



Cannington Life Extension

Initial Advice Statement

Prepared for:
BHP Billiton Minerals Pty Ltd

May 2008

Document History and Status

Issue	Rev.	Issued To	Qty	Date	Reviewed	Approved
1	1	Cannington Mine	1	11/04/2008	F.Tromans	F.Tromans
1	2	Cannington Mine	1	21/04/2008	Mark Daniell	A. Pearce
1	3	Cannington Mine	1	30/04/2008	Mark Daniell	A. Pearce
1	4	Cannington Mine	1	7/05/2008	Mark Daniell	A. Pearce
1	5	Cannington Mine	1	11/06/2008	Mark Daniell	A. Pearce

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Name of Project:	Cannington Life Extension
Title of Document:	Initial Advice Statement
Document Version:	Final

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LIST OF ABBREVIATIONS

AARC	-	AustralAsian Resource Consultants Pty Ltd
AHD	-	Australian Height Datum
ANFO	-	Ammonium Nitrate Fuel Oil
BHP Billiton Cannington-		BHP Billiton Minerals Pty Ltd
CALG	-	Cannington Aboriginal Liaison Group



CAMBA	-	China/Australia Migratory Bird Agreement
CCEG	-	Cannington Community Engagement Group
CHMP	-	Cultural Heritage Management Plan
DNRW	-	Department of Natural Resources and Water
DPI	-	Department of Primary Industries
EA	-	Environmental Authority
EIS	-	Environmental Impact Statement
EP Act	-	<i>Environmental Protection Act 1994</i>
EPBC Act	-	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ERA	-	Environmentally Relevant Activity
g/m ² /month	-	grams per square metre per month
GAB	-	Great Artesian Basin
ha	-	hectares
IAS	-	Initial Advice Statement
ILUA	-	Indigenous Land Use Agreement
JAMBA	-	Japan Australian Migratory Bird Agreement
km	-	kilometres
LIG	-	Low Intensity Grazing
m	-	metres
m ³	-	cubic metres
ML	-	Mining Lease
MLA	-	Mining Lease Application
mm	-	millimetres
Mt	-	Million tonnes
Mtpa	-	Million tonnes per annum
MW	-	MegaWatts
NC Act	-	<i>Nature Conservation Act 1992</i>

°C	-	degrees Celsius
QEPA	-	Queensland Environmental Protection Agency
QPWS	-	Queensland Parks and Wildlife Service
RE	-	Regional Ecosystem
ROM	-	Run of Mine
STP	-	Sewage Treatment Plant
t	-	tonnes
ToR	-	Terms of Reference
tpa	-	tonnes per annum
TSF	-	Tailings Storage Facility
WRSF	-	Waste Rock Storage Facility

1.0 INTRODUCTION

AustralAsian Resource Consultants Pty Ltd (AARC) has been commissioned by BHP Billiton Minerals Pty Ltd (BHP Billiton Cannington) to prepare this Initial Advice Statement (IAS) for a proposed open cut pit expansion of the current underground Cannington Mining Project (the Project). BHP Billiton Cannington is applying to the chief executive under Chapter 3, Part 2, Sections 70 and 71 of the *Environmental Protection Act 1994* for approval to prepare a Voluntary Environmental Impact Statement (EIS). This IAS contains supporting information as required by Section 2 of the Approval to Prepare a Voluntary EIS application form. BHP Billiton Cannington will be the applicant for the application and the operator of the Project.

Once detailed investigations for the Project are complete, it is proposed that an EIS will be lodged with the Queensland Environmental Protection Agency QEPA as per the requirements of the Final Terms of Reference (ToR) approved by the QEPA.

1.1 CURRENT OPERATIONS

The Project has been operational since 1996, as an underground silver-lead-zinc mine. Mining is undertaken by sub-level open stoping with approximately half the ore crushed underground and hoisted to the surface, whilst the other half is hauled directly to the surface for crushing. Processing involves grinding through a mill and selective flotation and leaching to liberate a zinc concentrate and a silver-rich lead concentrate. Up to approximately three million tonnes (Mt) of ore is processed annually to produce approximately 500,000 tonnes (t) of concentrate.

Tailings produced from the operation are either directed to the surface Tailings Storage Facility (TSF), or mixed with cement and directed underground as paste fill. Approximately half the tailings are expected to be directed underground as paste fill during the life of the current operation.

Water is supplied from a sub-artesian basin of the Great Artesian Basin (GAB) located approximately 25 kilometres (km) east of the Project. Power is generated on-site; primarily using natural gas fired generating units.

Concentrate is trucked, in covered trucks, direct to customers or to the Yurbi railhead where it is loaded onto covered train wagons for transport to the Cannington Townsville port facility or customer facilities. Once at the port, concentrate is unloaded, stored, and loaded onto ships at a purpose built wharf and ship-loader.

Project operations occur within Mining Lease (ML) 90059 (Project site), ML 90060 (GAB), and ML 90077 (Yurbi railhead loading facility), which are all covered under Environmental Authority (EA) MIM800090002. The Cannington Townsville port facility is covered under EPA Permit number IPCE00573807B11.

1.2 PROPOSED EXPANSION

The proposed expansion Project involves converting all or part of the current underground operation to an open cut mining operation. This will result in an extended mine life of up to 20 years, and will increase concentrate production. A new ML will be added to the Project adjacent to ML 90059, increasing the Project area to approximately 15,000 hectares (ha). The GAB ML 90060 will also require a new ML to be added (<5% area).



Additional changes to the current operation will include increased water and power usage, relocation of some surface infrastructure facilities, Waste Rock Storage Facilities (WRSF), an open pit void, expanded TSF, and probable diversion of surrounding watercourses. The Yurbi railhead loading facility will also require expanding or an additional shed constructed, however these works will not require an extension of the existing ML. It is anticipated that the Cannington Townsville port facility has adequate capacity, however an extension to the storage shed may be required.

1.3 PROJECT LOCATION

The Project is located on Cannington Station - Trepell Special Lease (SL). Access to the Project from Cloncurry is via the national Landsborough (or Matilda) Highway for 107 km south-east to McKinlay, and then south by sealed Shire road for 83 km. McKinlay township is the nearest township to the Project. The regional location of the Project site is shown in Figure 1.

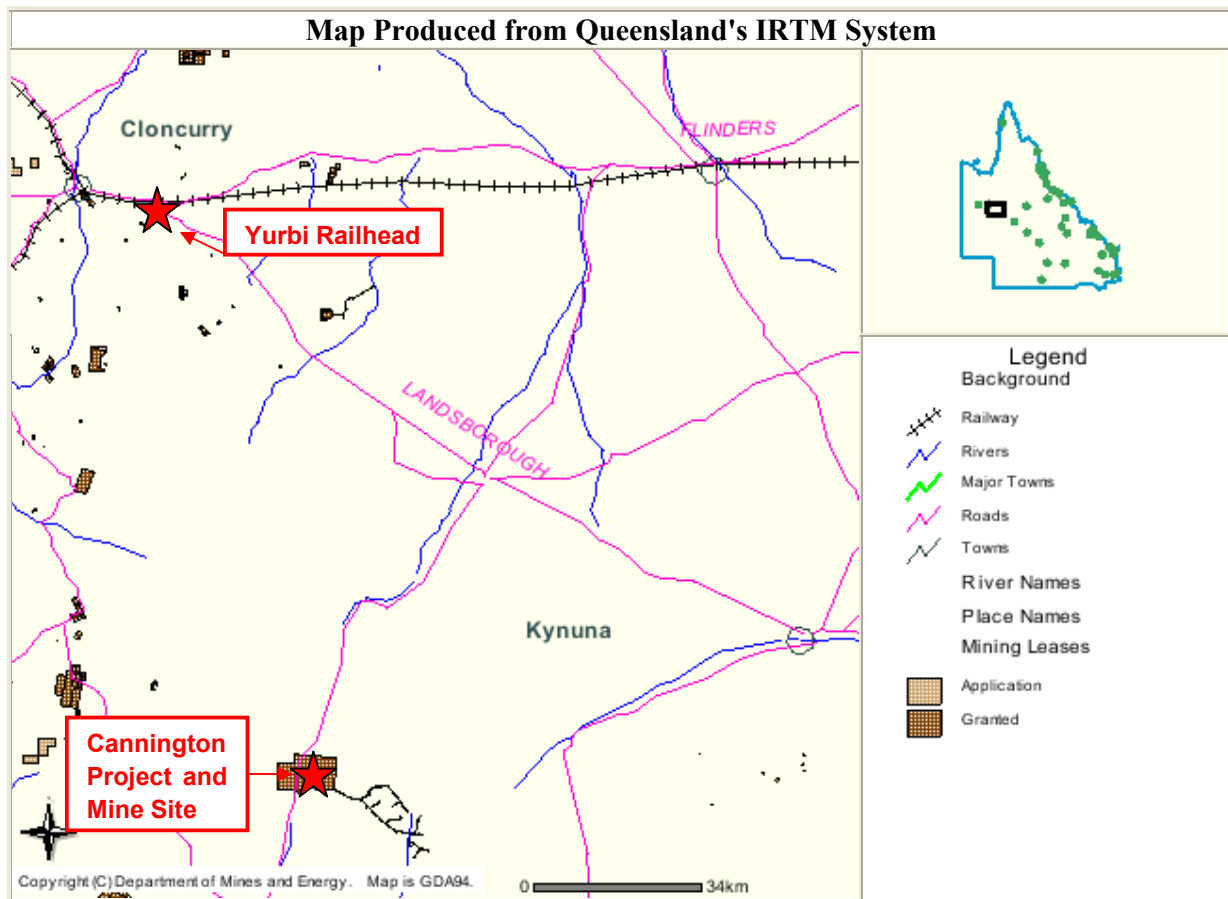


Figure 1: Regional Location of the Project Site

2.0 DESCRIPTION OF THE EXISTING ENVIRONMENT

2.1 REGIONAL CLIMATE

The area surrounding the Project is semi-arid with an annual average rainfall of 345 millimetres (mm) as recorded at Cannington's Trepell Weather Station. A significant majority of the annual rainfall generally falls in the wet season, between November and March. Evaporation is extremely high at approximately 2,300 mm per annum.

Typically average summer temperatures are around 29 degrees Celsius (°C) and average winter temperatures are around 16°C. Average summer maximum temperatures are approximately 39°C and lowest winter minimums average 2°C. Light to moderate winds between 10 to 30 km per hour from the south and south-east are predominant in the region (sourced from Cloncurry Airport).

2.2 GEOLOGY

The Cannington orebody is overlain by 20 – 60 metres (m) of Cretaceous mudstone (known as the Wilgunya mudstone) and irregular sand and gravel deposits. The Cannington deposit is hosted by metamorphosed Proterozoic rock of the Mt Isa Inlier. The host rock consists of a sequence of amphibolites, pegmatites, quartzites, and schists that are enveloped by gneisses. The sequence strikes north and is cut by a series of major northwest trending structures. The silver-lead-zinc mineralisation is generally associated with the quartzites and is divided into two zones or blocks (south and north blocks) separated by the Trepell Fault.

2.3 TOPOGRAPHY AND DRAINAGE

2.3.1 Surface Features

The average elevation of the Project area is 250 m Australian Height Datum (AHD). The Cannington deposit lies upstream of the confluence of the Hamilton River and Trepell Creek. Both of these systems are ephemeral and highly braided. The Hamilton River flows to the south for some 200 km before joining the Georgina River, and then flowing a further 500 km into Lake Eyre.

Yurbi lies within the Southern Gulf Catchment and is drained by two small ephemeral creeks, Gum Creek and an unnamed creek. Gum Creek runs along the south-east side of the facility. The creeks join Fisher Creek, which flows northwards to join the Flinders River, which in turn enters the Gulf of Carpentaria.

A number of aquatic surveys have been undertaken on the Project site dating back to 1994. AARC has collected additional data on surface water quality, stream sediment, macroinvertebrates, aquatic vertebrates and stream morphology during a wet season survey in 2008. This information will be presented in the EIS for the Project.



2.3.2 Groundwater

The Proterozoic rocks of the Cannington deposit are typically low in permeability and storage. In the Project area, four water-bearing units have been identified:

- Trepell fault fracture zone in the Proterozoic which is not a significant groundwater supply;
- Local finer sand horizon at the base of the Cretaceous Wilgunya mudstone sequence which is not a significant source of groundwater;
- Hamilton fault which is not a significant source of groundwater; and
- Longsight sandstone of the GAB which is where the Cannington Borefield 25 km to the east of the Project is located and is the principal water supply for the Project site.

Although there are no significant groundwater resources in the immediate vicinity of the Project site, additional groundwater studies will be undertaken to determine the hydrological impacts of the expansion Project. This information will be presented in the EIS for the Project.

2.4 LAND USE AND CAPABILITY

A soil and land capability survey and assessment of the mine and borefield areas conducted in 1993 identified 16 soil types and one land capability class over the majority of the Project area. The majority of soils at the Project were cracking and self-mulching clays. Some alluvial non-cracking clay soils were also found within the Hamilton River floodplain. In both the cracking clays and the alluvial soils, salinity was found to increase with depth. Figure 2 shows the distribution of soil types within the current Project area.

The soils in the borefield area follow a graduation from west to east. In the west, limestone ridges grade to plains of both cracking and non-cracking alluvial soils. In the east, steep, rugged hills are present and grade to colluvium and ultimately alluvium in the lowest parts of the landscape.

Cattle are grazed in the area now but both sheep and cattle have been grazed at the mine site since 1878. According to the land capability classification system of Rosser et al. (1974) used by the Queensland Department of Primary Industries (DPI), the 1993 survey classified the Project as Land Capability Class VII (i.e. not suitable for cultivation and pastoral use is possible only with careful management). However, some of the ridge top areas at the borefield site are considered to be Class VIII.

Areas subject to disturbance on the current Project, the Yurbi railhead facility, and the pre and post-mining land use and capability, are summarised in Tables 1 and 2.

Details of the land use and capability for additional disturbance areas associated with the expansion Project will be included in the EIS for the Project.



Table 1: Project Site and Borefield Land Use Capability

Disturbance	Approx Area (ha)	Land Capability	Land Use
Built area comprising decline area, shafts, vents, lay down areas, process plant, concrete batching plant, fuel and oil storages, workshops, explosives magazine and power station.	45	VII	LIG*
Accommodation village Sewage Treatment Plant (STP) and support infrastructure	16	VII	LIG
Tailings storage facility ¹	160	VII	LIG
Borefield and access corridor	30	VII	LIG
Internal roads	10	VII	LIG
Topsoil stockpiles	12	VII	LIG
Airstrip	22	VII	LIG
Borrow pits	5	VII	LIG
Refuse disposal areas	5	VII	LIG
Water reservoir and environmental catch dam	6	VII	LIG
Waste rock stockpiles (underground operations)	5	VII	LIG
TOTAL AREA	316		

* LIG Low intensity grazing

¹ Only physical feature remaining above ground at closure of current project

Table 2: Yurbi Railhead Loading Facility Land Use Capability

Description	Approx Area (ha)	Land Capability	Land Use
Access road	5.02	VI/VII	LIG*
Loadout facility	1.0	VII	LIG
Rail siding and track	10	VII/VIII	LIG
Dams, ponds & bunds	0.16	VII	LIG
Borrow pit	2	VII	LIG
TOTAL	18.18		

*LIG Low intensity grazing

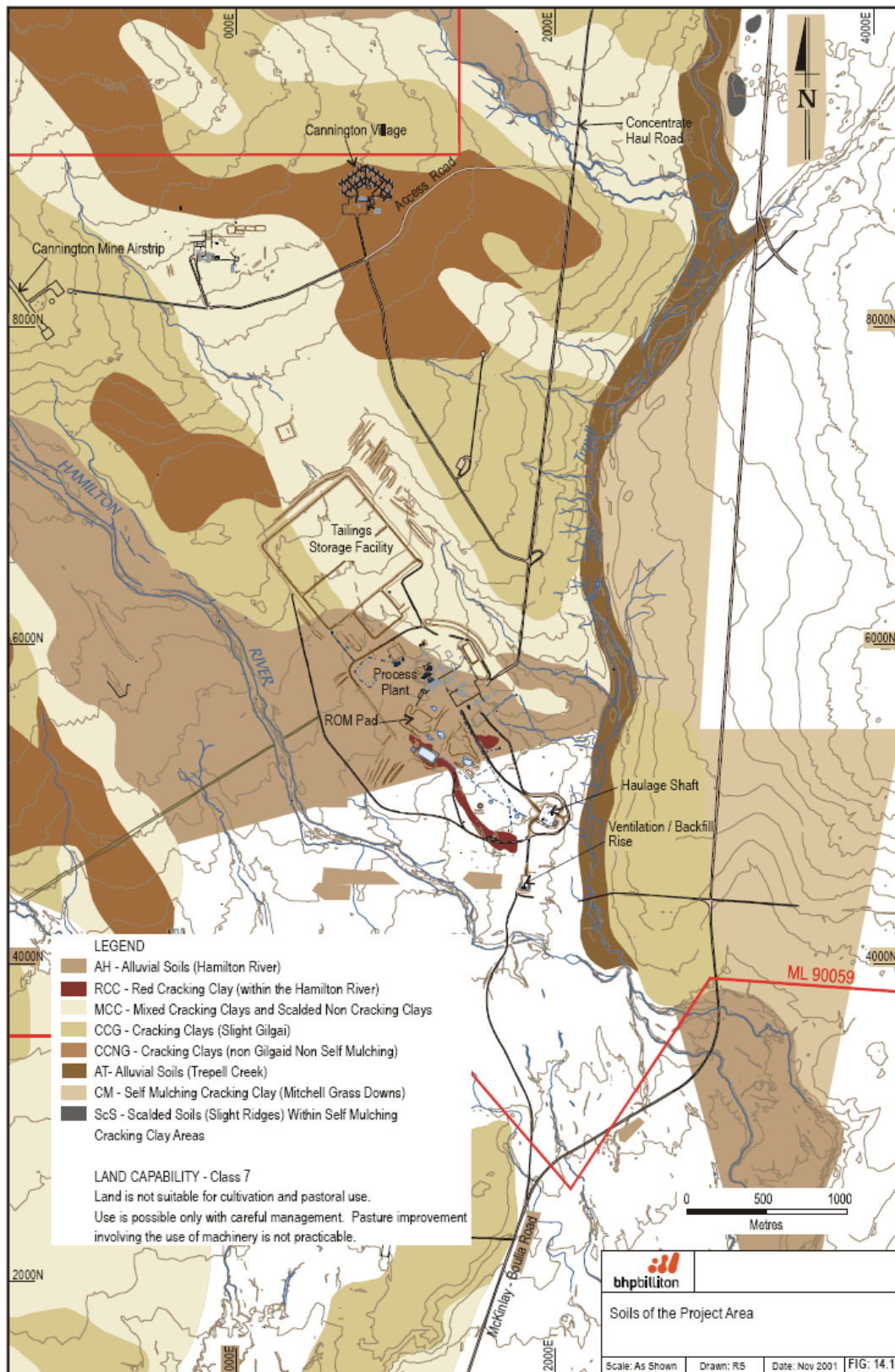


Figure 2: Soil Types of the Current Project Area

2.5 TERRESTRIAL FLORA AND FAUNA

2.5.1 Flora

Baseline flora surveys conducted in 1993 and 1994 determined the major vegetation communities on the current Project area comprised of five grassland types, several woodlands and scalded areas (Elsol J of John Miedcke and Partners, 1994). All vegetation types identified during the survey were considered widespread and common, and no rare or threatened plant species were identified. Figure 3 displays the major vegetation communities in the current Project area.

Due to changes in the vegetation classification system and sampling techniques since the initial baseline work, an additional flora survey will be undertaken for the expansion Project. This information will include Regional Ecosystem (RE) classification and mapping and will be presented in the EIS for the Project.

2.5.2 Fauna

Since the initial baseline survey performed in 1994, a number of other fauna surveys have been undertaken on the Project up to as recently as 2004. A summary of the findings from these surveys are as follows:

- A total of 267 fauna species have been recorded on the Project site over the past ten years, comprising of 32 mammals, 9 amphibians, 62 reptiles, 155 birds, six fish and three crustaceans. Seven introduced species were identified of which the Dingo, Feral Cat, Feral Pig, Fox and Goat are listed as Class 2 pest under the *Land Protection (Pest and Stock Route management) Act 2002*;
- No threatened species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) have been recorded on the Project site;
- A number of migratory and/or marine overfly species listed under the EPBC Act have been recorded on the Project site. The distribution of these species is widespread throughout eastern Queensland, and the local populations on the Project site are highly unlikely to constitute an 'ecologically significant proportion' of the total population of the species. Furthermore, the Project site is not at the limit of these species' range, nor are these species considered to be declining within the region. Therefore, it is unlikely the Project will have a significant impact on the regional populations of these species;
- One Endangered species, listed under the *Nature Conservation Act 1992* (NC Act) the Troughton's Sheathtail Bat (*Taphozous troughtoni*) was identified on the Project site. Troughton's Sheathtail Bat was known only from selected areas around the Cloncurry/Mount Isa region. This species is a cave-dweller, and is known to utilise disused mine shafts (Churchill 1998). It is also known to co-roost in some locations (Duncan et al 1999). According to discussions with Bruce Thomson from Queensland Parks and Wildlife Service¹ (QPWS), the taxonomic status of *T. troughtoni* is unclear and undergoing revision as the species may be far more widespread than first thought. Consequently, it is possible that the species will be de-listed from relevant legislation in the near future, meaning that the potential

¹ Author of "Recovery plan for cave-dwelling bats, *Rhinolophus philippinensis*, *Hipposideros semoni* and *Taphozous troughtoni* 2001-2005" Thomson et al 2002.

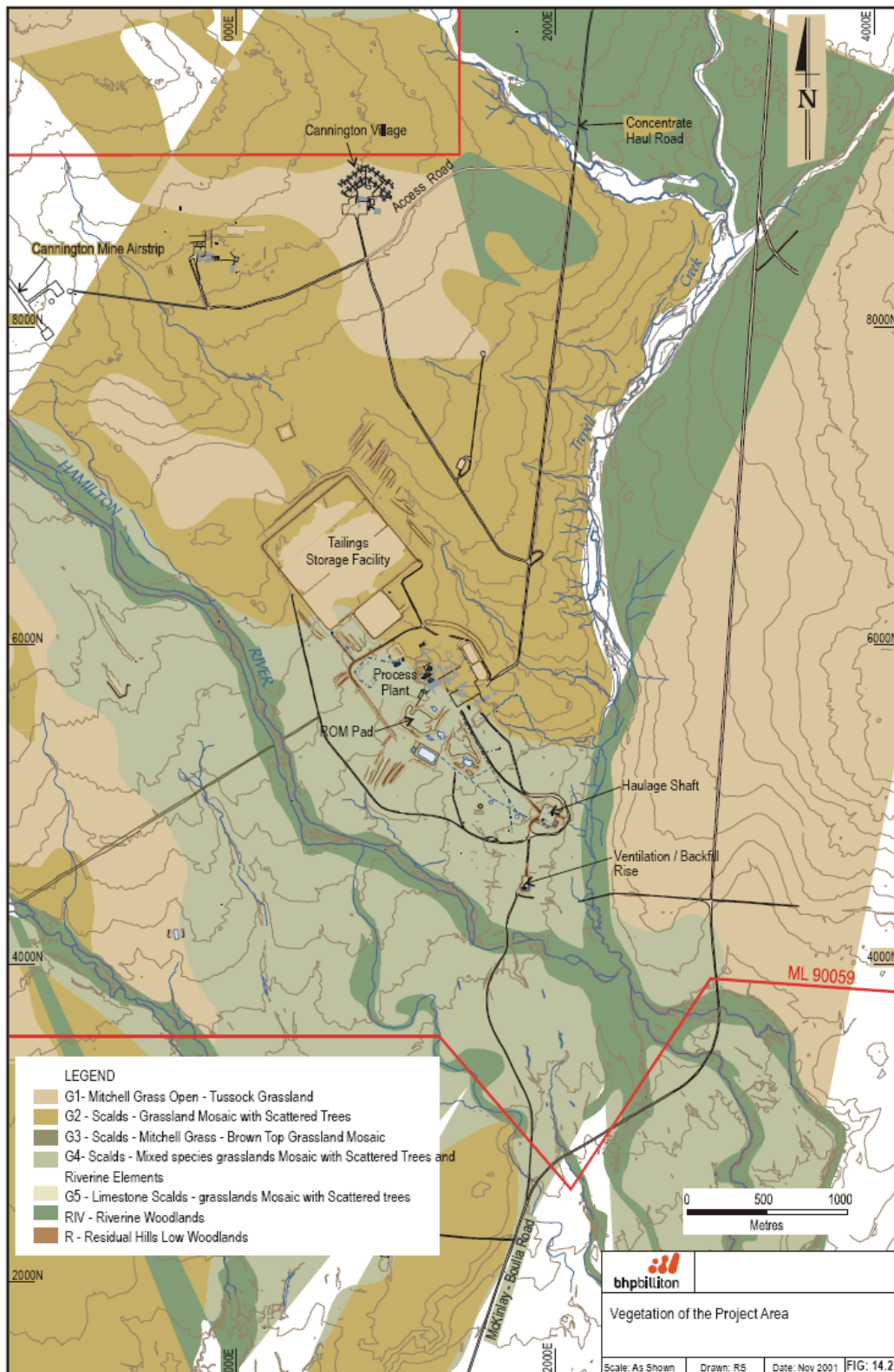


Figure 3: Major Vegetation Communities in the Project Area

presence of this species on the Project site is not an issue of significant management concern; and

- Seven Rare species, listed under the NC Act have been identified on the Project site. These included the Death Adder (*Acanthophis antarcticus*), Collett's Snake (*Pseudechis colletti*), Grey Goshawk (*Accipiter novaehollandiae*), Square-tailed Kite (*Lophoictinia isura*), Pitorella Mannikin (*Heteromunia pectoralis*), Black-necked Stork (*Ephippiorhynchus asiaticus*), and Painted Honeyeater (*Grantiella picta*). Although the expansion Project will result in increased land disturbance, it is unlikely the Project will have a significant impact on these species due to the extent of available habitat within the surrounding region.

Due to the extent of ongoing fauna surveys over the Project area and the substantial fauna database, additional terrestrial fauna surveys for the expansion Project will only be required if previous fauna surveys do not meet the requirements of the ToR.

A more comprehensive discussion on the potential impacts on each of the above listed species will be included in the EIS for the Project.

2.6 NOISE AND VIBRATION

Noise emissions from the existing operation (e.g. processing, vehicles, explosives, ventilation fans) were measured in 1998 at the Cannington mine village, contractors' camp and Cannington homestead. No major noise issues were identified during the survey. In 1999 the QB 80 ventilation fans were decommissioned, resulting in a significant reduction in operational noise.

The expansion Project will result in increased noise and vibration impact from blasting, loading and haulage, tipping at waste rock storage facilities and other activities. The likely sensitive receptors are the Project's accommodation village and Cannington station, which is located 3km south of the Project.

Potential noise and vibration impacts and mitigation strategies will be included in the EIS for the Project.

2.7 AIR

Six dust deposition gauges were installed at Cannington in April 1993. The gauges were installed in accordance with the relevant Australian Standard, and are used to obtain operational dust deposition data for the site. An additional seventh gauge was installed in 1999 and four more in 2001 in order to provide a more comprehensive operational monitoring program.

Sampling of the dust gauges is conducted each month and the available air quality monitoring results show intermittent exceedance of 4 grams per square metre per month (g/m²/month) at most gauges, including the background ones.

Additional dust gauges will be installed where required for the expansion Project and potential impacts and mitigation strategies will be included in the EIS for the Project.

2.8 ABORIGINAL CULTURAL HERITAGE

Cannington established a sound working relationship with the representatives from various Aboriginal organisations in the region via, the now inactive, Cannington Aboriginal Liaison Group (CALG).

Evidence of past Aboriginal occupancy is relatively sparse at the Project site. The two archaeological surveys and one anthropological survey conducted during the original feasibility study identified some sparse artefact scatters and Aboriginal hearths in the Project area. None of the artefacts or sites found during the surveys were classified as being significant. The majority of the known artefacts are located along the banks of the Hamilton River and some artefacts and a hearth occur at Trepell Creek.

Additional Cultural Heritage surveys will be required along the Hamilton River and Trepell Creek due to proposed creek diversions for the expansion (refer to Section 3.12) and in any Project area if not previously surveyed. Findings from these surveys, along with a Cultural Heritage Management Plan (CHMP) will be provided in the EIS for the Project.

2.9 EUROPEAN CULTURAL HERITAGE

Early maps indicate that the Project site was originally part of Toolebuc No. 8 Pastoral Lease, first settled by Europeans in 1879 after the Gregory North Pastoral District was opened. The lease was applied for and declared stocked in 1878 and granted in 1879. The lease was transferred twice between 1879 and 1892. Cadastral maps show a stock route following the McKinlay-Boulia Road.

The main historic heritage value in the Project area is Spider's Camp, an old Aboriginal stockman's camp, the remnants of which are situated in the northwest of the Project site beside the Hamilton River. This site would not be affected by proposed expansion of the Project.

Additional European Cultural Heritage surveys will be conducted over the proposed Mining Lease Application (MLA) boundaries, with the findings provided in the EIS for the Project.

2.10 NATIVE TITLE

The original approvals for the Project pre-date the Native Title (Queensland) Act, which was introduced in 1993, therefore the Project does not hold any current Indigenous Land Use Agreements (ILUA) over the Project MLs. Native Title claims currently lodged over the Project area are detailed in Table 3 below.

Table 3: Current Native Title Claim Details

Tenement Details	Native Title Claimant	Claim Number	Federal Court Number
ML 90059	Yulluna #2	QC02/5	QUD6004/02
ML 90059 & ML 90060	Mitakoodi #3	QC03/4	QUD6004/03
ML 90077	Mitakoodi	QC96/101	QUD6106/98

A Native Title plan is currently being developed with the intention to begin the negotiation process to develop agreements for the proposed MLAs for the expansion Project.



2.11 ENVIRONMENTALLY SENSITIVE AREAS

The Project will not impact on any environmentally sensitive areas directly or indirectly (refer to Figure 4 for existing ML and Figure 5, south of the existing ML, where the new MLA will be located). The land affected by the Project is not likely to become part of a protected area estate or subject to any treaty. In making this statement, consideration has been given to national parks, conservation parks, fish habitat areas, wilderness areas, aquatic reserves, national estates, world heritage listings and sites covered by international treaties or agreements e.g. Ramsar, Japan Australian Migratory Bird Agreement (JAMBA) and China/Australia Migratory Bird Agreement (CAMBA), areas of cultural significance and scientific reserves.

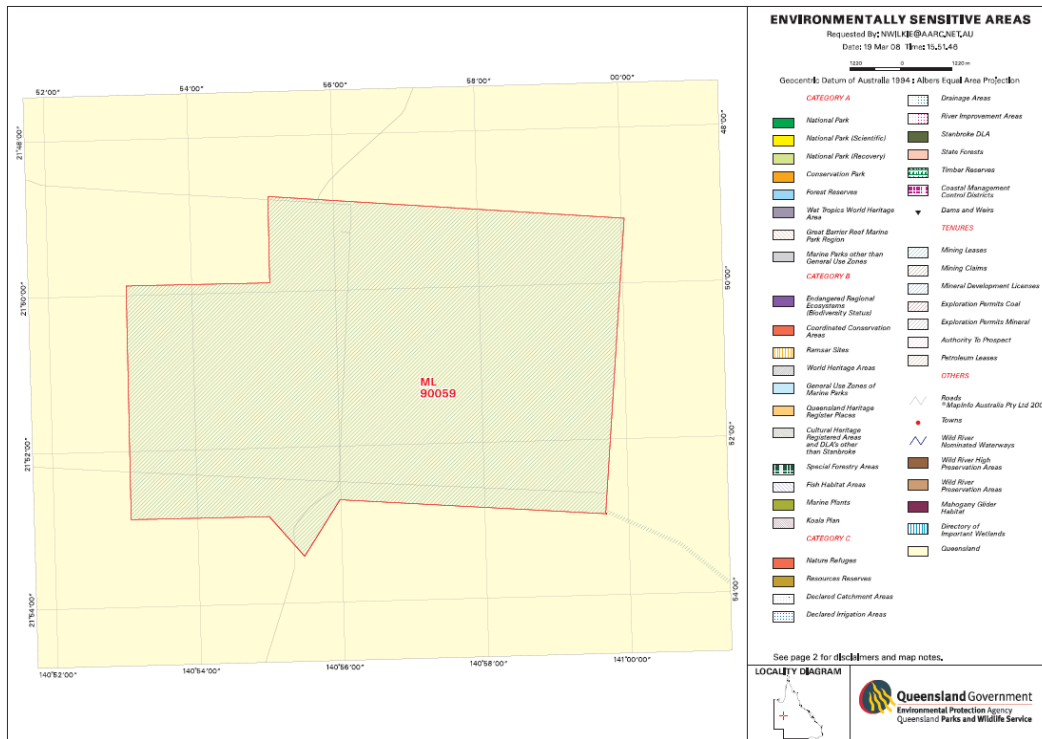


Figure 4: Environmentally Sensitive Areas Map (Project Site)

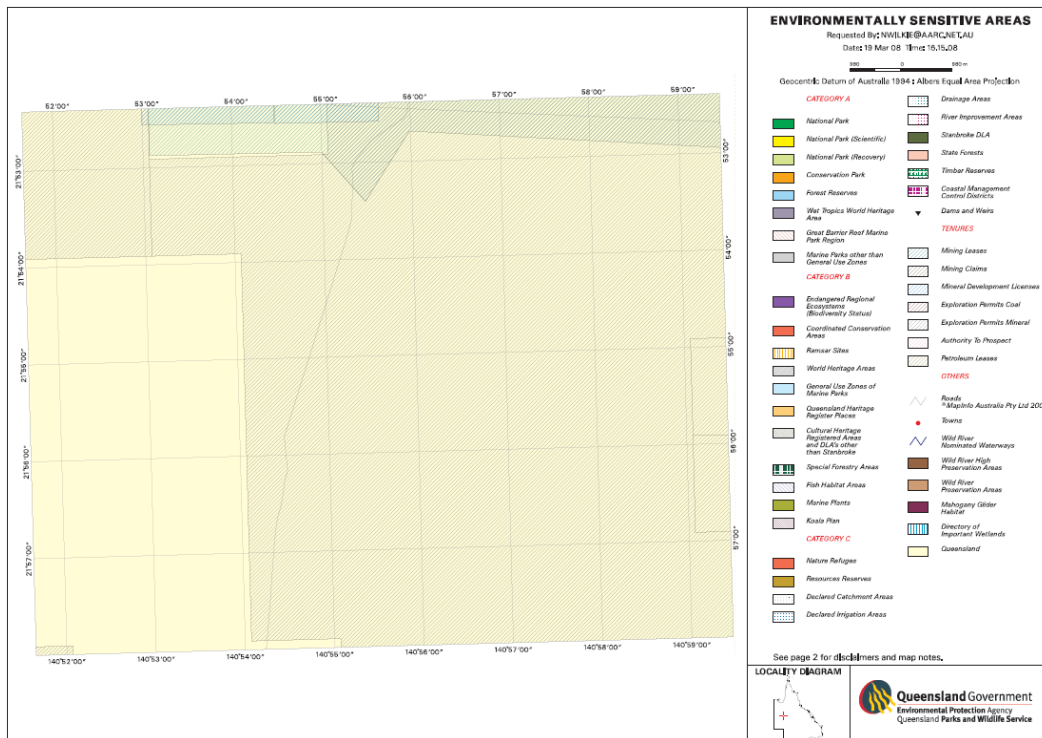


Figure 5: Environmentally Sensitive Areas Map (South of Project Site)



3.0 PROPOSED PROJECT ACTIVITIES

The closest homestead to the existing Project is Cannington Station Homestead, some 3 km to the south. Other homesteads within 10 to 40 km of the Project include Answer Downs, Cukadoo, Toolebuc, Squirrel Hills and Cowie. Due to the close proximity to the Project site, and the proposed MLA boundaries, it is likely that Cannington Station will be abandoned or relocated away from the Project site. Cannington village is located approximately 3km north of the existing Project. The village may also be relocated away from the Project site.

The borefield is located 25 km east of the Project on El Rita Holding and Toolebuc Holding.

Yurbi railhead loading facility is located about 15 km east of the town of Cloncurry. Yurbi is 180 km to the north by road from the Project site and is within Martindale Preferential Pastoral Holding and the boundary of the Cloncurry Shire. The site is accessed from the Landsborough Highway via a short access road. The regional location of the Yurbi railhead loading facility is shown in Figure 1.

Figure 6 shows the ML boundaries for the current operation along with the proposed MLA boundaries to include the expansion Project. A conceptual site layout is shown in Figure 7.

The following Sections 3.1 to 3.13 describe the mining and processing activities that are proposed for the expansion Project.

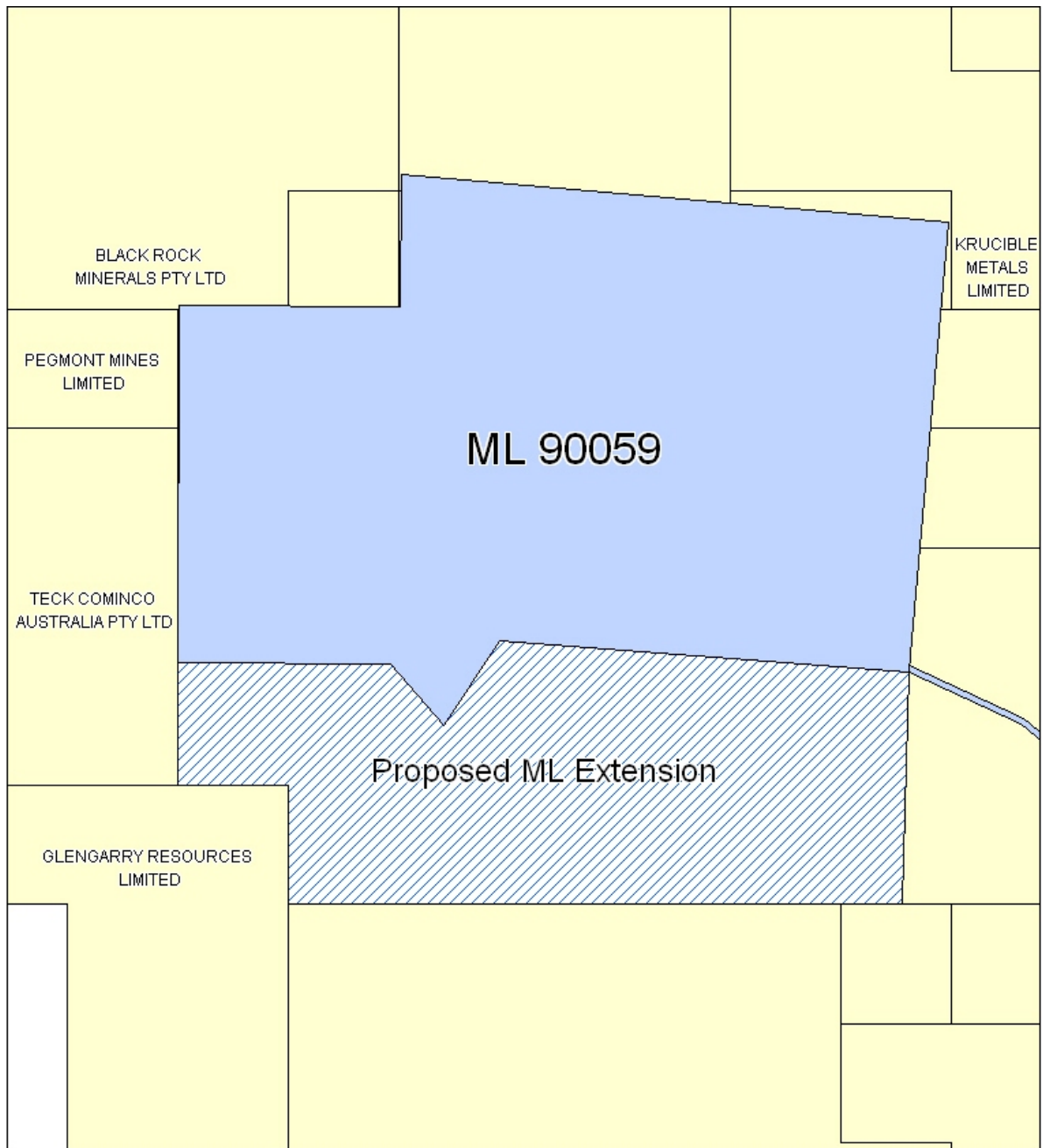


Figure 6: Current ML and Proposed MLA Boundaries

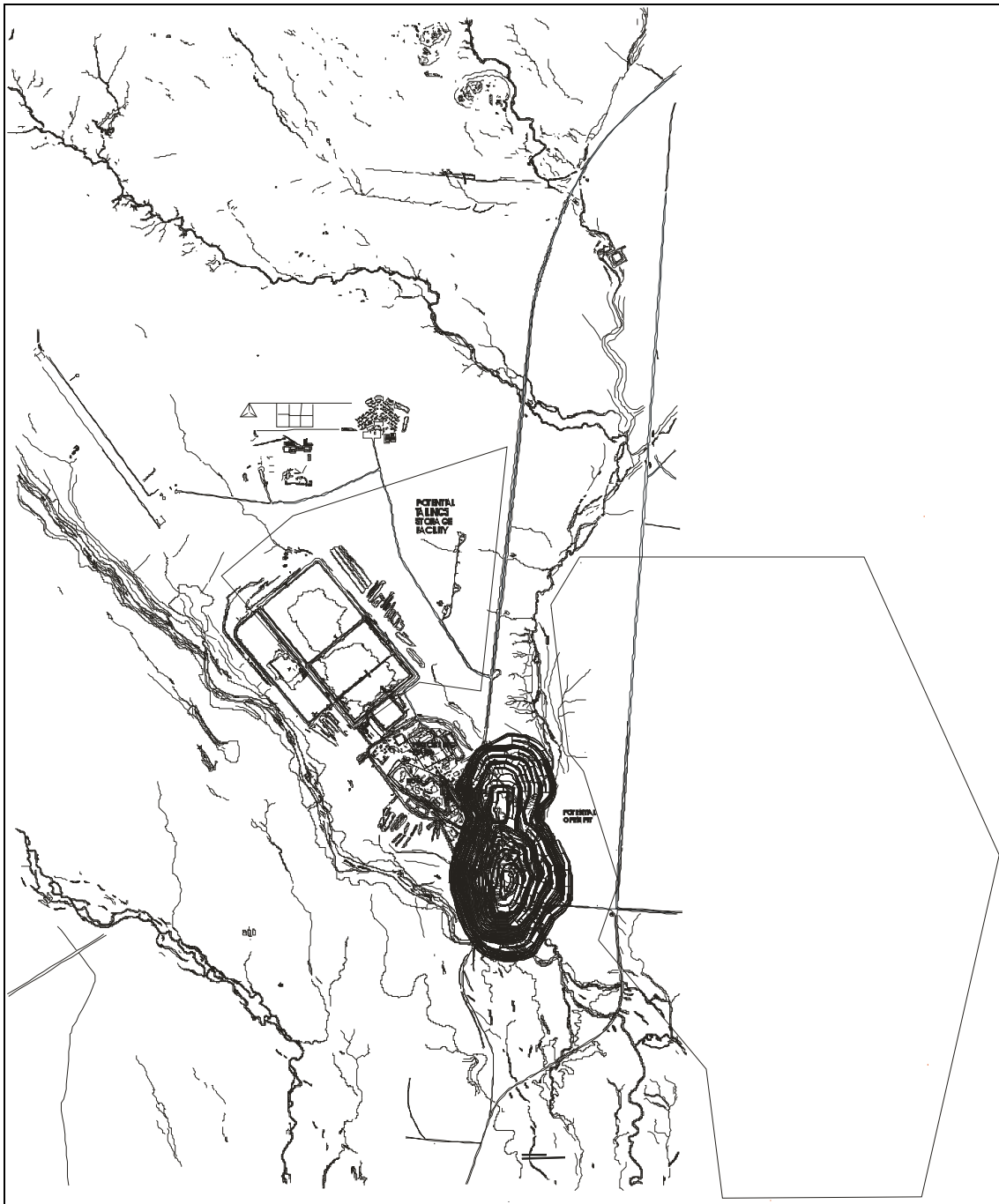


Figure 7: Conceptual Site Layout

3.1 PROJECT TENEMENTS AND OWNERS

Three MLs are held in the name of BHP Billiton Minerals Pty Ltd for the existing Project. Two MLs covering a total area of 8461 ha are granted for the mineral extraction and processing aspect of the Project. The main Project site is located on ML 90059 and its borefield is located on ML 90060. A third lease, ML 90077 was granted to provide for the establishment of the Yurbi railhead loading facility. Details of each of the three existing mining leases are summarised in Tables 4 and 5.

BHP Billiton Cannington holds Exploration Permit for Minerals (EPM) 6788 over the area of the proposed expansion Project. An additional MLA may occur to extend the ML 90060 (which lies to the south east of the main Project expansion). There is no underlying EPM for this area.

Proposed MLA boundaries are shown in Figure 6.

Table 4: Approved Project Mining Leases

ML No.	Minerals / Purpose	Surface Area (ha)	Commenced	Expiry
ML 90059	Underground mine and infrastructure with mining rights for: silver, arsenic, gold, bismuth, cadmium, clay, copper, iron ore, fluorite, germanium, gravel, limestone, lead, quartz, rock, sand and zinc.	7862	15/12/94	31/12/2029
ML 90060	Borefield and associated services and access corridors with mining rights for silver, copper, gravel, limestone, lead, quartz, rock, sand and zinc.	599	08/06/95	30/06/2030
ML 90077	Railhead loading facility.	190	07/12/95	31/12/2030

Table 5: Background Tenure Details

ML	Lease Holder	Background Tenure	Landholder	Compensation Agreement
90059	BHP Billiton	Lot 2 on MN 17 Water Reserve and Camping Reserve on Lot 3 MN 15 Lot 1 on CP865897 SL13/53193 Hol: Lily Downs Par: Tideswell	BHP Billiton	Finalised 30/11/94
90060	BHP Billiton	Lot 2083 on PH460 Hol: El Rita Par: Davis	JJ Daniels & V Daniels (deceased)	Finalised 15/05/95
90060	BHP Billiton	Lot 346 on PH1950 Hol: Toolebuc Par: Balthar	Sam and Sue Daniels & Andrew Daniels	Finalised 15/05/95

ML	Lease Holder	Background Tenure	Landholder	Compensation Agreement
90077	BHP Billiton	Lot 4105 on PH2186 Hol: Martindale Preferential Pastoral Holding No. 4105 Par: Letitia	H Monize	Finalised 02/11/95 Revised Feb 2008

3.2 ENVIRONMENTALLY RELEVANT ACTIVITIES

Table 6 describes the activities proposed to be conducted on the Project site, 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 6: ERAs Associated with the Project

Item (ERA Schedule No.)	Level of Activity	Level	License Fee (\$)	Currently Approved
6(c) Chemical manufacturing, processing or mixing	>100,000t per year	1	5,820	Yes
7(b) Chemical storage including explosives	>1000 m ³ or more	1	1,740	Yes
11(b) Crude oil or petroleum product storage	>500,000 L	1	1,740	Yes
15(b) Sewerage treatment	>100 persons <1,500 persons	1	1,500	Yes
17 Fuel burning	>500 kg/hour	1	3,000	Yes
18(a) Power Station - gas fired	>10MW	1	4,420	Yes
42(b) Mineral Processing	>100,000t per year	1	16,340	Yes
75(a)(i) Waste disposal – general waste	>50t < 2,000t per year	1	500	Yes
75(b)(iv) Waste disposal – regulated waste	≥200,000t per year	1	10,000	Yes
76(c)(i) Incinerating waste – general	>5,000t per year	1	2,280	Yes
76(e) Incinerating waste - regulated waste	Regulated waste other than clinical waste or quarantine waste	1	6,000	Yes

3.3 EXPLORATION

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

3.4 VEGETATION REMOVAL AND TOPSOIL STRIPPING

Prior to the development of any open cut pits, overburden dumps or infrastructure, vegetation and topsoil will be removed from the footprint area and stockpiled. The preferred option to dispose of large vegetation is to appoint a contractor to clear and use the timber for milling, wood-chipping, or other economically viable use.

Smaller vegetation and grasses will be removed with the topsoil and stockpiled in windrows no higher than 2m. Where necessary, stockpiles will be seeded to encourage water infiltration, microbial activity 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 required for infrastructure on the Project site is shown in Table 7. Figure 7 shows the conceptual mining and infrastructure layout.

Table 7: Estimated Land Clearance Required on the Project

Disturbance Type	Area (ha)
Open cut pit	170
Waste rock storage facilities	1200
Tailings Dam	500
Topsoil dumps	175
Roads/Tracks	60
ROM Pad	12
Process plant, work shops and facilities	32
Process Water Ponds	54
Sediment Ponds Diversions	180
Power plant	6
Landfill	4
Accommodation Camp & Support Infrastructure	36
Yurbi Railhead Loading Facility	2
GAB Exploration Borefield	0.5
Exploration	3
Total	2434.5

3.5 MINING AND HAULAGE OF THE DEPOSIT

The proposed expansion Project will be mined on the existing ML at an approximate rate of 80 Million tonnes per annum (Mtpa) (ore and waste) with approximately 7Mtpa of ore trucked to the processing plant for concentration. The expansion will also require the construction of waste rock storage facilities, with approximately 550M cubic metres (m³) of waste rock being disposed of over the life of the mine. Mining of the open cut pit will be staged, with a final pit depth of approximately 600m, and covering approximately 170ha.

An additional 65Mt of low grade ore will be stockpiled for future processing; however the stockpile will be designed appropriately as a permanent landform in the event processing of this ore does not occur (i.e. as a long term waste rock storage facility).

Ore and waste rock will be loaded into haul trucks utilising large diesel hydraulic loading units. Waste rock will be hauled using 220t capacity haul trucks; whilst ore will be transported to the processing plant using 185t haul trucks.

3.6 WASTE ROCK STORAGE FACILITIES

Waste rock will be deposited in waste rock surface storage facilities surrounding the open cut pit, on the existing ML and new MLA. Waste rock characterisation studies are currently underway, however due to the sulphidic nature of the ore body it is probable the majority of waste rock will also be sulphidic in nature. The conceptual size of the waste rock storage facilities will range from 3km x 7km at 60m in height to 2km x 6km at 100m in height. The final waste rock storage design will be dependent on waste rock competency and geotechnical studies to be undertaken for the Project

Waste rock characterisation results and strategies to manage any Potentially Acid Forming (PAF) waste rock will be included in the EIS document.

3.7 PROCESSING ACTIVITIES

The Run of Mine (ROM) stockpile will increase in size to approximately 12ha due to the higher processing rate and lower average ore grade. However the processing activities themselves are expected to remain unchanged to currently approved activities. Concentrate production will increase from 500,000 tonnes per annum (tpa) to approximately 1Mtpa.

Toll milling of ore from other companies may also occur, providing an opportunity to fill gaps in the Project's production schedule and capacity.

Transportation of concentrate from the Project site to the Yurbi railhead loading facility will continue to utilise road trains. Transport from the Yurbi facility to the Townsville port will continue to be primarily by covered rail wagons with some road transport (covered bins) of zinc concentrate in peak periods or during rail closures.

Transport of third party products may occur as an emergency solution in the event other companies have problems with their transport chain. Transport of concentrate from the Project site may also utilise the services of other company's transport chains in the event of emergencies.

Transportation of concentrate interstate and overseas is currently through shipping from the Townsville port. This will remain the main mode of transport; however alternatives for particular supplier campaigns will be evaluated.



3.8 TAILINGS STORAGE FACILITY

An estimated 86 million m³ of tailings material will be generated during the life of the Project, which will report directly to an impoundment style TSF on the existing ML. It is estimated that this facility will cover approximately 800 ha and have an average height of 25m.

3.9 WATER SUPPLY

The main water supply for the Project is from the GAB. The Project is currently licensed to extract 2210 megalitres per annum; however actual annual usage is approximately 1800 megalitres. The proposed expansion Project may increase water usage significantly per annum due to the lower ore grade and increased production. Water use minimisation and recycle/reuse maximisation will be a key focus of studies.

3.10 POWER SUPPLY

Power is currently generated on site using mainly natural gas and diesel, with a generating capacity of 37 MegaWatts (MW). The proposed expansion Project will increase power demand to approximately 50MW per annum. Alternatives to supply increased demand are being investigated and include the construction of an additional generating plant or grid connection, with a generating plant the more feasible option.

3.11 STAFFING AND ACCOMMODATION

It is anticipated the expansion Project will increase employee and contractor numbers up to 1400 equivalent persons over the long term and an additional 350 contractors may be required in the short term for construction purposes.

The existing accommodation village will require some upgrade and expansion. The sewage treatment plant and potable water treatment plant will also be upgraded to accommodate increased demand.

3.12 GENERAL INFRASTRUCTURE

The majority of general infrastructure required already exists on the Project site, including workshops, warehouses, offices, process plant, power station, and village. Some of these facilities will require relocation and / or upgrading to support the proposed expansion.

A large Ammonium Nitrate Fuel Oil (ANFO) explosives plant and magazine will be constructed to replace the small emulsion facility and magazine currently constructed on the Project.

The Yurbi railhead loading facility will require an additional storage shed to be constructed to accommodate increased concentrate production. An extension of the storage shed at the Cannington Townsville port facility may also be required.

3.13 DRAINAGE DIVERSIONS

There are several ephemeral creek lines, including the Hamilton River and Treppel Creek, which traverse the Project site. Proposed infrastructure on site such as waste rock storage facilities and the open cut pit may intercept these seasonal flow regimes in some locations, and therefore drainage diversions may be required. These drainage diversions will be designed and constructed with



consideration for current guidelines and in consultation with the Department of Natural Resources and Water (DNRW).

4.0 REHABILITATION STRATEGY

Land disturbance on the Project will be a temporary impact only, during the construction and operational phases of the Project. All land disturbances on the Project will be rehabilitated either progressively, where possible, or on decommissioning to mitigate any potential environmental impacts.

It is proposed to return the majority of the Project area back to its pre-mining land capability of Class VII and a land use of low intensity grazing (native pastures). An exception to the post-mine land capability of Class VII is in regard to the final void which will be utilised as water storage for pastoral activities on decommissioning, if the water quality in the void is acceptable for stock drinking water. The land capability of the void will be Class VIII.

Topsoil will be stripped and stockpiled from disturbed areas for re-use in the rehabilitation program to provide a seed bank and growth media for revegetation activities.

Ongoing revegetation and erosion monitoring of rehabilitation works will be conducted on an annual basis to ensure that rehabilitated areas are progressing towards the completion criteria for rehabilitated landforms and the land use of low intensity grazing.

4.1 WASTE ROCK STORAGE FACILITIES

The final waste rock storage facility rehabilitation design will be detailed in the EIS document. The final slope of each lift of the waste rock storage facility will depend on the competency of the rock material and landform planning. Waste rock is being characterised and a management program will be implemented. It is envisaged that any acid forming waste rock will be encapsulated by non-acid forming waste.

The slopes and top of the waste rock storage facilities will be topsoiled where possible and deep ripped to bind in the topsoil to the subsoil or waste. Revegetation will use species suitable for the final land use.

4.2 FINAL VOIDS

The final void created by the open cut pit will be used for water storage for pastoral activities if water quality permits, otherwise it will be bunded and/or fenced.

If 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 available to be pumped to a stock watering point. Consultation with stakeholders will be undertaken to determine the best means of pumping or access.

If water in voids is not suitable for stock drinking water then the voids will be bunded and/or fenced to prevent stock access as described in the *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 2m, with a minimum base width of 4m and be located at least 10m beyond the area potentially affected by any instability of the pit edge.

4.3 TAILINGS STORAGE FACILITY

The TSF will occupy approximately 800 ha of land. On decommissioning, a 'store and release' rehabilitation strategy is proposed for the TSF. The store and release treatment is well suited to the



arid, low rainfall, high evaporation climate of the area. The principle involves providing sufficient benign material above the TSF material to act as a moisture store and then release that moisture via plant evapotranspiration or surface evaporation.

Additional research would be conducted during the mine life to determine the actual thickness of the layer necessary to cap the TSF surface, and the size, strength and geochemical characteristics of the construction material (e.g. whether it would also function as a capillary breaking layer).

The TSF rehabilitation design intent and proposed research activities will be detailed in the EIS document.

4.4 YURBI RAILHEAD LOADING FACILITY

Any infrastructure not required by the stakeholders, or by Queensland Rail as support for existing or future rail users, will be removed. Salvaged topsoil will be respread and local grasses, trees and shrubs will be re-introduced. Dams will be retained in support of stock and native fauna. Soil and earth contaminated by lead and zinc at significant levels will be transported to the Project site for disposal in the TSF prior to capping or alternative licensed facility for disposal.

4.5 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 landholder or other stakeholders.

4.6 ACCESS ROADS

Access roads required for pastoral activities will not be rehabilitated. This will be confirmed by written agreement with the landholder. Roads that are to be rehabilitated will be deep ripped, topsoiled and seeded with species suitable for the intended land use.

5.0 COMMUNITY CONSULTATION

5.1 INTERESTED PERSONS

The following definitions of interested and affected persons have been taken from the QEPA *Guideline 12 – The EIS Process for Non-standard Mining Projects*.

“Interested persons are defined as persons nominated by the proponent that have an interest in the Project. Interested persons may include a local community progress association, a local/state/national environmental action group, and affected land users other than land holders, any person who might have a substantial interest in the project or its impact.”

5.2 AFFECTED PERSONS

A person is an “affected person” for a project (s38) if the person is:

(1) any of the following under the Native Title Act 1993 (Commonwealth) for the operational land or for an area that includes any of the land:

- (a) a registered native title body corporate;
- (b) a registered native title claimant;
- (c) a representative Aboriginal/Torres Strait Islander body; or

(2) a relevant local government for the operational land; or

(3) a person mentioned below for the operational land or any land joining it:

- (a) a registered proprietor - for freehold land;



(b) a person recorded in the register as the registered holder of the interest - for land that is held from the State for an estate or interest less than fee simple and for which the interest is recorded in a register mentioned in the Land Act 1994 (Land Act), section 276;

(c) a holder of, or an applicant for, the tenement - for land subject to a mining claim, mineral development licence or mining lease;

(d) a holder of the authority; or a lessee under the lease; or a licensee under the licence - for land subject to an authority to prospect or a lease or licence under the Petroleum Act 1923;

(e) a trustee of the land - for land under the Land Act or the Nature Conservation Act 1992 (NCA) for which there are trustees;

(f) a grantee of the land - for Aboriginal land under the Aboriginal Land Act 1991 (ALA) that is taken to be a reserve because of section 87(2) or 87(4)(b) of that Act;

(g) a trustee for the land - for DOGIT land under the ALA or the Torres Strait Islander Land Act 1991;

(h) a relevant local government - for land held under a lease under the Local Government (Aboriginal Lands) Act 1978, section 6;

(i) a grantee of the land - for Torres Strait Islander land under the Torres Strait Islander Land Act 1991 that is taken to be a reserve because of section 84(2) or 84(4)(b) of that Act;

(j) a trustee of the land - for land under a lease from the State under the Aborigines and Torres Strait Islanders (Land Holding) Act 1985 that has been excised from land granted in trust for Aboriginal or Torres Strait Islander purposes under the Land Act;

(k) the State - for land that is any of the following:

- unallocated State land;

- a reserve under the Land Act for which there is no trustee;

- a national park, national park (Aboriginal land), national park (scientific), national park (Torres Strait Islander land), national park (recovery) or forest reserve under the NCA;

- a conservation park under the NCA for which there are no trustees;

- a State forest or timber reserve under the Forestry Act 1959;

- a State-controlled road under the Transport Infrastructure Act 1994;

- a fish habitat area under the Fisheries Act 1994.

- another person prescribed under a regulation to the EP Act.

Affected Persons for the Project are shown in Table 9 below.

5.3 CONSULTATION PROCESS

All affected and interested persons identified will be included in the community consultation program for the Project and will be provided with a copy of the ToR Notice and EIS Notice for public comment. The community consultation program will include meetings with affected and interested persons as required. All correspondence with interested and affected persons will be recorded in the Consultation Report as a part of the EIS.

The draft ToR will be released for public comment, and to interested and affected persons, and advisory bodies for at least 30 business days. Anyone can make comments on the draft ToR to the QEPA. At the end of the comment period, copies of all comments received by the QEPA will be given to the proponent. BHP Billiton Cannington will then prepare the following:

- A written summary of the comments;
- A response to the comments; and
- Proposed amendments to the ToR as a result of the comments received.

The above information must be provided by BHP Billiton Cannington to the QEPA within 20 business days of receiving copies of the documents. However, a longer period of time can be agreed between BHP Billiton Cannington and the QEPA. The QEPA will then prepare and publish the final ToR based on the responses from BHP Billiton Cannington within 20 business days.



BHP Billiton Cannington will then undertake the necessary assessments, research and consultations to prepare the EIS, in accordance with the final ToR. The EIS will support an application for Project approvals, in particular a new EA.

BHP Billiton Cannington will submit the completed EIS to the QEPA. The QEPA will then assess the EIS and decide whether or not it adequately addresses the final ToR. If it does, BHP Billiton Cannington must then publish an EIS Notice and give a copy of the EIS Notice to each affected and interested person. The submission period for public comment will be set by the QEPA and must be at least 20 business days. Copies of the EIS will be made available to all interested and affected persons and Advisory Bodies. The QEPA will accept all properly-made submissions received during the submission period. The QEPA will provide BHP Billiton Cannington with a copy of all the submissions received on the EIS. BHP Billiton Cannington must then prepare a response to the submissions and make any necessary amendments to the submitted EIS.

After receipt of the responses, the QEPA will prepare and give an EIS Assessment Report to BHP Billiton Cannington. This Assessment Report will consider the final ToR, the submitted EIS, all properly made submissions, BHP Billiton Cannington responses to submissions and the standard criteria in preparing the EIS Assessment Report. The Assessment Report will, among other things, recommend any relevant conditions that will be necessary for the Project to proceed.

6.0 EIS TRIGGER CRITERIA

Table 10 details an assessment of the Project against the QEPA's EIS Trigger Criteria as set out in *Guideline 4 – Deciding the Level of Impact Assessment for the Mining Industry*. It can be seen from this assessment that the Project triggers the criteria for an EIS in relation to ERAs, mining rate, and possibly more than 25ha of post mining unbeneficial land use.

Table 10: EIS Trigger Criteria

EIS Trigger Criteria	Triggered	Comments
1. Significant Impact on Category A or B environmentally sensitive areas	No	No Category A or B environmentally sensitive areas identified on the Project site.
2. Involve any mining in a marine area	No	The Project is located approximately 460 km from the coast.
3. Involve any mining less than 500 m landward from the highest astronomical tide	No	The Project is located approximately 460 km from the coast.
4. Require the construction of more than 150 new dwelling units	No	The expansion Project will not require construction of more than 150 new dwelling units.
5. Include any activity that would otherwise be a Level 1 ERA with an annual fee greater than \$4000	Yes	See Table 6.
6. Involve the mining of more than 2 million tonnes of mineral or run of mine ore per annum	Yes	The mining rate for the Project may be up to approximately 7Mt of run of mine ore per annum.
7. Involve the abstraction of more than 2 million m ³ of water per annum from natural surfaces and/or groundwater sources	Yes	Water requirements for the expansion Project may be up to a approximately 4 million m ³ per annum.
8. Result in more than 25 ha remaining post mining in a non-beneficial land capability where an acceptable alternative may be feasible	Yet to be determined	Current mine planning indicates that final voids will be approximately 170ha and may be of a non-beneficial nature. Refer to Section 4.2.
9. Involve any non-standard mining activity less than 2 km from a town	No	The nearest township is approximately 70km from the Project
10. Contain a dam that requires a dam failure assessment under the <i>Water Act 2000</i>	No	Hazardous dams only.
11. Include mining for uranium or asbestos	No	

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