate application to the QEPA due to different tenure ownership, and will be combined into the Mount Kelly Project after grant of the Lady Annie ML (**Milestone 1**).

A Supporting Information Document (AARC 2005) was lodged with an EA Amendment Application for the Project in November 2005, to detail the proposed Project and potential environmental impacts. The Queensland Environmental Protection Agency (QEPA) subsequently made an Assessment Level and Environmental Impact Statement (EIS) Decision for the Project on the 8 December 2005. The Assessment Level Decision was that the Project would be a Non Code Compliant Level 1 application with a significant increase in environmental harm. The QEPA also decided that an EIS was not required for the Project.

This EM Plan provides for the next step in the QEPA assessment process and the basis for the issue of a new draft EA for the Project. This EM Plan has been prepared in accordance with the QEPA *Guideline 8 – Preparing an EMOS for Non-standard Mining Projects* and section 203 of the *Environmental Protection Act 1994*.

This EM Plan has been brought about by the following proposed amendments to the Project:

- Adding three new Mining Lease Applications (MLA) to the Project including Mount Clarke (MLA90168), Mount Kelly Extended (MLA90170) and Mount Kelly West (MLA90169);
- Development of open cut mining on the Project tenements for oxide copper ore;
- Development of a copper heap leach and a SX - EW process plant for producing LME Grade copper cathode;
- Development of mining infrastructure associated with the proposed activities including an accommodation camp, roads, power and water supply; and
- Upgrading the current EA for the Project (M2599) from a Level 2 Mining Project approval to a Level 1 Mining Project approval.

¹ The Mount Kelly Project will be referred to as the Project from hereafter.

This EM Plan will provide a description of the following:

- Mining tenure(s);
- Mining activities;
- Environmental values and potential impacts from the Project on those values; and
- Proposed EA condition(s) using measurable indicators and standards.

For each environmental value identified an assessment of the beneficial and adverse impacts from the Project to that value will be described. Environmental objectives and control strategies will be proposed for the protection of each environmental value and proposed EA conditions containing measurable standards and Indicators developed. These proposed EA conditions will be used to draft the EA by the QEPA.

Once the QEPA has issued the Final EA for the Project a Plan of Operations and Financial Assurance will be submitted to the Adminstrating Authority (**Milestone 2**).

2.0 DESCRIPTION OF THE MINING TENURE

2.1 PROJECT NAME AND LOCATION

The Mount Kelly Project is located within the Mt Isa Shire, approximately 100km north-west of Mt Isa (Figure 1).

The Project is located in an isolated and sparsely populated area. The main land uses of the surrounding area include low intensity cattle grazing, mineral exploration and mining.

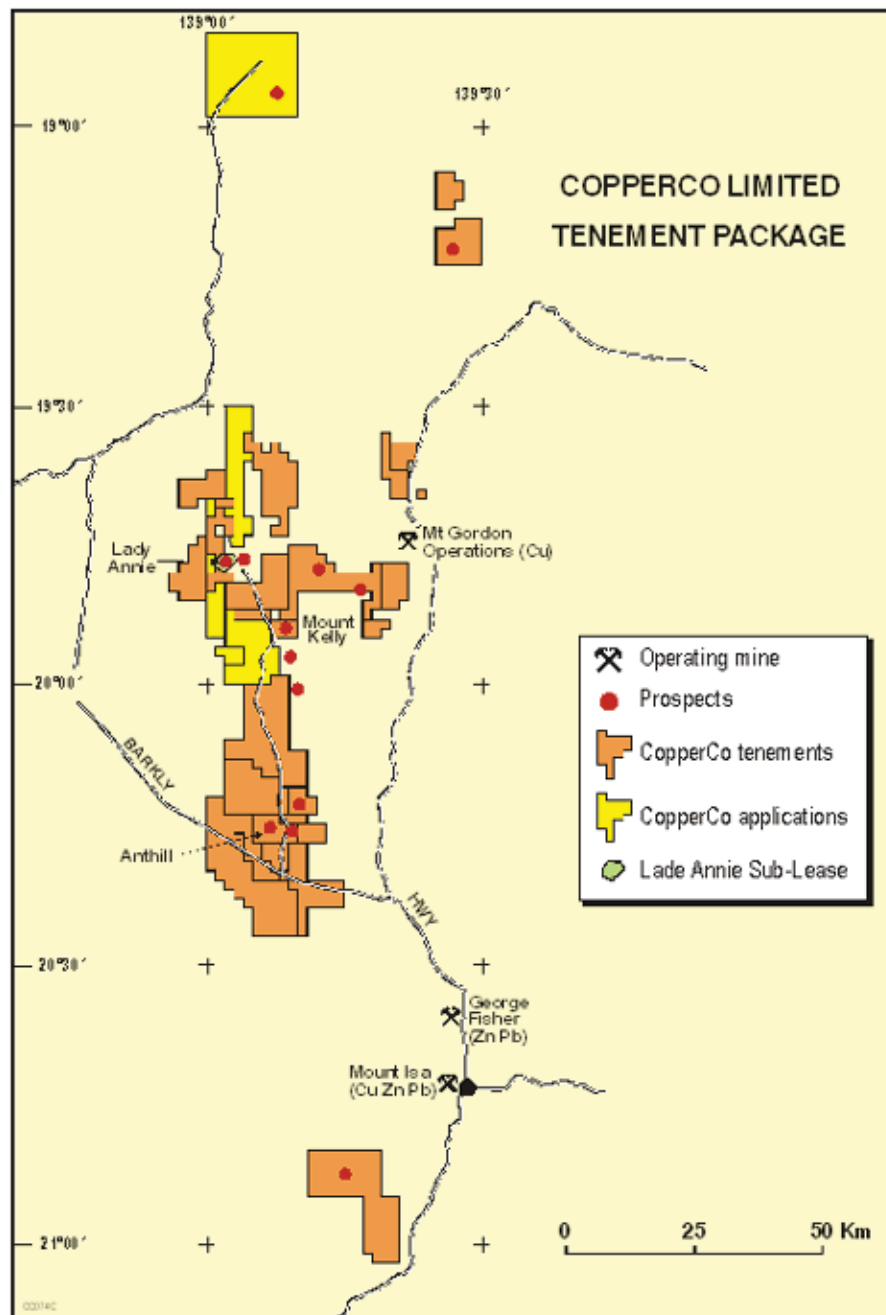


Figure 1: Regional Location of the Mount Kelly Project

2.2 MINING LEASES COVERED BY THE EM PLAN

The current EA for the Project (M2499) is held 100% in the name of Reefway Pty Ltd which is a wholly owned subsidiary of CopperCo Limited. There are eight Mining Leases that form part of this current EA as shown in Table 1 and Figure 2.

Table 1: Current Mining Lease within the Mount Kelly Project

Tenement	Name	Holder	Expiry	Area (Ha)
ML 5426	McLeod Hill	Reefway	31/1/06	4.05
ML 5435	Mt Kelly	Reefway	31/1/09	3.96
ML 5446	Flying Horse 1	Reefway	28/2/10	28.37
ML 5447	Spinifex Queen	Reefway	31/1/10	28.32
ML 5448	Flying Horse 2	Reefway	31/1/10	8.09
ML 5474	Suzie 6	Reefway	31/1/11	130
ML 5476	Suzie 12	Reefway	31/1/11	130
ML 5478	Suzie 14	Reefway	31/1/11	16.19
Total Area				349

Two of the new MLAs to be added to the Project (Mount Clarke and Mount Kelly Extended) are in the name of Reefway Pty Ltd. The third MLA (Mount Kelly West) is in the name of Savannah Resources Pty Ltd, also a wholly owned subsidiary of CopperCo Limited.

Table 2 describes the details of the new MLAs to be added to the Project and Figure 2 shows the locations of these tenements.

Table 2: MLAs to be added to the Mount Kelly Project

Tenement	Name	Holder	Expiry	Area (Ha)
MLA 90168	Mount Clarke	Reefway	-	4.05
MLA 90170	Mount Kelly Extended	Reefway	-	1,118
MLA 90169	Mount Kelly West	Savannah	-	644
Total Area				1,766.05

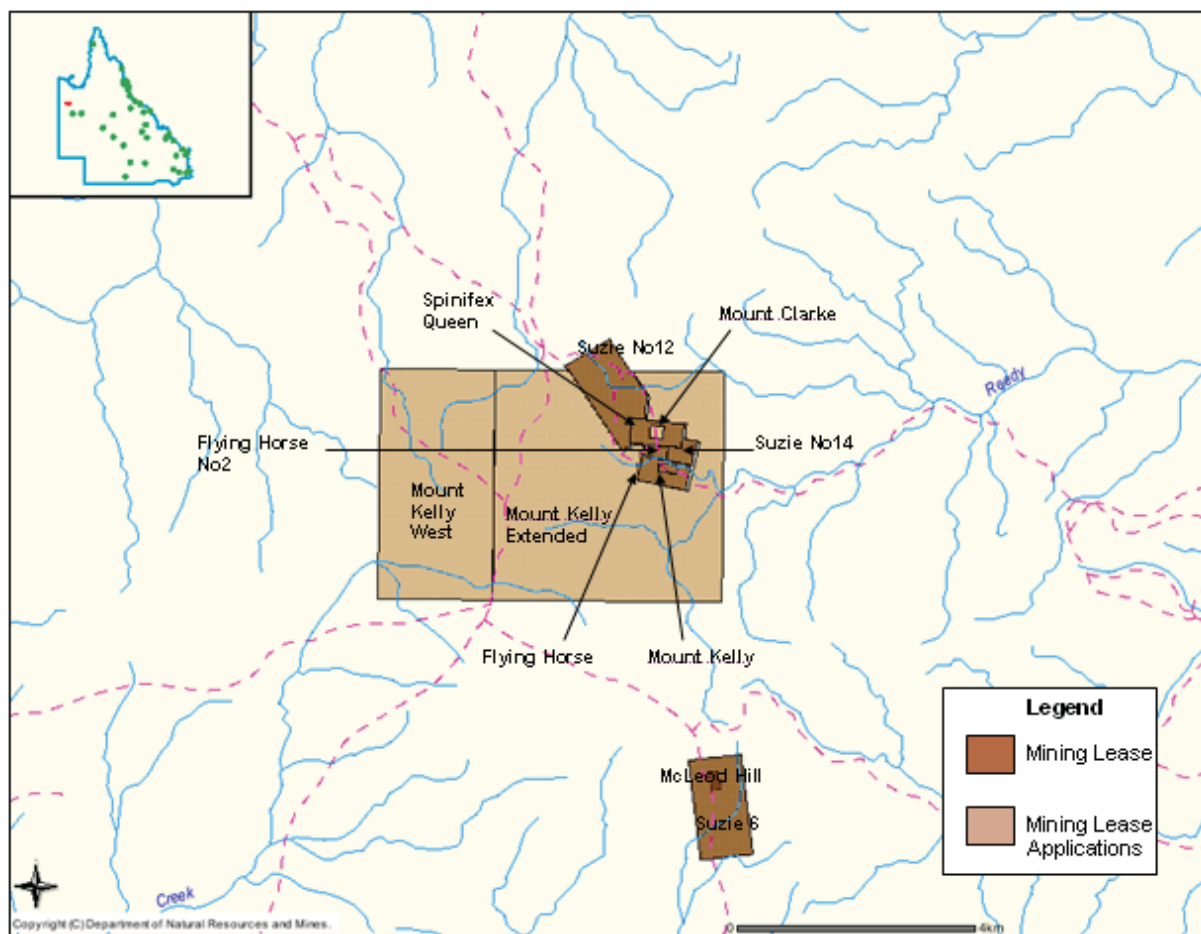


Figure 2: Location of the Mount Kelly Tenements

2.3 RELEVANT STAKEHOLDERS

The Project is relatively isolated and is located in a sparsely populated rural area typified by large land holdings where the surrounding land use is predominantly cattle grazing. The nearest non-Project related residences to the Project are approximately 30 km away as shown in Figure 3. Stakeholders and other groups or individuals with an interest in the operations include surrounding neighbours, Mount Isa City Council and State government departments, including Department of Natural Resources and Mines (DNRM) and the QEPA.

CopperCo Limited has conducted extensive consultation with Native Title groups and will continue to do so as part of a proactive community consultation program and development of a Cultural Heritage Management Plan (**Milestone 3**). CopperCo Limited also plans to undertake community consultation with relevant landholders in the region and will do so in the near future.

Relevant government agencies, stakeholders and the general community will have a chance to comment or object to the Project as part of the QEPA approval process. The QEPA will seek relevant advice and comment from experts and government agencies as part of assessing this EM Plan and setting the conditions of the draft EA. Once a draft EA has been issued for the Project by the QEPA, a public notice will be advertised in relevant newspapers and a public objection period commenced for at least 20 business days.

Considering the distance of the Project to the nearest residences, as well as the air, water, land management, waste management and noise control strategies outlined in this document, little or no impacts on the amenity and liveability of the area, access to services, and health and well-being of the community is expected.

The operations will have a positive impact on the economy of the local region and the state through payment of rates, purchase of consumables, use of service industries and payment of royalties and taxes. Community consultation with affected landholders will continue to be carried out as required throughout the life of the mine.

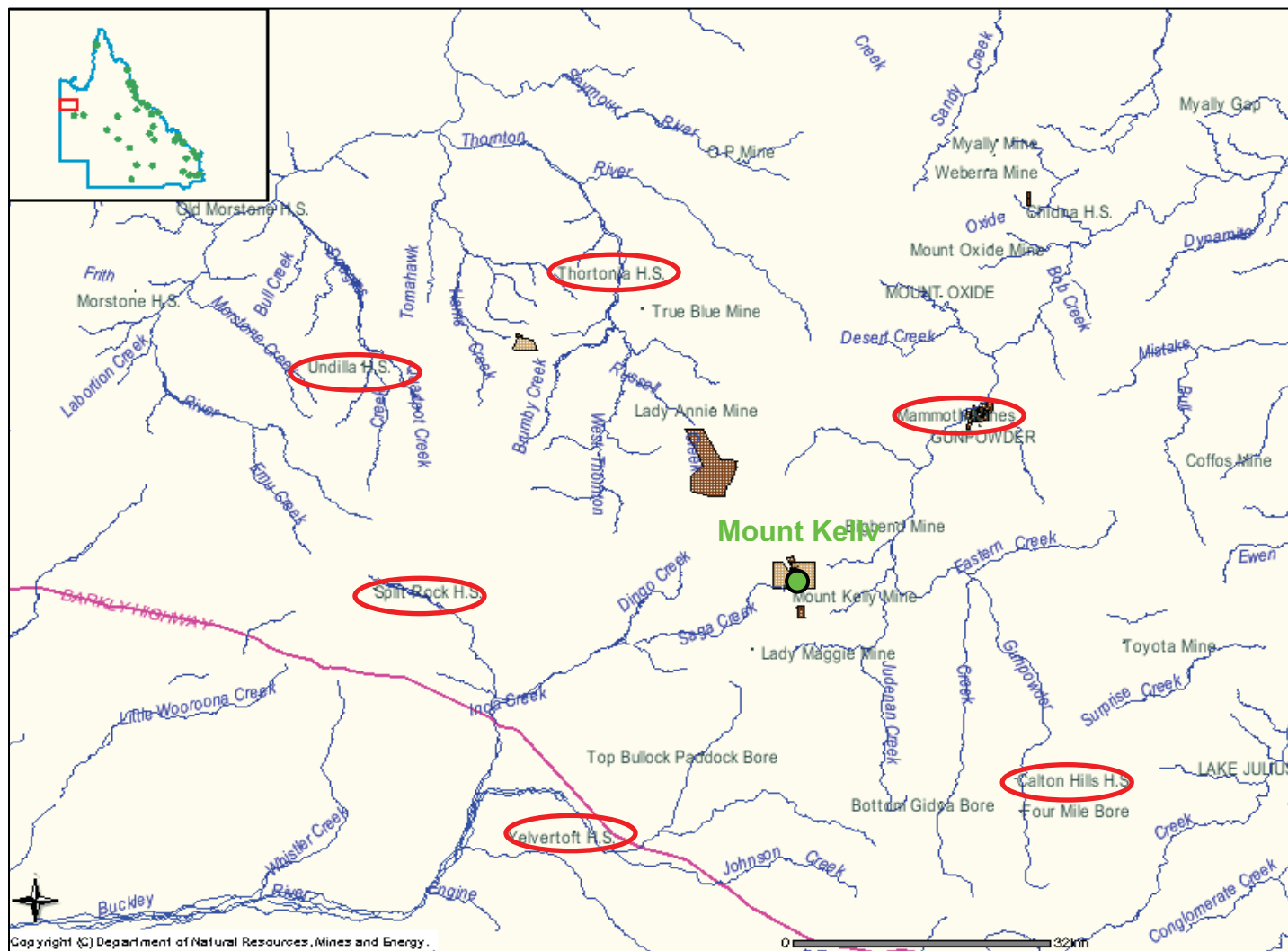


Figure 3: Location of Nearest Residences to the Project



2.4 REAL PROPERTY DESCRIPTION AND CURRENT DISTURBANCE TYPES

Real Property Descriptions (Lot and Plan details) for land situated under the Project tenements are detailed in Table 3 below.

Table 3: Real Property Descriptions for Project Tenements

Mining Tenure ID	Name of Lease	Underlying Tenures	Registered Lessees	Registered Place of Business
ML 5426	McLeod Hill	Lot 5 on CP 865892	Calton Hills Pty Ltd	Calton Hill Pastoral Lease Barkly Highway Mt Isa QLD 4825
ML 5435	Mt Kelly	Lot 5 on CP 865892	Calton Hills Pty Ltd	Calton Hill Pastoral Lease Barkly Highway Mt Isa QLD 4825
ML 5446	Flying Horse 1	Lot 5 on CP 865892	Calton Hills Pty Ltd	Calton Hill Pastoral Lease Barkly Highway Mt Isa QLD 4825
ML 5447	Spinifex Queen	Lot 5 on CP 865892	Calton Hills Pty Ltd	Calton Hill Pastoral Lease Barkly Highway Mt Isa QLD 4825
ML 5448	Flying Horse 2	Lot 5 on CP 865892	Calton Hills Pty Ltd	Calton Hill Pastoral Lease Barkly Highway Mt Isa QLD 4825
ML 5474	Suzie 6	Lot 5 on CP 865892	Calton Hills Pty Ltd	Calton Hill Pastoral Lease Barkly Highway Mt Isa QLD 4825
		Lot 2 on SP 162421	Calton Hills Pty Ltd	Calton Hill Pastoral Lease Barkly Highway Mt Isa QLD 4825
ML 5476	Suzie 12	Lot 5 on CP 865892	Calton Hills Pty Ltd	Calton Hill Pastoral Lease Barkly Highway Mt Isa QLD 4825
ML 5478	Suzie 14	Lot 5 on CP 865892	Calton Hills Pty Ltd	Calton Hill Pastoral Lease Barkly Highway Mt Isa QLD 4825
MLA 90168	Mount Clarke	Lot 5 on CP 865892	Calton Hills Pty Ltd	Calton Hill Pastoral Lease Barkly Highway Mt Isa QLD 4825
MLA 90170	Mount Kelly Extended	Lot 5 on CP 865892	Calton Hills Pty Ltd	Calton Hill Pastoral Lease Barkly Highway Mt Isa QLD 4825
MLA 90169	Mount Kelly West	Lot 5 on CP 865892	Calton Hills Pty Ltd	Calton Hill Pastoral Lease Barkly Highway Mt Isa QLD 4825

Current land disturbance on the Project is related to mineral exploration and cattle grazing and includes access roads, exploration tracks, drill pads and a small exploration camp. There has been some minor historic mining at Mount Clarke.

2.5 ENVIRONMENTALLY SENSITIVE LOCATIONS

There are currently no Category A, B or C Environmentally Sensitive Locations within the Project area or immediately surrounding the Project. The Environmentally Sensitive areas map as obtained from the QEPA website (<http://www.epa.qld.gov.au/ecoaccess/ecomaps>) is shown in Figure 4.

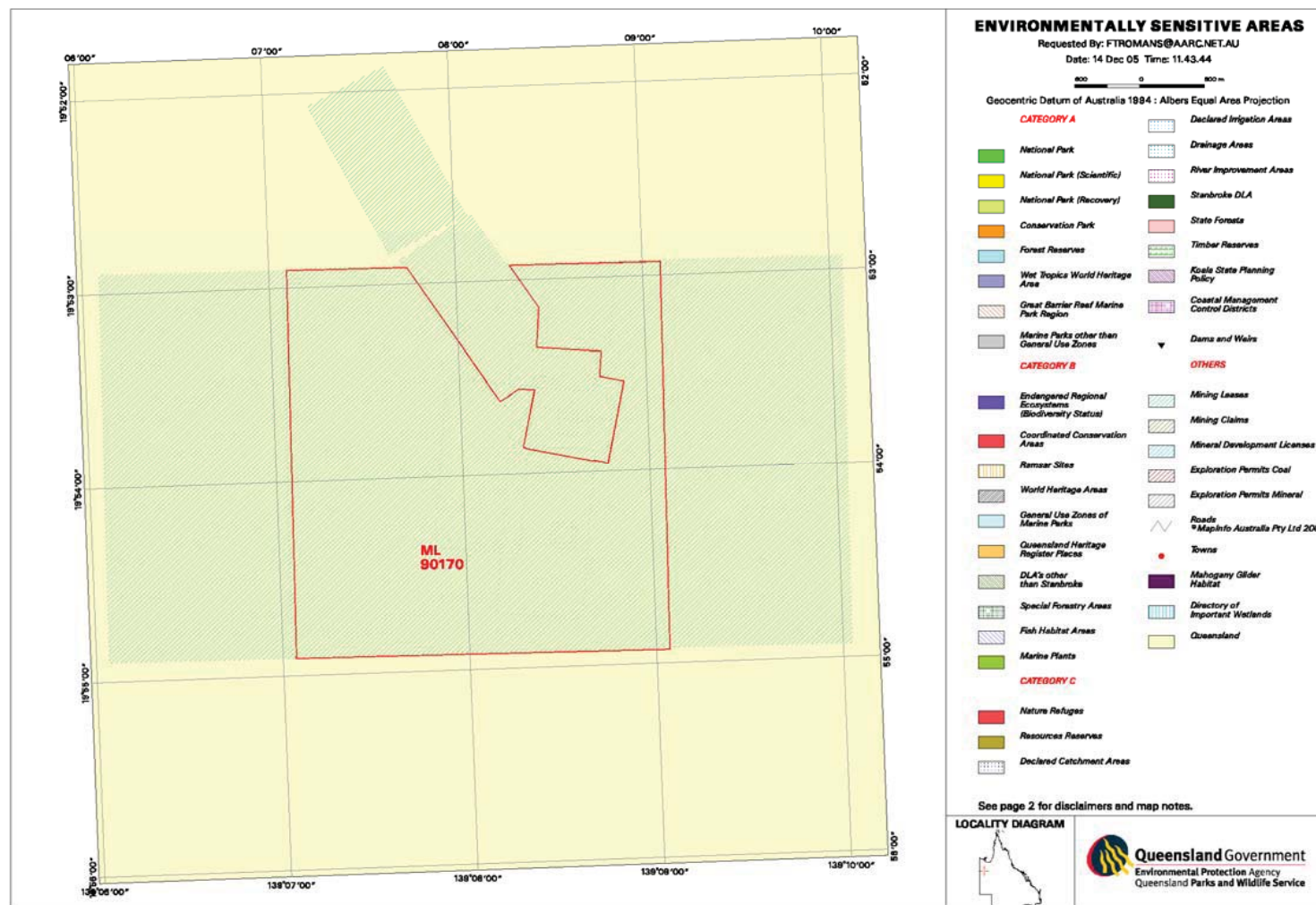


Figure 4: Environmentally Sensitive Areas Map

2.6 WILD RIVERS LEGISLATION

The Queensland Parliament passed the *Wild Rivers Act 2005* in October 2005. The purpose of the Act is to preserve the natural values of wild rivers. It does this by regulating most future development activities within a declared wild river and its catchment area. A wild river is a river system that has all, or almost all, of its natural values intact. For example, its flow regime, sediment regime and water quality will be in a near natural condition and it will have healthy riparian vegetation and connected wildlife corridors. These natural values provide the basis for sustaining healthy ecological processes in rivers and support the habitat needed for diverse native plant and animal communities. They also provide scenic and recreational appeal.

The Project tenements are located within the catchments of the Leichhardt and Georgina Rivers. Neither of these catchments are currently declared or nominated for declaration under the *Wild Rivers Act 2005*. Therefore the mining activities on the Project tenements will have no impact on areas nominated or declared as wild rivers.

There are two options for the water supply for the Project. The preferred strategy is to obtain water from the Greenstone Creek Dam (Waggaboonya Dam) located at Mount Gordon Mine via a pipeline to the Project. This dam is already constructed with an approved water supply allocation which may be sufficient for both the needs of the Mount Kelly Project and the Mount Gordon Mine. An assessment of this water supply option is currently being undertaken to determine allocations and feasibility. If required, further licences or permits will be sought from DNRm. The Greenstone Creek Dam is located within the Leichhardt River catchment and therefore would not have any impact on nominated or declared wild rivers.

The second water supply option is to obtain water by developing the Thornton Borefield which is located 65 km north of the Mount Kelly Project. Water licences and permits will be applied for if this water supply option is pursued. The proposed Thornton Borefield is located within the Gregory River catchment which has been nominated under the *Wild Rivers Act 2005*. The *Wild Rivers Act 2005* states that "No more than one percent of water will be allowed to be drawn from wild rivers, which ensures the protection of wetlands, waterholes and floodplains". Kohn Crippen (water consultants for the Project) have estimated that the water requirements from the Thornton Borefield for the Project (1.1 GL/annum or 35L/s) would amount to 0.16 – 0.29% of the median to average Gregory River flows, which is below the 1% limit.

3.0 DESCRIPTION OF THE EXISTING ENVIRONMENT

There are a number of baseline environmental studies that have been conducted for the Mount Kelly and Lady Annie Project sites. These studies aim to document and assess the current state of the Project area and surrounds, highlight any areas of potential environmental impact from the Project and propose mitigation strategies where required. Baseline studies for the Project include the following reports of which most are contained in Volume 2 and 3 of this EM Plan:

- Soils and Land Use Suitability Study (AARC, December 2005 – Appendix A);
- Flora and Fauna Assessment (AARC, December 2005 – Appendix B);
- Stream Sediment and Morphology Study (AARC, December 2005 – Appendix C);
- Draft Project Feasibility Report (Klohn Crippen, 2005) – covers hydrology, hydrogeology and geotechnical information for the Project and will be submitted to the QEPA when the final report is available;
- Waste Rock Characterisation Report (AARC, December 2005 – Appendix D);
- European Cultural Heritage Study (Gordon Grimwade and Associates, December 2005 – Appendix E); and
- Environmental Risk Assessment (AARC, December 2005 – Appendix G).

A summary of the relevant aspects of the Project site and the above baseline studies is provided in the following sections.

3.1 REGIONAL CLIMATE

Information from the Australian Bureau of Meteorology indicates that the average annual rainfall for Mount Isa is approximately 451.9 millimetres (mm). Rainfall is typically highly seasonal, with the dry season peaking around June (average 3.5 mm) and the wet season peaking in January and February (average 109.5 mm and 101.3 mm in each of these months respectively).

The coldest average temperatures occur in July (24.6 degrees Celsius [°C]) and the hottest average temperatures occur in January (36.4°C).

3.2 GEOLOGY

The host rocks for the oxide copper mineralization at the Mount Kelly/Flying Horse deposits are principally dolomitic siltstones and sandstones. Minor cherty/silicious bands are present. The dolomitic siltstones/sandstones are extremely weathered and friable and contain occasional carbonate bands.

At Mt Clarke, the ore body outcrops and as a result, little pre-stripping will be required. The wall rocks in both deposits comprise similarly weathered dolomitic siltstones and sandstones but are slightly more competent than the overburden material.

The presence of carbonate/dolomite bands and the extremely weathered and kaolinised character of the overburden and the surrounding wall rocks suggest that the waste rock material is highly likely to be net acid consuming. From all the drilling completed to date, sulphides are rare to absent above the base of complete oxidation. Given the heavily oxidised state of the overburden and wall rocks, the waste rock is expected to be net acid consuming.



3.3 SOIL AND LAND USE SUITABILITY

A Soil and Land Suitability Study for the proposed Lady Annie and Mount Kelly Project Sites was undertaken by AARC in 2005. The following is a summary of the major findings of the assessment, the full report is contained within Appendix A.

The aim of the study was to determine soil types, their physical and chemical characteristics and to determine their agricultural land suitability prior to mining.

Soils across the Project Sites were assessed at a total of 66 locations during a four-day field survey, conducted from 14th – 17th September, 2005. At the completion of the field survey, the soil samples were packaged for transportation to a laboratory (Incitec-Pivot, in Werribee Victoria) for chemical and physical analysis.

The soils within the Project Sites, due to their shallow, skeletal nature and lack of significant soil development, have been broadly classified as Rudosols/Tenosols (Australian Soil Classification, Isbell 1996) which are equivalent to Lithosols under the Great Soil Group classification (Stace et al 1968). The soil profiles exposed have an indicated soil depth of 10 – 20 cm. Soils in the steeper parts of the Project Sites and on the crests of the hills are typically very shallow with many of the slopes dominated by resistant iron-manganese rich scree.

Based on the field assessment, the Project Sites contain five distinct soil types ranging from cracking/slumping clays to sandy loams and clay loams. Soils are generally slightly acidic to neutral, shallow and low in nitrogen and phosphorous. Salinity levels in the soils are below the land use management criteria, suggesting a negligible plant response to levels in the soil.

The five distinct soil types include:

Soil Type 1: Brownish to reddish clay loam/loam soils, with a granular A horizon mostly found on hills and ridges, associated with Spinifex, Snappy Gum and Lancewood.

Soil Type 2: Greyish/brown skeletal soils found on hills and ridges associated with Lancewood community on the western side of Lady Annie.

Soil Type 3: Shallow, stony, loamy, yellow/whitish/grey dolomite/kaolinite orientated soils, found on plateaus associated with the southern area of Mount Kelly Extended. Snappy Gum, Ghost Gum and Lancewood are associated with this soil type.

Soil Type 4: Deeper more developed grey/brown soil, greater levels of organic matter, loamy to clay loam in the B horizon, situated on plains and undulating plains. Snappy Gum, Lancewood and Bloodwood communities

Soil Type 5: Cracking/slumping clay soil found on the Mt Kelly West area. Brown to orange slumping coloured clays. The soil is associated with the Gidgee and Sugar Box vegetation communities.

Given the post mine land use is most likely to be grazing which may or may not be improved, topsoil that has been stockpiled on the Project Sites may need to be fertilised after stockpiling for use as effective grazing country. As soils are low in organic matter, <1.5% (Guidelines for Agricultural Land Evaluation in Queensland, QDPI 1990), stockpiling of topsoils will need to be managed so as to reduce the loss of organic carbon through stockpiling.

The five soil types have been mapped into four distinct Soil Mapping Units, described as Lowland, Mesa, Gidgee and Sandstone. Generally each Soil Mapping Unit has similar management

requirements. The distribution of Soil Mapping Units over the Mount Kelly Project areas is shown in Figures 5 and 6.

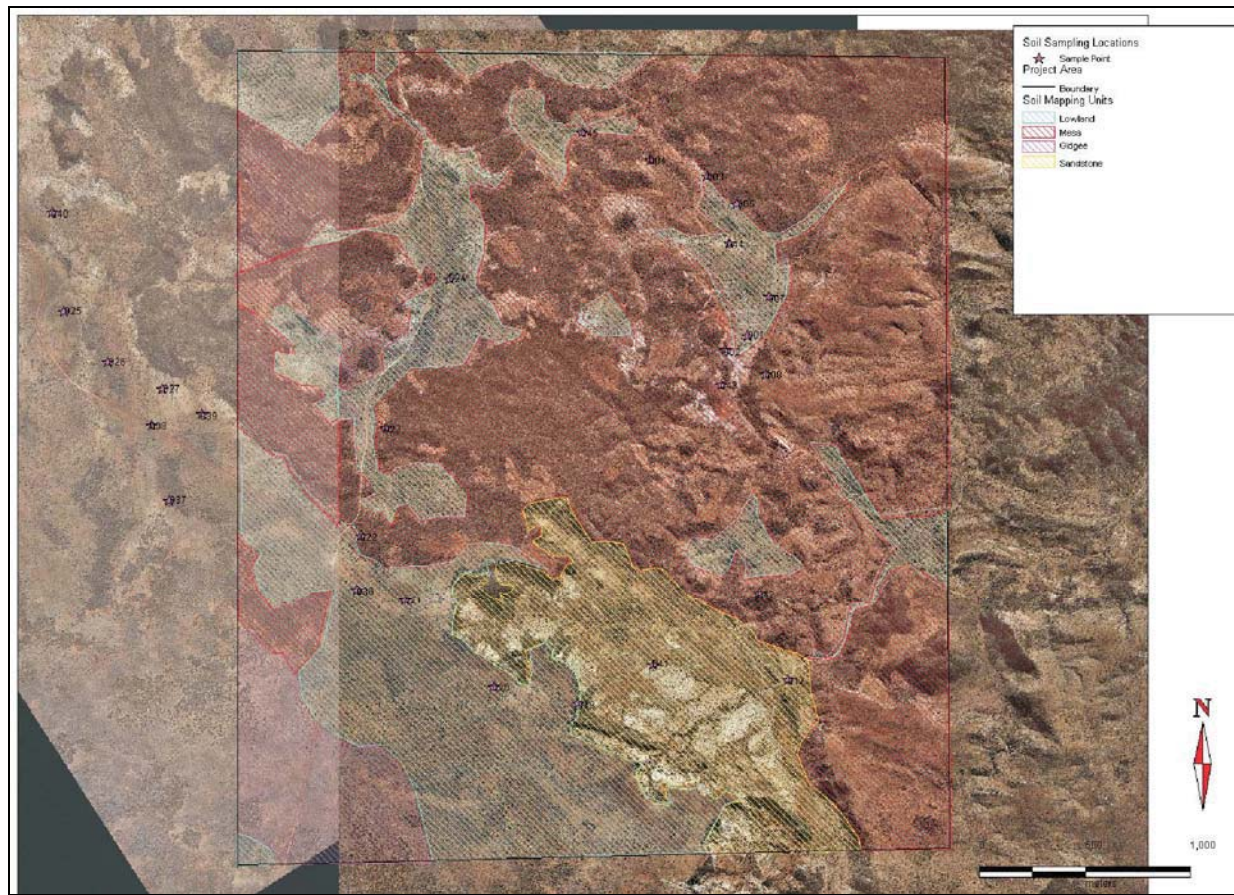


Figure 5: Distribution of Soil Mapping Units on the Mount Kelly Extended MLA

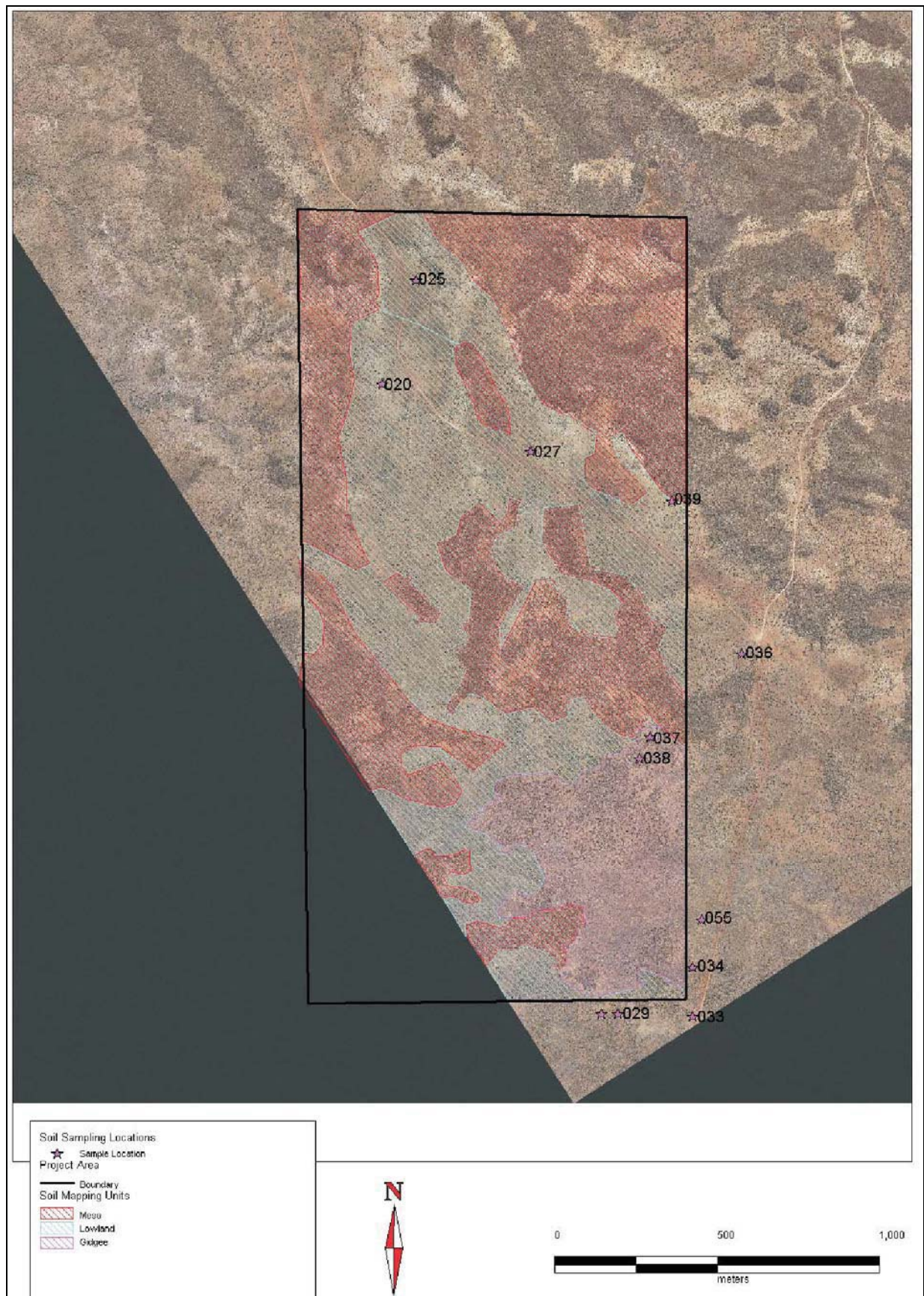


Figure 6: Distribution of Soil Mapping Units on the Mount Kelly West MLA

An interpretation of the data collected on the physical, chemical and nutrient characteristics of the Soil Mapping Units has been used to rank the land-use according to a five-class system that applies to grazing, rain fed cropping and conservation. This assessment is used to assess the suitability of the land for any potential land-use.

The land suitability classes are described as:

- Class 1** *Suitable land with negligible limitations which is highly productive requiring only simple management practises to maintain economic production.*
- Class 2** *Suitable land with minor limitations which either reduce production or require more than the simple management practices of Class 1 land to maintain economic production.*
- Class 3** *Suitable land with moderate limitations which either further lower production or require more than those management practices of Class 2 land to maintain economic production.*
- Class 4** *Marginal land with severe limitations which make it doubtful whether the inputs required to achieve and maintain production outweigh the benefits in the long term (presently considered unsuitable due to the uncertainty of the land to achieve sustained economic production).*
- Class 5** *Unsuitable land with extreme limitations that preclude its use for the proposed purpose.*

The Soil Mapping Units identified on the Projects Sites have been assessed as having the following pre-mining suitability for grazing and rain fed broad-acre cropping as shown in Table 4.

Table 4: Pre-Mining Land Suitability for Soil Mapping Units

Soil Mapping Units	Pre-Mining Land Suitability	
	Grazing	Rain Fed Broad Acre Cropping
1: Lowland	4	4
2: Mesa	5	5
3: Sandstone	5	5
4: Gidgee	4	4

The Gidgee and Lowland Soil Mapping Units are considered to be marginally suitable for beef cattle grazing but would require major inputs to ensure continuing sustainability while the Sandstone and Mesa units have been determined to be unsuitable for grazing due to limitations of low plant available water capacity, lack of nutrients and erodibility. The area is also severely constrained for use for rain fed cropping due primarily to low plant available water capacity, low levels of nutrients, excessive rockiness, topography, erosion and physical constraints.

3.4 FLORA AND FAUNA

AARC conducted a Flora and Fauna Assessment of the proposed Lady Annie and Mount Kelly Copper Projects in 2005. The following is a summary of the major findings of the assessment and the full report is contained within Appendix B.

To assess the environmental values of flora and fauna communities on the Project Sites, AARC undertook the following scope of works:



- A literature and database review to identify species of conservation significance known from the region. This enabled these species to be targeted during the field survey component of the study;
- A field survey employing standard methodologies to determine the composition of flora and fauna species inhabiting the Project Sites, particularly species of conservation significance²; and
- The preparation of a report to CopperCo Limited describing significant environmental features and outlining possible management strategies to reduce any foreseeable impacts associated with the proposed activities.

3.4.1 Field Survey Methods

Site scoping of the Project Sites was conducted using aerial photography and broad ground truthing on the first day of the survey period. Transects were located in areas representative of regional vegetation types and habitats. In addition, habitats potentially inhabited by species of conservation significance were targeted. Site scoping also allowed for the identification of boundaries of Regional Ecosystems, so that 1:25,000 mapping of the Regional Ecosystems could be produced.

In order to map vegetation communities, *Quaternary* plots were used along the boundaries of vegetation communities or to confirm the extent of the community. The quality of communities was assessed with regard to their likely value and viability as a representative vegetation type.

Survey methods for fauna included the establishment of four monitoring transects in representative areas of habitat on the Project Sites. Numerous trapping and survey techniques were employed along these transects including pitfall trapping, hair funnel sampling, Elliot trapping, bat call recording, habitat searching, and spotlighting. The ANABAT echolocation recording system was the primary method employed to survey microbats at the Project Sites. The ANABAT system was deployed for one entire night at each of the four fauna transects with additional incidental recordings made at other areas of interest on the Project Sites. This method therefore represents a broad census technique which facilitates the detection of a broad suite of microbats which utilise the Project Sites.

Fauna records obtained from the monitoring transects were combined with incidental records from other areas to produce a fauna species list for the Project Sites.

3.4.2 Field Results

Flora

Five major vegetation communities were identified on the Project Sites during the AARC survey. These communities and their conservation status are summarised in Table 5. The same vegetation community occurring on different geologies has a different Regional Ecosystem equivalent and therefore some communities will have multiple Regional Ecosystems assigned against them.

²References to "Species of Conservation Significance" or "Threatened Species" in this report refer to those species listed as Rare, Vulnerable, Endangered or Critically Endangered under the *Nature Conservation Wildlife Regulation 1994* or *Environmental Protection and Biodiversity Conservation Act 1999*.

Table 5: Vegetation Communities Identified on the Project Sites

Vegetation Community	Regional ecosystem equivalents	VMA (1999) status	QEPA Biodiversity status
Snappy Gum Open Woodland	1.11.2	Not of Concern	Of no concern at present
	1.7.1	Not of Concern	Of no concern at present
	1.5.3	Not of Concern	Of no concern at present
	1.10.4	Not of Concern	Of no concern at present
Lancewood Open Forest	1.7.1a	Not of Concern	Of no concern at present
	1.11.2x2a	Not of Concern	Of no concern at present
	1.10.5	Not of Concern	Of no concern at present
Sugar Box Open Woodland	1.7.2	Not of Concern	Of no concern at present
	1.5.5	Not of Concern	Of Concern
	1.5.4x1	Not of Concern	Of Concern
	1.11.4	Not of Concern	Of Concern
Gidgee Open Woodland	1.5.8	Not of Concern	No Concern at Present
River Redgum Riparian Woodland	1.3.7	Not of concern	Endangered

Vegetation disturbance on the Project will impact upon vegetation communities that are “Not of Concern” under both the *Vegetation Management Act 1999* and Queensland Environmental Protection Agency Biodiversity Status. These communities are very wide spread throughout the region and the relatively small losses that will occur will have a limited ecological impact.

River Red Gum Riparian Woodland is listed as being “Endangered” under the Queensland Environmental Protection Agency Biodiversity Status due to other threatening processes other than land clearing. These processes include inappropriate fire regimes, weed invasion and grazing. The presence of large hollow bearing trees and physical protection to riverine systems is of high ecological value and the destruction of these habitats should be limited. No known areas of this Endangered Regional Ecosystem are planned to be cleared on the Project.

The nearest River Red Gum Riparian Woodland is at least 1.2 km from any open cut pit on the Project. The River Red Gum community is located within a separate geological unit from the ore deposits and is not located near the Mount Kelly Fault (the major source of groundwater inflow within the pit area). The majority of dewatering impact is expected within the Mouth Kelly fault system, and therefore it is

considered unlikely that dewatering of the Mount Clarke and Mount Kelly/Flying Horse pits will impact significantly on groundwater levels in the area of the River Red Gum community.

No flora species of conservation significance were found on the Project Sites, despite detailed searches in areas of suitable habitat. However, *Brachychiton collinus* was observed close to the ML boundaries. Modelling of the potential occurrence of this species and targeted on ground searches suggest that there is very little likelihood that the proposed activities will have any effect on this species.

No species declared under the *Land Protection (Pest and Stock Route Management) Act 2002* or other weed species of management concern were recorded during the survey.

Fauna

A total of 115 vertebrate fauna species were identified on the Project Sites, comprising three amphibians, 19 mammals, 17 reptiles, and 76 birds. Four introduced species were identified including two that are listed as Class 2 pests under the *Land Protection (Pest and Stock Route management) Act 2002*.

One bird of conservation significance was recorded from the Project Sites, the Carpentarian Grasswren (*Amytornis dorotheae*). From a review of previous fauna surveys one other bird species of conservation significance is known from the Project Sites, the Pictorella Mannikin (*Heteromunia pectoralis*).

Section 7.2.3.3 of Appendix B of this EM Plan deals with birds of conservation significance. The report suggests limited impact because extensive areas of suitable habitat are available on the Project Site and although suitable habitats will be disturbed, it is unlikely that this will have a significant effect on the regional population of the species. Additional information on the Carpentarian Grasswren is provided below.

Carpentarian Grasswrens live on sandstone outcrops in Triodia Hummock Grassland and Low Open Woodland, with or without a low shrubby understorey (McKean and Martin, 1989, Rowley and Russell, 1997). They prefer long-unburnt hummock grass, the rugged terrain in which they occur offering natural protection from fire. They forage on the ground for insects and seeds, and lay 2-3 eggs in domed nests built in Triodia clumps (Beruldsen, 1980, Rowley and Russell, 1997).

Carpentarian Grasswrens eat insects and seeds, however their foraging ecology is poorly known. There is not a lot of information available about their breeding cycle as there have been no studies conducted to date. Nests are located above the ground, embedded in the upper portion of clumps of Spinifex. Active nests have been recorded in January and September, although it is suggested that most birds lay eggs between November and March (after the start of the wet season).

There are extensive areas of suitable habitat across the Project site and within the region (Snappy Gum Woodland with Spinifex understorey). Approximately 60% of the Project site constitutes this habitat type. Whilst areas of suitable habitat on the Project site may be disturbed as part of the proposed mining activities, it is unlikely that this will have a significant effect on the regional population of the species.

A total of eight migratory bird species, as listed under the *Environmental Protection and Biodiversity Conservation Act 1999*, were observed on the Project sites.

As Table 6 demonstrates, the distribution of the EPBC listed migratory bird species observed during the CopperCo field survey are widespread throughout Australia. Accordingly, the local populations of these Migratory Species on the Project Site are unlikely to constitute an 'ecologically significant proportion' of the total populations of the species. Furthermore, the Project Sites are not at the limit of any of the eight

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Migratory Species ranges, nor are any of the species considered to be declining within the region. Therefore, the Project Site does not constitute “important habitat” for any of the eight observed Migratory Species.

Table 6: Environment Protection and Biodiversity Conservation Act 1999 listed Migratory Bird Species Observed by AARC Ecologists During the Copper Co Fauna Survey (2005).

Scientific Name Common Name	Distribution
<i>Accipiter fasciatus</i> Brown goshawk	Widespread in Australia
<i>Aquila audax</i> Wedge-tailed eagle	Widespread in Australia
<i>Elanus axillarus</i> Black-shouldered kite	Moderately common in Cloncurry, Richmond district and areas around Mt Isa
<i>Haliastur sphenurus</i> Whistling kite	Widespread in Australia
<i>Milvus migans</i> Black kite	Widespread in Australia
<i>Falco berigora</i> Brown falcon	Widespread in Australia
<i>Falco cenchroides</i> Nankeen kestrel	Widespread in Australia
<i>Merops ornatus</i> Rainbow bee-eater	Widespread in Australia

Three mammal species of conservation significance were identified on the Project sites, the Purple-necked Rock Wallaby (*Petrogale purpureicollis*), Little Pied Bat (*Chalinolobous picatus*) and Troughton’s Sheath-tail Bat (*Taphozous troughtoni*). One species of significance had previously been positively recorded from nearby Lady Annie, the Northern Leaf-nosed Bat (*Hipposideros stenotis*). This species was recorded from the old Phosphate Pit located to the northeast of the Lady Annie Lease by James Warren and Associates (2000).

Bat habitat in the form of a mine adit was identified in an area of proposed disturbance at Mount Kelly/Flying Horse and AARC have been informed that it will be destroyed when mining commences. The adit is a relic of previous mining processes and therefore does not constitute a natural habitat. There are no other known adits located on the Project.

Other potential roost sites, particularly caves, may however occur on the Project. It is envisioned that some of these caves will be destroyed during the mining process. Prior to commencement of any mining activity, a suitably qualified Ecologist will conduct a survey of caves within the area of disturbance to determine if there are any habitats of conservation significance.

Following a review of the proposed activities on the Project Sites and an assessment of the habitat types and availability, it is considered that there will be no significant impact upon the local populations of any of these threatened mammal species.

As there are no foreseeable significant impacts upon any Nationally Significant threatened species on the Project Sites, the project does not need to be referred to the Commonwealth Department of Environment and Heritage.

3.5 STREAM SEDIMENT AND MORPHOLOGY STUDY

A Stream Sediment and Morphology Study for the proposed Lady Annie and Mount Kelly Project Sites was conducted by AARC in 2005. The following is a summary of the major findings of the study and the full report is contained within Appendix C.

The aims of the survey were to report on the following:

- Stream sediment quality of the various streams across the Project Sites to support the setting of receiving stream sediment quality criteria for the Project Sites;
- Morphological characteristics of watercourses on the Project Sites;
- Detail mitigation strategies to prevent potential negative impacts of the Projects on streams downstream of mine workings and infrastructure; and
- Describe a recommended ongoing monitoring program.

The Project Sites are situated mainly in the upper part of the Gunpowder Creek catchment, which is a major tributary of the Leichhardt River. The Leichhardt River flows in a northerly direction to the Gulf of Carpentaria. Gunpowder Creek has a catchment area of approximately 3,600 km².

The Project Sites are crossed by a number of small ephemeral streams, which generally drain in a southerly to easterly direction towards Gunpowder Creek. There are no permanent natural surface waterbodies on the Project Sites.

Baseline data on the morphology and stream sediment quality of watercourses on the Project Sites was collected during a four-day field survey, conducted from 14th – 17th September, 2005.

Overall, the condition of the streams on both the Lady Annie and Mount Kelly Project Sites appear to be good with little evidence of mass sediment movement or erosion. In most cases, where erosion has occurred it appears to have been part of the natural erosion and deposition cycle of the system.

Levels of cadmium, antimony, silver and mercury were all below detectable limits for the sediments sampled within the Mount Kelly Project Site.

Levels of chromium, lead, nickel, zinc, and arsenic were detectable within the Mount Kelly Project Site, however all samples were below the Australia and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC) 2000 Aquatic Ecosystem default low trigger limits.

Copper levels on the Mount Kelly Site were approaching the low trigger value at Site 6. This high level is expected to be due to the sampling locations being close to the naturally mineralised copper deposit area.

Based on the ANZECC Aquatic Ecosystem guidelines 2000 the low and high trigger values for copper should be adjusted to be site specific. This low trigger value has been adjusted to 80% of twice the maximum background level and the high trigger value has been adjusted to twice the existing maximum background level (QEPA 2003).

A summary of the results is presented in Table 7 and the locations of the samples sites are shown in Figure 7.

Table 7: Stream Sediment Quality Results – Mount Kelly Project

	SITE NUMBER						ANZECC Triggers	
	1	2	3	4	5	6	Low Trigger	High Trigger
Antimony	<5	<5	<5	<5	<5	<5	2	25
Arsenic	8	<5	<5	<5	6	<5	20	70
Cadmium	<1	<1	<1	<1	<1	<1	1.5	10
Chromium	22	10	14	48	31	14	80	370
Copper	32	19	20	10	7	61	100	120
Lead	10	<5	<5	6	7	5	50	220
Nickel	10	3	4	3	4	6	21	52
Silver	<2	<2	<2	<2	<2	<2	1	3.7
Zinc	16	<5	<5	<5	5	6	200	410
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.15	1

The shaded values indicate adjusted low and high trigger values based on site specific data, adjusted to the nearest 10.

In order to not adversely affect the natural processes within the streams on the Project it is recommended that any land disturbance within streams beds and adjacent to their bank should be kept to a minimum and stabilised immediately on completion of works. All major land disturbances on the Project that may have the potential to produce soil erosion or excessive sediment during storm events (i.e. waste rock dumps) should be drained via sediment traps to drop out suspended sediment prior to discharge of stormwater to natural stream systems. Progressive rehabilitation of land disturbances during the Project life should be undertaken where possible to reduce the potential for excessive sediment loads from disturbed land.

An annual monitoring program should be implemented, sampling streams both downstream of any mining or infrastructure disturbances and some upstream sites to take into account any natural variations in stream sediment quality and morphology.

For all metals besides copper, the ANZECC Aquatic Ecosystems guidelines should be used for the low and high triggers when setting downstream stream sediment values for the Project Sites. For copper, site specific low and high trigger values as determined from background data in the Stream Sediment and Morphology Study report should be used.

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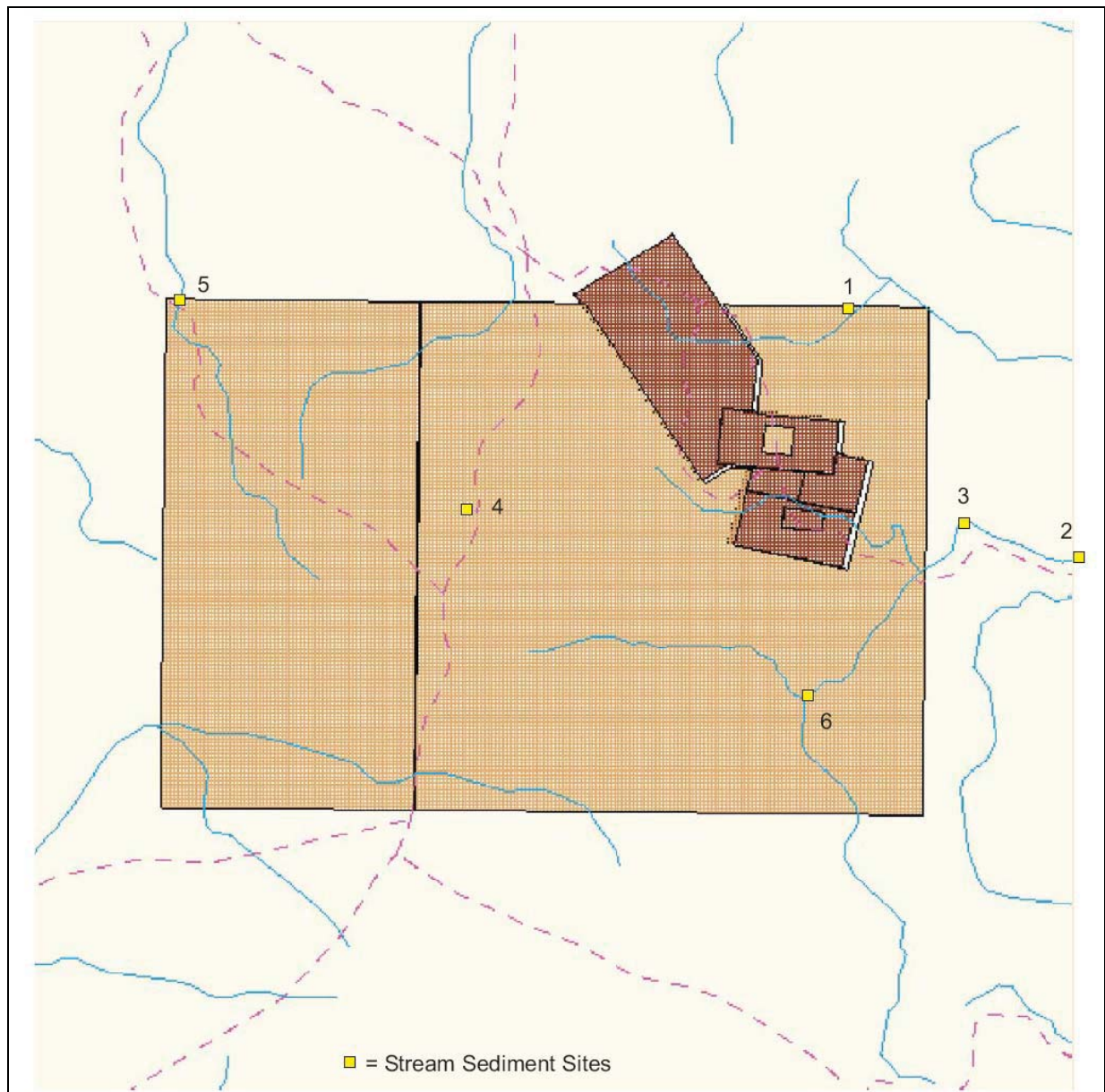


Figure 7: Stream Sediment Sampling Sites Mount Kelly

3.6 SURFACE WATER AND DRAINAGE

The Project occurs on the top of a catchment divide for two major ephemeral river systems. Water drainage on the majority of Project drains in an easterly direction towards Reedy Creek and its tributaries, which then flow north-east into Gunpowder Creek and eventually to the Leichhardt River. Surface water drainage from the Mount Kelly West MLA drains to the north in the northern portion of the lease in tributaries which form Battle Creek which also eventually joins Gunpowder creek.

A portion of the south of the Mount Kelly West MLA drains to the south-west through Saga Creek, which joins Inca Creek and Buckley River in the Georgina River Catchment.

Surface water drainage and diversions on the Project have been assessed by Klohn Crippen in their Draft Feasibility Report (2005) and is described below.

The philosophy behind the surface water management plan for the Project is to minimise contact of runoff water with mining operations. Where possible, stormwater runoff will be diverted around operations and allowed to continue on its natural drainage path, minimising both disturbance to the environment and the volume of water that contacts the area disturbed by mining. Stormwater runoff that comes in contact with mining operations will be collected, monitored and treated as required prior to release back to the environment or alternatively used as process water. As recommended in the DNRM Site Water Management guidelines (DNRM 1995), section 8.4.4, sedimentation dams will be used to remove suspended solids from runoff water. Runoff from areas which will contain hazardous materials, such as the heap leach pad, will be required to be contained in ponds with a Design Storage Allowance (DSA), as recommended in the DNRM guidelines. Keeping the hazardous runoff separate from other stormwater runoff will minimise the DNRM storage allowance requirements for the site.

3.6.1 Plant Site

The topography of the proposed processing area on the Mount Kelly West MLA is relatively flat with only one minor, poorly defined tributary of Saga Creek traversing this area. It is believed that rainfall across this area would generate minimal stormwater runoff, with most rainfall evaporating or infiltrating into the soil. Due to the flat topography of the process plant area and the lack of any major natural drainage paths, it is not considered necessary to divert any natural waterways around the site. Runoff from the surrounding catchment into the site will be minimal and will be picked up by drainage bunds and drains around major processing infrastructure and deposited downstream.

3.6.2 Mount Clarke Mining Area

Five sub-catchments were identified having drainage paths entering the Mount Clarke pit. All the sub-catchments are small and are not expected to produce significant runoff volumes. Construction of diversion channels around the perimeter of the pit will reduce the risk of stormwater runoff from entering the pit. Peak stormwater runoff flows have been calculated for these sub-catchments using the rational method as outlined in 'Australian Rainfall & Runoff'.

Sub-catchment A has an area of 4.2 ha and has an expected 10 year peak runoff flow of 0.7 m³/s. As this catchment is located between two large knolls on the pit boundary, construction of a drainage channel would involve significant earthworks compared to the volume of stormwater. It is proposed for this catchment to direct runoff flows into the pit drainage system where they will be pumped from the pit sump to the Mount Clarke Pit Sediment Dam; alternatively an evaporation pond could be constructed on the drainage path to reduce runoff through evaporation.

The sub-catchment B has an area of 1.3 ha and an expected 10 year peak runoff flow of 0.3 m³/s. The existing drainage path runs along the edge of the proposed pit and minimal earthworks would be

required to realign this channel to the perimeter of the pit to allow runoff to continue without contamination from mining operations.

Sub-catchment C has an area of 0.9 ha and has an expected 10 year peak runoff flow of 0.2 m³/s. The sub-catchment D has an area of 1.3 ha and has an expected 10 year peak runoff flow of 0.3 m³/s. Both sub-catchment C and D are small and runoff from these will be short and peaky following a rain event. Construction of a diversion channel running north along the pit boundary will intercept these flows and divert them around the pit. The sub-catchment E has an area of 3.3 ha and has an expected 10 year peak runoff flow of 0.8 m³/s. The perimeter drain will pick up flows from this catchment and direct them to the existing waterway north of the pit.

3.6.3 Mount Kelly/Flying Horse Mining Area

Eight sub-catchments were identified as having drainage paths entering the Mount Kelly/Flying Horse pit. The majority of the sub-catchments are small and are not expected to produce significant runoff volumes. Construction of diversion channels around the perimeter of the pit will reduce stormwater runoff entering the pit.

Sub-catchment A has an area of 8.1 ha and has an expected 10 year peak runoff flow off 1.5 m³/s. However, this catchment would also receive flow diverted away from the Mount Clark Pit which would bring the 2 year peak run off to 1.2 m³/s and the 10 year peak run off to 1.7 m³/s. A diversion channel running between the two segments of the Mount Kelly/Flying Horse pit would be the most effective way of diverting this flow from the pit.

Sub-catchments B, C and D have a combined area of only 1.5 ha and a 10 year peak flow of 0.3 m³/s. As these sub-catchments are small and steep, the runoff will be short and peaky following a rain event. The diversion for these catchments will join into the drain from sub-catchment A and run between the two segments of the Mount Kelly/Flying Horse pit. The sub-catchment E has an area of 10.7 ha and an expected 10 year peak runoff flow of 1.9 m³/s. Earthworks would be required to realign this channel to the perimeter of the pit to allow runoff to continue without contamination from mining operations.

Sub Catchments F and G are small catchments having areas of only 1.4 ha and 0.5 ha respectively. The combined 10 year peak runoff flow of these two catchments is 0.5 m³/s and will be diverted into the perimeter drain and into the natural waterway to the south of the pit.

The sub-catchment H has an area of 3.2 ha and has an expected 10 year peak runoff flow of 0.6 m³/s. This flow will be directed into the pit perimeter drain and then into the natural drainage channel to the south.

3.6.4 Sediment Dams

Runoff from the waste rock dumps and ROM Pads will be intercepted by toe drains around the perimeter of the dumps and directed to sediment dams. It is expected that the runoff water quality from the waste rock dumps will be of a suitable quality for release, as investigations on the waste rock material have identified that it is non-acid producing. Runoff from surrounding catchments will be diverted around the waste rock dumps and ROM Pads and allowed to continue in the natural watercourse. It may be necessary to line these channels in places with rock riprap where expected velocities are greater than 2 m/s.

Sizing of the sediment dams is based on a 1 in 10 year ARI storm event with a one hour duration (the time of concentration for the catchments of the sediment traps). This storm event is recommended in the DNRM guidelines (DNRM 1995) for the design of sedimentation dams. Rainfall from a 1 in 10 year ARI 1 hour event will be 52.7mm. The standing water level in these dams will be at a depth of around 1m with the design freeboard for events around 2m

Each sediment dam will have a filtered pipe as a primary outlet from the pond for gradual release of collected water over a 48 hour period. The outlet pipe will run through a wet well manhole beside the downstream channel where a Rising Stream Sampler will be mounted. Each pond will be provided with an overflow spillway to cater for storm events greater than the 1:10 year design storage event.

The locations of the proposed sediment dams/ponds on the Project are shown in Figures 8 and 9. The coordinates for the end of pipe releases from each of the sediment dams/ponds is described in Table 15.

3.6.5 Surface Water Quality

There is currently no background surface water quality data for the streams on the Mount Kelly Project leases although a background water quality monitoring program is being implemented for the current wet season. Therefore it is expected that some background water quality data for the Project will be available before the EA conditions for the Project are finalised.

In Lieu of this site specific data, water quality at the nearest DNRM gauging stations has been obtained from Greenstone Creek Site 1 (station 9130010), Greenstone Creek Site 2 (station 9130011) and Gunpowder Creek (upstream of Mount Gordon Mine workings – station 9130002) this data is presented in Appendix F. The results of this monitoring are likely to be similar to the water quality expected on the Mount Kelly Project as these sites are all with the Gunpowder Creek catchment. The results of the water quality monitoring conducted at these sites comply with the ANZECC 2000 water quality limits for Livestock Drinking Water. When the data was compared to the trigger values in ANZECC 2000 for Aquatic Ecosystems (Table 3.4.1 of the guidelines) several parameters such as aluminium, copper and zinc did not comply with the trigger values. This is most likely due to local mineralisation of the area which is also likely to be the case on the Mount Kelly Project. Therefore for the purpose of setting surface water quality standards for the Project mostly ANZECC 2000 Livestock Drinking Water limits will be used and Aquatic Ecosystem trigger limits where appropriate.

3.7 GROUNDWATER

Klohn Crippen has prepared a Draft Feasibility Report for the Project. A summary of the main findings of the hydrology for the Mount Kelly Project area from this report is given below.

The Mt Clarke and Mount Kelly/Flying Horse deposits are hosted by three main formations; the Mount Oxide Chert Member, the Paradise Creek Formation and the Esperanza Formation. Results of the hydrogeological field program undertaken in the Mt Clarke area indicate that groundwater at this location is structurally controlled. Exploration drilling has recorded groundwater flows in drill holes that have intersected fault zones and associated fracturing. The majority of flows were observed from holes that intersect the northwest-southeast trending Mount Clarke fault. Prominent cross-cutting faults are present throughout the deposits, located adjacent to the proposed Mount Kelly/Flying Horse pit. It is assumed that the faulting in the vicinity of the Mt Clarke pit will display similar aquifer characteristics. Groundwater inflow is expected to be encountered during pit excavations, and therefore a dewatering strategy is required.

Groundwater levels measured in three bores indicate that the piezometric surface is relatively flat, with no strongly defined groundwater gradient. Recharge to the system would be dominated by incident rainfall infiltration along the fault planes exposed at the ground surface. No observable groundwater discharge mechanisms were identified.

Both drawdown and residual drawdown data for all three bores displayed an increase in gradient of the drawdown curve throughout the test. The increase in drawdown rate during late time testing indicated

the extent of the aquifer system is restricted and water available from storage is limited, which has positive implication to mine dewatering requirements.

The conceptual hydrogeological model for the Mount Clarke and Mount Kelly/Flying Horse pit areas identified that groundwater flow and distribution is structurally controlled, predominantly by the Mount Kelly and Spinifex Faults. These prominent structures are intersected by the proposed Mount Kelly/Flying Horse pit therefore, the dewatering associated with the pit excavation will reduce the storage of water within this system. Minor faulting has been observed within the proposed Mount Clarke pit area and therefore minimal pit dewatering is expected. As a result, impact on adjacent groundwater users extracting from the groundwater storage associated with the Mount Kelly or Spinifex Faults may occur.

Registered bore data obtained from the DNRM groundwater bore database indicates that one bore (RN38531) has been installed within 5 km of the proposed pits (1.5 km from the pits). The registered bore details indicate that this bore was installed in 1972 as a water supply for the Mount Kelly mine from an application submitted by the mining lease holder (ML5781) at the time. The water level observed in this bore was 27.4 m below ground level, with an approximate yield of 1.6 L/s. As this bore was installed for the purpose of a water supply for the Mount Kelly mine operations in 1972, and due to this mine being no longer in operation, it is assumed that this bore has been abandoned. Based on the above information on the site hydrogeology and adjacent registered groundwater bore (RN38531), it is considered that the impact on the groundwater system as a result of the proposed dewatering of the Mount Clarke and Mount Kelly/Flying Horse pits should have minimal impact on adjacent groundwater users.

3.7.1 Groundwater Quality

A water quality sample was collected from one groundwater bore on the Project and analysed for pH, conductivity, redox potential, dissolved oxygen, alkalinity, major cations, major anions, dissolved metals and nutrients. The sample was slightly alkaline, with an EC level of 538 μ S/cm. The sample had a hardness value of 282mg/L as CaCO₃, with the dominant cations being Ca²⁺ and Mg²⁺ and the dominant anion HCO₃⁻. Dissolved metal concentrations for all metals tested were either below the laboratory detection limit, or below the ANZECC (2000) water quality limits for Livestock Drinking Water. Copper levels in the sample (0.030mg/L) exceeded the ANZECC 2000 Aquatic Ecosystems trigger level for copper (0.0014mg/L). The EC of the sample also exceeded the ANZECC 2000 Aquatic Ecosystem limit of 250 μ S/cm.

3.7.2 Groundwater Dewatering

A groundwater model was used to estimate inflows into the Mount Clarke and Mount Kelly/Flying Horse pits. The model showed that inflows should be manageable without pre-production dewatering, using in-pit (sump) transfer pumping techniques. The model also showed that the extraction of water from the Mount Kelly/Flying Horse pit will have a dewatering impact on inflows into the Mount Clarke pit.

The main sources of water into the Mt Clarke pit will be precipitation and groundwater. Runoff from adjacent undisturbed catchments (B, C, D and E) will be diverted away from the pit. Groundwater flows into the pit are not expected to be significant, so water can be collected in a pit sump.

As with the Mount Clark pit, the main sources of water into the Mount Kelly/Flying Horse pit will be precipitation and groundwater. Runoff from adjacent undisturbed catchments will be diverted away from the pit. Groundwater flows into the pit are not expected to be significant, so water can be collected in a pit sump.

Sump water from both pits will be pumped to sediment dams at surface level for settling and re-use as dust suppression water.

3.7.3 Heap Leach Area

Field investigations undertaken to assess the conceptual hydrogeology of the heap leach processing area comprised drilling and installation of three piezometers (to a depth of 30m) adjacent to the proposed heap leach area. No groundwater was encountered during drilling.

The geology across the plant site is relatively uniform comprising a felsic-rich, possibly quartzite, formation; with the deeply weathered profile extending below 50 m of natural surface. East of the plant site, lithology changes to an interbedded siltstone/mudstone formation with a weathered profile extending 30 m below the natural surface. Generally, the weathered profile underlying the plant site area comprises a mixture of kaolinitic and smectitic clays. Groundwater was not encountered within the weathered profile.

The site investigations did not intersect shallow groundwater resources, nor did it identify any shallow granular material with the potential to provide a seepage pathway away from the HL area. Furthermore, the deeply weathered nature of material below the proposed plant site is strongly dominated with clay and fine material. However, this interpretation is based on limited data only and does not account for localised zones of higher permeability that may exist beneath and away from the process plant site.

Generally, a shallow piezometric surface in similar shallow geological systems would reflect the topographic expression; therefore, groundwater flow would be similar to the surface drainage. Detailed topographic surveying of the site indicates a westerly drainage direction. Seepage pathways away from the heap leach pad would generally be radial in nature, or would follow any local preferential flow paths that may exist. This is because an artificial head induced by the heap leach pad would be significantly higher than current conditions and would dominate local groundwater flow. However, the heap leach pad design includes the installation of a liner to help prevent the occurrence of such conditions.

In the event some limited seepage loss does occur, the migration of the wetting front away from the Heap Leach area would be relatively slow due to the clay-rich nature of the weathered profile, which is estimated to range in permeability from 4×10^{-4} to 9×10^{-9} m/day.

Although groundwater was not encountered adjacent to the heap leach pads, three initial piezometers (LA-MB01, 02 and 03) have been installed to monitor upstream/background water quality (Figure 14). Each piezometer was constructed to a depth of 30m with the entire annulus gravel packed to surface. This construction design will enable interception of a wetting front (to a depth of 30 m) that may develop during operations. Additional piezometers will be required to compliment the three piezometers already installed and to provide suitable monitoring capacity for detection of potential seepages for the process plant area. Typical locations of these piezometers are shown in Figure 14 although these will need to be revisited once the final heap leach pad layout is confirmed. These piezometers are positioned adjacent to the heap leach pad, process ponds and surface water ponds to assess potential seepage into the underlying groundwater system. The proposed piezometer locations focus along the western edge of the current infrastructure layout, as it is assumed that groundwater flow will be towards the west (as a reflection of the surface drainage direction). The total piezometer network will therefore comprise eight downstream monitoring bores, and six upstream or heap leach peripheral bores. The existing monitoring bores (LA-MB01, 02 and 03) are considered upstream or peripheral to the heap leach area.

Monthly monitoring of these piezometers will be undertaken, with any groundwater encountered sent to a laboratory for analysis.

3.8 WASTE ROCK CHARACTERISATION

AARC was commissioned by CopperCo Limited to prepare a Waste Rock Characterisation report for the development of the Lady Annie and Mount Kelly Projects (Appendix D). The specific aims of the study were to:

- Determine the acid forming characteristics and Acid Rock Drainage (ARD) potential of the waste rock samples;
- Identification of samples that may be problematic with respect to ARD generation; and
- Determination of any specific management strategies for the waste rock that may be required to prevent ARD.

Waste rock samples were taken from a variety of drill holes on the Project Sites, to represent each waste rock type (lithology) occurring within the proposed open cut pits. The waste rock types at Lady Annie and Mount Kelly comprise the following lithologies:

- o Strongly weathered and oxidized dolomitic sandstones and siltstones;
- o Kaolinised, haematitic dolomitic siltstones;
- o Quartzite; and
- o Faulted brecciated siltstones.

Sampling locations were selected by CopperCo Limited on the basis of spatial representivity over the orebodies and to test all waste rock types. Overall, the Mount Kelly area comprises a series of tightly folded and faulted dolomitic siltstones and sandstones. The waste rock types encountered at Mt Clarke and Flying Horse are typical throughout the Mount Kelly area

A total of fifty waste rock samples were collected and sent to a NATA registered laboratory for analysis. The samples were analysed for the following parameters:

- Net Acid Generation Capacity (kg H₂SO₄/tonne);
- % Total Sulphur;
- Acid Neutralising Capacity (kg H₂SO₄/tonne);
- Net Acid Producing Potential (kg H₂SO₄/tonne); and
- Fizz Rating.

The waste rock results where compared to the waste rock characterisation criteria show in Table 8. All waste rock samples were classified as Non Acid Forming when compared to these criteria. As the samples represented all lithology types within the proposed open cut pits, it is probable that all waste rock materials to be mined will be Non Acid Forming. No specific waste rock management strategies are required to prevent ARD on the Project Sites.

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Table 8: Waste Rock Classification Criteria

Criteria for Categories	NAF*	UC*	PAF*
NAG pH (pH OX)	> 4.5	Conflicting NAG and NAPP results	<4.5
NAG Capacity at pH 4.5 (kg H ₂ SO ₄)	<0.1		>0.1
NAPP (kg H ₂ SO ₄)	<0		>0

*** Description of Categories**

NAF = Potentially Non Acid Forming

UC = Uncertain Acid Forming Potential

PAF = Potentially Acid Forming

3.9 CULTURAL HERITAGE

CopperCo Limited has conducted extensive consultation with Native Title groups and will continue to do so as part of a proactive community consultation program and development of a Cultural Heritage Management Plan. Due to the confidential nature of the results from the indigenous cultural heritage surveys information regarding these surveys will not be detailed in this EM Plan.

A European cultural heritage assessment was conducted for the Project by Gordon Grimwade & Associates – Heritage Consultants, on 29 October 2005 to ascertain the possible impacts of mining on non-indigenous cultural heritage (refer to Appendix E).

The cultural heritage assessment determined that no European cultural material was observed in the area proposed for the treatment plant.

Within the Mount Kelly deposit drill pad area the mangled remains of a wrought iron bucket with riveted joins was identified. It was severely dilapidated but bore some resemblance to similar buckets from the early to mid twentieth century. Down slope, on the scree developed from recent drilling activity, a section of an old fluming was noted. The frame supporting this seems to have been of local Eucalypt timber.

On the spur into which drill platforms have been cut at Mount Kelly were two 44-gallon drums that show similarities with those found on World War II sites between Tennant Creek and Mt Isa. On the valley floor, a further two drums were observed, along with a further length of fluming. Finally, a costean cut into shale rock on the footslopes of a small range of hills was noted. There were no indications whether it had been cut by hand or machine.

No European cultural heritage material was found in the area designated for the proposed new access road.

The elements noted above and in greater detail in Appendix E are considered to have limited cultural heritage value. The finds were incomplete to the extent they have limited value in contributing further to the knowledge of development of this area. Gordon Grimwade & Associates – Heritage Consultants advise that the sites can be destroyed without further recording, and if it is practical to do so, the drums and chute sections could be moved to the edge of the new work and left there.

3.10 ENVIRONMENTAL RISK ASSESSMENT

A risk assessment was conducted by AARC on the mining and associated activities proposed for the Project. A complete copy of the report compiled from the risk assessment is contained in Appendix G. A



summary of the main findings of the risk assessment are contained below. The risk assessment process was conducted as detailed in *The Handbook: Environmental Risk Management – Principles and Process. HB 203:2004*. (Standards Australia/Standards New Zealand, 2004).

The risk assessment was based on background information on the Project as contained in this EM Plan, information as provided in Project meetings and process diagrams provided by Ausenco. A brainstorming session was conducted to conceptualise all the activities on the Project that may have potential to cause an environmental incident and therefore have an environmental impact. Process inputs, chemical storages and wastes were also included. For each environmental impact a consequence value, likelihood factor and risk rating was assigned both with and without control strategies in place. The Risk Matrix used to define the level of risk for each environmental impact is shown in Table 9. The consequence values included an assessment of the likely impacts of the event on the health of people, harm to the environment and financial loss. Control strategies applied were based on current industry best practice for the region in which the Project occurs.

Table 9: Qualitative Risk Analysis Matrix – Level of Risk

Likelihood	Consequences				
	Catastrophic	Major	Moderate	Minor	Insignificant
Almost certain	E	E	E	H	H
Likely	E	E	H	H	M
Possible	E	E	H	M	L
Unlikely	E	H	M	L	L
Rare	H	H	M	L	L

Source: *The Handbook: Environmental Risk Management – Principles and Process. HB 203:2004*. (Standards Australia/Standards New Zealand, 2004).

There were 92 environmental risks identified for the Project. Of these 18 were given an extreme risk rating when no control strategies were applied. The activities and impacts associated with the 18 extreme risks can be summarised as follows:

- Project construction and potential impacts relating to land clearing of threatened habitat and Indigenous heritage sites;
- Dewatering of open cut pits and the potential for lowering the water table of local graziers bores;
- Construction of waste rock dumps and the Run of Mine (ROM) stockpile and the potential impacts from runoff causing contamination of land, groundwater and surface water from sediment and leachate;
- The potential for waste rock dumps or infrastructure to cause diversion of surface waterways which may increase/decrease flow and affect drainage lines;
- Operation of the heap leach pads, process water and stormwater ponds and the potential for groundwater contamination from leakage through the High Density Polyethylene (HDPE) liners; and
- The potential for unsuccessful rehabilitation of the heap leach pads leading to ongoing land and water contamination.

Of the remaining risk the following were identified:

- 20 out of the 92 identified risks were considered high risk;
- 10 out of the 92 identified risks were considered medium risk; and
- 44 out of the 92 identified risks were considered low risk.

Once control strategies were applied to each of the potential environmental impacts or incidents identified, there was a large reduction in the number categorised in the medium to extreme risk bracket. There were only 5 impacts or incidents which remained in the medium risk category and none in the high to extreme category. These remaining medium risks were associated with activities and impacts as described in the sections below.

3.10.1 Land Clearing

The control strategies proposed to be implemented during land clearing on the Project to reduce the effects of loss of habitat, include:

- Conducting flora and fauna surveys to determine areas of threatened vegetation or fauna;
- Avoiding threatened habitat areas where possible;
- Investigating alternative habitats for Purple-necked Rock Wallabies prior to Project construction (**Milestone 4**); and
- Conducting annual surveys to determine the success of alternative habitat for rock wallabies (**Milestone 5**).

Even when all of these control strategies have been implemented, a moderate risk rating was still given based on potential that the rock wallabies could still be impacted on through operational noise, transport and blasting. As the extent of this potential impact is relatively unknown a program of regular surveys of the population has been proposed to determine if modification of the Project's activities or further control strategies are required.

3.10.2 Heap Leach Pads

The heap leach pads, process water ponds and stormwater ponds have the potential to overtop process water in a very large rainfall event or a series of large rainfall events which exceeds their designed holding capacity. Although this event would be rare it could lead to land and surface water contamination downstream. The mitigation strategies proposed to be implemented to reduce the likelihood and consequences of this event include:

- The ponds will be designed, constructed and operated in line with the QEPA, *Code of Environmental Compliance for Environmental Authorities for High Hazard Dams Containing Hazardous Waste*;
- Designing the stormwater ponds to hold the volume of a 1:100 year Annual Recurrence Interval (ARI), 2 month wet season (823.9 mm of rainfall) plus process inputs for the catchment of the heap leach pads, process water ponds and stormwater ponds. This volume is substantially larger than the 1:100 year ARI, 72 hour event (339.12 mm) and therefore overtopping of the ponds is considered to be a very rare occurrence;

- After rainfall events water from the stormwater ponds will be recycled as process water, thereby ensuring the capacity in the stormwater ponds is always the maximum possible i.e. it is not envisaged that the rainfall from a whole 2 month wet season would be allowed to accumulate in the stormwater ponds ;
- Evaporation from the surface of the stormwater ponds (which hasn't been taken into account in the design storage allowance) will further reduce the amount of water in these ponds after rainfall events;
- The stormwater ponds and process water ponds will be constructed as excavations below ground level and therefore a dam break situation can not occur;
- Daily inspections;
- Emergency plans to prevent overtopping;
- Operating procedures; and
- Mitigation and monitoring strategies as in Section 4.6.4 of this EM Plan.

The extent of the impacts of overtopping of process water on ephemeral surface water flows and quality downstream would be dependant on a number of variables including the quality, flow and volume of the discharged water and the flow, volume and quality of natural receiving waters. The size of a rainfall event that would be required to overtop the ponds (greater than 1:100 year ARI, 72 hour event) would ensure that the discharged water would have a substantial dilution factor in any receiving waters.

All practical alternatives to prevent the stormwater ponds overtopping, or to improve water quality of the discharged water, would be implemented should an overtopping event appear imminent.

3.10.3 Transport

The associated incidents/events which may occur as a result of transporting products, supplies and personnel may include the potential to injure or kill native fauna and livestock. Mitigation strategies proposed to be implemented to reduce the occurrence of this incident/event include:

- Imposing and enforcing speed limits;
- Ensuring staff have training and appropriate licensing; and
- Providing inductions for employees.

There is still the potential that even with these control strategies in place that native fauna and livestock may be killed leading to vehicle damage, potential injury to personnel and in the case of livestock a financial loss to the grazier and/or the potential to damage good relations.

4.0 DESCRIPTION OF MINING ACTIVITIES

The following Sections 4.1 to 4.14 described the mining and processing activities that are proposed for the Project.

4.1 ENVIRONMENTALLY RELEVANT ACTIVITIES

Table 10 describes those activities proposed to be conducted on the Project, which would otherwise be Environmentally Relevant Activities (ERAs) as per Schedule 1 of the *Environmental Protection Regulation 1998*, if the Project was not a mining project.

The process of mining mineral ore (mining activities) is not covered by an ERA in Schedule 1 of the Regulation; it is covered separately by Schedule 6, Part 2 of the *Environmental Protection Regulation, 1998*.

Table 10: ERAs Associated with the Project

Item (ERA Schedule No.)	Level of Activity	Level	License Fee (\$)
ERA 7(b) Chemical Storage	>1000m ³ or more	1	1,740
ERA 11(a) Crude Oil or Petroleum Product Storing	<500,000L	2	-
ERA 15(b) Sewage Treatment	100 or more equivalent persons but less than 1,500 equivalent persons	1	1,500
ERA 17 Fuel Burning	500 kg or more of fuel per hour	1	3,000
ERA 41(c) Metals Works commercially smelting or processing ore or ore concentrates to produce metal in works	10,000 t or more per year	1	16,340
ERA 62 Concrete Batching	>100 tpa	1a	650
ERA 75(a)(i) General Waste disposal	>50 but <2000 tpa	1	500
ERA 75(b)(i) Regulated Waste disposal	<50,000 tpa	1	3,000
ERA 84(b) Regulated Waste Storage	--	1	2,000

4.2 EXPLORATION

Exploration and drilling activities will continue to be undertaken on the Project area, to determine or prove up further ore resources. Drill pads and sumps will be constructed as necessary, and where possible existing roads and pads will be used.

4.3 VEGETATION REMOVAL AND TOPSOIL STRIPPING

Prior to the development of any open cut pits, waste rock dump or infrastructure, vegetation and topsoil shall be removed from the footprint area and stockpiled. Large vegetation will be pushed first and windrowed along side the area where topsoil will be stockpiled. Smaller vegetation and grasses will be removed with the topsoil and stockpiled in windrows no higher than 2 m. Where necessary, stockpiles will be ripped and seeded to encourage water infiltration and prevent erosion. Topsoil will be respread on surfaces to be rehabilitated as soon as possible to benefit from the viability of the topsoil seed bank.

The approximate amount of land clearing that is required for infrastructure on the Project is shown in Table 11 and Figures 8 and 9.

Table 11: Land Clearance Required on the Project

Disturbance Type	Area (ha)
Mount Kelly/Flying Horse Mine Area	
Mount Kelly/Flying Horse pit	13.2
Mount Kelly/Flying Horse Waste Rock Dump and Low Grade Stockpile	28
Mount Kelly/Flying Horse Topsoil Stockpile	1.1
Mount Kelly/Flying Horse Sediment Dam	1.3
Mount Kelly/Flying Horse Diversion Drains	1.3
Mount Clarke Mine Area and ROM Pad	
Mount Clarke Pit	9.5
Mount Clarke Waste Rock Dump	16.3
Mount Clarke Low Grade Stockpile	5.4
Mount Clarke ROM Storage + Live Rehandle	5.5
Mount Clarke Topsoil Stockpile	4.5
Mount Clarke Pit Area Sediment Dam	0.6
Mount Clarke ROM Area Sediment Dam	0.4
Mount Clarke Diversion/Interception/Sediment Dam Drains	3.2
Processing Plant Area	
Process Plant	3.3
ROM Pad and Crushing Station	7.8
Overland Conveyor	1.8
Workshop/Office Access Circuit Area	2.9

Disturbance Type	Area (ha)
Heap Leach Pad – Stage 1	24.2
Heap Leach Pad – Stage 2	19
Process Water Ponds – PLS, ILS and Raffinate	3.4
Stormwater Pond 1	7.2
Stormwater Pond 2	4.2
Stormwater Pond Overflow Channel	0.7
Raw Water Pond	0.6
Process Area Stage 1 Topsoil Stockpile	6.0
Process Area Stage 2 Topsoil Stockpile	3.7
Process Plant Drainage Diversions and Bunding	2.7
Process Plant Sediment Ponds and Overflow Drains	1
Contractor Laydown Area	4.3
Concrete Batch Plant	0.3
Fuel Storage Area	0.3
Bulk Fill Stockpile	2.6
Roads and Other Infrastructure	
Site Access Road (on lease)	2.4
Lady Annie Haul Road (on lease)	4.2
Mount Clarke to Mount Kelly ROM Pad Haul Road	5.6
Process Plant/Camp Roads	6.6
Accommodation Camp and Facilities	5
Sewage Effluent Pond	0.2
Exploration	5
Pipeline and Power line Access	1
Domestic Rubbish Dump	0.2
Construction Access	
Mount Kelly Process Site Construction Area (net of specific areas)	23.1
Process Plant POM Pad Construction Area (net of specific areas)	8.6
Flying Horse Mine Construction Area (net of specific areas)	12.6
Mount Clarke Mine construction Area (net of specific areas)	10.3
Mount Clarke ROM Pad Construction Area (net of specific areas)	5.3
Total	276.4

4.4 MINING OF THE DEPOSITS

The Mount Kelly/Flying Horse and Mount Clarke deposits will be mined using conventional open cut, drill, blast and excavation methods, with copper ore being trucked to the Run of Mine (ROM) pad. Benches within the pit will be at 15 m intervals and the overall batter angle of the pit walls will be 45 degrees. The depths of the pits will vary and may be up to 100 m dependant on the nature of the oxide resource and local structural controls.

An average of approximately 1.4 Mt of copper oxide ore (including the Lady Annie deposit) will be extracted for processing by heap leach and SX-EW each year (maximum 1.9 Mtpa). A total of approximately 11 - 12 Mt of copper oxide ore (at an average copper grade of 1.2%) will be extracted from the Project deposits during the life of mine. The current mine life is estimated at eight years. The total resource at the Project may increase with ongoing exploration and this will have the affect of increasing the mine life.

The mining rate is determined by the process plant capacity, which will be designed to produce a maximum of 19,000 tpa of copper cathode.

There will be two open cut pits on the Project, the Mount Clarke pit and Mount Kelly/Flying Horse pit as shown in Figure 9. Land disturbance associated with the final voids will be approximately 23 ha.

Ore from the Mount Kelly/Flying Horse pit and the Mount Clarke pit will be temporarily stockpiled at the Live ROM Rehandle Area before being transported to the Process Plant ROM Pad.

Copper ore mined from the Lady Annie deposit (not included within the Mount Kelly Project area) will be trucked to the proposed processing plant at Mount Kelly. The total maximum mining rate of 1.9 Mtpa includes ore transported from the Lady Annie and Mount Kelly deposits.

Groundwater flows into the pits are not expected to be significant, and therefore water will be collected in a pit sump. Sump water will then be pumped to sediment dams outside the pits for settling and re-use as dust suppression water.

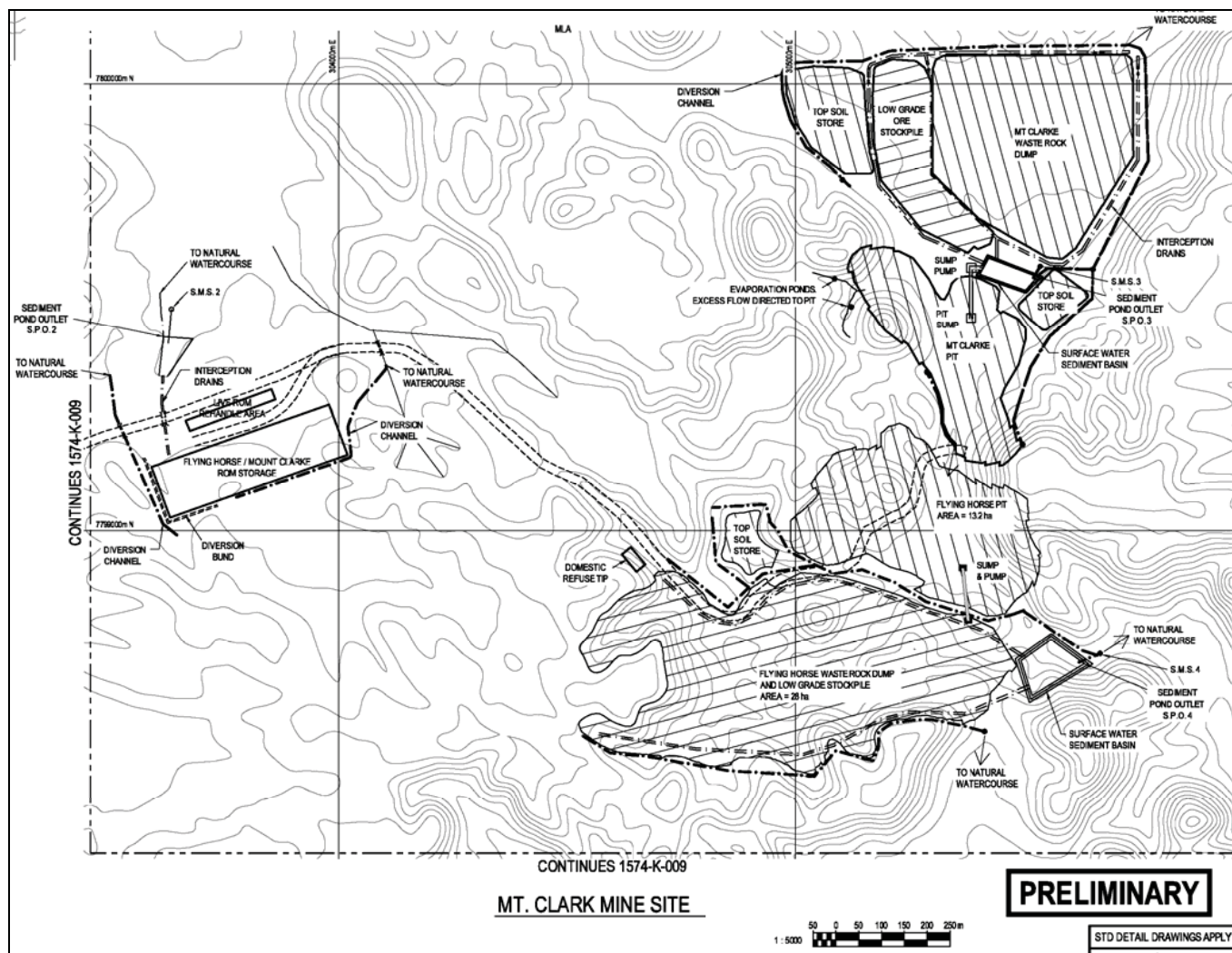


Figure 9: Conceptual Mining and Infrastructure Layout

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4.5 WASTE ROCK DUMPS

The waste rock dumps will to be constructed via 10m lifts, to an approximate final height of 30 – 40m. The proposed waste rock dumps will be located as shown in Figure 9.

Whilst the waste rock dumps are being constructed, a bund wall will be in place around the toe of the dump to contain water runoff and sediments from the waste dump during storm events. Sediment dams will also be constructed down slope of the waste rock dumps to prevent sedimentation of natural drainage lines. The water quality of any water released from these sediment dams will be monitored by Rising Stage Samplers immediately downstream. Clean water runoff from surrounding catchments will be diverted around the waste rock dumps and allowed to continue in the natural watercourses. It may be necessary to line these channels in places with riprap where expected velocities are greater than 2 m/second.

Once a lift has been completed the outer face of the waste rock dump will be dozed down to an angle of less than 20 degrees. A seven meter wide berm will be left between each lift for drainage and access. Waste rock dumps will be progressively rehabilitated as areas become available.

4.6 PROCESSING ACTIVITIES

4.6.1 Ore Stacking and Heap Leach Pad Design

Ore will be trucked to the proposed processing plant site which will be located on the Mount Kelly West MLA (Figure 8). The ore will be temporarily stockpiled at the Process Plant ROM Pad and crushed. Blending of the Lady Annie and Mount Kelly Project ore will occur as ore is transferred from the ROM Pad to the heap leach pad. Crushing and agglomeration of the ore will occur prior to stacking on the heap leach pads.

The heap leach pads will cover a total area of approximately 43.2 ha (including drainage) and will contain 11 to 12 Mt of ore. The heap leach pads will be constructed in two stages, Stage 1 (24.2 ha) being completed in year 1 of the mine life and Stage 2 (19 ha) in year 2 of the mine life. Two stormwater ponds downstream of the heap leach pads, process water ponds and process plant will provide secondary containment for contaminated stormwater collected during large rainfall events. The two stormwater ponds, one for each heap leach stage, will also be constructed over two years (Figure 8).

The heap leach pads will be constructed in lifts of 6 - 8 m, with up to seven lifts per pad to a total height of 42 meters. The final pad height may vary depending on the characteristics of the material being stacked, but on consolidation the height is expected to be approximately 34m.

All heap leach pads will be constructed with a High Density Polyethylene (HDPE) liner under the pads, drainage controls and associated drain and pond infrastructure. Each heap leach pad will use crushed and screened waste rock as a cushion layer and drain coil to collect leachate from the heap leach pads. Between each lift of the heap leach pads it will be necessary to compact the surface to minimise solution infiltration into material below.

A 1 m high bund wall will be built 5 m from the toe of the heap leach pads to contain any material should a slump occur. This will also act as a solution control bund to contain stormwater runoff from the pads. Clean stormwater will be diverted around the heap leach pads if required.

A leak detection and control system will be developed for the heap leach pads. This will include the installation of a single detection drain down the low side of each 50m wide panel. The bottom end of

this drain will be extended under the access road and the solution W-drains, to a monitoring stand pipe on the western side of the W-drains.

4.6.2 Copper Leaching Process

Two HDPE pipelines will carry raffinate and intermediate leach liquor containing sulphuric acid to the heap leach pads. From these main pipelines, distribution header pipelines will carry the leach solution onto the top of the leach pads where drippers or wobblers will distribute the leach solution onto the top and sides of the heap leach pads. This solution will percolate through the ore heap and dissolve the copper bearing minerals.

Once the leach liquor (leachate) has passed through the heap, it is collected in drain coil pipes and HDPE lined drains and transferred to the HDPE lined Pregnant Leach Solution (PLS) ponds or the Intermediate Leach Solution (ILS) pond.

From metallurgical test work conducted, the average composition of the leachate in the PLS, ILS and Raffinate ponds is likely to include copper levels of approximately 5,200 mg/L, 1,500 mg/L and 650 mg/L respectively. Average concentrations of other parameters will be similar for all process water ponds and include iron 2,000 mg/L, calcium 600 mg/L, magnesium 9,500 mg/L, aluminium 2,200 mg/L and manganese 700 mg/L. The pH of the solution in the PLS ponds is likely to be approximately pH 1.4.

The composition of the water in the stormwater ponds downstream of the heap leach pad and process water ponds is likely to be significantly diluted as the stormwater ponds will have a capacity greater than 10 times the size of the total capacity of the process water ponds.

4.6.3 Solvent Extraction (SX) and Electro-winning (EW) Process

The liquor from the PLS ponds will be pumped through an SX circuit using mixers and settlers to produce a clean high grade copper electrolyte that is pumped through EW cells where the copper is electroplated onto stainless steel cathodes. After loading, the copper which is stripped from the cathodes is in the form of 1m square sheets of 99.999 % pure LME Grade A copper cathode, and is transported off site to be sold. It is proposed to produce up to 19,000 tpa of copper cathode.

The liquor from which the copper has been removed in the SX circuit (raffinate) will be pumped back to Raffinate ponds where further acid is added (if required). This solution will then be returned for heap leach irrigation. All process solutions are in a closed circuit and are recycled.

4.6.4 Process Water and Stormwater Ponds

It has been determined from the QEPA, *Information Sheet – Determining Dams Containing Hazardous Waste* that the process water ponds and stormwater ponds will all be High Hazard dams. These ponds will be designed, constructed and operated in line with the QEPA, *Code of Environmental Compliance for Environmental Authorities for High Hazard Dams Containing Hazardous Waste*.

The process water and stormwater ponds have been assessed against the Site Water Management guideline provided in *Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland* (1995) to determine their hazard category (Table 1 of guideline) and Design Annual Exceedance Probability (Table 3 of guideline). It has been determined that the ponds will have a High Hazard Category based on the likely water quality in the process water and stormwater ponds.

There will be three types of process water ponds which include ILS, PLS and Raffinate ponds which will have a combined capacity of 51,100 m³. All ponds will be designed so that in large rainfall events they will overflow to the two stormwater ponds.

Water from the stormwater ponds will be reclaimed to the process water circuit. The water level in Stormwater Pond 1 will equalise with the water level in Stormwater Pond 2. Only Stormwater Pond 1 will be required in the first year of operation as only Stage 1 of the heap leach pad area will be constructed. Stormwater Pond 2 will be staged to be completed in time to contain the catchment of Stage 2 of the heap leach pads in the second year of the Project. The stormwater ponds and process water ponds will be constructed as excavations below ground level and therefore a dam break situation can not occur.

Each of the process ponds and stormwater ponds will be HDPE lined. The process water and stormwater ponds will have an under-liner leak detection system which will consist of leak detection drains under the pond liners, connected to down batter leak detection wells at approximately 50 m centres around the walls of the ponds. Added to this a series of heap leach leak detection bores will be located around the outside of the ponds and processing area to detect any potential seepage to groundwater should the HDPE liner be breached.

The stormwater ponds will be designed to hold a Design Storage Allowance (DSA) of 1:100 year Annual Recurrence Interval (ARI), 2 month wet season (823.9 mm of rainfall) across the catchment area plus process inputs (38,736 m³) at the 1 November every year. For Stage 1 of the heap leach pads the catchment area of Stormwater Pond 1 is 35.5 ha which equates to a runoff volume of 292,484 m³ for the DSA event which is within the 353,860 m³ combined capacity of the process water ponds and Stormwater Pond 1. For Stage 2 of the heap leach pads the total catchment area of both Stormwater Pond 1 and 2 will be 58 ha which equates to a runoff volume of 477,862 m³ for the DSA event which is within the 518,820 m³ combined capacity of process water ponds, Stormwater Pond 1 and 2. The total combined capacity volumes of the process water ponds and stormwater ponds utilises the HDPE lined channels between these ponds as capacity given the inline configuration of the ponds shown in Figure 8.

After rainfall events water from the stormwater ponds will be recycled as process water, thereby ensuring the capacity in the stormwater ponds is always the maximum possible i.e. it is not envisaged that the rainfall from a whole 2 month wet season would be allowed to accumulate in the stormwater ponds. Evaporation from the surface of the stormwater ponds (which hasn't been taken into account in the design storage allowance) will further reduce the amount of water in these ponds after rainfall events.

The stormwater ponds will each have an overflow spillway which is designed to pass the peak flow from a 1:1,000 year ARI storm event. Water from these spillways, in the unlikely event of an overflow, would flow through a channel to the upper reaches of Saga Creek as shown on Figure 8.

The Mandatory Reporting Levels to be marked on each stormwater pond below the spillway, will equal the volume left in the pond to hold a 1:100 year ARI, 72 hour event (339.12mm) over the catchment area. For Stormwater Pond 1 in Stage 1, this Mandatory Reporting Level will be marked at 1.7 m below the spillway and is equal to a volume of 120, 400 m³ left in the pond. For Stormwater Ponds 1 and 2 in Stage 2 of the Project this Mandatory Reporting Level will be marked at 1.9 m below the spillway and is equal to a volume of 196, 700 m³ left in the ponds.

Should the water level in the stormwater ponds reach the mandatory reporting level then the Administrating Authority (QEPA) will be contacted immediately. The QEPA may at this point issue instructions to CopperCo Limited regarding contingency measures that need to be taken should the water level in the ponds exceed the level below the spillway of a 1:10 year ARI, 24 hour event

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(150mm of rainfall across the catchment) which is equal to 0.65 m below the spillway for Stage 1 and 0.75 m for Stage 2.

The extent of the impacts of overtopping the ponds on ephemeral surface water flows and quality downstream would be dependant on a number of variables including the quality, flow and volume of the discharged water and the flow, volume and quality of natural receiving waters. The size of a rainfall event that would be required to overtop the ponds (greater than 1:100 year ARI, 72 hour event) would ensure that the discharged water would have a substantial dilution factor in any receiving waters.

All practical alternatives to prevent the stormwater ponds overtopping, or to improve water quality of the discharged water, would be implemented should an overtopping event appear imminent.

CopperCo Limited proposes the following contingency measures if the Mandatory Reporting Level is reached in the stormwater ponds:

1. A water sample will be taken from each process water and stormwater pond and sent to a NATA registered laboratory to determine water quality.
2. Field measurements will be conducted in each pond using a portable pH and Electrical Conductivity (EC) meter on a weekly basis should rainfall continue.
3. No additional water will be added to the process water system under any circumstance and water from the stormwater ponds will recycled to the process plant.
4. Weekly recordings of the water level in the ponds below the spillway crest and any rainfall.

Should the water level in the ponds reach the level below the spillway crest of a 1:10 year ARI, 24 hour event (150mm of rainfall across the catchment area) then the following strategies will be implemented:

1. The QEPA will be notified immediately.
2. A water sample will be taken from each process water and stormwater pond to and sent to a NATA registered laboratory to determine water quality.
3. Field measurements will be conducted in each pond using a portable pH and (EC) meter on a daily basis.
4. Process water will continue to be circulated through the heap leach pads to prevent drain down of the heaps.
5. Contingency measures will be developed to prevent an overflow in conjunction with the QEPA.

Should an overflow of the stormwater ponds occur, the time that the discharge starts and finishes will be recorded along with approximate depths at regular intervals over the spillway. Water samples from the discharge will be taken at both the stormwater pond and downstream at the lease boundary at regular intervals to determine if environmental harm has occurred.

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4.7 RAW WATER POND

A raw water pond will be constructed in a Turkeys Nest design at the site of the processing plant to store water from the raw water pipeline. Water from this pond will be used to top up water in the process water circuit. The Raw Water Pond will be lined with HDPE with dimensions of 55 m x 55 m x 6 m deep and have a capacity of 8,500m³. The raw water pond will contain fresh, good quality water from either the borefield or Greenstone Creek Dam (Waggaboonya Dam).

4.8 WATER REQUIREMENTS

An estimated 20 L/s water supply is required for the construction phase of the project based on a construction demand of 1500 m³/day (17.5 L/s), plus a potable water allowance for personnel being accommodated in camps.

The preferred source of this water is the Greenstone Creek Dam (Waggaboonya Dam), however, given that the water supply pipeline from Waggaboonya Dam to the Project site is unlikely to be completed in time for construction, additional near-mine water sources are required.

Analysis has indicated that it is more feasible to gain adequate water supply from several local sources rather than from a single source. These sources potentially include:

- The Mount Kelly area existing bore (Mount Kelly Camp Bore);
- The Flying Pig Bore at Lady Annie;
- The proposed Lady Annie Dewatering Bores (yet to be constructed);
- Supply from the existing Lady Annie East (LAE) Borefield; and,
- Potential supply from the Buckley River area south of Mount Kelly.

Prior to the establishment of new bores or use of existing bores, all the necessary permits will be obtained from the relevant authorities. Environmental impacts will be assessed as part of the permitting process and appropriate environmental controls will be implemented in accordance with the permits.

The water supply requirements for the processing, mining and potable water supply have been assessed to be a maximum of 42 litres/second. This equates to an annual water requirement of 1.3 million m³.

There are two options for the water supply for the Project. The preferred strategy is to obtain water from the Greenstone Creek Dam (Waggaboonya Dam) located at Mount Gordon Mine via a pipeline to the Project. This dam is already constructed with an approved water supply allocation which may be sufficient for both the needs of the Mount Kelly Project and the Mount Gordon Mine. An assessment of this water supply option is currently being undertaken to determine allocations and feasibility. If required, further licences or permits will be sought from DNRM. Waggaboonya Dam lies approximately 35 km north-east of the proposed Mount Kelly process plant site and was built in 1969 on Greenstone Creek as a water supply for the pre-existing Gunpowder Township. The dam has a maximum storage of 14,000 ML. Currently, Waggaboonya Dam is utilised by Birla Mount Gordon for mine process water and camp water supply purposes. Two water extraction licences for this storage are held by Birla Mount Gordon, which permit a combined total extraction of 64 L/s (2,020 ML/yr).

The second water supply option is to obtain water by developing the Thornton Borefield which is located 65 km north of the Mount Kelly Project. Water licences and permits will be applied for if this water supply option is pursued.

4.9 POWER SUPPLY

The power supply for the Project has been estimated at 7.25 MW and is likely to be provided by a spur line from the 11kV power line to the Mount Gordon Mine. A small backup diesel generator will be required to supply a trickle current to the processing plant.

A generator will be required at the accommodation camp to provide power.

4.10 CONCRETE BATCHING

A concrete batching plant will be established to supply concrete during the construction phase of the project and to a lesser extent during operations. The plant will be located in close proximity to the Processing Plant and will include small storage areas for raw materials and cement.

4.11 ACCOMMODATION CAMP

A temporary accommodation camp to house approximately 140 people will be constructed on the Mount Kelly Extended MLA to the south of the Swagman deposit. Figure 10 below shows the personnel requirements for the Project.

Personnel will operate on a fly in fly out roster with the Mount Isa airport utilised as the main hub for personnel travelling to and from the site.

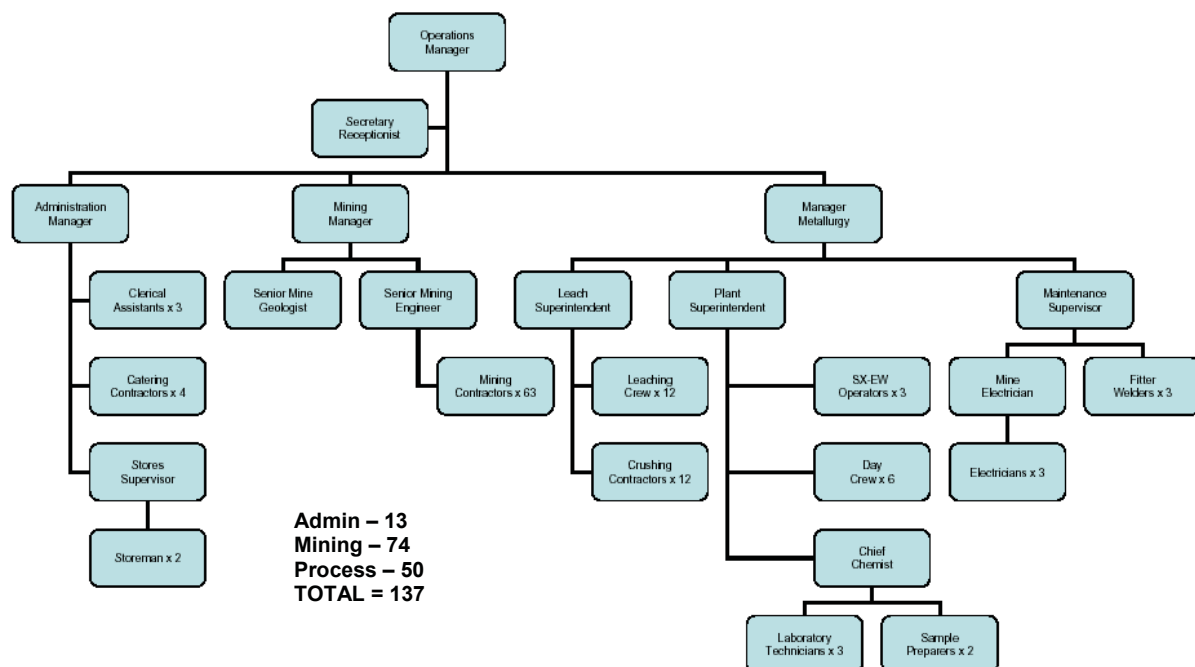


Figure 10:

Organisational Chart

4.12 SEWAGE TREATMENT

The offices and workshops at the Mount Kelly processing plant will be serviced by septic sewage systems. These systems will be serviced and pumped out by a licensed contractor on a regular basis with the resulting sludge being disposed of to a licensed facility.

There will be two sewage treatment plants to support the Project. The larger of these will be a 148 person plant to cater for the permanent camp. The other unit will be an 80 person plant that will cover the additional people on site for construction. This smaller plant will be removed from site after the construction peak is over.

The capacity of the 148 person plant is 38,000 L/day. This capacity has been determined by allowing 250 L/day/person for 148 people and then rounding up. The capacity of the 80 person plant is 20,000 L/day. This capacity has been determined by allowing 250 L/day/person per person for 80 people.

The sewage treatment process is illustrated in Figure 11.

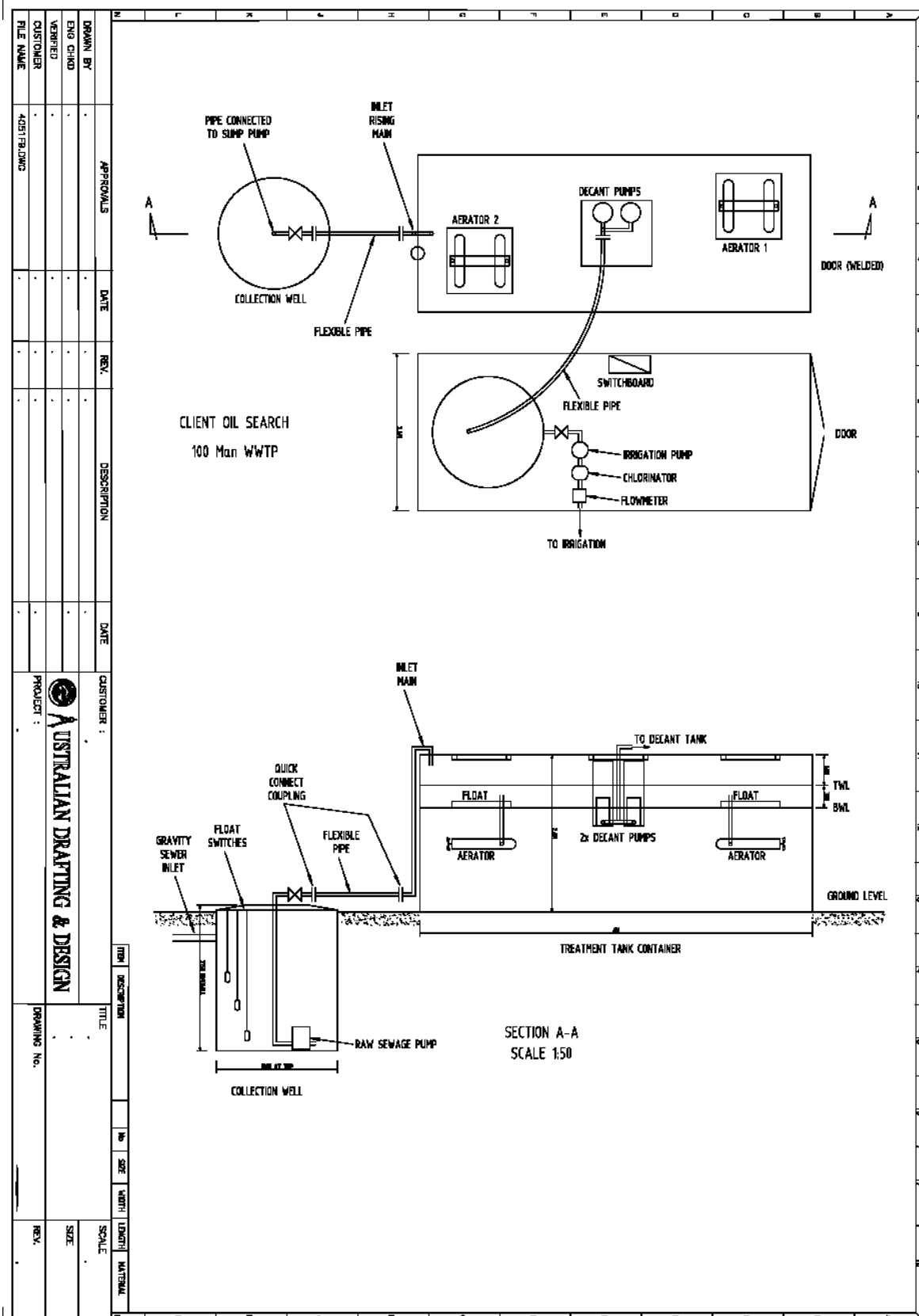


Figure 11: Treatment Process for Sewage Treatment Plant for the Accommodation Camp

The process consists of raw sewage flowing to the raw sewage pump well, which has a capacity of 3,900L. The raw sewage is pumped to the Treatment Tank Container (TTC) via the raw sewage main. Inside the TTC are two submersible aerators, two decant pumps and three float switches. The plant operates over three phases; aeration, settling and decanting. The aeration period typically lasts approximately 60 minutes and can be increased or decreased according to plant load.

The settling period follows aeration to settle out solids and also lasts for approximately 60 minutes. The plant will continue to pass through these two phases until the midlevel float switch in the TTC is reached. At this point the plant will immediately switch to a Settle period if it was in an Aeration period. The plant will then settle for 60 minutes, which allows time for the activated sludge to settle in the TTC.

Upon completion of the settling period both decant pumps are activated. The clear effluent is pumped from the TTC via the transfer pipe to the Treated Effluent Tank located in the second container. This tank acts as an equalisation tank. When the level in the TTC falls to the lowest float level switch, the Decant pumps are switched off and the cycle recommences.

Final disinfection occurs when the treated effluent passes through the tablet chlorinator upon exit from the Treated Effluent Tank, achieving chlorination of effluent with a residual of 2ppm.

A properly maintained plant produces treated effluent with:

- Biological Oxygen Demand < 20 mg/l
- Suspended Solids < 30 mg/l
- Faecal Coliforms < 10 in 100ml.

Any grits, scums or sludges from the sewage treatment plant will be removed and disposed of by a licensed contractor to an appropriately licensed facility.

The water from the sewage treatment plant will not be used for effluent irrigation to naturally vegetated areas. The water treated from the sewage treatment plant will piped to a nearby lined, waste water pond prior to being used for dust suppression on roads on the Project. The water will be pumped out of the waste water pond via a stand pipe into water trucks and then sprinkled on to the roads and other processing areas requiring dust suppression. Given the proposed water quality of the final effluent it unlikely that disposing of this effluent by road watering for dust suppression would lead to contamination to surface waters, groundwater or land.

The waste water pond will not receive any surface water run off from surrounding areas and as such flooding of the waste water pond will be unlikely. Sufficient capacity will be provided in the waste water pond to contain treated sewage water plus rainfall falling directly in the pond during times when dust suppressions is not required (i.e. during rainfall events).

Figure 8 shows the site of the proposed sewage treatment plant area and waste water pond. There are no nearby neighbours, sensitive areas or waters that will be impacted by the sewage treatment plant or waste water pond.

The plant is a closed system and therefore stormwater will not be collected within the system or contaminated in normal operating conditions. Clean stormwater collected in the bunded area surrounding the sewage treatment plant would be pumped into the waste water pond to be used for dust suppression.

The sewage treatment plant will be surrounded by earthen bunds. The bunded areas will be sized such that they will hold the capacity of the tanks along with highest recorded monthly rainfall for the area. In the event of heavy rain, and if there is no contamination, the rain water in the bund would be pumped to the waste water pond near the plant and used for dust suppression at a later date. In the event of a plant overflow the waste water would be pumped out of the bunded area by a certified waste disposal contractor and disposed of off site to an appropriately licensed facility.

Flood potential of the treatment plant and waste water pond is considered to be minimal as they are located on a flat plateau, adjacent to the accommodation camp with minimal catchment upstream.

CopperCo Limited will be responsible for the operation and maintenance of the sewerage treatment plant and waste water pond. The manufacturer also provides a range of management options, including remote operation and on-site training of staff.

In addition, the site induction for new employees will cover site environmental issues, including any issues of relevance to the sewage treatment plant. On-going issues will be addressed by site memos.

Contingency plans for emergencies/environmental incidents associated with the sewage treatment plant will include the following:

- Equipment failure - the units will be equipped with duty and standby pumps.
- Power Outage - The camp will have a generator that will provide power to the plant in the event of a mains power failure.
- Process upset - trained personnel on site.

4.13 GENERAL INFRASTRUCTURE

General infrastructure that will be required on the Project that has not been discussed previously will include:

- Workshops and administration buildings;
- Fuel Storage - 2 x 70,000 litres tanks;
- Sulphuric acid and extractant storage;
- Borrow pits for road construction;
- Contractors laydown area and boneyard; and
- General rubbish disposal site.

All hydrocarbons will be stored and handled as per the requirements of section 5.8 of AS 1940 - Storage and Handling of Flammable and Combustible Liquids of 2004. The on-site storage of corrosive

liquids will be in accordance with section 5.7 of AS 3780 - Storage and Handling of Corrosive Substances 1994.

The rubbish disposal site will consist of two long trenches one for industrial type rubbish and the other for domestic putrescible type rubbish from the offices and camp. Each trench will be covered on a regular basis (at least weekly) to prevent the dispersal of wind borne rubbish, control scavenging by feral animals and deter insect breeding.

A laydown and recycling area will be developed to aid in the separation of re-useable and recyclable materials. This area will be used for the storage of wastes such as scrap metal, tyres and vehicle batteries prior to collection from site by a licensed contractor for disposal or recycling to a licensed facility. A Waste Management Plan for the Project will be developed and reported in the Plan of Operations to aid in the management and recycling of wastes from the site (**Milestone 6**).

4.14 TRANSPORT

Transport of copper cathode product, supplies and personnel to and from the Project will be via existing public roads between Mount Isa and the Project which includes McNamara's Road and the Barkley Highway. CopperCo Limited plan to upgrade McNamara's Road in consultation with the relevant government authorities to allow better access to the Project site.

It is anticipated that the following number of transport movements will be required for Project on a weekly basis:

- Acid - 10 triple road trains;
- Copper - (back load on acid trucks);
- Diesel - 2 triples;
- Freight - 1 semi trailer;
- Light vehicles - 7;
- Personnel - mini bus 2 round trips; and
- Visitors - 35 light vehicles per week.

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5.0 REHABILITATION

5.1 EXPLORATION

Exploration disturbances will be rehabilitated as per the following six steps:

- Capping the drill hole;
- A drying out period to allow water to evaporate from the drilling muds in the sumps;
- Backfilling of drilling sumps;
- Scarifying the surface; and
- Should natural regeneration not be successful after the first year, seed from species native to the area will be sown before the following wet season to enhance revegetation.

5.2 HEAP LEACH PADS

Once commercially viable quantities of marketable copper can no longer be leached from a heap leach pads, the heap will be rehabilitated.

The heap leach pad will be reshaped to blend with the surrounding topography at a grade of less than 1:3 or 33%. Depending on the results of rehabilitation trials the resultant landform may be covered with approximately 50 cm of coarse waste rock material. Topsoil (to a thickness of at least 100 mm, if available) will then be spread over the surface of the rock and lightly ripped, fertilised and seeded with local shallow rooting species.

Drainage from the rehabilitated heap will drain to a channel around the perimeter of the heap and then to the process water ponds. Any water discharged from the rehabilitated heap leach impoundment will be monitored for water quality until the rehabilitated landform has been deemed to have met completion criteria.

5.3 WASTE ROCK DUMPS

Waste rock dumps will be rehabilitated by leaving a berm of at least 5 m between each lift once the dump faces have been dozed down to act as a water control structure to prevent erosion of the lower waste dump face.

The final slope of the waste rock dump face once dozed down for rehabilitation will be between the angle of repose and 20 degrees depending on the competency of the rock material. The berm between the two lifts of the dump will be graded to slope back towards the dump to act as a water control structure for any stormwater flowing off the lift above. The top of the waste rock dump will be graded towards the centre and a drain or bund installed back from the edge to prevent any overtopping of water from the top of the dump over the face of the dump.

The slopes and top of the waste rock dumps will be topsoiled where possible and deep ripped to bind in the material. Native local grass and tree species and an appropriate fertiliser, if required, will be directly seeded onto the topsoiled dump.

5.4 FINAL VOIDS

Final voids will be left in a safe condition by constructing a safety bund wall around each void from competent rock and/or fencing, depending on the terrain, to limit human and livestock/animal access. The safety bund wall will be constructed as described in *Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland*. This guideline states that the bund wall should be of a minimum height of 2 m, with a minimum base width of 4 m and be located at least 10 m beyond the area potentially affected by any instability of the pit edge.

Where water quality within the void is suitable for stock drinking water, a safe access to the water shall be provided for stock, or the water will be pumped to a stock watering point. Consultation with the land holder will be undertaken to determine the best means of pumping or access. Where water in voids is not suitable for stock drinking water, then the voids will be bunded or fenced to prevent stock access.

5.5 PLANT AND INFRASTRUCTURE

All process plants and associated buildings and equipment will be dismantled and removed upon the cessation of mining operations, or on agreement left for the land holder.

5.6 ACCESS ROADS

Access roads required for grazing activities will not be rehabilitated. This will be confirmed by written agreement with the pastoralist. Roads that can be rehabilitated will be deep ripped and if necessary seeded with a mix of native grass and tree species.

5.7 REVEGETATION METHODS

Compacted areas will be topsoiled (if topsoil is available), ripped to a depth of 500 mm and fertilised with a nitrogen and phosphate based fertiliser, if required. The area will be seeded with appropriate plant species, which occur naturally in the local area. Ripping the soil surface will slow down surface water flows and minimise the potential for erosion.

6.0 ENVIRONMENTAL VALUES, IMPACTS, CONTROL STRATEGIES AND PROPOSED EA CONDITIONS

In accordance with the QEPA guideline for the preparation of an EM Plan for non-standard mining Projects (QEPA, 2003), this section provides a description of environmental values likely to be affected by the Project. For each environmental value identified an assessment of the beneficial and adverse impacts from the Project to that value will be described. Environmental objectives and control strategies will be proposed for the protection of each environmental value and EA conditions containing measurable standards and Indicators developed. In doing so, the following is discussed where relevant:

- The magnitude or relative size of the impact in relation to the environmental value being discussed;
- The severity of any adverse effect or scale of any beneficial outcome;
- The duration of the effect; and
- An indication of the level of uncertainty and any assumptions used to address the uncertainty in any of the data or proposed commitments to protect the environmental values.

The following is a list of definitions for terms that will be used in this section:

Environmental Values: Environmental values are those qualities or physical characteristics of the environment that are conducive to ecological health, public amenity, or safety.

Environmental Protection Objectives: These describe the key elements of the environment and the level to which they should be protected in order to prevent impacts on the environmental values.

Control Strategies: These set out the technological, management and other approaches to be taken in meeting the environmental protection objectives and achieving the proposed standards.

Measurable Indicators: These are the activities or target areas through which the level of achievement of the environmental protection objective can be determined.

Standards: These are defined numerical standards or clear actions for each of the indicators by which adequate levels of achievement of the environmental protection objectives and protection of the environmental values can be determined.

6.1 GENERAL EA CONDITIONS

Financial Assurance

(A1-1) *Provide a financial assurance in the amount and form required by the administering authority prior to the commencement of activities proposed under this environmental authority.*

NOTE: *The calculation of financial assurance for condition (A1-1) must be in accordance with Guideline 17 and may include a performance discount. The amount is defined as the maximum total rehabilitation cost for complete rehabilitation of all disturbed areas, which may vary on an annual basis due to progressive rehabilitation. The amount required for the financial assurance must be the highest Total Rehabilitation Cost calculated for any year of the Plan of Operations and calculated using the formula: (Financial Assurance = Highest Total Annual Rehabilitation Cost x Percentage Required).*



(A1-2) *The financial assurance is to remain in force until the administering authority is satisfied that no claim on the assurance is likely.*

NOTE: *Where progressive rehabilitation is completed and acceptable to the administering authority, progressive reductions to the amount of financial assurance will be applicable where rehabilitation has been completed in accordance with the acceptance criteria defined within this environmental authority.*

Maintenance of Measures, Plant and Equipment

(A2-1) *The environmental authority holder must ensure:*

- *that all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority are installed;*
- *that such measures, plant and equipment are maintained in a proper condition; and*
- *that such measures, plant and equipment are operated in a proper manner.*

Monitoring

(A3-1) *Record, compile and keep for a minimum of five years all monitoring results required by this environmental authority and make available for inspection all or any of these records upon request by the administering authority.*

(A3-2) *Where monitoring is a requirement of this environmental authority, ensure that a competent person(s) conducts all monitoring.*

Storage and Handling of Flammable, Combustible and Corrosive Liquids

(A4-1) *Spillage of all flammable and combustible liquids must be contained within an on-site containment system and controlled in a manner that prevents environmental harm (other than trivial harm) and maintained in accordance with Section 5.8 of AS 1940 - Storage and Handling of Flammable and Combustible Liquids of 2004.*

(A4-2) *The on-site storage of corrosive liquids must be in accordance with Section 5.7 of AS 3780 - Storage and Handling of Corrosive Substances 1994.*

Definitions

(A5-1) *Words and phrases used throughout this environmental authority are defined in Schedule H – Definitions. Where a definition for a term used in this environmental authority is sought and the term is not defined within this environmental authority, the definitions in the Environmental Protection Act 1994, its Regulations and Environmental Protection Policies must be used.*

6.2 AIR

6.2.1 Environmental Value

Air quality typical of a rural environment compromised infrequently by diffuse dust from surrounding grazing and mineral exploration activities.

6.2.2 Description of Environmental Value

The nearest non Project related sensitive place that could be potentially impacted by the Project is approximately 30 km away at the Mount Gordon mine camp. Due to the distance of the sensitive receiver from the operations, the limited air emissions from the mining and processing activities and the control strategies to be employed, it is unlikely that the operations would have any significant effect on the air quality at this receiver.

6.2.3 Assessment of Impacts on the Environmental Values

The potential air quality impacts from the activities at the Project may include:

- Air emissions from diesel generators;
- Air emissions from company vehicles and heavy equipment;
- Dust from vehicle movements on unsealed roads;
- Dust from clearing activities;
- Dust generated from disturbed areas on the leases such as waste rock dumps;
- Dust from blasting and mining of open cut pits; and
- Dust from materials handling and crushing on the leases.

All potential air contaminants are from fugitive sources and therefore there will be no point source releases on the Project.

The mining and processing activities on the Project will not produce any significant odour. The only activities to be conducted that could potentially cause odour would be the disposal of putrescible wastes and the sewage treatment facilities. Given the distance of the nearest residence from these activities, it is highly unlikely that odour nuisance will occur.

6.2.4 Proposed Environmental Protection Objective

To ensure that the local ambient air quality is maintained and that emissions from the Project do not impact on sensitive places.

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6.2.5 Control Strategies

Control strategies will include:

- A complaints register will be maintained to record and investigate all bona fide complaints;
- Ongoing rehabilitation and revegetation of the site;
- Minimisation of disturbed areas;
- Limited vehicle speed within infrastructure areas and mine access roads;
- Gaseous emissions from the diesel generators, vehicles and earthmoving equipment will be minimised by ensuring that all equipment is regularly serviced and well maintained so that fuel combustion occurs at optimal efficiency;
- The heap leach pads will be kept damp by the irrigation system and therefore dust is not likely to be generated from this area;
- Disturbed areas on the lease will be rehabilitated progressively to prevent dust generation;
- Stockpiles and internal unsealed roads will be watered to prevent the generation of excessive dust; and
- Putrescible waste will be covered on a regular basis (at least weekly) to reduce odour.

6.2.6 Proposed EA Conditions using Measurable Indicators and Standards

Dust Nuisance

- (B1-1) *Subject to Conditions (B1-2) and (B1-3) the release of dust or particulate matter or both resulting from the mining activity must not cause an environmental nuisance at any sensitive or commercial place.*
- (B1-2) *When requested by the administering authority, dust and particulate monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within 14 days to the administering authority following completion of monitoring.*
- (B1-3) *If the environmental authority holder can provide evidence through monitoring that the following limits are not being exceeded then the holder is not in breach of (B1-1):*
- a) *Dust deposition of 120 milligrams per square metre per day, averaged over one month, when monitored in accordance with AS 3580.10.1 Methods for sampling and analysis of ambient air - Determination of particulates - Deposited matter - Gravimetric method of 1991.*
- (B1-4) *If monitoring indicates exceedence of the relevant limits in Condition (B1-3), then the environmental authority holder must:*
- a) *address the complaint including the use of appropriate dispute resolution if required; or*
- b) *immediately implement dust abatement measures so that emissions of dust from the activity do not result in further environmental nuisance.*

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Odour Nuisance

- (B2-1) *Subject to condition (B2-2), the release of noxious or offensive odour(s) or any other noxious or offensive airborne contaminant(s) resulting from the mining activity must not cause an environmental nuisance at any sensitive or commercial place.*
- (B2-2) *When requested by the administering authority, odour monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within 14 days to the administering authority following completion of monitoring.*
- (B2-3) *If monitoring indicates Condition (B2-1) is not being met then the environmental authority holder must:*
- a) address the complaint including the use of appropriate dispute resolution if required; or*
 - b) immediately implement odour abatement measures so that emissions of odour from the activity do not result in further environmental nuisance.*

6.3 WATER MANAGEMENT

6.3.1 Environmental Value

Ephemeral surface water in local watercourses is potentially a source of water for stock and is of environmental value to the surrounding grazing industry, the local community and native flora and fauna.

The groundwater quality is of environmental value to the local grazing industry and therefore protection of existing groundwater quality must be maintained to ensure ongoing and sustainable use of this resource.

6.3.2 Description of Environmental Value

Stream sediments, surface water and groundwater on the Project are described in Sections 3.5, 3.6 and 3.7 respectively, of this EM Plan.

6.3.3 Assessment of Impacts on the Environmental Values

Surface Water

The potential surface water quality impacts from activities on the Project include surface water runoff containing elevated concentrations of sediment, Total Dissolved Solids (TDS), sulphate, metals and low pH water from areas such as:

- Stockpiles of waste rock and ore;
- Heap leach pads, process water ponds and stormwater ponds;
- Workshops, hydrocarbon and chemical storage areas; and
- Sewage treatment plant.

Stream diversions around mine infrastructure and workings may also have the potential to effect water quality and flows downstream.

Groundwater

The potential groundwater water quality impacts from the Project activities could include infiltration of process water, mine water, sewage water or leachate to the groundwater containing elevated concentrations of TDS, sulphate, metals and low pH water from areas such as:

- Voids containing pit water;
- Waste rock dumps and stockpiles;
- Heap leach pads, process water ponds and stormwater ponds; and
- Septic systems or the sewage treatment plant.

6.3.4 Proposed Environmental Protection Objective

To prevent degradation of water quality in the ephemeral creeks downstream of the Project and the local groundwater aquifer.

6.3.5 Control Strategies

Control strategies will include:

- Clean stormwater runoff will be separated from contaminated stormwater by the use of diversion bunds and drains around the processing activities, mine workings and waste rock dumps. Measures will be employed to not significantly increase the volume or flow velocities of waters being diverted;
- The heap leach pad, process water ponds, stormwater ponds and channels will be completely contained with a 1.5 mm thick HDPE liner, 100 % weld tested;
- The process water and stormwater ponds will be designed as described in Section 4.6.4 of this EM Plan to provide for contingency measures to prevent overtopping in large rainfall events or if overtopping does occur prevent environmental harm downstream;
- All spills of fuels or chemicals will be cleaned up as soon as possible. Contaminated areas will be remediated in accordance with relevant guidelines and standards;
- A spill kit containing absorbent material for fuels and chemicals contained on the leases will be maintained;
- Fuel and chemical storage facilities will be contained and operated as per the relevant Australian Standard.
- Groundwater monitoring will be conducted on the Project to determine background water quality and any change in quality that may be due to the operations. The total groundwater monitoring network in the vicinity of the plant and heap leach area will (assuming that groundwater is a subdued reflection of surface topography with a westerly flowing surface drainage) comprise eight (8) downstream monitoring bores, and six (6) upstream or heap leach peripheral bores;
- The heap leach pads, process water ponds and stormwater ponds will include a leak detection and control system. For ponds, this will consist of leak detection drains being installed under pond liners and connected to down batter to the leak detection wells installed at approximately 50 m centres around the walls of the ponds. For the heap leach pad, a single detection drain will be installed down the low side of each 50m wide panel. The bottom end of this drain will be extended under the access road and the solution W-drains, to a monitoring stand pipe on the western side of the W-drains. The reasons for any increases in contaminants above the designated standards will be investigated and corrective actions implemented if necessary. The results of the investigation and mitigation strategies, if necessary, will be reported to the QEPA.
- Each sediment dam will have a filtered pipe as a primary outlet from the pond for gradual release of collected water over a 48 hour period. The outlet pipe will run through a wet well manhole beside the downstream channel where a Rising Stream Sampler will be mounted.

Each pond will be provided with an overflow spillway to cater for storm events greater than the 10 year design storage event.

- Downstream water quality will be conducted in all streams that could be potentially impacted by mine activities on a regular basis. Upstream water quality monitoring will also occur to provide further baseline data for the Project. The reasons for any increases in contaminants above the designated standards will be investigated and corrective actions implemented if necessary. The results of the investigation and mitigation strategies, if necessary, will be reported to the QEPA.
- Septic systems and treatments plants will be maintained on a regular basis, including pumping out when necessary, to maintain optimum efficiency;
- Water monitoring will be conducted annually to determine the water quality in any pit voids;
- Where water quality in voids is not suitable for stock drinking water, access by stock to this water will be prevented;
- Any land disturbance within streams beds and adjacent to their bank will be kept to a minimum and stabilised immediately on completion of works;
- All major land disturbances on the Project that may have the potential to produce soil erosion or excessive sediment during storm events (i.e. waste rock dumps) will be drained via sediment traps to drop out suspended sediment prior to discharge of stormwater to natural stream systems;
- Progressive rehabilitation of land disturbances during the Project life will be undertaken where possible to reduce the potential for excessive sediment loads from disturbed land;
- An annual stream sediment and morphology monitoring program will be conducted for all streams downstream of any mining or infrastructure related disturbances once Project construction has commenced. The monitoring program will include an adequate number of upstream background sites so that natural variations in stream sediment quality and morphology are also monitored;
- Should the stream sediment monitoring program detect metal concentrations downstream of mining activities higher than the low or high trigger values, then an investigation into the likely causes will be initiated. The results of the investigation and mitigation strategies, if necessary, will be reported to the QEPA; and
- Waste rock dumps and the ROM pad will be drained via sediment traps to remove suspended materials prior to discharge.

6.3.6 Proposed EA Conditions using Measurable Indicators and Standards

Release to Waters

- (C1-1) *Receiving waters affected by the release of process water or storm water contaminated by the mining activities or both must be monitored at the locations and frequencies defined in Table 12 and Figure 12 and the results of the test sites comply with the contaminant limits defined in Table 14.*



Table 12: Schedule C - Receiving Water Monitoring Locations and Frequency

Monitoring point	Easting (AMG 84, Zone 54)	Northing (AMG 84, Zone 54)	Monitoring frequency
MKUS 1 – reference site*	305625	7797450	Each flow event.
MKUS 2 – reference site*	TBD	TBD	Each flow event.
MKDS 1 – test site	301160	7800135	Each flow event.
MKDS 2 – test site	306366	7798356	Each flow event.
MKDS 3 – test site	306370	7798363	Each flow event.
MKDS 4 – test site	301300	7797255	Each flow event.

NOTE: This does not apply to dams containing hazardous waste

*Reference sites must:

- a) be from the same biogeographic and climatic region;
- b) have similar geology, soil types and topography;
- c) contain a range of habitats similar to those at the test sites;
- d) be of a similar follow regime; and
- e) not be so close to the test sites that any disturbances at the test site also results in a change at the reference site.

TBD- to be determined and provided to the QEPA prior to commencement of mining.

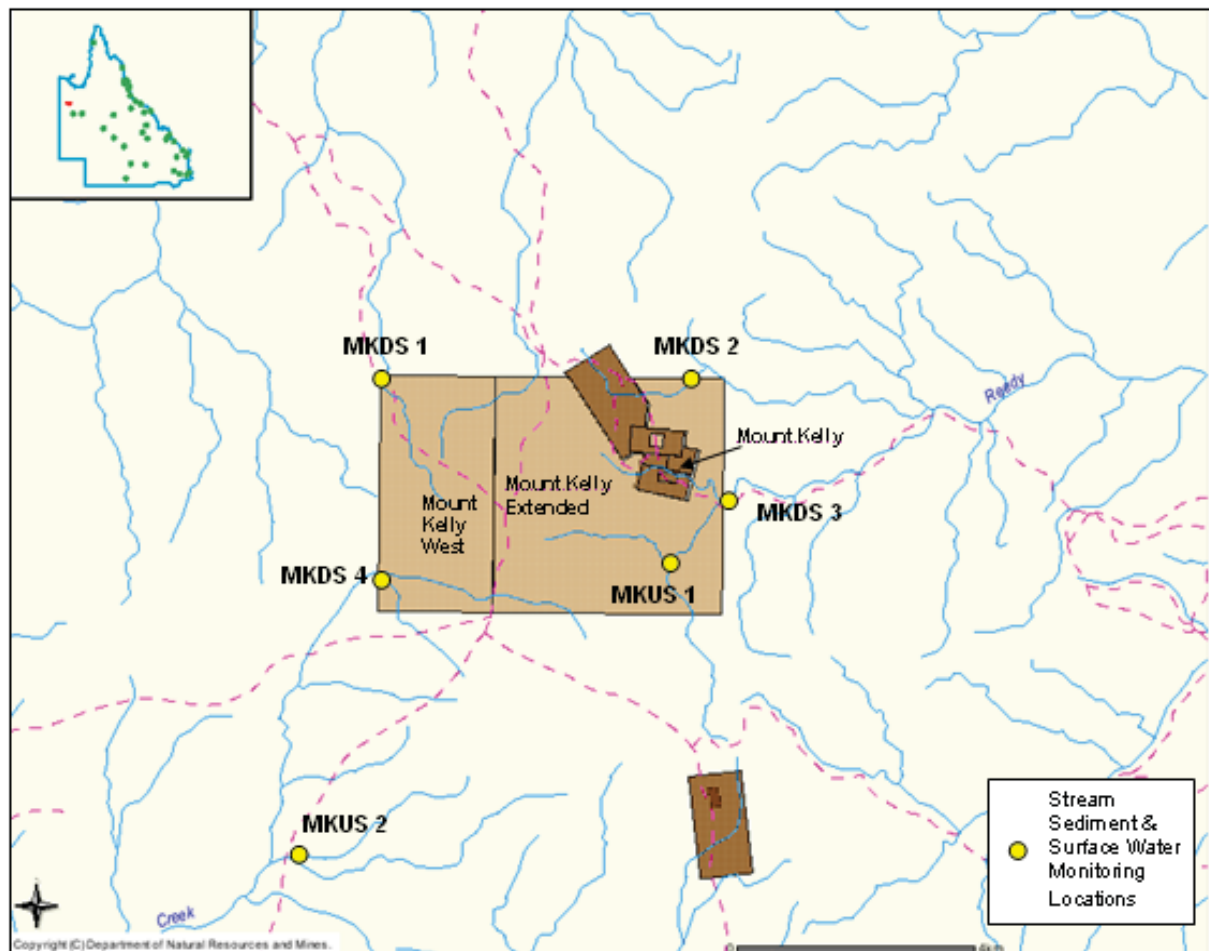


Figure 12: Surface Water and Stream Sediment Monitoring Locations

(C1-2) Subject to Condition (C1-1), if the receiving water contaminant trigger levels defined in Table 13 are exceeded at the test sites then the environmental authority holder must complete an investigation into the potential for environmental harm and notify the administering authority within 3 months of receiving the analysis results.

Table 13: Schedule C - Receiving Water Contaminant Trigger Levels

Parameter	Units	Level	Trigger Type
pH	pH units	6-8 ¹	Range
EC	µS/cm	250 ¹	Maximum
Aluminium	mg/l	2.5 ²	Maximum
Arsenic	mg/l	0.25 ²	Maximum
Boron	mg/l	0.37 ³	Maximum
Cadmium	mg/l	0.005 ²	Maximum
Chromium	mg/l	0.5 ²	Maximum
Cobalt	mg/l	0.5 ²	Maximum
Copper	mg/l	0.5 ²	Maximum
Fluoride	mg/l	1 ²	Maximum
Lead	mg/l	0.05 ²	Maximum
Manganese	mg/l	1.9 ³	Maximum
Mercury	mg/l	0.001 ²	Maximum
Molybdenum	mg/l	0.075 ²	Maximum
Nickel	mg/l	0.5 ²	Maximum
Sulphate	mg/l	500 ²	Maximum
Selenium	mg/l	0.01 ²	Maximum
Zinc	mg/l	10 ²	Maximum

¹Contaminant trigger limits are based on Table 3.3.4 and 3.3.5 of Aquatic Ecosystems ANZECC (2000).

²Contaminant trigger limits are based on 50% of the contaminant limits defined in the ANZECC (2000) Livestock Drinking Water and are to be analysed as Total Metals (unfiltered).

³Contaminant trigger limits based on Table 3.4.1 of Aquatic Ecosystems ANZECC (2000) and are to be analysed as Dissolved Metal (filtered).

Table 14: Schedule C - Receiving Water Contaminant Limits

Parameter	Units	Limit	Trigger Type
pH	pH units	6 - 9	Range
TDS	mg/l	4,000	Maximum
Aluminium	mg/l	5	Maximum
Arsenic	mg/l	0.5	Maximum
Boron	mg/l	5	Maximum
Cadmium	mg/l	0.01	Maximum
Chromium	mg/l	1	Maximum
Cobalt	mg/l	1	Maximum
Copper	mg/l	1	Maximum
Fluoride	mg/l	2	Maximum
Lead	mg/l	0.1	Maximum
Mercury	mg/l	0.002	Maximum
Molybdenum	mg/l	0.15	Maximum
Nickel	mg/l	1	Maximum
Sulphate	mg/l	1,000	Maximum
Selenium	mg/l	0.02	Maximum
Zinc	mg/l	20	Maximum

Contaminant limits are based on ANZECC (2000) Livestock Drinking Water and are to be analysed as Total Metals (unfiltered).

End of Pipe Release

(C1-3) End of pipe release limits for storm water contaminated by mining activities must be monitored at the locations and frequencies defined in Table 15 and Figures 8 and 9 and comply with the contaminant limits defined in Table 16.

Table 15: Schedule C - End of Pipe Monitoring Locations and Frequency)

Monitoring point	Easting (AMG 84, Zone 54)	Northing (AMG 84, Zone 54)	Monitoring frequency
Mount Clarke ROM Area Sediment Dam	303834	7799496	Each flow event
Mount Clarke Pit Area Sediment Dam	305336	7799592	Each flow event
Mount Clarke/Flying Horse Sediment Dam	305887	7798726	Each flow event
Process Plant ROM Pad Sediment Dam 1	303040	7798656	Each flow event
Process Plant ROM Pad Sediment Dam 2	302905	7798900	Each flow event
Process Plant ROM Pad Sediment Dam 3	302771	7799010	Each flow event

NOTE: This does not apply to dams containing hazardous waste.

Table 16: Schedule C - End of Pipe Contaminant Release Limits

Parameter	Units	Minimum	Maximum	Limit Type
pH	pH	6	9	Range
TDS	mg/L	N/A	4000	Maximum
Sulphate	mg/L	N/A	1000	Maximum
Arsenic	mg/L	N/A	5	Maximum
Cadmium	mg/L	N/A	0.01	Maximum
Chromium	mg/L	N/A	1	Maximum
Cobalt	mg/L	N/A	1	Maximum
Copper	mg/L	N/A	1	Maximum
Lead	mg/L	N/A	0.1	Maximum
Mercury	mg/L	N/A	0.002	Maximum
Zinc	mg/L	N/A	20	Maximum

Contaminant limits based on ANZECC (2000) Livestock drinking water quality and are analysed as Total metals (unfiltered)

NOTE: This does not apply to dams containing hazardous waste.

Dams Containing Hazardous Waste

(C1-4) Water storages containing process water and storm water contaminated by mining activities must be monitored at the locations and frequencies defined in Table 17 and samples analysed for the parameters defined in Table 16.

Table 17: Schedule C - Water Storage Monitoring Locations of Hazardous Dams

Monitoring point	Easting (AMG 84, Zone 54)	Northing (AMG 84, Zone 54)	Monitoring frequency
PLS Ponds	302000	7797450	Annually, March
ILS Pond	301900	7797450	Annually, March
Raffinate Pond Pre-Settler	301850	7797450	Annually, March
Raffinate Pond	301800	7797450	
Storm water Pond 1	301750	7797450	Annually, March
Storm water Pond 2	301750	7797350	Annually, March

(C1-5) In the event that the water quality within any dam containing hazardous waste does not comply with the contaminant limits defined in Table 16, implement measures to prevent access by all livestock and minimise access by fauna to the dam.

Released



Table 18: Schedule C – Water Quality in Dams Containing Hazardous Waste and Sediment Ponds

Parameter	Units	Limit	Trigger Type
pH	pH	4-9	Range
TDS	mg/l	5,000	Maximum
Boron	mg/l	5	Maximum
Sulphate	mg/l	1,000	Maximum
Aluminium	mg/l	5	Maximum
Arsenic	mg/l	0.5	Maximum
Cobalt	mg/l	1	Maximum
Copper	mg/l	1	Maximum
Lead	mg/l	0.1	Maximum
Nickel	mg/l	1	Maximum
Zinc	mg/l	20	Maximum

Contaminant limits are based on ANZECC (2000 Livestock drinking water quality and analysed for total metals (unfiltered))

(C1-6) The design storage allowance on **1 November** of each year for any dam containing hazardous waste constructed or operated within the operational land must comply with Table 19.

Table 19: Schedule C - Storage Design for Dams Containing Hazardous Waste

Storage Type	Design Storage Allowance ⁽¹⁾	Spillway Critical Design Storm ⁽²⁾	Mandatory Reporting Level ⁽³⁾
Stormwater Ponds 1 and 2 (Process water ponds overflow to the stormwater ponds. Spillways on Stormwater Pond 1 and 2)	1:100 Year ARI 2month wet season plus process inputs for the 2 month wet season	1: 1,000 Year ARI	1:100 year ARI, 72 hour event

Note ⁽¹⁾: The design storage allowance on 1 November of each year for any dam containing hazardous waste constructed within the operational land must be equivalent to the run-off from a 1 in 100 Year ARI, 2 month wet season plus process inputs for the equivalent wet season. Process inputs refers to hazardous mineral process waste and water, which is being disposed of in the storage facility.

Note ⁽²⁾: The critical design storm has a duration that produces the peak discharge for the catchments.

Note ⁽³⁾: The mandatory reporting level refers to the volume below the spillway crest, either the 1: 100 ARI 72 hour storm or the 1:100 ARI wave allowance, whichever is lower.

(C1-7) The spillway for any dam containing hazardous waste, constructed or operated within the operational land must be designed and maintained to withstand the peak flow from the spillway critical design storm defined in Table 19.

(C1-8) The holder of the environmental authority must mark the mandatory reporting level defined in Table 19 on the spillway of all dams containing hazardous waste within the operational land.

(C1-9) The holder of the environmental authority must notify the administering authority when the pondage level of the dam containing hazardous waste, reaches the mandatory reporting level defined in Table 19.

Stream Sediment Contaminant Levels

- (C2-1) All reasonable and practicable erosion protection measures and sediment control measures must be implemented and maintained to minimise erosion and the release of sediment.
- (C2-2) The bed of the receiving waters, affected by the release of process water and storm water contaminated by the mining activities must be monitored at the locations and frequencies defined in Table 20 and Figure 12.

Table 20: Schedule C - Receiving Stream Sediment Monitoring Locations and Frequency

Monitoring point	Easting (AMG 84, Zone 54)	Northing (AMG 84, Zone 54)	Monitoring frequency
MKUS 1 – reference site*	305625	7797450	May each year
MKUS 2 – reference site*	TBD	TBD	May each year
MKDS 1 – test site	301160	7800135	May each year
MKDS 2 – test site	306366	7798356	May each year
MKDS 3 – test site	306370	7798363	May each year
MKDS 4 – test site	301300	7797255	May each year

NOTE: This does not apply to dams containing hazardous waste

*Reference sites must:

- a) be from the same biogeographical and climatic region;
- b) have similar geology, soil types and topography;
- c) contain a range of habitats similar to those at the test sites;
- d) be of a similar flow regime; and
- e) not be so close to the test sites that any disturbances at the test site also results in a change at the reference site.

TBD- to be determined and provided to the QEPA prior to commencement of mining.

- (C2-3) Subject to Condition (C2-2), if the stream sediment contaminant trigger levels defined in Table 21 are exceeded then the environmental authority holder must complete an investigation into the potential for environmental harm and notify the administering authority within **3 months** of receiving the analysis results.

Table 21: Schedule C - Receiving Stream Sediment Contaminant Trigger Levels

Parameter	Units	Limit	Trigger Type
Antimony	mg/kg dry wt	2 ¹	Maximum
Arsenic	mg/kg dry wt	20 ¹	Maximum
Cadmium	mg/kg dry wt	1.5 ¹	Maximum
Chromium	mg/kg dry wt	80 ¹	Maximum
Copper	mg/kg dry wt	100 ²	Maximum
Lead	mg/kg dry wt	50 ¹	Maximum
Nickel	mg/kg dry wt	21 ¹	Maximum
Silver	mg/kg dry wt	1 ¹	Maximum
Zinc	mg/kg dry wt	200 ¹	Maximum
Mercury	mg/kg dry wt	0.15 ¹	Maximum

¹ ANZECC (2000) Aquatic Ecosystems: ISQG Low trigger values, Table 3.5.1.

² Site specific trigger value as calculated in section 3.5 of this EM Plan.

- (C2-4) *Subject to Condition (C2-2), stream sediment contaminant limits must not exceed the contaminant limits defined in Schedule C -Table 22.*

Table 22: Schedule C - Receiving Stream Sediment Contaminant Limits

Parameter	Units	Limit	Trigger Type
Antimony	mg/kg dry wt	25 ¹	Maximum
Arsenic	mg/kg dry wt	70 ¹	Maximum
Cadmium	mg/kg dry wt	10 ¹	Maximum
Chromium	mg/kg dry wt	370 ¹	Maximum
Copper	mg/kg dry wt	120 ²	Maximum
Lead	mg/kg dry wt	220 ¹	Maximum
Nickel	mg/kg dry wt	52 ¹	Maximum
Silver	mg/kg dry wt	3.7 ¹	Maximum
Zinc	mg/kg dry wt	410 ¹	Maximum
Mercury	mg/kg dry wt	1 ¹	Maximum

¹ ANZECC (2000) *Aquatic Ecosystems: ISQG High values, Table 3.5.1.*

² Site specific trigger value as calculated in section 3.5 of this EM Plan.

- (C2-5) *All stream sediment sampling must be undertaken in accordance with AS 5667.1 Guidance on Sampling of Bottom Sediments of 1998.*

Sewage Effluent

- (C3-1) *All effluent released from the treatment plant must be monitored at the frequency and for the parameters specified in Table 23.*

Table 23: Schedule C - Sewage Effluent Quality Targets for Dust Suppression

Quality characteristics	Release limit	Units	Limit type	Monitoring frequency
pH	6.5 – 8.5	pH	Range	Quarterly
Faecal Coliforms, based on the average of a minimum of five samples collected	1,000	Colonies per 100 millilitres	Max	Quarterly

- (C3-2) *Sewage effluent used for dust suppression must not exceed sewage effluent release limits defined in Schedule C - Table 23.*
- (C3-3) *Sewage effluent used for dust suppression must not cause spray drift or over spray to any sensitive or commercial place, and must not be applied at a rate that causes pooling, ponding and/or runoff of any effluent irrigated.*
- (C3-4) *Sewage effluent from sewage treatment facilities must be reused or evaporated and must not be directly released from the sewage treatment plant to any water way or drainage line.*

Groundwater

(C4-1) Ground water, affected by the mining activities must be monitored at the locations and frequencies defined in Table 24 and Figure 13.

Table 24: Schedule C - Groundwater Monitoring Locations and Frequency

Monitoring point	Easting (AMG 84, Zone 54)	Northing (AMG 84, Zone 54)	Surface RL (m)	Monitoring frequency
LA MB01 (process plant) – reference site	302484	7796800	TBD	Monthly
LA MB02 (process plant) – reference site	302891	7797385	TBD	Monthly
LA MB03 (process plant) – reference site	302128	7797950	TBD	Monthly
LA MB04 (process plant)	TBD	TBD	TBD	Monthly
LA MB05 (process plant)	TBD	TBD	TBD	Monthly
LA MB06 (process plant)	TBD	TBD	TBD	Monthly
LA MB07 (process plant)	TBD	TBD	TBD	Monthly
LA MB08 (process plant)	TBD	TBD	TBD	Monthly
LA MB09 (process plant)	TBD	TBD	TBD	Monthly
LA MB10 (process plant)	TBD	TBD	TBD	Monthly
LA MB11 (process plant)	TBD	TBD	TBD	Monthly
LA MB12 (process plant)	TBD	TBD	TBD	Monthly
LA MB13 (process plant)	TBD	TBD	TBD	Monthly
LA MB14 (process plant)	TBD	TBD	TBD	Monthly
MK MB01 (pit area)	305360	7799013	315.467	Quarterly
MK PB01 (pit area)	305356	7799019	315.424	Quarterly

TBD – to be determined.

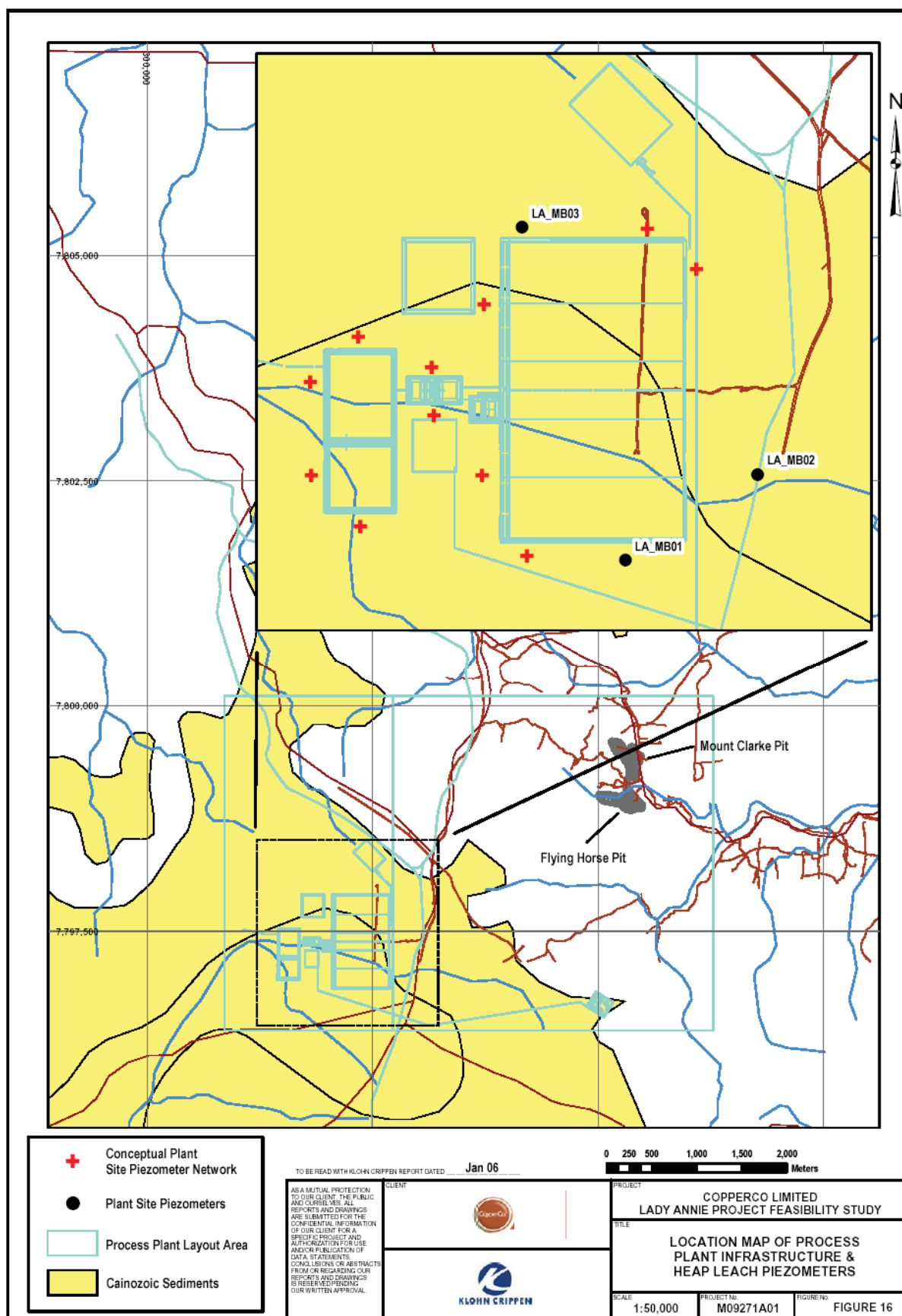


Figure 13: Location of Process Plant Leak Detection Bores

- (C4-2) Subject to Condition (C4-1), if the groundwater contaminant trigger levels defined in Table 25 are exceeded then the environmental authority holder must complete an investigation into the potential for environmental harm and notify the administering authority within **3 months** of receiving the analysis results.

Table 25: Schedule C - Groundwater Contaminant Trigger Levels

Parameter	Units	Limit	Trigger Type
pH	pH units	6-8 ¹	Range
TDS	mg/l	2,000 ²	Maximum
Aluminium	mg/l	2.5 ²	Maximum
Arsenic	mg/l	0.25 ²	Maximum
Boron	mg/l	0.37 ³	Maximum
Cadmium	mg/l	0.005 ²	Maximum
Chromium	mg/l	0.5 ²	Maximum
Cobalt	mg/l	0.5 ²	Maximum
Copper	mg/l	0.5 ²	Maximum
Fluoride	mg/l	1 ²	Maximum
Lead	mg/l	0.05 ²	Maximum
Manganese	mg/l	1.9 ³	Maximum
Mercury	mg/l	0.001 ²	Maximum
Molybdenum	mg/l	0.075 ²	Maximum
Nickel	mg/l	0.5 ²	Maximum
Sulphate	mg/l	500 ²	Maximum
Selenium	mg/l	0.01 ²	Maximum
Zinc	mg/l	10 ²	Maximum

¹Contaminant trigger limits are based on Table 3.3.4 and 3.3.5 of Aquatic Ecosystems ANZECC (2000).

²Contaminant trigger limits are based on 50% of the contaminant limits defined in the ANZECC (2000) Livestock Drinking Water and are to be analysed as Total Metals (unfiltered).

³Contaminant trigger limits based on Table 3.4.1 of Aquatic Ecosystems ANZECC (2000)

(C4-3) Subject to Condition (C4-1), groundwater contaminant limits must not exceed the contaminant limits defined in Schedule C -Table 26.

Table 26: Schedule C - Groundwater Contaminant Limits

Parameter	Units	Limit	Trigger Type
pH	pH units	6 - 9	Range
TDS	mg/l	4,000	Maximum
Aluminium	mg/l	5	Maximum
Arsenic	mg/l	0.5	Maximum
Boron	mg/l	5	Maximum
Cadmium	mg/l	0.01	Maximum
Chromium	mg/l	1	Maximum
Cobalt	mg/l	1	Maximum
Copper	mg/l	1	Maximum
Fluoride	mg/l	2	Maximum
Lead	mg/l	0.1	Maximum
Mercury	mg/l	0.002	Maximum
Molybdenum	mg/l	0.15	Maximum
Nickel	mg/l	1	Maximum
Sulphate	mg/l	1,000	Maximum
Selenium	mg/l	0.02	Maximum
Zinc	mg/l	20	Maximum

Contaminant limits are based on ANZECC (2000) Livestock Drinking Water and are to be analysed as Total Metals (unfiltered).

(C4-4) The method of water sampling required by this environmental authority must comply with that set out in the latest edition of the Environmental Protection Agency's Water Quality Sampling Manual.

Voids

(C5-1) Water quality in mining voids and final voids must be monitored at the locations and frequencies defined in Table 27 and for the parameters detailed in Table 28

(C5-2) In the event that water quality within the mining voids or final voids does not comply with the contaminant limits defined in Table 28, implement measures to prevent access by all livestock and minimise access by fauna to the void.

Table 27: Schedule C - Voids Monitoring Locations and Frequency

Monitoring point	Monitoring frequency
Mount Kelly/Flying Horse pit	Annually
Mount Clarke pit	Annually

Table 28: Schedule C - Void Water Quality Limits

Parameter	Units	Limit	Trigger Type
pH	pH units	6 - 9	Range
TDS	mg/l	4,000	Maximum
Aluminium	mg/l	5	Maximum
Arsenic	mg/l	0.5	Maximum
Boron	mg/l	5	Maximum
Cadmium	mg/l	0.01	Maximum
Chromium	mg/l	1	Maximum
Cobalt	mg/l	1	Maximum
Copper	mg/l	1	Maximum
Fluoride	mg/l	2	Maximum
Lead	mg/l	0.1	Maximum
Mercury	mg/l	0.002	Maximum
Molybdenum	mg/l	0.15	Maximum
Nickel	mg/l	1	Maximum
Sulphate	mg/l	1,000	Maximum
Selenium	mg/l	0.02	Maximum
Zinc	mg/l	20	Maximum

Contaminant limits are based on ANZECC (2000) Livestock Drinking Water and are to be analysed as Total Metals (unfiltered).

Acid Rock Drainage and Leachate Management

(C6-1) *Subject to the release limits defined in Schedule C all reasonable and practicable measures must be implemented to prevent hazardous leachate being directly or indirectly released or likely to be released as a result of the activity to any groundwater or watercourse.*

6.4 NOISE AND VIBRATION

6.4.1 Environmental Value

The existing ambient noise level is of environmental value to the rural residences surrounding the Project area. The maintenance of an acoustic environment typical of a rural environment at noise sensitive localities must be achieved.

6.4.2 Description of Environmental Values

The nearest non Project related sensitive place that could be potentially impacted by the Project is approximately 30 km away at the Mount Gordon mine camp. Due to the distance of the sensitive receiver from the operations, the limited noise emissions from the mining and processing activities and the control strategies to be employed, it is unlikely that the operations would have any significant effect on the ambient noise environment at this receiver.

6.4.3 Assessment of Impacts on the Environmental Values

Potential noise and vibration impacts from the Project activities could include:

- Light and heavy vehicles on and accessing the Project;
- Blasting activities for open cut mining;
- Open cut mining activities (excavation, hauling, drilling etc);
- Crushing ore; and
- Conveying and stacking ore.

6.4.4 Proposed Environmental Protection Objective

To ensure that the local ambient noise level is maintained and that noise emissions from the Project do not impact on sensitive places.

6.4.5 Control Strategies

Noise and vibration from the operations will be minimised by:

- Maintaining the any diesel generators in proper working order to prevent unnecessary noise being emitted;
- Ensuring that vehicle mufflers are fitted to all heavy and light vehicles;
- Maintaining the process plant in proper working order to prevent unnecessary noise being emitted; and
- Conducting blasting activities only during daylight hours.

6.4.6 Proposed EA Conditions using Measurable Indicators and Standards

Noise Nuisance

- (D1-1) *Subject to Conditions (D1-2) and (D1-3) noise from the mining activity must not cause an environmental nuisance, at any sensitive or commercial place.*
- (D1-2) *When requested by the administering authority, noise monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within 14 days to the administering authority following completion of monitoring.*
- (D1-3) *The method of measurement and reporting of noise levels must comply with the latest edition of the Environmental Protection Agency's Noise Measurement Manual.*

Vibration Nuisance

- (D2-1) *Subject to Conditions (D2-2) vibration from the mining activity must not cause an environmental nuisance, at any sensitive or commercial place.*
- (D2-2) *When requested by the administering authority, vibration monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within 14 days to the administering authority following completion of monitoring.*

6.5 WASTE MANAGEMENT

6.5.1 Environmental Value

The integrity of ecological processes and associated ecosystems which may be disrupted by waste materials and from the process of waste generation.

6.5.2 Description of Environmental Value

The Project will build on the four tiered waste management strategy incorporating in order of preference, the following principles of:

- Waste minimisation;
- Waste reuse/recycling;
- Waste treatment; and
- Waste disposal.

The implementation of these principles will be dictated by the availability of markets and practicabilities. This strategy will be developed in accordance with *Environmental Protection (Waste) Policy 2000*.

A waste rock characterisation study has been completed for the Project and is described in Section 3.8 of this EM Plan. All waste rock samples analysed were determined as Non Acid Forming.

6.5.3 Assessment of Impacts on the Environmental Values

Waste disposal may potentially impact on the environment in the following ways:

- Spills of hydrocarbons or chemicals may result in contamination of soil, surface water or groundwater. The risk of such contamination is reduced through a range of management strategies, including the use and maintenance of bunds in chemical and hydrocarbon storage areas;
- If used tyres are stockpiled a fire risk may be posed;
- Potential impacts from domestic and general waste may include generation of contaminated leachate as a result of rainfall infiltration through waste disposal sites;
- Increase in numbers of feral animals and vermin around waste disposal sites; and
- Risk of vector borne diseases and odour from waste disposal sites.

6.5.4 Proposed Environmental Protection Objective

Waste disposal will be managed to avoid any direct or indirect impacts on land, surface waters or groundwater.

6.5.5 Control Strategies

The following control strategies will be implemented:

- All waste hydrocarbons will be banded or drummed and removed by a licensed waste transporter for disposal at a licensed waste facility;
- Waste tyres will be stockpiled and disposed of so as to prevent a fire risk;
- Waste rock characterisation will be conducted on all future open cut pits prior to mining where this has not been previously carried out (**Milestone 7**);
- Putrescible and general waste will be covered on a regular basis (at least weekly) to reduce the food supply to feral animals eg cats and wild dogs, breeding of insects and minimise the generation of odour; and
- A Waste Management Plan will be developed and a copy included and updated in the relevant Plan of Operations (**Milestone 6**).

6.5.6 Proposed EA Conditions using Measurable Indicators and Standards

Storage of Tyres

- (E1-1) *Tyres stored awaiting disposal or transport for take-back and, recycling, or waste-to-energy options - should be stockpiled in volumes less than 3m in height and 200m² in area and at least 10m from any other tyre storage area.*
- (E1-2) *All reasonable and practicable fire prevention measures must be implemented, including removal of grass and other materials within a 10m radius of the scrap tyre storage area.*

Disposal of Tyres

- (E2-2) *Disposing of scrap tyres resulting from the mining activities in waste rock dumps is acceptable, provided tyres are placed as deep in the waste rock as reasonably practicable.*
- (E2-3) *Scrap tyres resulting from the mining activities disposed within the operational land must not impede saturated aquifers or compromise the stability of the consolidated landform.*

Waste Management

- (E3-1) *A Waste Management Plan, in accordance with the Environmental Protection (Waste Management) Policy 2000, must be included in the Plan of Operations. The Waste Management Plan must include re-using and recycling where possible, and a program for safe recycling or disposal of all wastes, and a disposal procedure for hazardous wastes.*
- (E3-2) *Waste must not be burnt or allowed to be burnt on the licensed site unless permitted by an Environmental Authority*

Regulated Waste

- (E4-1) *All regulated waste received and removed from the site, that is over 250kg in weight, must be transported by a person who holds a current authority to transport such waste under the provisions of the Environmental Protection Act 1994.*
- (E4-2) *Except as otherwise provided by the conditions of this authority, all waste removed from the site must be taken to a facility that is lawfully allowed to accept such waste under the provisions of the Environmental Protection Act 1994.*

Waste Rock Characterisation

- (E5-1) *All areas to be mined must undergo a waste rock characterisation survey (where waste rock is to be disposed of on the surface) and a report submitted to the administering authority prior to mining where this survey has not previously been carried out.*

6.6 LAND MANAGEMENT

6.6.1 Environmental Value

The land within the Project site has a pre-mining land use of low-intensity grazing and native habitat and a pre-mining land suitability of Class 4 - 5.

6.6.2 Description of Environmental Value

A Soil and Land Suitability Study for the proposed Lady Annie and Mount Kelly Project Sites was undertaken by AARC in 2005. The study is summarised in Section 3.3 of this EM Plan and the full report is contained within Appendix A.

6.6.3 Assessment of Impacts on the Environmental Values

Potential impacts on land from the Project may include:

- Clearing of land on the Project which will result in the loss of vegetation and habitat;
- Clearing of land could potentially impact on areas of cultural heritage, nature conservation and land capability;
- Contamination of land from diesel or process water spills; and
- Reduction in land suitability of areas disturbed by the Project.

6.6.4 Proposed Environmental Protection Objectives

The following are proposed as the land management environmental protection objectives for the Project:

- Return the majority of disturbed land to a vegetation and habitat condition similar to the pre-existing condition of land suitability Class 4 – 5 and low intensity grazing or native habitat where appropriate;
- On rehabilitation of the Project, make disturbed areas geotechnically and erosionally stable to ensure that the proposed subsequent land use is not compromised by surface instability;
- Ensure that any land contamination on the Project is either removed or an Environmental Management Plan for the contamination formulated on decommissioning; and
- Ensure that constructed landforms such as heap leach pads and waste rock dump are geochemically stable to the extent that they do not impact on surface water or groundwater quality.

6.6.5 Control Strategies

Management strategies for the stripping and stockpiling of topsoil on areas to be affected by mining disturbances should include the following provision:

- Prior to the development of any new open cut pit, waste rock dump or infrastructure, vegetation and topsoil shall be removed from the footprint area and stockpiled;
- Large vegetation should be pushed first and windrowed along side the area where topsoil will be stockpiled;
- On scree slopes and steeper areas of the Project Sites (some areas mapped as the Mesa and Sandstone Mapping Unit) it may not be possible to remove topsoil of any significance prior to mining disturbances depth due to the rocky nature of the material;
- On shallower slopes of the Mesa and Sandstone Mapping Unit effort should be made to remove at least the top 10 - 20 cm of topsoil with smaller vegetation and grasses, prior to mining disturbances and stockpile the topsoil in windrows no higher than 2 m;
- On flatter areas of the Project (those mapped as Lowland and Gidgee) topsoil with smaller vegetation and grasses should be stripped to at least 20 cm in depth prior to mining disturbances and stockpiled into windrows no higher than 2 m; and
- Where necessary, topsoil stockpiles should be ripped and seeded to encourage water infiltration and prevent erosion. Topsoil should be respread on surfaces to be rehabilitated as soon as possible to benefit from the viability of the topsoil seed bank.

The following general land management control strategies will be implemented:

- Land clearing will be kept to the minimum required for the safe operation of the Project;
- Land to be cleared will be marked out prior to disturbance and where possible sensitive environmental or cultural heritage features avoided;
- The disturbed areas of the Project will be rehabilitated as indicated in this document;
- Land contamination risks will be reduced by ensuring that all chemical and hydrocarbon storage facilities are appropriately bunded and spills cleaned up immediately;
- All infrastructure and buildings will be dismantled and removed from the Project unless they are required by the landowner;
- Vegetation reference sites will be identified for the disturbed areas on the Project and rehabilitation completion criteria developed and submitted to the QEPAC for approval (**Milestone 8**);
- A register and map of all potentially contaminated sites and any remediation details, will be kept on site, updated regularly, and included in each Plan of Operations (**Milestone 9**); and
- A Spillage Management Plan and an Emergency Plan for all hazardous materials stored on-site, together with a description of suitable equipment and training, must be updated and included with each Plan of Operations (**Milestone 10**).

6.6.6 Proposed EA Conditions using Measurable Indicators and Standards

Rehabilitation Landform Criteria

- (F1-1) All areas significantly disturbed by mining activities must be rehabilitated to the final land description as defined in Tables 29 and 30.
- (F1-2) The holder of this environmental authority is to provide information on the Vegetation Reference Site identification for each land disturbance in Table 29 (Final Land Use and Rehabilitation Approval Schedule) and rehabilitation completion criteria to the administering authority by **30 June 2007**. All areas significantly disturbed by mining activities must be rehabilitated to a stable landform with a self-sustaining vegetation cover.
- (F1-3) Progressive rehabilitation must commence when areas become available within the operational land.

Table 29: Schedule F - Final Land Use and Rehabilitation Approval Schedule

Disturbance Category	Max. Area (ha)	Land Use		Land Suitability	
		PRE DISTURBANCE	POST DISTURBANCE	PRE DISTURBANCE	POST DISTURBANCE
Mount Kelly/Flying Horse Pit	13.2	Habitat	Water Storage	Class 5	Water Storage
Mount Kelly/Flying Horse Waste Rock Dump	28	Habitat	Habitat	Class 5	Class 5
Mount Kelly/Flying Horse Topsoil Stockpile	1.1	Habitat	Habitat	Class 5	Class 5
Mount Kelly/Flying Horse Sediment Dams	1.3	Habitat	Water Storage	Class 5	Water Storage
Mount Kelly/Flying Horse Diversion Drains	1.3	Habitat	LIG or diversion Habitat	Class 5	Class 5
Mount Clarke Pit	9.5	Habitat	Water Storage	Class 5	Water Storage
Mount Clarke Waste Rock Dump	16.3	Habitat/LIG	Habitat/LIG	Class 4 - 5	Class 4 - 5
Mount Clarke Low Grade Stockpile	5.4	Habitat/LIG	Habitat/LIG	Class 4 - 5	Class 4 - 5
Mount Clarke/Flying Horse/Mount Kelly ROM Storage & Live Rehandle	5.5	Habitat	Habitat/LIG	Class 4 - 5	Class 4 - 5
Mount Clarke Topsoil Stockpile	4.5	Habitat/LIG	Habitat/LIG	Class 4 - 5	Class 4 - 5
Mount Clarke Pit Area Sediment Dam	0.6	Habitat	Water Storage	Class 4 - 5	Water Storage
Mount Clarke ROM Area Sediment Dam	0.4	Habitat	Water Storage	Class 4 - 5	Water Storage
Mount Clarke – Diversion/Interception/Sediment Dam Drains	3.2	Habitat	LIG or diversion Habitat	Class 4 - 5	Class 4 - 5
Roads/Tracks	18.8	Existing tracks or LIG	Tracks for grazier or LIG	Class 4 - 5	Class 4 - 5
Accommodation Camp and Facilities	5	LIG	LIG	Class 4	Class 4
Sewage Plant and Pond	0.2	LIG	LIG	Class 4	Class 4

Disturbance Category	Max. Area (ha)	Land Use		Land Suitability	
		PRE DISTURBANCE	POST DISTURBANCE	PRE DISTURBANCE	POST DISTURBANCE
ROM Pad – at process plant	7.8	LIG	LIG	Class 4 - 5	Class 4 -5
Process plant and associated buildings	3.3	LIG	LIG	Class 4	Class 4
Overland Conveyor	1.8				
Workshop/Office Access Circuit Area	2.9	LIG	LIG	Class 4	Class 4
Heap Leach Pads – Stage 1 and 2	43.2	LIG	Habitat/LIG	Class 4	Class 4- 5
Process Water Ponds – PLS, ILS and Raffinate	3.4	LIG	Water storages	Class 4	Water storages
Stormwater Ponds 1 and 2	11.4	LIG	Water storages	Class 4	Water storages
Stormwater Pond spillway channel	0.7	LIG	LIG or diversion	Class 4	Class 4 -5
Raw Water Pond	0.6	LIG	LIG/Water storage	Class 4	Class 4 or water storage
Process Area Topsoil Stockpiles	9.7	LIG	LIG	Class 4	Class 4
Process Plant Drainage Diversions	2.7	LIG	LIG or diversion	Class 4	Class 4 - 5
Process Plant Sediment Ponds	1	LIG	LIG or ponds	Class 4 - 5	Class 4 - 5
Bulk Fill Stockpile	2.6	LIG	LIG	Class 4	Class 4
Pipelines and Powerlines (on lease)	1	LIG	LIG	Class 4 -5	Class 4 - 5
Rubbish Dumps	0.2	LIG	LIG	Class 4 - 5	Class 4 - 5
Concrete Batch Plant	0.3	LIG	LIG	Class 4	Class 4
Fuel Storage Area	0.3	LIG	LIG	Class 4	Class 4
Contractor Laydown Area	4.3	LIG	LIG	Class 4	Class 4
Exploration	5	LIG	LIG/Habitat	Class 4 - 5	Class 4 - 5
Construction Access (net of specific areas)	59.9	LIG	LIG/Habitat	Class 4 - 5	Class 4 - 5
Total	276.4				

LIG = Low Intensity Grazing

Table 30: Schedule F - Landform Design

Disturbance type	Slope range (%)	Projective surface area (ha)
Waste Rock Dumps and Low Grade Stockpile	33%-76% (1:3 to angle of repose)	49.7
Heap Leach Pads	<33% or 1:3	43.2
ROM area(s)	33%-76% (1:3 to angle of repose)	13.3

Residual Void Outcome

(F2-1) Residual voids must not cause any serious environmental harm to land, surface waters or any recognised groundwater aquifer, other than the environmental harm constituted by the existence of the residual void itself and subject to any other condition within this environmental authority.

Dams Containing Hazardous Waste

Description of Dam

(F3-1) The construction or operation of any dam containing hazardous waste within the operational land must comply with Table 31.

Table 31: Schedule F — Size and Purpose of Dams Containing Hazardous Waste

Name of Dam Containing Hazardous Waste ⁽¹⁾	Maximum Surface Area of Dam (ha)	Maximum Volume of Dam (m3)	Maximum Depth of Dam (m) ⁽²⁾	Purpose of Dam ⁽³⁾
Process Water Ponds (Raffinate Pre-Settler, Raffinate, ILS and PLS)	3.4	51,100	4.5	Storage of Process Solutions
Stormwater Pond 1 (Stage 1 only)	6.47	302,760	6.35	Storage of storm water runoff from processing area
Stormwater Pond 1 & 2 (Stage 2)	10.4	467,720	6.35	Storage of storm water runoff from processing area

Note ⁽¹⁾: The name of the dam containing hazardous waste should refer to the name of the dam e.g. process residue facility and decant dam.

Note ⁽²⁾: For dams that do not require a dam wall, input the maximum void depth e.g. where dams are formed by excavating below the land surface or backfilling a residual void.

Note ⁽³⁾: Purpose of the dam should outline the designed function, e.g. "the permanent containment of tailings resulting from the extraction of nickel, cobalt and other metals at the XYZ Refinery".

Location of Dam

(F3-2) The location of any dam containing hazardous waste within the licensed place must be located within the polygonal area defined by the co-ordinates defined in Table 32.

Table 32: Schedule F — Location of Dams Containing Hazardous Waste

Name of dam containing hazardous waste ⁽¹⁾	Easting (AMG 84, Zone 54)	Northing (AMG 84, Zone 54)
PLS Ponds, ILS, Raffinate Pre-settler and Raffinate Pond	301760	7797640
	302065	7797640
	302035	7797310
	301760	7797310
Stormwater Pond 1 and 2	301470	7797640
	301760	7797640
	301760	7797110
	301470	7797110
Heap Leach Pads	302065	7797945
	302720	7797945
	302720	7796825
	302035	7796825

Note ⁽¹⁾: A minimum of 3 control points is required to constrain the location of all activities associated with the dam containing hazardous waste. Additional infrastructure which forms part of any dam containing hazardous waste

may include appurtenant works consisting of tailings discharge pipelines, seepage collection systems, runoff diversion bunds, containment systems, pressure relief wells, decant and recycle water systems.

Released



Standards and Criteria

- (F3-3) *The holder of the environmental authority must design, construct, repair, maintain, operate and decommission the dams defined in Table 32 in accordance with an acknowledged design plan that must comply with the standard environmental conditions in the "Code of Environmental Compliance for High Hazard Dams Containing Hazardous Waste".*

Inspection of Dams

- (F3-4) *High hazard dams containing hazardous waste shall be inspected by a Registered Professional Engineer Queensland (RPEQ) prior to **1 November** each year or at any time if alarming, unusual or otherwise unsatisfactory conditions are observed.*
- (F3-5) *For each inspection, the engineer shall assess the condition of the dam and its foundations determine the hydraulic adequacy of the dam and assess the adequacy of the works with respect to dam safety.*
- (F3-6) *For each inspection, two copies of the engineer's report and any recommendations as to measures to be taken to ensure the integrity of the dam shall be furnished to the administering authority within **28 days** of the inspection.*

Decommissioning of Dam - Objective

- (F3-7) *Dams containing hazardous waste must not be abandoned and must be decommissioned to a situation where water can no longer be stored in the dams. The dams and their contained waste(s) must be stable, whereafter the dams are no longer dams and they become landforms on the operational land and must comply with the rehabilitation requirements of this environmental authority.*

Decommissioning of Dam – Documentation and Compliance

- (F3-8) *Decommissioning activities for dams must be documented in detail in the plan of operations under which the activities are to occur. Where the detailed documentation is not already contained in the Design Plan for the dam, the detailed documentation is considered to be an amendment to the design plan and must be submitted as an amendment to the design plan required by the "Code of Environmental Compliance for High Hazard Dams Containing Hazardous Waste".*

Infrastructure

- (F4-1) *All infrastructure, constructed by or for the environmental authority holder during the mining activities including water storage structures, must be removed from the site prior to mining lease surrender, except where agreed in writing by the post mining land owner / holder.*

NOTE: This is not applicable where the landowner/holder is also the environmental authority holder.

Contaminated Lands

- (F5-1) *A register and map of all potentially contaminated sites and any remediation details, must be kept on site, updated regularly, and included in each Plan of Operations.*
- (F5-2) *A Spillage Management Plan and an Emergency Plan for all hazardous materials stored on-site, together with a description of suitable equipment and training must be updated and included with each Plan of Operations.*
- (F5-3) *Materials Safety Data Sheets must be maintained for all chemicals on the site.*

6.7 COMMUNITY

6.7.1 Environmental Value

The social conditions in the region surrounding the Project are of environmental value.

6.7.2 Description of Environmental Values

The Project is relatively isolated and is located in a sparsely populated rural area typified by large land holdings where the surrounding land use is predominantly cattle grazing. Stakeholders and other groups or individuals with an interest in the operations include surrounding neighbours, Mount Isa City Council and State government departments, including Department of Natural Resources and Mines (DNRM) and QEPA.

CopperCo Limited has conducted extensive consultation with Native Title groups and will continue to do so as part of a proactive community consultation program and development of a Cultural Heritage Management Plan. CopperCo Limited also plans to undertake community consultation with relevant landholders in the region and will do so in the near future.

6.7.3 Assessment of Impacts on the Environmental Values

Considering the distance of the Project to the nearest residences, as well as the air, water, land management, waste management and noise control strategies outlined in this document, little or no impacts on the amenity and liveability of the area, access to services, and health and well-being of the community is expected.

The operations will have a positive impact on the economy of the local region and the state through payment of rates, purchase of consumables, use of service industries and payment of royalties and taxes. Community consultation with affected landholders will continue to be carried out as required throughout the life of mine.

6.7.4 Proposed Environmental Protection Objective

Mining activities will not cause negative impacts on the livelihood and well being of the local grazing industry or regional residences.

6.7.5 Control Strategies

A complaints register will be established and maintained.

6.7.6 Proposed EA Conditions using Measurable Indicators and Standards

Complaint response

(G1-1) *All complaints received must be recorded including details of complainant, reasons for the complaint, investigations undertaken, conclusions formed and actions taken. This information must be made available for inspection by the administering authority on request.*

6.8 CULTURAL HERITAGE

6.8.1 Environmental Value

Areas of indigenous cultural heritage on the Project site may be of significance to local indigenous people and Native Title claimants.

Areas of European cultural heritage on the Project may be of significance to the local and wider community and in gaining an understanding of early mine history in the area.

6.8.2 Description of Environmental Values

CopperCo Limited has conducted extensive consultation with Native Title groups and will continue to do so as part of a proactive community consultation program and development of a Cultural Heritage Management Plan. Due to the confidential nature of the results from the indigenous cultural heritage surveys information regarding these surveys will not be detailed in this EM Plan.

A European cultural heritage assessment was conducted for the Project by Gordon Grimwade & Associates – Heritage Consultants, on 29 October 2005 to ascertain the possible impacts of mining on non-indigenous cultural heritage (refer to Appendix E). This report is summarised in Section 3.9 of this EM Plan. There are no areas of significant European cultural heritage that require preserving on the Project.

6.8.3 Proposed Environmental Protection Objective

Where possible conserve areas of indigenous and European cultural heritage on the Project and develop and implement a Cultural Heritage Management Plan.

6.8.4 Control Strategies

A Cultural Heritage Management Plan will be developed and implemented for the Project (**Milestone 3**).

6.9 NATURE CONSERVATION

6.9.1 Identified Environmental Value

The ecological processes and native flora and fauna of the Project area are of environmental value.

6.9.2 Description of Environmental Value

AARC conducted a Flora and Fauna Assessment of the proposed Lady Annie and Mount Kelly Copper Projects in 2005. The report is summarised in Section 3.4 of this EM Plan and contained in full within Appendix B.

6.9.3 Assessment of Impacts on the Environmental Values

The following potential impacts on nature conservation values may occur:

- Land clearing and mining activities (noise and blasting) may reduce the available habitat for certain species of flora and fauna on the Project site; and
- The introduction of pest and weed species to the Project area.

6.9.4 Proposed Environmental Protection Objective

Management strategies will be developed to protect and minimise impact on any species of flora or fauna on the Project that is significant.

6.9.5 Control Strategies

Strategies to minimise the impacts on native flora and fauna and recommendations regarding rehabilitation of the Project Sites are outlined below.

- Although the vegetation within the Project is well-represented in the wider region, in recognition of the intrinsic value of extant native vegetation, every effort should be made to keep proposed disturbance areas to a minimum;
- To maintain the integrity of vegetated land not cleared, appropriate erosion and sediment controls are recommended to prevent sediment deposition in remaining habitats. Maintenance of retained areas of native vegetation would also provide a source of seed for mine rehabilitation works;
- Native vegetation removal should be conducted only after:
 - the areas to be cleared have been clearly delineated and identified to equipment operators and supervisors; and
 - appropriate erosion and sediment control structures are in place.

- Methodologies for the rehabilitation/re-vegetation works for the proposed Project will use the most appropriate species for the landscape elements of the site. Such methodologies should include habitat matching of species to ensure rehabilitation success.
- Native species endemic to the area should be used in the rehabilitation works on-site. In particular, species which will encourage the return of native fauna species such as nectar producing species (eg *Lophostemon grandiflorus*, *Corymbia terminalis* and *Eucalyptus camaldulensis*) should be used;
- Landforms will be contoured to resemble the original local topography;
- Infrastructure planning should avoid the creation of permanent, shallow water areas, such as septic and other tank overflows that form a permanent seep. These areas attract Cane Toads which are lethal to most snakes and other fauna species when ingested;
- The frequency of fires on the Project should not be increased as this may impact on potential habitat for species of conservation significance, including the Pictorella Mannikin. Consequently, it is recommended that measures are implemented to ensure that the potential for wild fire is minimised. This may include the establishment of a firebreak around the Project infrastructure to ensure the protection of sensitive areas. Burning off within the fire break is not recommended unless absolutely necessary; and
- A segment of the Staff Induction Program should be allocated to informing staff of the conservation values on the Project, to increase their awareness of the species present. This could include photographs, brief descriptions and management requirements of species of conservation significance, such as the Purple-necked Rock Wallaby.

Management of the Purple-necked Rock Wallabies

The following mitigation strategies are suggested for this species:

- Where major mine roads pass between two jump-ups which have been identified as suitable for the Purple-necked Rock Wallaby, “go-slow” areas should mitigate impacts associated with road strike;
- In the case that suitable shelter sites (caves, boulders or overhangs) are disturbed during mine operations, such sites should be replaced with appropriate artificial shelter sites. Artificial sites should include a variety of structures (eg open ended sections of concrete pipe and closed sections of concrete pipe, box culverts, suspended concrete slabs etc). An inventory of suitable shelter sites should be taken by a qualified ecologist prior to disturbance to determine targets. As these methods of habitat creation are untested, sites should be monitored in a systematic fashion and the most successful methods documented and adopted in future rehabilitation works;
- The diet of Purple-necked Rock Wallaby should be determined across the Project. This can be ascertained by faecal pellet analysis. Dietary analysis results should guide the revegetation of foraging habitat for this species;

- Structural and floristic data should be obtained for sites occupied by the Purple-necked Rock Wallaby. Rehabilitation targets should be set for the rehabilitation of habitat for this species in particular.

Management of Cave-roosting Bats

The Northern Leafnosed Bat and Troughtons Cave Bat are threatened species known from the Project Sites and other cave roosting species may be present. Prior to commencement of any mining activity, a suitably qualified Ecologist will conduct a survey of caves within the area of disturbance to determine if there are any habitats of conservation significance.

Artificial bat roosts may be constructed to compensate for the loss of any known roost sites or significant bat species. This would only be necessary where significant colonies are located. A significant colony would exhibit some, or all of the following attributes:

1. Presence of Rare or Threatened Bat species; and
2. Stable substrate which has a good prospect of long term permanency.

Management of Carpentarian Grasswren

As frequent burning for pastoralism apparently eliminates this species (Schodde, 1982, McKean and Martin, 1989), a change in fire regime is the most likely threat (McKean and Martin, 1989, Rowley and Russell, 1997). The most practical management strategy that can be adopted for this species is the development and encouragement of fire management that favours the Grass Wren. In this case the maintenance of patches of mature Spinifex should be the dominant objective.

6.10 CONTINUOUS IMPROVEMENT

The Project will develop and implement systems for continuous improvement such as:

- An Environmental Management System (EMS) to document procedures for environmental management and improvement on the Project (**Milestone 11**);
- An Environmental Monitoring Manual (EMM) to document procedures for environmental monitoring as described in this EM Plan and the EA conditions to ensure that they are conducted in line with relevant Australian Standards and guidelines (**Milestone 12**);
- An Internal Annual Monitoring Report to summarise and interpret the results of environmental monitoring programs on the Project and check compliance against EA standards (**Milestone 13**);
- An Annual Audit of compliance as described in Section 6.12 (**Milestone 14**).
- An Annual Improvement Plan to action any non-compliance items from the annual audit and develop programs for improving environmental performance beyond compliance (**Milestone 15**); and

Timing for achieving these systems is provide in Table 30.

6.11 STAFF TRAINING

The Project will have an induction Program (**Milestone 16**), which will include the following:

- Occupational Health and Safety;
- Identification of environmental issues relevant to the Project such as fuel storage and containment, spill response, land management and nature conservation;
- Issues of cultural heritage on the Project and responsibility of personnel not to disturb sites and to report any new cultural heritage material;
- Identification of weeds and pests on the Project and responsibility to report these to management;
- Fauna species of conservation significance such as the Purple-necked Rock Wallaby and Carpentarian Grass Wren on the Project and control strategies to prevent potential impacts; and
- Clear definition of the responsibilities of staff and contractors working on the Project, particularly those matters that can be directly impacted by staff practices (eg. waste management, storm water management and safety).

6.12 ENVIRONMENTAL AUDITING

Internal environmental audits will be conducted by qualified personnel to assess compliance of the Project with relevant permitting and statutory requirements and identify areas for improvement (**Milestone 14**). The following requirements will be audited on an annual basis:

- Confirmation that Project operations and activities comply with the those described in the current Plan of Operations;
- The Projects compliance with the EA conditions;
- Investigation of whether or not the Financial Assurance (Security Deposit) submitted to the Administering Authority as calculated in the Plan of Operations is still sufficient for the Project;
- Checking that the Nominated Performance Category in the Plan of Operations is still current; and
- Checking progress against milestones as described in this EM Plan.

6.13 ENVIRONMENTAL MANAGEMENT PLAN MILESTONES

The following Table 33 includes a summary of milestones as identified in this EM Plan and expected timing for their completion.

Table 33: Summary of Milestones

Milestone No.	Milestone Description	Timing for Completion
1	The Lady Annie deposit is not located on the Mount Kelly Project leases and will be the matter of separate application to the QEPA due to different tenure ownership. The Lady Annie Project will be combined into the Mount Kelly Project EA after grant of the Lady Annie Mining lease (ML).	January 2007
2	Submit a Plan of Operations and Financial Assurance for the Project prior to construction commencing.	July 2006
3	Development of a Cultural Heritage Management Plan in consultation with Native Title groups.	June 2006
4	Investigating alternative habitats for Purple-necked Rock Wallabies prior to Project construction.	Prior to Project construction
5	Conducting annual surveys to determine the success of alternative habitat for rock wallabies.	Annually
6	A Waste Management Plan for the Project will be developed and reported in the Plan of Operations to aid in the management and recycling of wastes from the site.	June 2006
7	Waste rock characterisation should be conducted on all future open cut pits prior to mining where this has not been previously carried out.	Before submitting the relevant Plan of Operations for mining the deposit in question.
8	Vegetation reference sites will be identified for the disturbed areas on the Project and rehabilitation completion criteria developed and submitted to the QEPA for approval.	June 2007
9	A register and map of all potentially contaminated sites and any remediation details, will be kept on site, updated regularly, and included in each Plan of Operations.	June 2006
10	A Spillage Management Plan and an Emergency Plan for all hazardous materials stored on-site, together with a description of suitable equipment and training must be updated and included with each Plan of Operations.	June 2006
11	Develop and implement an Environmental Management System (EMS).	September 2006
12	An Environmental Monitoring Manual (EMM) to document procedures for environmental monitoring as described in this EM Plan and the EA conditions to ensure that they are conducted in line with relevant Australian Standards and guidelines.	September 2006
13	Internal Annual Monitoring Report.	Annually in June

Milestone No.	Milestone Description	Timing for Completion
14	Annual Audit of Compliance.	Annually in June
15	An Annual Improvement Plan to action any non-compliance items from the annual audit and develop programs for improving environmental performance beyond compliance.	Annually in July
16	Develop and implement a Project Induction Program.	September 2006

7.0 BIBLIOGRAPHY

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DME (1995), *Site Water Management* guideline provided in *Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland*.

QEPA (2003), Guideline 8 – Preparing an EMOS for Non-Standard Mining Projects, Version March 2003.

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Sattler, P. and Williams, R. (eds) (1999), *The Conservation Status of Queensland's Bioregional Ecosystems*. Queensland Environmental Protection Agency, Queensland Government.



Environmental Protection Order (Varied)

Section 360 Environmental Protection Act 1994

This Environmental Protection Order is issued in accordance with section 360 of the Environmental Protection Act 1994.

Under the provisions of the *Environmental Protection Act 1994* an Environmental Protection Order is issued:

To: Lady Annie Operations Pty Ltd (ACN 076289097)
Attention Messrs Gary Peter Doran and David John Frank Lombe
Receiver Managers for Lady Annie Operations Pty Ltd
Deloitte Touche Tohmatsu

of: Woodside Plaza Level 14
240 St Georges Terrace
PERTH WA 6000

TAKE NOTICE that under the provisions of the *Environmental Protection Act 1994*, an Environmental Protection Order is issued to you by the administering authority. The administering authority is the Chief Executive of the Environmental Protection Agency (referred to below as the EPA).

The Environmental Protection Order (STAT 443) is issued in respect of the activities of Lady Annie Operations Pty Ltd and related entities conducted under Environmental Authority MIN100401006 (the EA) at premises/place on land described as ML5426, ML5435, ML5446, ML5447, ML5448, ML5474, ML5476, ML5478, ML90168, ML90169, ML90170, ML90178, ML901079, ML90184 (the mine), which is located approximately 100 kilometres north of Mount Isa to secure compliance by the person with the general environmental duty under section 319 of the *Environmental Protection Act 1994*.

A. Grounds

The Environmental Protection Order is issued on the following grounds:-

1. To secure compliance with the general environmental duty, which pursuant to section 319 of the *Environmental Protection Act 1994* ('the Act'), requires that a person must not carry out any activity that causes, or is likely to cause, environmental harm unless the person takes all reasonable and practicable measures to prevent or minimise the harm.

The facts and circumstances forming the grounds are:

2. Lady Annie operations carries out mining activities on the mine.
3. During normal operating conditions, the mining activities cause, or are likely to cause, environmental harm. The EA authorises the mining activity and limits the actual and potential environmental harm that can lawfully be caused.
4. Rainfall records indicate that between 1 January 2009 and 17 February 2009, approximately 1000 mm of rain has fallen on, or in the vicinity of, the mine.

3. During normal operating conditions, the mining activities cause, or are likely to cause, environmental harm. The EA authorises the mining activity and limits the actual and potential environmental harm that can lawfully be caused.
4. Rainfall records indicate that between 1 January 2009 and 17 February 2009, approximately 1000 mm of rain has fallen on, or in the vicinity of, the mine.
5. On 30 January 2009 and 7 February 2009 the EPA was advised by Jason Alexander of Lady Annie that discharges had occurred from the mine into Saga Creek. Saga Creek flows into Inca Creek, and then the Buckley River.
6. The EPA took water samples from Inca Creek on 23 February 2009. Insitu analysis of the water samples indicates that the water had low pH levels.
7. On 30 January 2009, Lady Annie provided the EPA with data relating to discharge water over the pond spillways. That data indicated that:
 - a. the water in Stormwater Pond 2 contained 0.04 g/l copper and had a pH of 4.26;
 - b. the water in the Stormwater Pond 2 spillway contained 0.22 g/l copper and had a pH of 2.51.
 - c. The depth of the water over the spillways was approximately 200mm, flow was approximately 12.1 cubic metres per second.
 - d. the water at monitoring point MKDSO4 had a pH of 3.45 and Electrical Conductivity of 862 μ S/cm.
8. On 21 February 2009, an owner of land located 20 kilometres downstream from the mine advised the EPA of poor water quality in Inca Creek.
9. Authorised Persons took water samples from Saga and Inca Creeks at locations downstream of the mine, and carried out insitu water quality monitoring.
10. The insitu water quality monitoring indicated that the water was acidic with pH ranging from 3.3 to 4.7.
11. EPA Officers also made observations that the water in Saga and Inca Creek was clear, with an obvious green tinge, and had a strong and unusual odour. The water in Saga and Inca Creeks is usually turbid.
12. EPA Officers observed dead fish (species included spangled perch and catfish) and a dead crab. They collected six (6) dead fish for investigation/ post mortem.
13. On 25 February 2009, EPA officers took water samples from Saga and Inca Creeks and carried out insitu water quality monitoring in the waters from the mine and downstream for a distance of approximately 30 kilometres.
14. Insitu testing indicated that the water in Inca Creek at the point closest to the mine was acidic with a pH of 2.2.
15. Insitu testing conducted at the downstream sites indicated that the pH in the water gradually increased as distance from the mine increased. Insitu testing at the monitoring point 30 kilometres from the mine indicated pH at 5.7.
16. On 5 January 2009, Lady Annie Ltd advised the EPA of subsidence in the wall of Stormwater Pond 2 on the mine.

17. On 17 February 2009, EPA Officers attended the mine and inspected the wall of Stormwater Pond 2. They observed waters discharging from the pond to Inca Creek. The subsidence was observed to be significant, and greatly reduced the capacity of the pond to contain hazardous material as intended.
18. The information provided to the EPA and investigations undertaken by the EPA indicate that:
 - a. A release of a large volume of water with a low pH has been discharged from Stormwater Pond 2 on the mine to Inca Creek; and
 - b. Environmental harm has been caused.
19. Works are required to be carried out on the mine to prevent or minimise the risk of further discharge of water to Inca Creek.

B. Requirements

Pursuant to this Environmental Protection Order you are required to:

1. From the date of receipt of this Environmental Protection Order prevent any discharge from Stormwater Pond 2 off the mining lease.
2. As soon as possible, and by no later than 5.00pm (AEST) on Monday 9 March 2009, undertake works to ensure that all stormwater which is generated outside the process and stormwater system on the premises is diverted around and away from the process and stormwater system.
3. As soon as possible and by no later than 5.00 pm (AEST) on Monday 9 March 2009, take action to commence reducing the level of waters contained in all processing and stormwater ponds on the premises to ensure that the storage capacity of the water storage infrastructure has the capacity to capture and retain on site the likely rainfall events for the remainder of the wet season.
4. Complete actions commenced under paragraph 3 as soon as practicable.
5. As soon as possible and by no later than 5.00pm (AEST) on 20 March 2009 ensure that there is the ability on the premises to treat contaminated waters contained within the process and stormwater pond system to meet as a minimum the water quality limits as contained in Schedule C Table 5 of the EA (MIN100401006).
6. By no later than 5.00 pm (AEST) on Friday 13 March 2009, provide a report to the administering authority outlining the measures taken and/ or proposed to be taken in order to comply with the requirements of this Environmental Protection Order.
7. By no later than 5.00 pm on Friday 20 March 2009, provide the administering authority with an interim report detailing a proposed plan of works (tasks and timeframes) to repair or decommission Stormwater Pond 2.
8. By no later than 5.00 pm on Thursday 2 April 2009, provide the administering authority with a final plan detailing a proposed schedule of works (tasks and timeframes) to repair or decommission Stormwater Pond 2.

And also **TAKE NOTICE** that:

1. The requirements of this Order take effect immediately upon service of the Order.
2. Failure to comply with this Environmental Protection Order is an offence under the *Environmental Protection Act 1994 (Qld)*.

3. This Order remains in force until further notice from the administering authority.
4. This Order replaces the Environmental Protection Order dated 26 February 2009.
5. You may apply for a review of or appeal against the decision to issue the Environmental Protection Order within ten business days of the service of the order. Information regarding the reviews and appeals are attached to this order.

Obligations

Should you propose to dispose of the place or business to which this Environmental Protection Order relates, you must advise the buyer of the existence of this Environmental Protection Order (Section 362).

s.49 - Signature

(Signed)

6/3/09
(Date)

Rob Lawrence
Delegate of Administering Authority
(*Environmental Protection Act 1994*)

EXTRACTS FROM THE ACT REGARDING REVIEWS AND APPEALS

Procedure for review

521.(1) A dissatisfied person may apply for a review of an original decision.

- (2) The application must-
 - (a) be made in the approved form to the administering authority within-
 - (i) 10 business days after the day on which the person receives notice of the original decision or the administering authority is taken to have made the decision (the "**review date**"); or
 - (ii) the longer period the authority in special circumstances allows; and
 - (b) be supported by enough information to enable the authority to decide the application.
- (3) On or before making the application, the applicant must send the following documents to the other persons who were given notice of the original decision-
 - (a) notice of the application (the "**review notice**"); and
 - (b) a copy of the application and supporting documents.
- (4) The review notice must inform the recipient that submission on the application may be made to the administering authority within 5 business days after the application is made to the authority.
- (5) If the administering authority is satisfied the applicant has complied with subsection (2) and (3), the authority must within 10 business days after receiving the application -
 - (a) review the original decision; and
 - (b) consider any submissions properly made by a recipient of the review notice; and
 - (c) make a decision (the "**review decision**") to-
 - (i) confirm or revoke the original decision; or
 - (ii) vary the original decision in a way the administering authority considers appropriate.
- (6) The application does not stay the original decision.
- (7) The application must not be dealt with by-
 - (a) the person who made the original decision; or
 - (b) a person in a less senior office than the person who made the original decision.
- (8) Within 10 business days after making the review decision, the administering authority must give written notice of the decision to the applicant and persons who were given notice of the original decision.
- (9) The notice must-
 - (a) include the reasons for the review decision; and
 - (b) inform the person of their right of appeal against the decision.
- (10) If the administering authority does not comply with subsection (5) or (8) the authority is taken to have made a decision confirming the original decision.
- (11) Subsection (7) applies despite the *Acts Interpretation Act 1954, section 27A*.¹¹²
- (12) This section does not apply to an original decision made by-
 - (a) for a matter, the administration and enforcement of which has been devolved to a local government - the local government itself or the chief executive officer of the local government personally; or
 - (b) for another matter-the chief executive personally.

Stay of operation of original decisions

522

- (1) If an application is made for review of an original decision, the applicant may immediately apply for a stay of the decision to-
 - (a) for an original decision mentioned in schedule 1, part 1 – the tribunal; or
 - (b) for an original decision mentioned in schedule 1, part 2 – the Court.
- (2) The tribunal or the Court may stay the decision to secure the effectiveness of the review and any later appeal to the tribunal or the Court.
- (3) A stay may be given on conditions the tribunal or the Court considers appropriate and has effect for the period stated by the tribunal or the Court.
- (4) The period of a stay must not extend past the time when the administering authority reviews the decision and any later period the tribunal or the Court allows the applicant to enable the applicant to appeal against the review decision.

Who may appeal

- 531**
- (1) A dissatisfied person who is dissatisfied with a review decision, other than a review decision to which subdivision 1 applies, may appeal against the decision to the Court.
 - (2) The chief executive may appeal against another administering authority's decision (whether an original or review decision) to the Court.
 - (3) A dissatisfied person who is dissatisfied with an original decision to which section 521 does not apply may appeal against the decision to the Court.



Environmental Protection Order (Varied)

Section 360 *Environmental Protection Act 1994*

This Environmental Protection Order is issued in accordance with section 360 of the Environmental Protection Act 1994.

Under the provisions of the *Environmental Protection Act 1994* an Environmental Protection Order is issued:

To: Savannah Resources Pty Ltd (ACN 096358735)
Attention Messrs Gary Peter Doran and David John Frank Lombe
Receiver Managers for Savannah Recourses Pty Ltd
Deloitte Touche Tohmatsu

of: Woodside Plaza Level 14
240 St Georges Terrace
PERTH WA 6000

TAKE NOTICE that under the provisions of the *Environmental Protection Act 1994*, an Environmental Protection Order is issued to you by the administering authority. The administering authority is the Chief Executive of the Environmental Protection Agency (referred to below as the EPA).

The Environmental Protection Order (STAT 443) is issued in respect of the activities of Savannah Resources Pty Ltd and related entities conducted under Environmental Authority MIN100401006 (the EA) at premises/place on land described as ML5426, ML5435, ML5446, ML5447, ML5448, ML5474, ML5476, ML5478, ML90168, ML90169, ML90170, ML90178, ML901079, ML90184 (the mine), which is located approximately 100 kilometres north of Mount Isa to secure compliance by the person with the general environmental duty under section 319 of the *Environmental Protection Act 1994*.

A. Grounds

The Environmental Protection Order is issued on the following grounds:-

1. To secure compliance with the general environmental duty, which pursuant to section 319 of the *Environmental Protection Act 1994* ('the Act'), requires that a person must not carry out any activity that causes, or is likely to cause, environmental harm unless the person takes all reasonable and practicable measures to prevent or minimise the harm.

The facts and circumstances forming the grounds are:

2. Lady Annie operations carries out mining activities on the mine.
3. During normal operating conditions, the mining activities cause, or are likely to cause, environmental harm. The EA authorises the mining activity and limits the actual and potential environmental harm that can lawfully be caused.
4. Rainfall records indicate that between 1 January 2009 and 17 February 2009, approximately 1000 mm of rain has fallen on, or in the vicinity of, the mine.

3. During normal operating conditions, the mining activities cause, or are likely to cause, environmental harm. The EA authorises the mining activity and limits the actual and potential environmental harm that can lawfully be caused.
4. Rainfall records indicate that between 1 January 2009 and 17 February 2009, approximately 1000 mm of rain has fallen on, or in the vicinity of, the mine.
5. On 30 January 2009 and 7 February 2009 the EPA was advised by Jason Alexander of Lady Annie that discharges had occurred from the mine into Saga Creek. Saga Creek flows into Inca Creek, and then the Buckley River.
6. The EPA took water samples from Inca Creek on 23 February 2009. Insitu analysis of the water samples indicates that the water had low pH levels.
7. On 30 January 2009, Lady Annie provided the EPA with data relating to discharge water over the pond spillways. That data indicated that:
 - a. the water in Stormwater Pond 2 contained 0.04 g/l copper and had a pH of 4.26;
 - b. the water in the Stormwater Pond 2 spillway contained 0.22 g/l copper and had a pH of 2.51.
 - c. The depth of the water over the spillways was approximately 200mm, flow was approximately 12.1 cubic metres per second.
 - d. the water at monitoring point MKDSO4 had a pH of 3.45 and Electrical Conductivity of 862 $\mu\text{S/cm}$.
8. On 21 February 2009, an owner of land located 20 kilometres downstream from the mine advised the EPA of poor water quality in Inca Creek.
9. Authorised Persons took water samples from Saga and Inca Creeks at locations downstream of the mine, and carried out insitu water quality monitoring.
10. The insitu water quality monitoring indicated that the water was acidic with pH ranging from 3.3 to 4.7.
11. EPA Officers also made observations that the water in Saga and Inca Creek was clear, with an obvious green tinge, and had a strong and unusual odour. The water in Saga and Inca Creeks is usually turbid.
12. EPA Officers observed dead fish (species included spangled perch and catfish) and a dead crab. They collected six (6) dead fish for investigation/ post mortem.
13. On 25 February 2009, EPA officers took water samples from Saga and Inca Creeks and carried out insitu water quality monitoring in the waters from the mine and downstream for a distance of approximately 30 kilometres.
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B. Requirements

Pursuant to this Environmental Protection Order you are required to:

1. From the date of receipt of this Environmental Protection Order prevent any discharge from Stormwater Pond 2 off the mining lease.
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4. Complete actions commenced under paragraph 3 as soon as practicable.
5. As soon as possible and by no later than 5.00pm (AEST) on 20 March 2009 ensure that there is the ability on the premises to treat contaminated waters contained within the process and stormwater pond system to meet as a minimum the water quality limits as contained in Schedule C Table 5 of the EA (MIN100401006).
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s.49 - Signature

(Signed)

6/3/09
.....
(Date)

Rob Lawrence
Delegate of Administering Authority
(Environmental Protection Act 1994)

EXTRACTS FROM THE ACT REGARDING REVIEWS AND APPEALS

Procedure for review

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- (11) Subsection (7) applies despite the *Acts Interpretation Act 1954, section 27A*.¹¹²
- (12) This section does not apply to an original decision made by-
 - (a) for a matter, the administration and enforcement of which has been devolved to a local government - the local government itself or the chief executive officer of the local government personally; or
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Stay of operation of original decisions

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Memorandum



Queensland Government

Environmental Protection Agency

Incorporating the
Queensland Parks and Wildlife Service

Enquiries
Telephone
Your reference
Our reference

Neil Maver
(07) 4744 7820
MIN100401006
ISA658

1 May 2007

To: Dean Ellwood, Ian Wilson & Bill Dixon, Integrated Assessment Branch

Through: Geoff Metcalfe, District Manager, North West District

From: Neil Maver, Senior Environmental Officer

Subject: Proposed expansion of the CopperCo Ltd Mt Kelly / Lady Annie Project

On 13 March 2007 the EPA received notification that CopperCo Ltd is proposing by mid 2008 to expand the Mount Kelly / Lady Annie Project (Environmental Authority MIN100401006) from the currently approved mining rate of 1.9 Mt/pa producing 19,000 t/pa of copper cathode to 3-3.6 Mt/pa with production at 25,000 t/pa.

The proposed expansion is based on the results of recent exploration reported in December 2006 that show that the total oxide mineral resource for the Project is now 22.2 Mt containing 200,800 t of copper with a Project life of 8 years (up from 15.8 Mt containing 150,000 t of copper reported in September 2005). CopperCo Ltd has indicated they would prefer to increase the mining rate of the project to 3-3.6 Mt/pa over 8 years rather than to extend the mine life at the current mining rate of 1.9 Mt/pa.

Impacts associated with land clearing to increase the total area of disturbance are expected. Table 1 below indicates the additional land disturbance for the Mount Kelly pits and waste rock dumps.

Table 1: Mining Disturbance Areas

Disturbance Area	Currently Approved in EA	Final Mine Designs required for clearing in 2007
Mount Kelly/Flying Horse Pit	13	37
Mount Kelly/Flying Horse Waste Rock Dump	28	47
Mount Clarke Pit	9.5	36
Mount Clarke Waste Rock Dump/low grade stockpile	21.7	45
Total	72.2	128

Table 2 below is an outline of a preliminary assessment of the proposed expansion against the EIS trigger criteria based on information provided by AustralAsian Resource Consultants Pty Ltd on behalf of CopperCo Ltd.

Table 2: Preliminary assessment of expansion against EIS Trigger Criteria

Criterion	Yes / No / Reasons
1. Impacts to Cat A / B ESA	No - The ERE on the site is the RE 1.3.7 River Redgum Riparian Woodland on larger watercourses on the Lady Annie ML and Power and Water Corridor ML. It is not planned to clear or impact any areas of this ERE as part of the Expansion Project.
2. Mining in a marine area	No
3. Mining less than 500m landward from mean high water	No
4. Construction of more than 150 new dwellings	No – the current accommodation that exists on site is believed to be adequate.
5. Include a Level 1 ERA	Yes - ERA 41 c) Metal works >10,000 tonnes / annum with an annual fee of \$16,340, is currently approved for the Project.
6. Mining of more than 2 Mt / pa of ore	Yes - A mining rate of up to 1.9 Mt/pa of ROM ore per annum from all sources is currently approved for the Project. The Expansion Project proposes an increased mining rate of approximately 3-3.6 Mt/pa.
7. Abstraction of more than 2 million m ³ of water per year	No - The currently approved water supply of 42 L/s or 1.3 m ³ is likely to be adequate for the Expansion Project.
8. More than 25ha remaining non-beneficial land capability	Yes - The expansion represents a 28% increase in pit/void size (165ha up from 72.2ha). Current waste rock characterization studies show that waste rock is non-acid forming. It is expected that the water quality in the final voids will be of good quality for beneficial use.
9. Non-Code Compliant mining activity < 2km from town	No
10. High hazard dams	Yes – Process and storm water ponds
11. Mining for uranium or asbestos	No
12. EIS requirement under the EPBC 1999	No

On 1 December 2005 an ALD was made on the original application to amend the Mt Kelly Level 2 Code Compliant Project. The amendment was submitted to increase the scale of the operation and add new tenures. After considering the standard criteria, EIS trigger criteria, the ANZECC Criteria, the application and supporting information it was recommended that the project be assessed as a Level 1 Non-Code Compliant Mining Activity and that the assessment level decision be a **significant increase in environmental harm likely, no EIS required.**

The amendment application dated 24 November 2005 did trigger one of the numerical EIS trigger criteria. Even though one of the EIS criteria had been triggered the criteria was considered as only a guide and was not used as the only tool for determining whether an applicant is required to conduct an EIS.

Section 246 (2) of the *Environmental Protection Act 1994* states: "*The authority must, in making a decision under subsection (1) consider the standard criteria.*" There is no legislative requirement in the EPAct 1994 to consider the EIS trigger criteria as this is only a guide but it is a legislative requirement to consider the standard criteria. The applicant presented their assessment of the project against the standard criteria on Page 27 of the Mount Kelly Project Supporting Information Document dated November 2005 (on file in Mount Isa).

Guideline 4 states projects with the potential for relatively high environmental impact and/or a high level of uncertainty regarding the possible environmental impact and/or a high level of public interest and/or State or national significance, will be required to prepare an EIS under the EP Act.

In regards to the original amendment application and with reference to Guideline 4, environmental impact was assessed based on the following:

- The type of mineral processing operation – closed circuit operation.
- The potential environmental risks can be managed by a series of proven control measures.
- The proponent will be required to conduct monitoring of environmental values such as water, sediments, and vegetation and there will be a leak detection system in place.
- Oxide ore is being mined with less risk than mining of sulphidic ore.
- The project is not located in an Environmentally Sensitive Category A, B or C Area.
- The project is located in a remote area.

On 30 November 2005, Geoff Metcalfe stated the following:

In considering the standard criteria as a legislative requirement (not the EIS Trigger criteria), to make a decision, more information is required on whether a precedent has been set with the Agency requiring an EIS based on this one criterion (level 1 ERA). It is a large project with significant impacts however, it may also be possible to address these risks and impacts by making a "significant impact, no EIS" decision and following the EM Plan and public notification process.

On 2 December 2005, District Manager Stan Potocki stated the following:

The project has hit the trigger set up in Guideline 4. The leaching process (heaps) occupies a huge area of 700,000m³. Although the technology is known, there is a high risk potential for spills and malfunctions. While the mining scale is a medium one, the leaching scale is very large. Therefore an EIS is fully supported and justified given the number of world-wide incidents. The project is also located at the top of a catchment area, so potential spills/flooding would not take advantage of dilution due to the absence of upstream water flow rates. The problems with containments (in the leaching process) may be illustrated by the latest incident in Phu Bia mine (Pan Australian Resources) and a trend in NSW to ban leaching, however they relate to the use of cyanide, nevertheless the process of SX/EW in copper show similarities in containment issues. Also there is not enough info related to groundwater resources and impacts.

It is expected that ore will derive from existing deposits on granted tenures at Mount Clarke / Flying Horse and Lady Annie. The expansion will involve the development of an additional heap leach pad and an extension to existing pads incorporating a need for an additional stormwater dam requirement for the processing area, an extension to the EW / SX Plant and an increase in the workforce. It is stated that the currently approved power and water supply will be sufficient.

Though it is believed that the proposed control strategies and processes involved will reduce the likelihood of environmental harm occurring from this project and that the project does not have a high level of uncertainty and it is believed that this project will not have a high level of public interest due to the location of the site, strict observance of the EIS trigger criteria would suggest that an EIS is required.

s.49 - Signature

Neil Maver

**Senior Environmental Officer
Environmental Operations Division
North West District, Northern Region**

s.49 - Signature

Geoff Metcalfe

**District Manager
Environmental Operations Division
North West District, Northern Region**



**Queensland
Government**

Enquiries Neil Maver
Telephone (07) 4046 6731
Your reference MIN100401006
Our reference ISA658



Environmental Protection Agency

Incorporating the
Queensland Parks and Wildlife Service

20 June 2007

Reefway Pty Ltd
Level 22, Allendale Square
77 St Georges Terrace
PERTH WA 6000

Dear Sir / Madam,

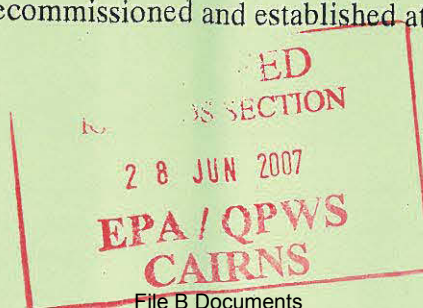
Compliance Inspection of the Mount Kelly / Lady Annie Project - Environmental Authority MIN100401006

I refer to the compliance inspection of the Mount Kelly / Lady Annie Project tenures conducted on 8 May 2007. As the project is yet to progress past the construction phase a full compliance audit of all the operational aspects of the Environmental Authority could not be achieved. As a result, please be advised that the scope of the compliance inspection was largely restricted to ensuring activities are consistent with the Environmental Management Plan.

Compliance issues

At the time of the inspection there were no non-compliances with Environmental Authority MIN100401006. Areas of concern or issues noted that might not technically form a contravention of the conditions of the Environmental Authority but were identified during the site inspection include:

1. Though it was outside the scope of this inspection, it was inferred that numerous areas of disturbance associated with construction activities are not consistent with planned disturbances outlined in Schedule F (Rehabilitation) or the Plan of Operations. There are areas that appear to have been disturbed for no apparent reason e.g. the planned location for a concrete batching plant that is not required and a disused lay down area for road materials and equipment adjacent to the Lady Annie haul road and site access road. The holder of this Environmental Authority is therefore reminded that the area and duration of disturbance to land and vegetation should be minimised.
2. Concerns were raised over the size and location of the landfill in particular its capacity to accommodate the quantities of waste expected during the construction phase. It is expected that the current landfill will operate for the first 18 months of mine life before it will need to be decommissioned and established at an alternative site.



3. Agency staff were advised that there has been a number of problems with the accommodation camp sewage treatment plant since its installation. It was determined at the time of the inspection that the cause may be insufficient nitrification / de-nitrification.

The Agency has since received advise that the package treatment plant is operating according to specifications however if similar problems are encountered in the future it is suggested that the following tests be completed:

- (1) for influent, test for ammonia as NH_3 , Total Nitrogen as N, alkalinity, BOD, pH;
- (2) for final effluent test for Total Nitrogen as N and the oxides of nitrogen i.e. NO_2 and NO_3 (to verify if nitrification / de-nitrification is occurring) and ammonia as NH_3 and;
- (3) before and after disinfection, test for BOD, suspended solids, pH, dissolved oxygen and faecal coliforms.

All the above tests would be useful in order to check with the manufacturers of the package treatment plant on how effective the plant is performing taking into account that the current organic load on the plant is low as the camp is currently at a minimum occupancy rate.

4. A small number of waste batteries were stored uncovered at the landfill.

It is understood the Mount Kelly / Lady Annie mine is not yet operational however the EPA views the above issues seriously and you are requested to take action to ensure there continues to be no non-compliances with the conditions of your Environmental Authority. You are reminded that it is an offence to contravene a condition of an Environmental Authority as cited in section 430 of the *Environmental Protection Act 1994*, and significant penalties apply.

Should you require any further information regarding this matter please contact Neil Maver on (07) 4046 6731.

Yours faithfully

s.49 - Signature

Ralph Riese
District Manager
Environmental Operations
Mount Isa District, Northern Region

File note of meeting/discussion

☐ Meeting ☒ Telephone

Date: 31 January 2009 Time: 9:30am

Between Jason Alexander of Lady Annie Mine

And Hamish Butler of the Environmental Protection Agency

Subject: Reporting Discharge.

Jason Alexander (JA) contacted Hamish Butler (HB) to report that a discharge had occurred from both stormwater ponds at Lady Annie Mine. An unknown quantity and quality of water had overflowed from site at the discharge point into the receiving environment. HB told JA to sample the water in the stormwater ponds to identify the quality and estimate the volume of water discharged into the receiving environment. HB asked if any water had been discharged through the breached wall in stormwater pond two, JA believed the only water to be released of site went through the discharge point. HB confirmed the EPA would conduct a site inspection once access could be obtained to the mining operation. HB also advised that Lady Annie Operations must take all reasonable and practical measures to prevent further discharges from occurring in accordance with section 319 of the *Environmental Protection Act 1994*.

Hamish Butler



**Queensland
Government**

Enquiries Ash Leavy
Telephone (07) 4744 7810
Your reference
Our reference ISA658

Environmental Protection Agency
Incorporating the
Queensland Parks and Wildlife Service

26 February 2009

CopperCo Limited (ACN 004434904)
Attention Messrs Gary Peter Doran and David John Frank Lombe
Receiver Managers for CopperCo Limited
Deloitte Touche Tohmatsu
Woodside Plaza Level 14
240 St Georges Terrace, Perth
WA 6000

Dear Sirs

RE: Releases to the environment from Lady Annie mine site

I refer to my telephone conversation with Mr Glen Kanevsky on 25 February 2009 regarding the Lady Annie Mine in North West Queensland.

I note that Copper Co Limited (ACN 004 434 904) is externally administered and that you are appointed Receiver Managers for the company. Mr Kanevsky requested that the EPA direct correspondence to you as the Receivers Managers.

As you are aware, Copper Co previously conducted mining activities under Environmental Authority MIN100401006 at the Lady Annie mine site. Mining activities continue on the site.

There have been discharges of contaminated water from the mine since January 2009.

The EPA is investigating complaints relating to water quality issues in watercourses downstream of the Lady Annie Mine, and in particular in Saga and Inca Creeks.

The EPA's investigation to date has found water contamination in these creeks with pH levels ranging from 2.27 just below the mine through to 5.05 just prior to the confluence of Inca Creek and the Buckley River. This point is approximately 30km downstream of the mine.

The *Environmental Protection Act 1994* requires that mining activities are carried out in a way that prevents or minimises environmental harm. Where environmental incidents occur, the legislation requires action to be taken to prevent further harm and to mitigate the impacts of incidents.

The EPA's investigations to date indicate that environmental harm has been caused as a result

of the discharge of water from the mine to Inca Creek. Further action is required to **comply** with the general environmental duty set out in section 319 of the *Environmental Protection Act 1994*. Please find **enclosed** an Environmental Protection Order (EPO) issued pursuant to the *Environmental Protection Act 1994*. The EPO requires that you take a number of actions to prevent further environmental harm.

In addition to the requirements of the EPO, and in order to comply with the general environmental duty, you must take all reasonable and practicable measures to prevent or minimise harm. You need to consider what other actions you may need to take in the short, medium and long term to manage the environmental risks associated with the mining activities.

The EPA is currently considering whether further statutory action is appropriate.

Should you have any queries in relation to this correspondence, please contact Mr Ash Leavy, Manager of the EPA Mt Isa office on telephone (07) 4744 7810.

Yours Sincerely

s.49 - Signature

Rob Lawrence
Director
Far Northern Region
Regional Services
Environmental Services

Cc
Mr Glen Kanevsky
Director, Corporate Reorganisation Group
Deloitte Touche Tohmatsu
Woodside Plaza Level 14
240 St Georges Terrace, Perth
WA 6000

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www.deloitte.com.au

27 February 2009

Mr Hamish Butler
District Manager
Environmental Protection Agency

By facsimile: (07) 4744 7800

Mr Rob Lawrence
Director
Environmental Protection Agency

By facsimile: (07) 4046 6771

Lady Annie Operations Pty Ltd
(Receivers and Managers Appointed) (Administrators Appointed)

Dear Sirs

We are the receivers and managers appointed to Lady Annie Operations Pty Ltd (the Company) the owner of the Lady Annie mine in Queensland.

1 Discharges

We refer to the 2 discharges at the Lady Annie mine in which a stormwater pond overflowed during recent rains (the Discharges), formal notification of which was provided to you by letters dated 16 February 2009 as required under section 320 of the *Environmental Protection Act 1994*.

2 EPO

We acknowledge receipt of the EPO received last night. We will review its contents and contact you shortly.

3 Actions

In the meantime, we confirm the Company is taking all reasonable and practicable measures to address any resulting and potential environmental impacts on the site and downstream creeks from the Discharges.

To this end, Parsons Brinckerhoff have been engaged to investigate affected areas downstream and plan recovery. We suggest that Parsons Brinckerhoff meet with you to discuss the scope of their works. Unless you have any objection, Brian Fainton from Parsons Brinckerhoff will contact you shortly to arrange a convenient time.

Member of
Deloitte Touche Tohmatsu

Liability limited by a scheme approved under Professional Standards Legislation.

Printed February 2009 1:40 PM
INCIDENT/ENHANCEMENT/2.8 DORAN JOBS/PROJECT COORDINATOR/LET/LADY ANNIE-GH/00 (7)-27.02.09.DOC



Page 2
27 February 2009

To date, the Company has undertaken rectification works in the form of:

- Repair of bund walls on the north eastern edge of Storm Water Pond 1, adjacent to Processing SXEW Plant.
- Installation of bund walls across the spillway of Storm Water Ponds 1 & 2 to contain additional rainfall inputs to the catchment and prevent additional discharges.
- Installation of two diversion bunds and channels to direct the flow of surface water runoff away from Storm Water Pond 2, one to surround Storm Water Pond 2 on its southern and western sides, the other to direct rainwater from the east of the heap leach pads to the south into Saga Creeks southern catchment.
- Work is continuing to temporarily fill in the wall breach caused by erosion in Storm Water Pond 2, but is hampered by wet ground.

Additionally, the Company intends to undertake the following to mitigate and prevent additional discharge events:

- Line spillway with rock lime and construct a baffle system to slow the flow of acidified water offsite, thus increasing contact time between lime acid and alkaline materials to raise pH before mixing with rainwater runoff and discharging.
- Construct water pumping system from SW Ponds to Flying Horse East Pit to facilitate the increased capacity in the SW Ponds, using existing materials and resources onsite.
- Source CaCO₃ by product from BOC to treat East Pit water to minimise environmental impact to the groundwater's.
- Repair SW Pond 2 wall breach and liner, and remediate contaminated soils in erosion area and under liner. Not fully achievable until pond levels are lowered significantly and fully dry weather.
- Redirect drainage away from SW Pond 1 to minimise risk of overtopping pond bund wall in high rainfall events.

We propose an urgent meeting with you and Parsons Brinckerhoff to discuss the above proposed mitigation actions.

We will also contact you to discuss the requirements of the EPO shortly.

Yours sincerely

s.49 - Signature

Gary Doran
Joint and Several Receiver and Manager
Lady Annie Operation Pty Ltd
(Receivers and Managers Appointed) (Administrators Appointed)

Deloitte**COPY**

(fax with Rob)

Rob is assessing

Deloitte Touche Tohmatsu
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240 St Georges Terrace
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By facsimile: (07) 4744 7800 (20 pages, including this page)

Mr Ash Leavy
Manager
Environmental Protection Agency
Cnr Camooweal & Mary Streets
Mt Isa Qld 4825

2 March 2009

Dear Sirs

**Environmental Protection Order issued to CopperCo. Limited
(Administrators Appointed) (Receivers and Managers Appointed)**

We refer to the Environmental Protection Order (EPO) issued to CopperCo Limited (Receivers and Managers Appointed) (Administrators Appointed) (CopperCo) under section 360 of the *Environmental Protection Act 1994* (Qld) (EP Act) on 26 February 2009 and to the covering letter from the Environmental Protection Agency (EPA) sent with the EPO.

As foreshadowed in our teleconference on Friday afternoon (27 February 2009), we enclose an application for review of the EPO. We have had limited time to put the review document together but for reasons explained later in this letter, we have to provide it to you this afternoon.

As set out in the supporting information for the enclosed EPO, there are two principle bases for the review.

Firstly, CopperCo is not the holder of, nor is it acting under MIN100401006 (EA) or the mining bases referred to in the EO. It is therefore not reasonable to impose the requirements under the EPO on CopperCo.

Secondly, compliance with the requirements set out in the EPO is impossible for a range of practical and technical reasons, which have been set out in detail in the supporting information to our application.

We emphasize that we wish to work co-operatively with the EPA to ensure the best outcomes for the environment in the short and long term and that we take our environmental obligations seriously. The fact we are lodging an application to review the EPO should not be interpreted otherwise.

However, to preserve our legal rights, CopperCo has little option but to submit, under section 521 of the EP Act an application for a review of an original decision.

Member of
Deloitte Touche Tohmatsu

Liability limited by a scheme approved under Professional Standards Legislation.

CURRENT ENGAGEMENTS, 6 DORAN JOSS PROJECT COCONO COPPER CO. LEGAL ADVICE CORRESPONDENCE EPO APPLICATION REVIEW LETTER 020309 FINAL.DOC

Deloitte.

Page 2
March 2009

As outlined in the letter:

1. Completed and signed Application Form;
2. Attachment 1 - Supporting information.

As to the deadline in the EPO reply to the summons, Tuesday, we request that you provide a written urgent response by **Monday morning, Tuesday, 2 March 2009**. We apologise that this is a very short time frame; however, we are minded to the significant deadline that may be imposed by any court compliance with the EPO.

We also thank you for you that we are intending to make an urgent application to the court on Tuesday, 2 March 2009 to the Planning and Environment Court in the region of the EPA to stay the effect of the EPO pending your decision on the review findings. Court appeal beyond that. We are committed to take this action to preserve our interests and avoid the effects of breaching the EPO which potentially carries significant fines and penalties. This is because, during the review, it is still does not stay the effect of the EPO from being applied in the EPO. We consider this a last resort but one we have to take at this point in time in the interests of being open and transparent in our intentions. We clearly do want to be proceeding with the action if we receive a favourable review decision before then but we are mindful that the time frame for doing so is very short and would not wish to pre-empt the EPA's deliberations in that regard.

Having said all that, we are very keen to avoid having to undertake this course of action over major applications to the Court for stay of the EPO so that we and the EPA can continue to work together to achieve to achieve good environmental outcomes for the site. We are aware that largely to discuss any views you might have as to any other way we can avoid this outcome without the same time and expense to support a resolution, not a breach of the EPO.

Our firm is strongly committed to co-operating with the EPA to obtain a timely and mutually beneficial resolution to this matter. The application for review is intended to be a step in achieving this resolution. We are grateful to discuss any aspect of this matter at your convenience.

Yours sincerely,

Michael Joseph O'Connell (Mr O'Connell)

s.49 - Signature

Case Officer

Land and Natural Resources and Minerals

Environmental Management

Phone:

0800 555 1234 / 0800 555 1234

0800 555 1234

0800 555 1234

0800 555 1234

eco

QSS

increases and permits

Application form

Section 521 — Environmental Protection Act 1994

Review of original decision

This form is to be used when a person is dissatisfied with an original decision made by the Environmental Protection Agency (EPA) under schedule 1 of the Environmental Protection Act 1994 and is seeking a review of that decision under section 521 of the Act. Please answer the questions on this form in order, unless instructed to go to another question and label attachments alphabetically (e.g. "Attachment A").

OFFICIAL USE ONLY

DATE RECEIVED

FILE REF

PROJECT REF

COMPLETE FORM

CORRECT AA

COMPLETE FEE

ENTERED BY [SIGNATURE]

DATE

Application details

1. Applicant name

CopperCo Limited ACN 004 434 904 (Receivers and Managers Appointed) (Administrators Appointed)

2. Responsible person

Gary Doran as Receiver and Manager of the Applicant

3. What is the original decision you want reviewed?

The issue of Environmental Protection Order dated 26.02.09 to the Applicant.

4. When did you receive the notice of the original decision?

26 February 2009

5. What is the reference number for the original decision?

ISA658

6. When did you give notice of this application to the other people who received notice of the original decision?

N/A

For a list of the people who were given notice of the original decision, contact your local Environmental Protection Agency (EPA) office (refer to the information sheet EPA's Environmental Services' offices — contact details and Council areas)



Application form Review of original decision

2. Declaration

Note: If you have received the full form this application form, you do not need to complete this section under the relevant Act or Regulation.

- ☐ I apply for the review of the original decision made by the administering authority as detailed in this application.
- ☐ I have given notice of this application to the other parties who received notice of the original decision, informing them that submissions about this application must be received within 5 business days after this application is submitted.
- ☐ I have given a copy of this application, and supporting documents, to all other people who received notice of the original decision.
- ☐ I have solemnly and sincerely declared that the information provided is true and correct to the best of my knowledge. I understand that it is an offence under sub-section 45B(1) of the Environmental Protection Act 1986 to provide false or misleading information containing elements of fraud to a government officer, including a government officer and a contractor.
- ☐ I understand that all information supplied in or with this application form may be disclosed publicly in accordance with the Freedom of Information Act 1992 and the Privacy Act 1988.

Signature of applicant: s.49 - Signature

Date: 20/03/2009

Signature of authorised officer: [Signature]

Date: 20/03/2009

3. Applicant checklist

- ☒ Application form(s) completed and signed
- ☒ Supporting information or documentation provided (if applicable)
 - ☐ Each specific decision that you seek reviewed
 - ☐ Reasons why you believe each decision is unreasonable or inappropriate
 - ☐ Documentation supporting your reasons

For more information visit the
Ecoaccess and Environmental
Protection Agency website
www.epa.qld.gov.au

Access to our website
is free and available 24 hours a day.
If you need a copy of
this application form, please
contact us on 1300 366 366.

Please return your completed application to:

Ecoaccess Customer Service Unit
Environmental Protection Agency

PO Box 14100

St Leonards

Queensland 4055

Application Form 080528

Email: eco.access@epa.qld.gov.au

Attachment 1 - Supporting information for an application for review of EPA decision to issue an EPO to CopperCo Limited

Overview

This document comprises supporting information for the application by CopperCo Limited (Receivers and Managers Appointed) (Administrators Appointed) (CopperCo) to review the EPA decision to issue an Environmental Protection Order (EPO) in relation to the Lady Annie Mine.

CopperCo is not opposed to the intent of the EPO. It wishes to work with the EPA to prevent, or at least minimise, environmental impacts associated with the Lady Annie Mine from recent rainfall events, with a view to obtaining the best environmental outcome in the circumstances.

However, CopperCo does not own or operate the Lady Annie Mine, nor is it in a position to respond to the requirements of the EPO. The owner and operator of the Lady Annie Mine is Lady Annie Operations Pty Ltd (Receivers and Managers Appointed) (Administrators Appointed). In the circumstances, we request the EPO be withdrawn.

In the alternative, the requirements of the EPO are impossible to achieve in the timeframes and may not be the most appropriate technical, environmental or economic solution.

It is submitted that the EPO should be withdrawn or amended to provide for actions and timeframes which are achievable and provide for the most appropriate environmental and technical solutions in the circumstances.

Background

Gary Peter Doran and David John Frank Lombe, both of Deloitte Touche Tohmatsu (Deloitte), were appointed as the receivers and managers of CopperCo on 6 February 2009. CopperCo had been in the hands of other receivers and managers prior to that.

The EPO was issued at 6.20 pm on 26 February 2009. A copy of the EPO is attached.

The following steps have been taken in relation to the incident the subject of the EPO:-

- The bund wall on the north east side of the Storm Water Pond (SWP)1 and SWP2 has now been repaired.
- An earthen bund wall approximately 1,500 mms high and 3,000 mms wide at the base and 2,500 mms wide at the top has been constructed across the spillway of SWP1 and SWP2. The bund is machine rolled and compacted. This provides approximately 61 megalitres (ML) of additional storage in SWP1 (which has an approximate surface area of 6.7 ha) and approximately 77ML of additional storage in SWP2 (which has an approximate surface area of 8.6 ha). Approximately 200 mm of rain would have to be received in 24 hours to overtop SWP1 and SWP2 with this bund in place.
- Two diversion bunds and channels have been constructed to direct surface water runoff away from SWP2 and to direct rainwater away from east of the heap leach pads.

**Attachment 1 - Supporting information for an application for review of
EPA decision to issue an EPO to CopperCo Limited**

- The wall breach in SWP2 caused by the previous heavy rains has been filled.
- Reducing the levels in the SWPs, the PSL, ISL and Raffinate ponds is being contemplated and acted on currently, but is limited to the rate at which evaporation and assisted evaporation through the wobblers on the heaps occurs.
- The receivers and managers have involved their in-house mining engineering expert and Parsons Brinckerhoff to assist and provide advice on the environmental impacts of the incident being the subject of the EPO and to advise on appropriate short and long term actions to prevent or minimise the impacts. Further to this, assessment of the impacts will be undertaken to provide recommendations for suitable rehabilitation in liaison with the EPA.
- A telephone conference was held between the EPA, receivers and managers, CopperCo and Parsons Brinckerhoff on Friday, 27 February 2009, to update all parties on work completed to date and to discuss the EPA's requirements, in particular the implications and practicalities of the EPO.

Grounds for application for review

1. CopperCo is not acting under the EA or relevant mining leases for Lady Annie Mine and therefore the requirements of section 358 of the Environmental Protection Act 1994 have not been met for the issue of the EPO.

The EPO states (in the second paragraph on page 1 of 6) that the EPO is issued in respect of the activities of CopperCo Limited (CopperCo Limited) under Environmental Authority Min100401006 (EA) on 14 mining leases comprising what is otherwise known as the Lady Annie Mine.

CopperCo is not the holder of the EA or any of the mining leases and does not undertake any activities under the EA or the mining leases referred to in the EPO. The EA and the mining leases are held by Lady Annie Operations Pty Ltd and Savannah Resources Pty Ltd. While CopperCo is the sole shareholder in these companies, it has no contract, arrangement or responsibility for the mining operations under the EA or the mining leases.

In the alternative:-

2. The EPO imposes requirements that are not reasonable in practicality or timeframe to prevent or minimise environmental harm.
3. The actions taken to date as outlined in the Background section above comprise reasonable short term measures available to prevent or minimise the environmental impacts arising out of the incident the subject of the EPO.

These measures were designed to address the immediate concerns arising out of the incident and to achieve the maximum impact in the shortest timeframe having regard to the known information and site conditions.

Further action will continue to be taken based on expert advice and ongoing discussions with the EPA.

4. In relation to the specific requirements listed in Section B of the EPO
 - a. Paragraph 1 provides as follows:-

**Attachment 1 - Supporting information for an application for review of
EPA decision to issue an EPO to CopperCo Limited**

From receipt of this Environmental Protection Order prevent any discharge from Stormwater Pond 2.

The actions already taken and set out in detail in the Background section above will minimise the possibility of any further discharge from SWP2. However, it is not possible to guarantee that these actions will be able to prevent a discharge if a further extraordinary rain event (or some other unforeseeable event occurs). It is not appropriate for an EPO (which carries a significant penalty and which is unrelated to the intention of the recipient ie it involves strict liability) to set a requirement which may not be able to be achieved due to circumstances beyond the control of the recipient of the EPO.

b. Paragraph 2 provides as follows:-

As soon as possible, and by no later than 5.00pm (AEST) on Thursday 5 March 2009, undertake works to ensure that no further contaminated water enters Stormwater Pond 2.

The meaning of the term 'contaminated water' is unclear in the context of the site and the processes for the Lady Annie Mine.

If it means surface water run off from natural ground then there is no objection to this paragraph as the works carried out in the Background section will achieve this.

However, if this term includes process water, then that is contrary to the EPA approved design of the containment plan for the site. Compliance with this requirement will almost certainly produce worse environmental outcomes if there is a further rain event than if contaminated process water can continue to be discharged to SWP2. In particular, given SWP2 has had its capacity increased significantly (as set out in the works carried out to date in the Background section above) this increased capacity would not be able to be utilised if there were a further rain event. This in turn would result in greater discharge of contaminated water off site than would otherwise be the case if this requirement were not imposed.

In addition, the work required to separate Raffinate Pond 2 (which has a solution concentrate of between 0.1 and 2 grams/litre of copper and 7 and 11 g/l of sulphuric acid) from the SWP2 is likely to cause damage to the liner of the spillway from Raffinate Pond 2 to the SWP2 which would in turn increase the prospect of groundwater seepage of this contaminated water.

c. Paragraphs 3 and 4 provide as follows:-

3. By no later than 5.00pm (AEST) on Thursday 5 March 2009, ensure that either:

a. Subject to paragraph 4 hereof, all water contained in Stormwater Pond 2 is removed; or

b. All water contained in Stormwater Pond 2 is treated to achieve water quality limits as contained in Schedule C Table 5 of Environmental Authority MIN100401006 (the EA).

**Attachment 1 - Supporting information for an application for review of
EPA decision to issue an EPO to CopperCo Limited**

4. If the water is removed from Stormwater Pond 2 to another storage location in accordance with paragraph 3(a), it must either:

- a. Firstly be treated to achieve water quality limits as contained in Schedule C Table 5 of the EA; or*
- b. Be stored in a fully lined containment structure or similar such that no further environmental harm, such as through impacts on groundwater, can be caused.*

When read together, these paragraphs require that by 5 pm on Thursday 5 March either:-

- all water in SWP2 is to be removed to a fully lined containment structure or similar; or
- the water in SWP2 is to be treated to achieve the relevant limits set out in the EA.

Both of these alternatives are impossible to achieve within the timeframe provided.

In relation to the first alternative, it is not possible to store the contaminated water in a fully lined containment structure or similar. There are no such reservoirs available and it would take over half a year to design, obtain the necessary approvals and build such a containment structure.

There is a possibility that the water could be transferred to one of the existing pits on site but this would require significant environmental and technical assessment, as well as approval from the EPA, before this could occur. Further, the pumping equipment and pipes required for this process will take several weeks to source and put in place. The pumping itself may then take several weeks as well to complete.

To give an indication of the logistics involved if pumping were to be carried out, Table 1 below sets out the results of some initial enquiries and consideration of the equipment required for this.

In relation to the second alternative, to source, purchase, transport and disseminate enough limestone / soda ash (CaCO_3 in whatever guise) or some other agent to neutralise SWP2, this will take a number of weeks, if not months. The logistics of this option includes determining the quantities required, the sourcing of this agent, including availability and transport alternatives and the time period required for treatment to take effect.

In any event, it is likely to require several weeks to disseminate the chemicals required to treat the vast quantities of water contained in the SWPs.

To give an indication of the logistics involved, Tables 2 to 4 below set out the results of some initial enquiries and consideration of options in this regard.

**Attachment 1 - Supporting information for an application for review of
EPA decision to issue an EPO to CopperCo Limited**

d. Paragraph 5 provides as follows:-

As soon as possible and by no later than 5.00pm (AEST) on Thursday 5 March 2009, reduce the level of waters contained in all processing and stormwater ponds on the premises to ensure that the storage capacity of the water storage infrastructure has a Design Storage Allowance for a 1:100 Year ARI 1 month wet season plus process inputs for the 1 month wet season.

This requirement would involve the lowering of all process water ponds on site by approximately 1 metre which would comprise approximately 130 megalitres of process water. This is impossible to achieve for the same reasons outline in paragraph 4(c) above.

e. Paragraph 6 provides as follows:-

By no later than 5.00pm (AEST) on Tuesday 2 March 2009, provide a report to the administering authority outlining the measures taken and/or proposed to be taken in order to comply with the requirements of this Environmental Protection Order.

This requirement cannot be met as the plan required must outline the measures to be taken 'in order to comply' with the EPO. For the reasons outlined above, it is not possible to comply with the requirements of the EPO and therefore it is impossible to submit a plan showing how compliance will be achieved.

f. Paragraph 7 provides as follows:-

By no later than 5.00pm on Friday 13 March 2009, provide the administering authority with a plan detailing a proposed schedule of works (tasks and timeframes) to repair or decommission Stormwater Pond 2.

A plan proposing the schedule of works for longer term repairs to SWP2 will be commissioned shortly. The short term repairs which have been possible in the circumstances have already been undertaken as set out in the Background section above. Further, longer term repairs of SWP2 cannot take place until the pond is mostly dry.

SWP 2 cannot be dried out alone without drying out SWP 1. The reason is that if this is contemplated, a pressure differential will be created between SWP2 and SWP1 that will result in the bund wall separating the two ponds collapsing.

Any plan and schedule of works to repair or decommission SWP2 will require detailed engineering and environmental input. However, given the interrelationship between SWP2 with the other process water ponds on site and the overall operation on site, this cannot be achieved in a meaningful way in the timeframe provided.

**Attachment 1 - Supporting information for an application for review of
EPA decision to issue an EPO to CopperCo Limited**

Table 1: Hire, Labour & Material Equipment for pumping

Item - Hire Equipment & Labour & Materials	Qty/Units	Duration (days)
Stainless steel pump	1	44
Non-Stainless steel pump	1	44
Bulk fuel tank	1	44
Trailer tandem axle	1	44
Fuel		44
Aerator cast iron	3	
Ploy Pipe 200 x PN 12.5	2600	
Backing Flanges		4
Bolts, nuts, washers		40
Gaskets	1	4
Relocate pipe to new site		15
Re-weld pipe		15
Install air bleeders	1	4
Vehicle Escort	1	6
Loader / Excavator		3
Elbow	1	

Table 2: Lime Treatment Costs

Item - Treatment option - Lime	Qty/Units	Duration (days)
Rock Lime	8022	
Freight from Chillagoe	400	
Stainless steel pump	1	44
Non-Stainless steel pump	1	44
Bulk fuel tank	1	44
Fuel		44
Trailer tandem axle	1	44
Pipe welder	1	6
Aerator cast iron	3	3
Excavator hire	1	4
Flange	1	1
Elbow	1	1
Injector		1
Labour & Materials	1	1
Sampling		30

Notes to Table 2 : Sourced from Chillagoe NQ, and freighted by road to site in a minimum of 20tonne loads. Supply will be dependent on other work the supplier has going, and the rate at which they can recover and crush the lime for sale. Treatment is not guaranteed to comply with Schedule C Table 5 given the improvised mixing method.

**Attachment 1 - Supporting information for an application for review of
EPA decision to issue an EPO to CopperCo Limited**

Table 3: Caustic Soda

Item - Treatment option - Caustic tonnes	Qty/Units	Duration (days)
Caustic Soda	8022	
Freight	8022	
Stainless steel pump	1	44
Non-Stainless steel pump	1	44
Bulk fuel tank	1	44
Fuel		44
Trailer tandem axle	1	44
Pipe welder	1	6
Aerator cast iron	3	
Excavator hire	1	4
Flange	1	
Elbow	1	
Injector		1
Labour & Materials	1	1
Sampling		30

Notes to Table 3 : Caustic soda will be sourced from Gladstone, freight by road, in 30 tonne containers. Treatment is not guaranteed to comply with Schedule C Table 5 given the improvised mixing method.

Table 4: ViroMine

Item - Treatment option - ViroTech ViroMine	Qty/Units	Duration (days)
ViroMine	850	44
Freight		
Injector		
Non-Stainless steel pump	1	44
Bulk fuel tank	1	44
Trailer tandem axle	1	44

Notes to Table 4 : The ViroMine option will take 6 weeks to mobilise to site, and will take an estimated 4 – 6 days to treat ready for discharge.

This work is guaranteed by the supplier to comply with the Environmental Authority Schedule C Table 5, or other set of limits imposed by the regulators.

File note of meeting/discussion

☐ Meeting ☒ Telephone

Date: 1 July 2009

Time: Various times during the day

Between Sean Helping (Cape Lambert), Jeff Hamilton (Cape Lambert) and Paul Wilson (Blake Dawson).

And Hamish Butler of the Department of Environment and Resource Management.

Subject: Phone call to update clients on DERM position with regards to Plan of Operations and transfer application for Lady Annie Operations.

Hamish Butler (HB) called all three people identified above at various times on 1 July 2009 to update them on the position DERM was taking with regards to assessing the new Plan of Operations and transfer application for Lady Annie Operations. HB explained DERM was awaiting a new plan of operations from Parsons Brinckerhoff as the previous document had been rejected as it didn't meet the content requirements under section 234 of the *Environmental Protection Act 1994*. A new plan of operations was due to be lodged at DERM before the 24 July 2009. Once the new plan of operations was lodged DERM would assess the document to ensure it meet the content requirements of section 234. DERM will additional check the correct amount of financial assurance has been provided and justified before approving the document.

Once the outstanding issues within the plan of operations have been addressed and approved DERM will process the transfer of Environmental Authority from current receivers and manger Deloitte to Cape Lambert. At the time of this discussion Cape Lambert were planning to operate the site as a "care and maintenance mine" and no further change to the current plan of operations would be required.

Hamish Butler

Senior Environmental Officer.



**Queensland
Government**

Enquiries Warwick Fegan
Telephone (07) 4046 6724
Your reference EPO STAT448 / MIN100401006
Our reference EPO STAT523 / CR45103

**Department of
Environment and Resource
Management**

3 December 2009

Lady Annie Operations Pty Ltd and Savannah Resources Pty Ltd
Attention Messrs Gary Peter Doran and David John Frank Lombe
Receiver Managers for Lady Annie Operations Pty Ltd
Deloitte Touche Tohmatsu

Woodside Plaza Level 14
240 St Georges Terrace
PERTH WA 6000

Dear Sirs,

I refer you to our teleconference on 30 November 2009 in relation to Environmental Protection Order (STAT448) and the remediation of Saga and Inca Creek.

Assessment of Saga and Inca Creek following the discharge events in 2009 resulted in approximately 52km of watercourse being impacted by contamination. Advice to date from Parsons Brinckerhoff Australia Pty Ltd (PB) is that the remediation strategy only reached approximately 20km.

Saga and Inca Creek Remediation

On 24 April 2009 at a meeting in Brisbane at PB offices, the Department of Environment and Resource Management (DERM) made their position and intent clear. The remediation was to commence as soon as possible, and the strategy was to involve flushing of contaminants to several dams, where the Bauxsol product would be applied to treat the water.

DERM identified that in-stream treatment was not an option, and that the Bauxsol sludge in the dams must be removed following the treatment, and disposed at the mine site. A site inspection of One Mile Dam and Wire Yard Dam on Yelvertoft Station on 23 November 2009 by DERM officers identified that the Bauxsol sludge had not been removed from these dams.

Furthermore, the Department is concerned that contamination remaining in Inca Creek could be mobilised during the first flow events of the 2009/2010 wet season.

To address the concerns with the 'first flush' contamination and the Bauxsol sludge remaining in One Mile Dam, the Department is issuing you with an Environmental Protection Order (STAT523). This Environmental Protection Order requires the removal of any Bauxsol sludge and contaminated sediments from One Mile Dam.

s.49 - Signature

C/c

Matthew Jeffs and Brian Fainton
Parsons Brinckerhoff Australia Pty Ltd
GPO Box 2907
BRISBANE QLD 4001

Environmental Protection Order

Section 360 Environmental Protection Act 1994

This Environmental Protection Order is issued in accordance with section 360 of the Environmental Protection Act 1994.

Under the provisions of the *Environmental Protection Act 1994* an Environmental Protection Order is issued:

To: Lady Annie Operations Pty Ltd (ACN 076289097)
Attention Messrs Gary Peter Doran and David John Frank Lombe
Receiver Managers for Lady Annie Operations Pty Ltd
Deloitte Touche Tohmatsu

of: Woodside Plaza Level 14
240 St Georges Terrace
PERTH WA 6000

TAKE NOTICE that under the provisions of the *Environmental Protection Act 1994*, an Environmental Protection Order is issued to you by the administering authority. The administering authority is the Chief Executive of the Department of Environment and Resource Management (referred to below as DERM).

The Environmental Protection Order (STAT523) is issued in respect of the activities of Lady Annie Operations Pty Ltd and Savannah Resources Pty Ltd and related entities conducted under Environmental Authority MIN100401006 (the EA) at premises/place on land described as ML5426, ML5435, ML5446, ML5447, ML5448, ML5474, ML5476, ML5478, ML90168, ML90169, ML90170, ML90178, ML901079, ML90184 (the mine), which is located approximately 100 kilometres north of Mount Isa to secure compliance by the person with the general environmental duty under section 319 of the *Environmental Protection Act 1994*.

A. Grounds

The Environmental Protection Order is issued on the following grounds:-

1. To secure compliance with the general environmental duty, which pursuant to section 319 of the *Environmental Protection Act 1994* ('the Act'), requires that a person must not carry out any activity that causes, or is likely to cause, environmental harm unless the person takes all reasonable and practicable measures to prevent or minimise the harm.

The facts and circumstances forming the grounds are:

1. Lady Annie Operations Pty Ltd and Savannah Pty Ltd formerly carried out mining activities on the mine.
2. During normal operating conditions, the mining activities cause, or are likely to cause, environmental harm. The EA authorises the mining activity and limits the actual and potential environmental harm that can lawfully be caused.
3. Rainfall records indicate that between 1 January 2009 and 17 February 2009, approximately 1000 mm of rain fell on, or in the vicinity of, the mine.

4. On 30 January 2009 and 7 February 2009 the then Environmental Protection Agency (now referred to as DERM) was advised by Jason Alexander of Lady Annie Mine that discharges had occurred from the mine into Saga Creek Saga Creek which flows into Inca Creek, and then the Buckley River.
5. DERM took water samples from Inca Creek, downstream of the mine, on 23 February 2009. *In situ* analysis of the water samples indicate that the water had low pH levels when compared with reference sites.
6. On 30 January 2009, Lady Annie Mine provided DERM with data relating to discharge water over the pond spillways. That data indicated that:
 - a. water in Stormwater Pond 2 contained 0.04 g/l copper and had a pH of 4.26;
 - b. water in the Stormwater Pond 2 spillway contained 0.22 g/l copper and had a pH of 2.51.
 - c. the depth of the water over the spillways was approximately 200mm and flow was approximately 12. cubic metres per second.
 - d. the water at monitoring point MKDSO4 had a pH of 3.45 and Electrical Conductivity of 862 μ S/cm.
7. On 21 February 2009, an owner of land located 20 kilometres downstream from the mine advised the DERM of poor water quality in Inca Creek.
8. DERM staff, who are also Authorised Persons took water samples from Saga and Inca Creeks at locations downstream of the mine, and carried out *in situ* water quality monitoring.
9. The *in situ* water quality monitoring indicated that the water was acidic with pH ranging from 3.3 to 4.7.
10. DERM Officers also made observations that the water in Saga and Inca Creek was clear, with an obvious green discolouration, and had a strong and unusual odour. The water in Saga and Inca Creeks is usually turbid.
11. DERM Officers observed dead fish (species included spangled perch and catfish) and a dead crab. They collected six (6) dead fish for investigation and post mortem.
12. On 25 February 2009, DERM officers took water samples from Saga and Inca Creeks and carried out *in situ* water quality monitoring in the waters from the mine and downstream for a distance of approximately 30 kilometres.
13. *In situ* testing indicated that the water in Inca Creek at the point closest to the mine was acidic with a pH of 2.2.
14. *In situ* testing conducted at the sites downstream of the mine discharge indicated that the pH value in the water gradually increased as distance from the mine increased. *In situ* testing at the monitoring point 30 kilometres from the mine indicated pH at 5.7.
15. Compared to the ANZECC 2000 guidelines for livestock drinking water (table 4.3.2) the water quality results showed:
 - a. Copper exceeding guidelines at all sites within Saga and Inca Creeks; and
 - b. Aluminium and Cobalt exceeded the guideline at various sites in Saga Creek and Inca Creek; and
 - c. Nickel exceeded the guideline in Saga Creek
16. Compared to the ANZECC 2000 water quality guidelines for the protection of ecosystems (95%) the guidelines were exceeded for various water quality parameters within Saga and Inca creek

including Aluminium, Chromium, Beryllium (LR), Cobalt (LR), Copper, Iron (LR), Lead, Manganese, Nickel, Vanadium (LR), Uranium (LR), Zinc, pH

17. On 5 January 2009, Lady Annie advised DERM of subsidence in the wall of Stormwater Pond 2 on the mine.
18. On 17 February 2009, DERM Officers attended the mine and inspected the wall of Stormwater Pond 2. They observed subsidence of the pond wall and waters discharging from the pond to Inca Creek. The subsidence was observed to be significant, and to have greatly reduced the capacity of the pond to contain hazardous material, as intended.
19. The information provided to DERM and investigations undertaken by DERM indicate that:
 - a. A large volume of water with a low pH has been released from Stormwater Pond 2 on the mine to Inca Creek;
 - b. Environmental harm has been caused.
20. On 20 March 2009 DERM issued an Environmental Protection Order to Lady Annie Operations Pty Ltd to undertake remediation of Saga and Inca Creek.
21. Following a meeting on 24 April 2009, DERM negotiated with the Receiver Managers for Lady Annie Operations Pty Ltd and Savannah Resources Pty Ltd a remediation strategy for Saga and Inca Creek.
22. On 22 May 2009, Parsons Brinckerhoff Australia Pty Ltd (PB), submitted a report of behalf of the Receiver Managers which detailed the off-site remediation works and the sediment and water quality benchmarks to be achieved.
23. The remediation strategy agreed to involve the flushing of clean water down Saga and Inca Creek, and the treatment of contaminated material using Bauxsol (aluminium refining by-product) in off-stream dams. The contaminated sludge generated in the dams was required to be removed and disposed of at the mine site.
24. On 6 November 2009, the consultants acting for the Receiver managers identified that the flushing of water had finished and the water reached approximately 20km downstream of the mine, with contamination remaining in up to 32km of Inca Creek.
25. On 23 November 2009, DERM officers inspected 2 farm dams on Inca Creek that had been treated with the Bauxsol product. The inspection identified that One Mile Dam had minimal water and the Bauxsol sludge had not been removed. Wire Yard Dam contained large volumes of water and the Bauxsol sludge product had settled at the base of the dam.

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1. The first step in the process is to identify the problem. This involves gathering information about the problem and its causes. Once the problem is identified, the next step is to develop a plan to solve it. This plan should be based on the information gathered in the first step.

2. The second step is to implement the plan. This involves putting the plan into action and monitoring the results. If the results are not as expected, the plan may need to be revised.

3. The third step is to evaluate the results. This involves comparing the results to the original goal and determining whether the plan was successful. If the plan was successful, the next step is to document the results and share them with others.

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.....3/12/09.....
(Date)

EXTRACTS FROM THE ACT REGARDING REVIEWS AND APPEALS

Procedure for review

521.(1) A dissatisfied person may apply for a review of an original decision.

- (2) The application must-
 - (a) be made in the approved form to the administering authority within-
 - (i) 10 business days after the day on which the person receives notice of the original decision or the administering authority is taken to have made the decision (the "review date"); or
 - (ii) the longer period the authority in special circumstances allows; and
 - (b) be supported by enough information to enable the authority to decide the application.
- (3) On or before making the application, the applicant must send the following documents to the other persons who were given notice of the original decision-
 - (a) notice of the application (the "review notice"); and
 - (b) a copy of the application and supporting documents.
- (4) The review notice must inform the recipient that submission on the application may be made to the administering authority within 5 business days after the application is made to the authority.
- (5) If the administering authority is satisfied the applicant has complied with subsection (2) and (3), the authority must within 10 business days after receiving the application -
 - (a) review the original decision; and
 - (b) consider any submissions properly made by a recipient of the review notice; and
 - (c) make a decision (the "review decision") to-
 - (i) confirm or revoke the original decision; or
 - (ii) vary the original decision in a way the administering authority considers appropriate.
- (6) The application does not stay the original decision.
- (7) The application must not be dealt with by-
 - (a) the person who made the original decision; or
 - (b) a person in a less senior office than the person who made the original decision.
- (8) Within 10 business days after making the review decision, the administering authority must give written notice of the decision to the applicant and persons who were given notice of the original decision.
- (9) The notice must-
 - (a) include the reasons for the review decision; and
 - (b) inform the person of their right of appeal against the decision.
- (10) If the administering authority does not comply with subsection (5) or (8) the authority is taken to have made a decision confirming the original decision.
- (11) Subsection (7) applies despite the *Acts Interpretation Act 1954, section 27A*.¹⁷²
- (12) This section does not apply to an original decision made by-
 - (a) for a matter, the administration and enforcement of which has been devolved to a local government - the local government itself or the chief executive officer of the local government personally; or
 - (b) for another matter-the chief executive personally.

Stay of operation of original decisions

522

- (1) If an application is made for review of an original decision, the applicant may immediately apply for a stay of the decision to-
 - (a) for an original decision mentioned in schedule 1, part 1 – the tribunal; or
 - (b) for an original decision mentioned in schedule 1, part 2 – the Court.
- (2) The tribunal or the Court may stay the decision to secure the effectiveness of the review and any later appeal to the tribunal or the Court.
- (3) A stay may be given on conditions the tribunal or the Court considers appropriate and has effect for the period stated by the tribunal or the Court.
- (4) The period of a stay must not extend past the time when the administering authority reviews the decision and any later period the tribunal or the Court allows the applicant to enable the applicant to appeal against the review decision.

Who may appeal

- 531**
- (1) A dissatisfied person who is dissatisfied with a review decision, other than a review decision to which subdivision 1 applies, may appeal against the decision to the Court.
 - (2) The chief executive may appeal against another administering authority's decision (whether an original or review decision) to the Court.
 - (3) A dissatisfied person who is dissatisfied with an original decision to which section 521 does not apply may appeal against the decision to the Court.

Environmental Protection Order

Section 360 Environmental Protection Act 1994

This Environmental Protection Order is issued in accordance with section 360 of the Environmental Protection Act 1994.

Under the provisions of the *Environmental Protection Act 1994* an Environmental Protection Order is issued:

To: Savannah Resources Pty Ltd (ACN 096358735)
Attention Messrs Gary Peter Doran and David John Frank Lombe
Receiver Managers for Savannah Resources Pty Ltd
Deloitte Touche Tohmatsu

of: Woodside Plaza Level 14
240 St Georges Terrace
PERTH WA 6000

TAKE NOTICE that under the provisions of the *Environmental Protection Act 1994*, an Environmental Protection Order is issued to you by the administering authority. The administering authority is the Chief Executive of the Department of Environment and Resource Management (referred to below as DERM).

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A. Grounds

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EXTRACTS FROM THE ACT REGARDING REVIEWS AND APPEALS

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 - (a) for a matter, the administration and enforcement of which has been devolved to a local government - the local government itself or the chief executive officer of the local government personally; or
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Stay of operation of original decisions

522

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File note inspection/discussion

☒ Inspection ☐ Telephone
Date: 14/12/2009 Time: 2:30 to 4:00pm
Between Russ McConnell, Rod Kent of DERM
 Warwick Fegan, Stuart Roberts of DERM (2:30 to 3:30pm)
And David Cook of Cape Lambert Lady Annie Exploration -
 EnvironmentManager
 Allan Evans, Nick Anderson Engineers of PB Consultants

Subject: Pre-wet season inspection of site – Lady Annie Mine

Background:

Lady Annie Mine had major discharges to the environment in January to February period 2009 and was issued with an Environmental Evaluation Notice. PB Consultants have been undertaking the evaluation on behalf of the mine operator, Deloitte Touche Tohmatsu, Receivers and Managers for the companies associated with the Lady Annie Mine. The response to the Evaluation Notice was issued on the 14/10/2009 by PB Consultants and submitted to DERM a short time afterwards.

The response was not complete in that the geotechnical investigation and assessment of the integrity of the liner had not yet been undertaken. The reasons given were the slowness of dewatering the “raw water pond”. The strategy, as understood from verbal communications, was to empty the raw water pond (RWP) and then transfer water from storm pond 2 (SP2) to the RWP so that the liner can be accessed.

DERM has been verbally advised the liner will not be lifted until after the wet season and that geotechnical investigations will take place then.

DERM has also been advised that some geotechnical investigations have already taken place but do not appear in the environmental evaluation.

DERM has concerns that there is currently some risk of further wet season release during the 2009/2010 wet season on the basis that:

- (a) The Environmental Investigation has not identified the primary cause of the discharges from the mine site but assumes that it is driven by catchment size,
- (b) There may be other contributory mechanisms which should be taken into account, and
- (c) No corrective actions have been undertaken to prevent a recurrence of the 2009 releases should other mechanisms be present and a similar wet season occur even with the surface water diversion in place.

Actions:

In the absence of the Geotechnical Assessment required under the Environmental Evaluation Notice, DERM cannot determine if the risk of a re-occurrence of the discharges has been lowered to acceptable levels.

PB supplied electronic copies of documentation describing diversion works about the site on 02/10/2009 and understand that these works have been put in place.

DERM has therefore sent a specialist dams engineer (Russ McConnell) to the site to assess the current situation.

Outcomes of Inspection:

The diversions, as described in the documentation, have been effectively completed. The rock protection has been installed and the walls of the diversion channels top soiled in preparation for grassing. These diversions will substantially reduce the size of the catchment reporting to the plant site area.

In essence the consultants are focussing of surface water entry to the ponds after failure of the bunds as being the main reason for the discharge. The opinion of the engineers at DERM is still that the water entry mechanism for the January February discharge has not been fully identified and resolved. Russ McConnell pointed out the photographic record of the flooding showed liner lifting well before failure of the bunds indicating ingress of groundwater from some source. It was further observed that Borehole BH06-7 contained lateritic gravel 1.5 to 3.3 m and is on the drainage line (Saga Creek).

The submitted EE states that recent revision calculations revealed that, while both were originally designed for Q100, the Southern Diversion could handle a Q₁₀₀₀ storm and the Northern Diversion could handle a Q₅₀₀ storm.

The Raw Water Pond was currently empty (200 MI capacity)

The site can currently manage a 1 in 300 wet season, having 480 MI of storage available out of 770 MI. This does not include the Raw Water Pond.

Mist evaporators were located on the intermediate bank between Storm Pond 1 and 2. Mist residue mostly fell in the storm ponds but could reach the unlined perimeter of the pond in stronger winds. The mist is highly acidic (personal communication DC).

Storm Pond 1 does not leak. (Not observable)

There is possibly a leak in Storm Pond 2 in the area of the water equalizer pipe. (Not observable)

The spillways have been repaired. The repairs were not inspected because of the proximity of the acid mist but it was noted that:

- (a) The downstream apron of the spillway had been armoured with (dolomite ?) rock, presumably to prevent erosion and neutralize acidity, and
- (b) Rock groynes had been placed across the spillway, presumably to limit flow velocity, neutralize acidity and to act as a sediment trap for precipitates and suspended solids.

It was observed that the walls of the spillway apron and the groynes were not armoured. In particular, the walls at the ends of the groynes need to be armoured to prevent erosion opening up bypasses to the groynes.

The impact of the groynes on the flood capacity needs to be checked to ensure that backwater effects do not affect spillway capacity of the storm ponds.



It was observed that Storm Pond 2 contained a small pond of water in the north east corner. It was reported that persons had walked over the floor and that the floor was “soft” to walk where accessible. There was no evidence of gas under the liner. It was noted that the “sink” hole area had been filled but had not been investigated since February 2009.

It was noted that the liner in the eastern side of Storm Pond 2 had settled onto excavation batter and that horizontal folds in the liner were present in the areas where the initial floating of the liner occurred.



A number of sink holes were observed amongst the thicket of remnant vegetation immediately adjacent to the liner folding. An investigation trench was located between the thicket and the liner folding. It had been partially backfilled. While the material in the investigation trench contained little “gravel” a nearby mound did contain observable “gravel”, suggesting that “gravels” may be

present as paleo channels.

David Cook, Warwick Fegan and Stuart Roberts left the inspecting team at 3:30 pm.



The Southern Diversion channel was inspected. The unarmoured batters of the diversion channel excavations had been topsoiled in preparation for grassing. No natural stratification was observable.

At about Chainage 300 on the Diversion Channel Chainage Datum, another area of sink holes was discovered in remnant vegetation between the diversion channel and the eastern bund wall of the heap leach pads. This was also the area of major water pondage over the January February period of 2009. The sink holes were much larger and better defined than those adjacent to Storm Pond Number 2 suggesting that this may have been an area of major ingress of water into an aquifer or a subterranean flow path feature.



The linear alignment of the two sink hole areas and Borehole BH06-7 (containing lateritic gravel 1.5 to 3.3 m) suggest that there could be a subterranean flow path feature connecting all three.

If gravels are present they may be present as lamellar inclusions in an otherwise fine soil profile. Investigations for such features requires the mapping of the soil stratigraphy in trench wall in the context of the soil formation processes.

The existence or otherwise of a subterranean flow path feature needs to be investigated. If the feature exists then:

- (a) The ingress of water into the feature needs to be prevented, or
- (b) The ingress of water from the feature into the storm ponds needs to be prevented (eg by a cutoff), or
- (c) Ingressing water needs to be removed from the storm ponds at a rate that prevents discharge to the environment.

The areal extent and characteristics of the sink hole areas need to be mapped. Areas of high density and strongly developed sink holes need to be investigated to establish the nature of the mechanism. An opportunity exists to examine the batters of the diversion channel to see if features can be identified. If rain occurs, the batters should be examined before the topsoil is replaced on the batters of the diversion channels. If rain does not occur then some topsoil should be removed to expose the natural stratigraphy. Otherwise, investigation trenches under the direction of a geotechnical engineer should be used in the areas of high density or strongly developed sink holes

The implication of the existence of such a feature is that surface water from outside the plant area will again find its way into the storm ponds and cause another discharge to the environment.

Inspection finished 4:00 pm

Russ McConnell 21 December 2009

File note of meeting/discussion

☒ Meeting ☐ Telephone
Date: 16/11/2009 Time: 2:30 to 3:30 pm
Between Russ McConnell, Gary Hargraves, Warwick Fegan of DERM
And Ellis Lawrie Project Manager
Brian ~~Faiton~~Fainton Senior Environmental Scientist
Joe Major Geotechnical Engineer
of PB Consultants

Subject: Technical Progress on Environmental Evaluation Notice – Lady Annie Mine

Background:

Lady Annie Mine had major discharges to the environment in January to February period 2009 and were ~~requested to undertake issued with an~~ Environmental Evaluation Notice. PB Consultants have been undertaking the evaluation on behalf of the mine operator, Deloitte Touche Tohmatsu, Receivers and Managers for the companies associated with the Lady Annie Mine. The response to the Evaluation Notice was issued on the 14/10/2009 by PB Consultants and submitted to DERM a short time afterwards.

The response was not complete in that the geotechnical investigation and assessment of the integrity of the liner had not yet been undertaken. The ~~reasons given was~~ reasons given were the slowness of dewatering the “~~raw~~clean water dampond”. The strategy, as understood from verbal communications, was to empty the ~~clean raw~~ water dam-pond (CRWPD) and then transfer water from storm pond 2 (SP2) to the ~~RCW~~PD so that the liner can be accessed.

DERM has been verbally advised the liner will not be lifted until after the wet season and that geotechnical investigations will take place then.

DERM has also been advised that some geotechnical investigations have already taken place but do not appear in the environmental evaluation.

DERM has concerns that the ~~re is currently some risk of further wet season release during the 2009/2010 wet season on the mine site will undergo further emissions this wet season on the~~ basis that:

- (a) The Environmental Investigation has not identified the primary cause of the discharges from the mine site,
- (a)(b) Alternative or contributory mechanisms had not been ruled out,
- and
- (b)(c) No corrective actions have been undertaken to prevent a recurrence of the 2009 releases should alternative mechanisms be present and a similar wet season occur.

Comment [F1]: What is this trying to say??

Comment [F2]: Are we just trying to say that they have not thoroughly investigated all potential factors that caused the 2009 failure? Bit misleading this statement.

Actions:

As a result of communications between Warwick Fegan and the Project Manager, this meeting was convened to get an understanding of the current status of site and the investigations taking place.

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PB supplied electronic copies of documentation describing diversion works about the site on ~~14~~02/140/2009.

Outcomes of meeting:

The diversions, as described in the documentation, were effectively completed two weeks ago with some minor amendments. Some of the rock protection is still being installed. These diversions will substantially reduce the size of the catchment reporting to the plant site area.

A geotechnical report has been and is currently with Deloitte Touche Tohmatsu. Joe Major described some of the contents of the report. It is understood that PB is of the opinion that for the heap leach area:

- (a) The damage to Eastern Bund of the heap leach pad was wholly caused by erosion resulting from runoff from the service road and the conveyor belt corridor. No settlement or rotational failure had occurred. The HDPE liner was not compromised and no contaminated water escaped from the heap leach apron. Water seeping under the liner should have been natural runoff at background water quality (need to check if this was sampled).
- (b) Six test pits were excavated along the bund at locations yet to be clearly identified in documentation. All contained several meters of clayey soils overlying a weathered mudstone bed.
- (c) Joe thought that the amount of seepage passing under the liner should be insignificant, and

that for the storm runoff water pond 2 area:

- (a) The subsidence in the south east corner was initiated by cracking in the soils and water flows through the cracks (need to wait for the report on this one to see the supporting data).
- (b) The inflows into the pond were caused by collapses (2) of bunds around the area.
- (c) One test pit has been dug near the bund which showed a similar profile to those done along the heap leach levee. No gravels were found.
- (d) The bunds in the area have been substantially widened.
- (e) Joe believes that seepage into the storm water ponds should be "miniscule".
- (f) A further test pit near the spillway revealed a change in soil lithology but still no gravel. Joe indicated that soil types have been mapped in the area.

In essence the consultants are focussing on surface water entry to the ponds after failure of the bunds as being the main reason for the discharge. The opinion of the engineers at DERM is still that the water entry mechanism for the January February discharge has not been fully identified and resolved. Russ McConnell pointed out the photographic record of the flooding showed liner lifting well before failure of the bunds indicating ingress of groundwater from

some source. It was further observed that Borehole BH06-7 contained lateritic gravel 1.5 to 3.3 m and is on the drainage line (Saga Creek).

Brian ~~Faiton~~Fainton stated that recent revision calculations revealed that, while both were originally designed for Q100, the Southern Diversion could handle a Q₁₀₀₀ storm and the Northern Diversion could handle a Q₅₀₀ storm.

Brian ~~Faiton~~Fainton stated that the Raw Water ~~Dam~~Pond was currently empty (200 MI capacity)

The site can currently manage a 1 in 300 wet season, having 480 MI of storage available out of 770 MI. This does not include the Raw Water ~~Dam~~Pond.

Storm Pond 1 does not leak.

There is possibly a leak in Storm Pond 2 in the area of the water equalizer pipe.

No groundwater bores show signs of contamination from storm water pond contents. (this needs to be validated).

Ellis Lawrie summarized proposed works, awaiting the endorsement of the receivers, as follows:

- (a) Removal of remaining water from Storm Pond 2 ASAP from above and below the liner.
- (b) Walkover survey of dewatered liner to see if there are silt trails, fans, cavities or other features that may need consideration in remediation works.
- (c) Fixing of leaks in the liner for the coming wet season.
- (d) Investigation through the liner (resealable holes) of silt deposits, cavities, soil contamination and other features.
- (e) Lifting the liner (if required) next dry season (This seems to be an idea proposed by the consultants. Is it endorsed by DERM? Is there a reason to lift the liner?)

Comment [F3]: It is my understanding the liner will be replaced as there is some holes in it already.

(The outstanding issue is "is there a real reason to lift the liner?". On the basis of land contamination advice from Garry ~~O'connor~~O'Connor is that water at the concentrations cited might not result in contaminated land. The total removal of the liners may not be necessary. It may be possible to undertake repairs in small areas or strips.)

Meeting finished 3:30 pm

Russ McConnell 16 November 2009

File note of meeting/discussion

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| Brian Fainton Senior Environmental Scientist
Joe Major Geotechnical Engineer
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DERM has been verbally advised the liner will not be lifted until after the wet season and that geotechnical investigations will take place then.

DERM has also been advised that some geotechnical investigations have already taken place but do not appear in the environmental evaluation.

DERM has concerns that the re is currently some risk of further wet season release during the 2009/2010 wet season on the basis that:

- (a) The Environmental Investigation has not identified the primary cause of the discharges from the mine site but assumes that it is driven by catchment size,
- (a)(b) There may be other contributory mechanisms which should be taken into account, and
- (b)(c) No corrective actions have been undertaken to prevent a recurrence of the 2009 releases should other mechanisms be present and a similar wet season occur even with the surface water diversion in place.

Actions:

As a result of communications between Warwick Fegan and the Project Manager, this meeting was convened to get an understanding of the current status of site and the investigations taking place.

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Page 1 of 4

Author mcconnr
Created on 18/11/2009 1:53:00 PM

Released

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Meeting finished 3:30 pm

Russ McConnell 16 November 2009

Environmental Protection Order

Section 360 Environmental Protection Act 1994

This Environmental Protection Order is issued in accordance with section 360 of the Environmental Protection Act 1994.

Under the provisions of the *Environmental Protection Act 1994* an Environmental Protection Order is issued:

To: CopperCo Limited (ACN 004434904)
Attention Messrs Gary Peter Doran and David John Frank Lombe
Receiver Managers for CopperCo Limited
Deloitte Touche Tohmatsu

of: Woodside Plaza Level 14
240 St Georges Terrace, Perth
WA 6000

TAKE NOTICE that under the provisions of the *Environmental Protection Act 1994*, an Environmental Protection Order is issued to you by the administering authority. The administering authority is the Chief Executive of the Environmental Protection Agency (referred to below as the EPA).

The Environmental Protection Order (STAT 443) is issued in respect of the activities of CopperCo Limited (CopperCo) under Environmental Authority MIN100401006 (the EA) at premises/place on land described as ML5426, ML5435, ML5446, ML5447, ML5448, ML5474, ML5476, ML5478, ML90168, ML90169, ML90170, ML90178, ML901079, ML90184 (the mine), which is located approximately 100 kilometres north of Mount Isa to secure compliance by the person with the general environmental duty under section 319 of the *Environmental Protection Act 1994*.

A. Grounds

The Environmental Protection Order is issued on the following grounds:-

1. To secure compliance with the general environmental duty, which pursuant to section 319 of the *Environmental Protection Act 1994* ('the Act'), requires that a person must not carry out any activity that causes, or is likely to cause, environmental harm unless the person takes all reasonable and practicable measures to prevent or minimise the harm.

The facts and circumstances forming the grounds are:

2. CopperCo carries out mining activities on the mine.
3. During normal operating conditions, the mining activities cause, or are likely to cause, environmental harm. The EA authorises the mining activity and limits the actual and potential environmental harm that can lawfully be caused.
4. Rainfall records indicate that between 1 January 2009 and 17 February 2009, approximately 1000 mm of rain has fallen on, or in the vicinity of, the mine.

5. On 30 January 2009 and 7 February 2009 the EPA was advised by Jason Alexander of Copperco that discharges had occurred from the mine into Saga Creek. Saga Creek flows into Inca Creek, and then the Buckley River.
6. The EPA took water samples from Inca Creek on 23 February 2009. Insitu analysis of the water samples indicates that the water had low pH levels.
7. On 30 January 2009, CopperCo provided the EPA with data relating to discharge water over the pond spillways. That data indicated that:
 - a. the water in Stormwater Pond 2 contained 0.04 g/l copper and had a pH of 4.26;
 - b. the water in the Stormwater Pond 2 spillway contained 0.22 g/l copper and had a pH of 2.51.
 - c. The depth of the water over the spillways was approximately 200mm, flow was approximately 12.1 cubic metres per second.
 - d. the water at monitoring point MKDSO4 had a pH of 3.45 and Electrical Conductivity of 862 μ S/cm.
8. On 21 February 2009, an owner of land located 20 kilometres downstream from the mine advised the EPA of poor water quality in Inca Creek.
9. Authorised Persons took water samples from Saga and Inca Creeks at locations downstream of the mine, and carried out insitu water quality monitoring.
10. The insitu water quality monitoring indicated that the water was acidic with pH ranging from 3.3 to 4.7.
11. EPA Officers also made observations that the water in Saga and Inca Creek was clear, with an obvious green tinge, and had a strong and unusual odour. The water in Saga and Inca Creeks is usually turbid.
12. EPA Officers observed dead fish (species included spangled perch and catfish) and a dead crab. They collected six (6) dead fish for investigation/ post mortem.
13. On 25 February 2009, EPA officers took water samples from Saga and Inca Creeks and carried out insitu water quality monitoring in the waters from the mine and downstream for a distance of approximately 30 kilometres.
14. Insitu testing indicated that the water in Inca Creek at the point closest to the mine was acidic with a pH of 2.2.
15. Insitu testing conducted at the downstream sites indicated that the pH in the water gradually increased as distance from the mine increased. Insitu testing at the monitoring point 30 kilometres from the mine indicated pH at 5.7.
16. On 5 January 2009, CopperCo Ltd advised the EPA of subsidence in the wall of Stormwater Pond 2 on the mine.
17. On 17 February 2009, EPA Officers attended the mine and inspected the wall of Stormwater Pond 2. They observed waters discharging from the pond to Inca Creek. The subsidence was observed to be significant, and greatly reduced the capacity of the pond to contain hazardous material as intended.
18. The information provided to the EPA and investigations undertaken by the EPA indicate that:

- a. A release of a large volume of water with a low pH has been discharged from Stormwater Pond 2 on the mine to Inca Creek; and
 - b. Environmental harm has been caused.
19. Works are required to be carried out on the mine to prevent or minimise the risk of further discharge of water to Inca Creek.

B. Requirements

Pursuant to this Environmental Protection Order you are required to:

1. From receipt of this Environmental Protection Order prevent any discharge from Stormwater Pond 2.
2. As soon as possible, and by no later than 5.00 pm (AEST) on Thursday 5 March 2009, undertake works to ensure that no further contaminated water enters Stormwater Pond 2.
3. By no later than 5.00 pm (AEST) on Thursday 5 March 2009, ensure that either:
 - a. Subject to paragraph 4 hereof, all water contained in Stormwater Pond 2 is removed; or
 - b. All water contained in Stormwater Pond 2 is treated to achieve water quality limits as contained in Schedule C Table 5 of Environmental Authority MIN100401006 (the EA).
4. If the water is removed from Stormwater Pond 2 to another storage location in accordance with paragraph 3(a), it must either:
 - a. Firstly be treated to achieve water quality limits as contained in Schedule C Table 5 of the EA; or
 - b. Be stored in a fully lined containment structure or similar such that no further environmental harm, such as through impacts on groundwater, can be caused.
5. As soon as possible and by no later than 5.00 pm (AEST) on Thursday 5 March 2009, reduce the level of waters contained in all processing and stormwater ponds on the premises to ensure that the storage capacity of the water storage infrastructure has a Design Storage Allowance for a 1:100 Year ARI 1 month wet season plus process inputs for the 1 month wet season.
6. By no later than 5.00 pm (AEST) on Tuesday 2 March 2009, provide a report to the administering authority outlining the measures taken and/ or proposed to be taken in order to comply with the requirements of this Environmental Protection Order.
7. By no later than 5.00 pm on Friday 13 March 2009, provide the administering authority with a plan detailing a proposed schedule of works (tasks and timeframes) to repair or decommission Stormwater Pond 2.

And also **TAKE NOTICE** that:

1. The requirements of this Order take effect immediately upon service of the Order.
2. Failure to comply with this Environmental Protection Order is an offence under the *Environmental Protection Act 1994 (Qld)*.
3. This Order remains in force until further notice from the administering authority.
4. You may apply for a review of or appeal against the decision to issue the Environmental Protection Order within ten business days of the service of the order. Information regarding the reviews and appeals are attached to this order.

Obligations

Should you propose to dispose of the place or business to which this Environmental Protection Order relates, you must advise the buyer of the existence of this Environmental Protection Order (Section 362).

s.49 - Signature

(Signed)

26/02/09
.....
(Date)

Ash Leavy

Delegate of Administering Authority
(Environmental Protection Act 1994)

EXTRACTS FROM THE ACT REGARDING REVIEWS AND APPEALS

Procedure for review

- 521.(1) A dissatisfied person may apply for a review of an original decision.
- (2) The application must-
- (a) be made in the approved form to the administering authority within-
 - (i) 10 business days after the day on which the person receives notice of the original decision or the administering authority is taken to have made the decision (the "review date"); or
 - (ii) the longer period the authority in special circumstances allows; and
 - (b) be supported by enough information to enable the authority to decide the application.
- (3) On or before making the application, the applicant must send the following documents to the other persons who were given notice of the original decision-
- (a) notice of the application (the "review notice"); and
 - (b) a copy of the application and supporting documents.
- (4) The review notice must inform the recipient that submission on the application may be made to the administering authority within 5 business days after the application is made to the authority.
- (5) If the administering authority is satisfied the applicant has complied with subsection (2) and (3), the authority must within 10 business days after receiving the application -
- (a) review the original decision; and
 - (b) consider any submissions properly made by a recipient of the review notice; and
 - (c) make a decision (the "review decision") to-
 - (i) confirm or revoke the original decision; or
 - (ii) vary the original decision in a way the administering authority considers appropriate.
- (6) The application does not stay the original decision.
- (7) The application must not be dealt with by-
- (a) the person who made the original decision; or
 - (b) a person in a less senior office than the person who made the original decision.
- (8) Within 10 business days after making the review decision, the administering authority must give written notice of the decision to the applicant and persons who were given notice of the original decision.
- (9) The notice must-
- (a) include the reasons for the review decision; and
 - (b) inform the person of their right of appeal against the decision.
- (10) If the administering authority does not comply with subsection (5) or (8) the authority is taken to have made a decision confirming the original decision.
- (11) Subsection (7) applies despite the *Acts Interpretation Act 1954, section 27A*.¹¹²
- (12) This section does not apply to an original decision made by-
- (a) for a matter, the administration and enforcement of which has been devolved to a local government - the local government itself or the chief executive officer of the local government personally; or
 - (b) for another matter-the chief executive personally.

Stay of operation of original decisions

522

- (1) If an application is made for review of an original decision, the applicant may immediately apply for a stay of the decision to-
- (a) for an original decision mentioned in schedule 1, part 1 – the tribunal; or
 - (b) for an original decision mentioned in schedule 1, part 2 – the Court.
- (2) The tribunal or the Court may stay the decision to secure the effectiveness of the review and any later appeal to the tribunal or the Court.
- (3) A stay may be given on conditions the tribunal or the Court considers appropriate and has effect for the period stated by the tribunal or the Court.
- (4) The period of a stay must not extend past the time when the administering authority reviews the decision and any later period the tribunal or the Court allows the applicant to enable the applicant to appeal against the review decision.

Who may appeal

- 531 (1) A dissatisfied person who is dissatisfied with a review decision, other than a review decision to which subdivision 1 applies, may appeal against the decision to the Court.
- (2) The chief executive may appeal against another administering authority's decision (whether an original or review decision) to the Court.
- (3) A dissatisfied person who is dissatisfied with an original decision to which section 521 does not apply may appeal against the decision to the Court.

DISCUSSION POINTS FOR LADY ANNIE TELECONFERENCE

- Firstly, Thank you to all the work done to date from everyone involved – I understand that at times it has been difficult
- I thought it was important to convene a brief meeting with all relevant parties to ensure that everyone is clear on where the Department wishes to go with this site, and the work that needs to be done
- Our goal is that by the end of the 2010 dry season, Lady Annie Mine will:
 - Have all water management infrastructure, protocols and procedures fully established in accordance with industry best practice
 - Be in full compliance with their environmental requirements
 - Have one clear entity responsible for the site
- So I just wanted to touch on the areas the Department sees as requiring attention, so that action can occur in a proactive and timely fashion as soon as the wet season finishes

Remediation

- The remediation of Saga and Inca Creek was not as effective as anticipated by the Department, therefore, the Department's expectation is:
 - o Detailed monitoring occurs during and following wet season flows
 - o A report is provided at the end of the wet detailing the levels, type and distribution of any outstanding contamination in Saga and Inca Creek
 - o The Department would review the data and report on the contamination, and determine if further remediation is required in those creek systems
- We also expect that the long term monitoring program (as per previous report) is carried out over the following wet seasons which include water quality data, sediment data and aquatic biology data.

Site Compliance

- I would like to note that everyone who conducts works on a mine, has a responsibility to ensure the conditions of an Environmental Authority are complied with.

EEN

- Letter detailed that not all requirements of the Notice had been addressed in the report
- Department expects details on the timeframes and responsible parties which addresses:
 - Geotechnical Assessment of the ponds and the heap leach pads
 - Details on how the water balance will be updated and calibrated over time with further data

- Accurate data to establish what wet season or rainfall events the site can contain

EPO1 (on site)

- Report and timeframe into the repair of SWP2 will be required to finalise matters relating to EPO1
- Important to start works as soon as possible into the dry season – don't want this to run close to the following wet

EPO2 (Off site)

- Finalisation of EPO will await discussions of if any further remediation is required
- Long Term Monitoring program will still be required to be carried out as previously mentioned

EPO 3 (Red Mud)

- Further dams impacted by the discharge and treated with red mud will require removal of the sludge in consultation with landholder requirements
- Constructed Inca Creek Dam was viewed during the helicopter survey to have one wall severely washed out – it is recommended that the landholder is engaged to determine the appropriate solution for the dam so that erosion is minimised

Sediment Erosion

- Sediment erosion was viewed to be poorly managed on site during December and January inspections by the Department
- The stormwater diversion drains require particular attention to ensure they are stabilised and do not erode

Heap Leach Pads

- Heap Leach Pads continue to be a concern - particularly the ability of the pads to contain contaminants within the lined area.
- Expectations are that investigations into the liner integrity and any potential sub surface contamination is quantified
- Program of works established to ensure heap leach pads are operated correctly and comply with environmental requirements