

Executive Summary

INTRODUCTION

This *Environmental Assessment* has been prepared by R.W. Corkery & Co. Pty. Limited to accompany an application for project approval by YTC Resources Limited (the Proponent) to construct and operate the Hera Project (the Project).

The Project is located approximately 100km southeast of Cobar in western New South Wales and approximately 4km south of the village of Nymagee (**Figure A**).

The Project is classified as a Major Project in accordance with Paragraph 5, Schedule 1 of *State Environmental Planning Policy (Major Development) 2005*. As the Director-General's Requirements for the Project were issued prior to the repeal of Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) the Project is to be assessed under that Part of the Act. This *Environmental Assessment* has been prepared in accordance with the requirements of Section 75H of Part 3A of the EP&A Act.

THE PROJECT

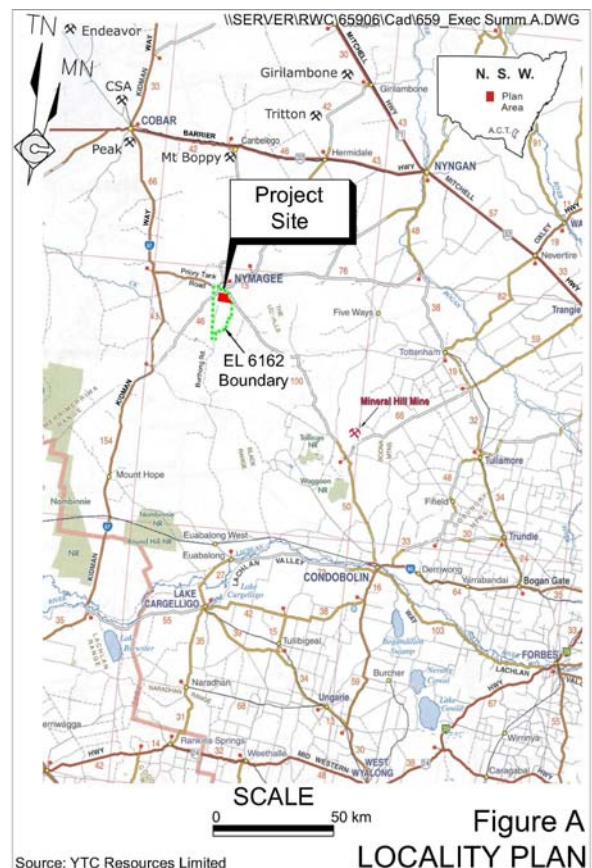
The Project would mine and process up to 350 000t of metalliferous ore per year to produce gold-silver doré (unrefined bars) and approximately 40 000t per year of bulk lead-zinc concentrate for sale to both domestic and international customers.

The Project would require establishment of an underground mine, a Processing Plant, run-of-mine (ROM) pad, a temporary Waste Rock Emplacement, a Tailings Storage Facility, a Mine Camp, site offices and ancillary infrastructure for mining and related activities.

The operational life of the Project would be a total of nine years, comprising 1.5 years of site establishment activities, 5.5 years of mining and processing operations, and 2 years of rehabilitation activities.

THE PROPONENT

The Proponent for the Project is YTC Resources Limited, an Australian Securities Exchange listed exploration and mining company based in Orange, New South Wales.



THE PROJECT SITE

The Project Site encompasses all areas of proposed Project-related disturbance and is located wholly within 'The Peak' property (Lot 664, DP 761702). It covers an area of 1 532ha. 'The Peak' property is held by the Proponent under Western Lands Lease WLL2455.

The Project Site lies within the Proponent's Exploration Licence EL6162.



PROJECT OBJECTIVES

The principal objectives of the Project are to:

- establish an underground mine for the production of gold, silver and base metals in a cost-effective and an environmentally responsible manner;
- develop an operation that would contribute to the local, regional, State and national economies; and
- rehabilitate all areas disturbed during the Project life following cessation of mining to form a self-sustaining and geotechnically stable final landform that would be suitable for end land uses of grazing and nature conservation.

PLANNING CONTEXT

The application for project approval is made possible because the Project Site is classified Zone 1(a) (General Rural) under the *Cobar Local Environment Plan 2001*. Mining is permissible with consent within that zone.

The Project would be developed and operated in accordance with the following State and regional planning instruments.

- *State Environmental Planning Policy (Major Development) 2005*.
- *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*.
- *State Environmental Planning Policy (Rural Lands) 2008*.
- *State Environmental Planning Policies 33, 44 and 55*.

The Proponent anticipates that, in addition to project approval, the following approvals would be required for the Project.

- An Environment Protection Licence from the Office of Environment and Heritage (OEH).

- A Mining Lease from the Division of Resources and Energy.
- A Section 138 Permit or deed from Cobar Shire Council to construct the site intersection.
- A Dam Safety Approval from the NSW Dam Safety Committee for the Tailings Storage Facility.
- An Explosives Storage and Use Licence from WorkCover Authority NSW.

PROJECT DESCRIPTION

The principal components of the Project are displayed in **Figures B** and **C**. A number of components were approved by the then Department of Primary Industries in 2006 under Part 5 of the EP&A Act following the preparation of a *Review of Environmental Factors* (RWC, 2006). These components are listed below, and highlighted in green on **Figure B**.

- Construction and use of infrastructure required for an underground mine including a box cut, portal and decline, magazine and ventilation rises.
- Construction and use an integrated ore stockpile area and temporary Waste Rock Emplacement.
- Installation and use of one or more diesel generators within the power station and associated fuel storage facilities.
- Construction and use of site offices, ablutions facilities, vehicle parking, workshop, laydown area and associated infrastructure.
- Establishment of communications facilities.
- Construction and use of surface water management structures.
- Construction and use of a site access road (the Light Vehicle Access Road).



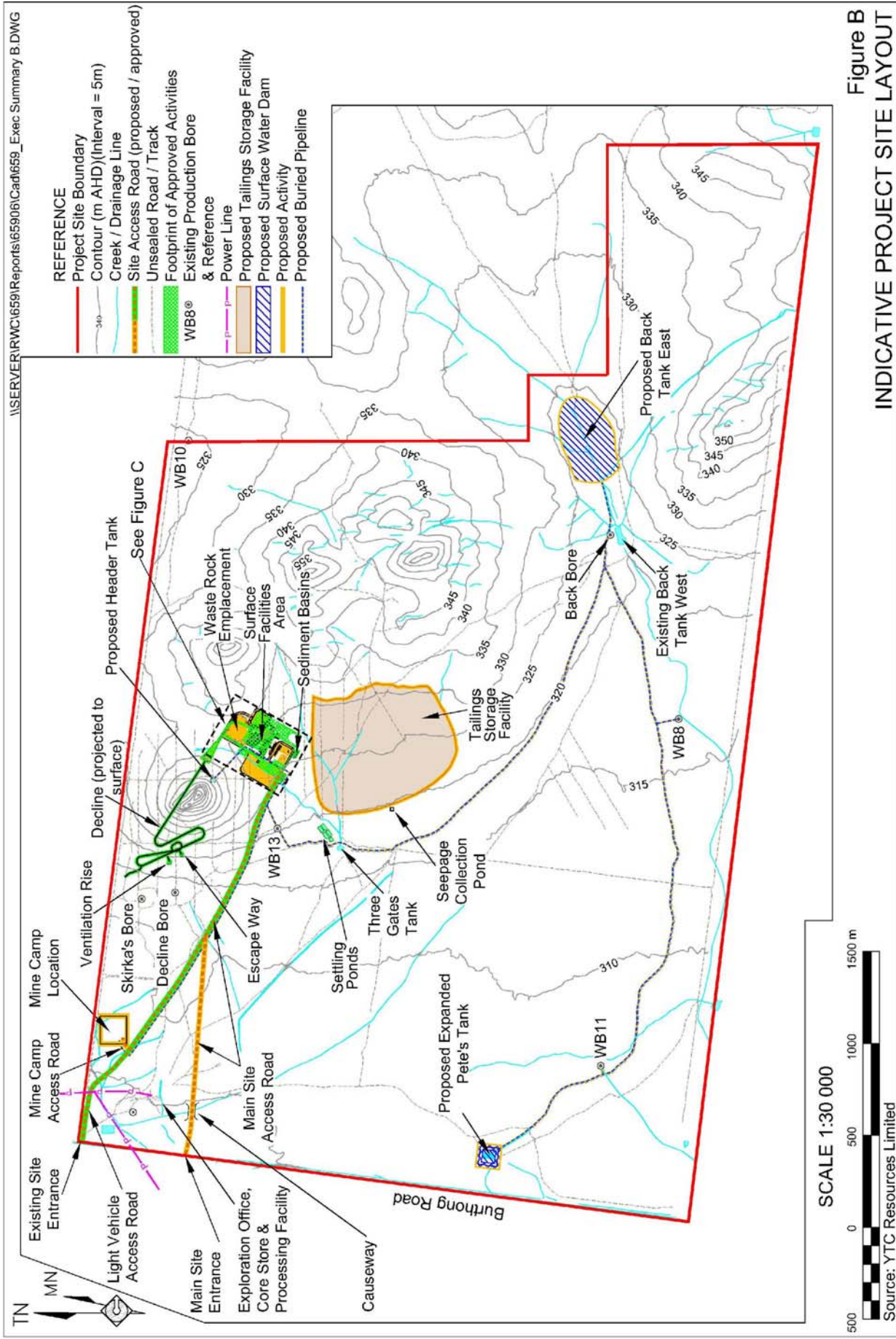
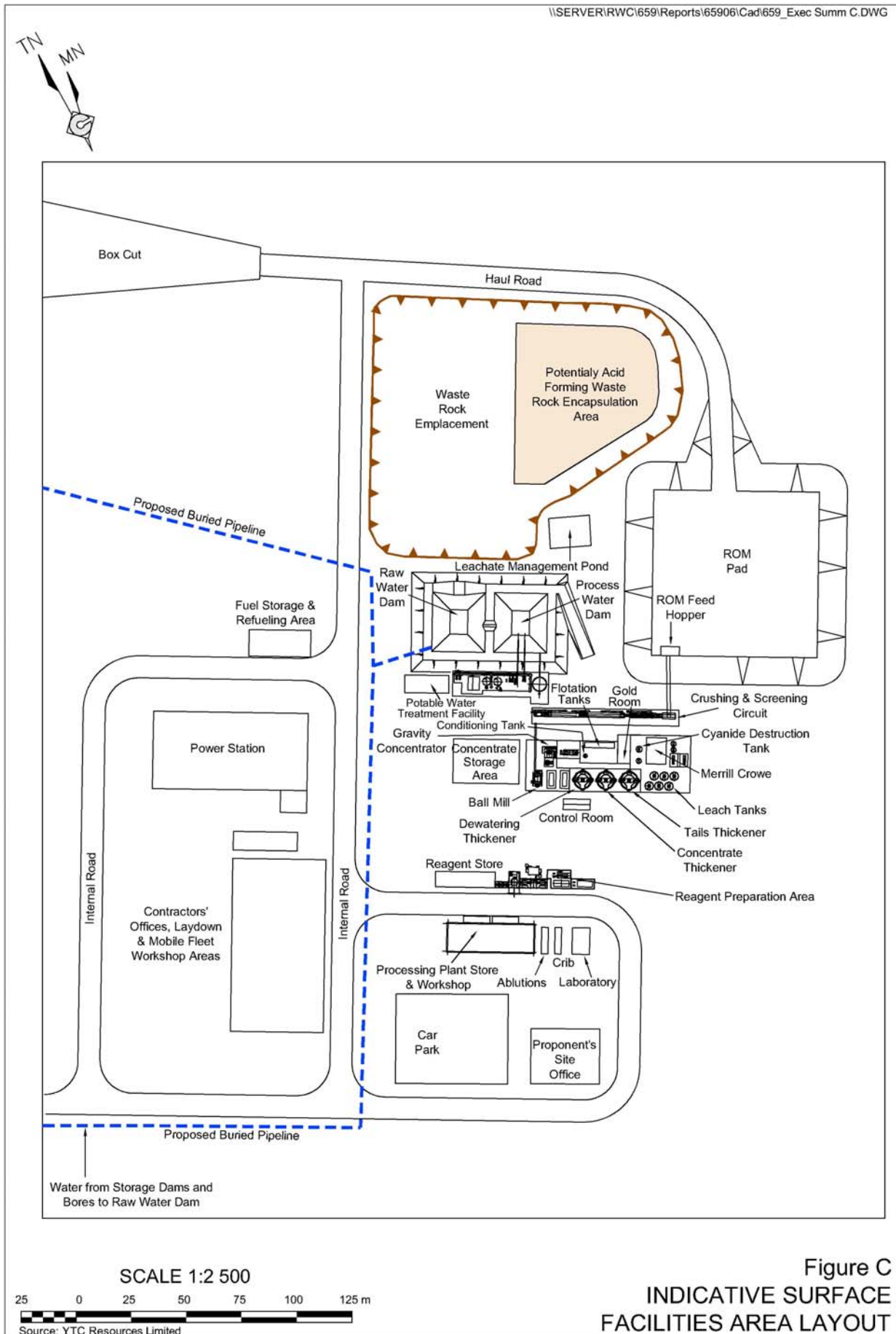


Figure B
INDICATIVE PROJECT SITE LAYOUT





Project approval is sought for the following activities (marked in orange on **Figures B and C**).

- Extraction of a maximum of approximately 350 000t per year ore using underground sublevel open-stope mining methods for approximately 5.5 years.
- Construction and use of the Surface Facilities Area incorporating a range of approved infrastructure including expanded Proponent's and Contractor's site offices, ablutions facilities, vehicle parking, power station, fuel storage, refuelling area, workshop and laydown areas.
- Construction and use of a Processing Plant within the Surface Facilities Area comprising crushing and grinding, gravity separation, flotation, leach and gold recovery circuits and ancillary infrastructure.
- Construction and use of a Tailings Storage Facility.
- Construction of a Mine Camp to house up to 72 mine personnel and visitors to the site.
- Construction and use of a surface water harvesting system, including expansion of an existing dam (Pete's Tank) to 20ML capacity and construction of a new 90ML capacity Back Tank East.
- Construction of a water reticulation system that would connect the surface water storage dams and existing groundwater bores with the Raw Water Dam and the Mine Camp.
- Construction and use of the Main Site Access Road and the associated intersection to allow site access from Burthong Road.
- Construction of the Main Site Access Road for use by heavy and light vehicles and the Mine Camp Access Road for light vehicle access to the Mine Camp and Surface Facilities Area,

- Transportation of bulk concentrate from the Project Site to the Proponent's customers using the surrounding public road network.
- Construction and use of ancillary infrastructure, including soil stockpiles, core storage yards, internal roads and tracks and sediment and erosion management structures not already approved.
- Construction and rehabilitation of a final landform that would be geotechnically stable and suitable for end land uses of agriculture and nature conservation.

Site Establishment and Construction

The initial approximately 18 months of the Project would involve the following site establishment and construction activities (see **Figures B and C**).

- Construction of the Main Site and Light Vehicle Access Roads and the construction and upgrading, respectively, of intersections between these access roads and Burthong Road.
- Development of the box cut, portal and decline to the underground mine.
- Construction of the ROM pad, Temporary Waste Rock Emplacement and Surface Facilities Area.
- Construction of the Mine Camp and the Mine Camp Access Road.
- Construction of the Tailings Storage Facility.
- Expansion of Pete's Tank and the construction of the Back Tank East.
- Establishment of surface water management structures and water harvesting infrastructure connecting the surface water dams and groundwater bores to the Raw Water Dam.

It is anticipated that the above-noted activities would involve disturbance to approximately 77ha of land comprising approximately 75ha of native vegetation.



The soils excavated would be stockpiled and used during progressive and final rehabilitation activities. Vegetation cleared for site establishment would be retained on site and would be used to provide structural complexity and habitat within sparsely vegetated sections of the Project Site or on the rehabilitated landform.

Mining Operations

Following the establishment of the box cut the portal and the decline, the Proponent would develop an underground mine using the conventional sublevel open stoping mining technique.

The Proponent would develop a range of stope designs to permit extraction of the ore material. The detailed design of each stope would be determined following completion of additional drilling during site establishment operations to better define the boundary between classes of material as well as the geotechnical characteristics of the materials to be mined. The mine design would be developed to ensure that there would be no surface subsidence within the Project Site.

Backfilling of underground stope voids with waste rock would be undertaken where it is necessary to provide for local mine stability and to allow extraction of higher grade resources in localised areas. This would also reduce the quantity of waste rock to be transported and stored at the surface with resulting reduced environmental impacts and mining costs.

Two ventilation rises would be installed. One ventilation rise, fitted with an appropriately sized extraction fan at the surface, would act as an exhaust vent for return air, while the second ventilation rise (in combination with the decline) would allow air intake into the underground mine. The second ventilation rise would be equipped as an escape way to permit emergency egress.

Processing Operations

Extracted ore material would be placed on the ROM pad and processed within the Processing Plant. Ore crushing, grinding, flotation, gold extraction and production and storage of gold-silver doré and the bulk lead-zinc concentrate would occur within the Processing Plant.

The tailings, the by-product of the ore processing operations, would be dewatered and pumped to the Tailings Storage Facility.

Mining Rate

The proposed ore material mining rate would increase from approximately 235 250t in Year 2 of the Project to approximately 351 259t per year for the remainder of the life of the mining operations. The waste rock mining rate would decrease from approximately 171 000t in Year 1 of the Project to approximately 38 500t in Year 6.

Waste Rock Management

Waste rock, or material that contains insufficient metalliferous material to justify processing, would be either transported to the surface for use in the construction of surface infrastructure or temporarily stockpiled within the Waste Rock Emplacement (**Figure B**) or would be retained underground for stope backfilling operations.

Approximately 280 000m³ of waste rock would be generated throughout the life of the Project, of which approximately 100 000m³ would be used for stope backfilling while the remainder would be used for site establishment activities, principally the construction of site access roads and the Tailings Storage Facility.

Test work undertaken on the waste rock material indicates that approximately 30% of the waste rock may be potentially acid forming. As a result, the temporary Waste Rock Emplacement would include a Leachate Management Pond for the



collection of all potentially acidic leachate for subsequent use within the Processing Plant. Potentially acid forming waste rock material would not be used for site establishment activities and would be transported back underground as a priority.

Tailings Management

The tailings, in the form of thickened slurry, would be pumped from the Processing Plant to the Tailings Storage Facility for the separation of the water from the solids and for the long-term storage of the solids. The water collected within the decant pond within the facility would be pumped back into the Process Water Dam (**Figure C**) for reuse in ore processing activities.

The Tailings Storage Facility has been designed to hold approximately 1.69 million cubic metres of tailings and would be sufficient to contain all tailings produced by the Project.

The concentration of weak-acid dissociable cyanide in the supernatant water would be less than 10ppm and as such no adverse cyanide-related impacts on biodiversity are expected to occur.

Finally, the Tailings Storage Facility would be constructed to ensure that seepage or infiltration into the underlying aquifer and degradation of the existing groundwater quality would not occur. A seepage collection pond, to be located on the downslope side of the facility, would be installed as an additional safeguard for collection of any water that may seep from the facility.

Operational Water Requirements

The operational water requirements for the Project would be approximately 187ML/year. That water would be sourced entirely from on-site sources in the priority order indicated below.

- Groundwater sourced from underground mine dewatering operations.

- Stormwater run-off from disturbed sections of the Project Site and stored within surface water management structures.
- Stormwater run-off stored in the expanded Pete's Tank (20ML) and Back Tank East (90ML).
- Groundwater sourced from existing, licenced production bores within the Project Site.

Transportation

The 85th percentile traffic movements that would be generated during the construction and operational phases of the Project would be as follows.

Project Phase	Light Vehicles	Heavy Vehicles	Oversize Vehicles
Construction	40	10	2
Operations	30	6	0

The bulk concentrate product would be transported from the Project Site by public roads to Cobar from where the material may be transported by road to the north via Kidman Way or east via the Barrier Highway. Alternatively, bulk concentrate may be transported to the Cobar Rail siding for onward transportation by rail.

Project Life and Hours of Operation

The Project life would be 9 years. The Project would operate 7 days per week with the following hours of operations.

Activity	Proposed Hours of Operation
Vegetation clearing and topsoil stripping	7:00am to 6:00pm
Construction operations – Box cut	
Construction operations – Remainder	24 hours per day
Underground mining operations	
Maintenance operations	
Processing operations	
Transportation operations	7:00am to 10:00pm
Rehabilitation operations	7:00am to 6:00pm



Employment

The Proponent estimates that the Project would provide approximately 100 full-time equivalent positions during site establishment phase and up to 100 full-time equivalent positions during the operational phase. This would be divided almost equally between employees of the Proponent and the mining contractor.

Rehabilitation and Decommissioning

The Proponent would adopt a progressive approach to the rehabilitation of disturbed areas within the Project Site to ensure that, where practicable, areas where mining-related activities are complete are quickly shaped and revegetated to provide a stable final landform. The progressive formation of the post-mining landform and the establishment of a vegetative cover would minimise the potential Project-related visual amenity and air quality impacts.

The final landform that would be created following post-mining would as far possible mimic the existing topography. It would include the following components.

- A bunded and fenced box cut with side slopes of 1:3 (V:H) or less and a sealed portal. The portal would be sealed in a manner that it may be re-opened in the event that mining operations recommence in the future.
- Appropriately sealed ventilation rises.
- A shaped, covered and vegetated Surface Facilities Area and Mine Camp with all infrastructure removed and final topography closely mimicking existing topography.
- A free-draining and appropriately covered Tailings Storage Facility with a slightly domed upper surface to facilitate shedding surface water and embankment slopes of approximately 1:3 (V:H) or less.

The on-site surface water storage dams and site access roads (with width reduced to that required for ongoing land management) would indicatively remain following completion of the Project.

Rehabilitation operations would be undertaken in accordance with the *Mining Operations Plan*, including a detailed rehabilitation plan, to be prepared for the Project following project approval.

Biodiversity Offset Strategy

The Proponent would implement a Biodiversity Offset Strategy that would protect one of two 628ha Biodiversity Offset Areas. In summary, the preferred Biodiversity Offset Area comprises the eastern section of “The Peak”. Use of that area for biodiversity purposes, however, would depend on agreement to close a section of Travelling Stock Reserve 8792. As agreement to close that section of the reserve has not been achieved, the Proponent has identified and negotiated an option to purchase the “Chelsea” property located approximately 25km to the southeast of the Project Site. The Proponent has identified an Alternative Biodiversity Offset Area within the eastern section of that property. The proposed Biodiversity Offset Strategy would result in the final Biodiversity Offset Area being managed for biodiversity purposes in perpetuity. Management measures that would be implemented would include the following.

- Fencing of the entire Biodiversity Offset Area in a manner to exclude feral animals, particularly goats.
- Implementation of weed and pest management measures.
- Amelioration where required to re-establish pre-existing vegetation communities.
- Preparation of a *Biodiversity Management Plan*.



ISSUE IDENTIFICATION AND PRIORITISATION

Project-related environmental issues likely to be of greatest significance to the local environment, the neighbouring landowners and the wider community were identified through a program of community and government agency consultation, preliminary environmental studies and literature review.

Consultation

Consultation with the local community principally involved:

- informal discussions with individual land owners and residents of Nymagee village and surrounding areas;
- a formal bore and residence census completed by the Project Manager to confirm the location of all residences surrounding the Project Site and identify those community members reliant on water obtained from bores; and
- formal community information and feedback forums held in Nymagee village on 16 August 2010, 15 December 2010 and 16 May 2011.

Formal consultations with the various government agencies, in addition to ongoing discussions comprised the following,

- A Planning Focus Meeting held on 3 September 2010.
- Individual meetings and teleconferences with each of the following government agencies.
 - NSW Office of Water (4 April 2011);
 - Cobar Shire Council (5 May 2011);
 - Department of Planning and Infrastructure (7 June 2011);
 - Office of Environment and Heritage (8 August 2011 and various additional meetings); and

- Darling Livestock Health and Pest Authority (various meetings and written correspondence).

Issue Prioritisation

A risk analysis of the identified environmental issues (in the absence of any mitigation measures) was undertaken to determine the relative priority, order of the assessment and depth of coverage of each issue in the *Environmental Assessment*. The following order of priority of the environmental issues relevant to the Project was determined.

- | | |
|----------------------------|--------------------------------|
| 1. Ecology. | 8. Traffic and transportation. |
| 2. Groundwater. | 9. Soils and land capability. |
| 3. Surface water. | 10. Visual amenity. |
| 4. Noise and blasting. | 11. Bushfire Management. |
| 5. Aboriginal heritage. | 12. Socio-economic setting. |
| 6. Historical heritage. | |
| 7. Air quality and energy. | |

ENVIRONMENTAL SAFEGUARDS AND IMPACTS

Specialist studies on a diverse range of environmental issues, identified to be relevant to the Project, were undertaken to assess the potential impacts the Project would have on the existing environment, and to recommend feasible and reasonable measures that, when incorporated into the Project design or implemented as an operational safeguard, would minimise any potentially adverse impacts. An assessment of the overall impact, following incorporation of the operational safeguards, of each identified environmental issue, was subsequently undertaken.



Eight specialist studies were undertaken for the Project and the results of each assessment are briefly discussed below.

Ecology

The ecology assessment identified four principal vegetation communities and four sub-communities as follows (**Figure D**).

- Benson 103 – Poplar Box – Gum-barked Coolibah – White Cypress Pine shrubby woodland. This community includes the following sub-communities.
 - Benson 103 – Bimble Box-dominated;
 - Benson 103 – White Cypress Pine dominated;
 - Benson 103 – Eremophila and hopbush regrowth;
 - Benson 103 – Yarren (*Acacia hemaphysylla*).
- Benson 174 Mallee – Smooth-barked Coolibah woodland;
- Benson 180 – Grey Mallee – White Cypress Pine woodland;
- Cleared grassland/shrubland, including *Bothriochloa biloba* regrowth.

No endangered ecological communities or populations were recorded or are predicted to occur within the Project Site.

Eleven bird species and two bat species listed as threatened under the NSW *Threatened Species Conservation Act 1995* (TSC Act) were recorded. One threatened species, the Superb Parrot (*Polytelis swainsonii*), listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), as well as the TSC Act, was recorded within the Project Site.

One population of an EPBC Act-listed flora species, the Lobed Blue-grass (*Bothriochloa Biloba*) was been recorded within the Project Site.

Environmental safeguards would be implemented during the site establishment, operational and rehabilitation phases of the Project so that any adverse impact on habitat within the site would be minimised to the greatest extent practicable.

Assessments of Significance or 7-part tests taking into account the proposed safeguards were undertaken for 17 TSC Act threatened flora and fauna species recorded or considered as highly likely to occur within the Project Site. These assessments indicated that Project-related impacts on threatened species are unlikely to be significant.

Notwithstanding the minimal anticipated impact on listed species, the Proponent has committed to establishing a Biodiversity Offset Strategy to compensate for the loss of habitat within the Project Site due to clearing of approximately 75ha of native vegetation.

Groundwater

The Project would result in the following groundwater-related impacts.

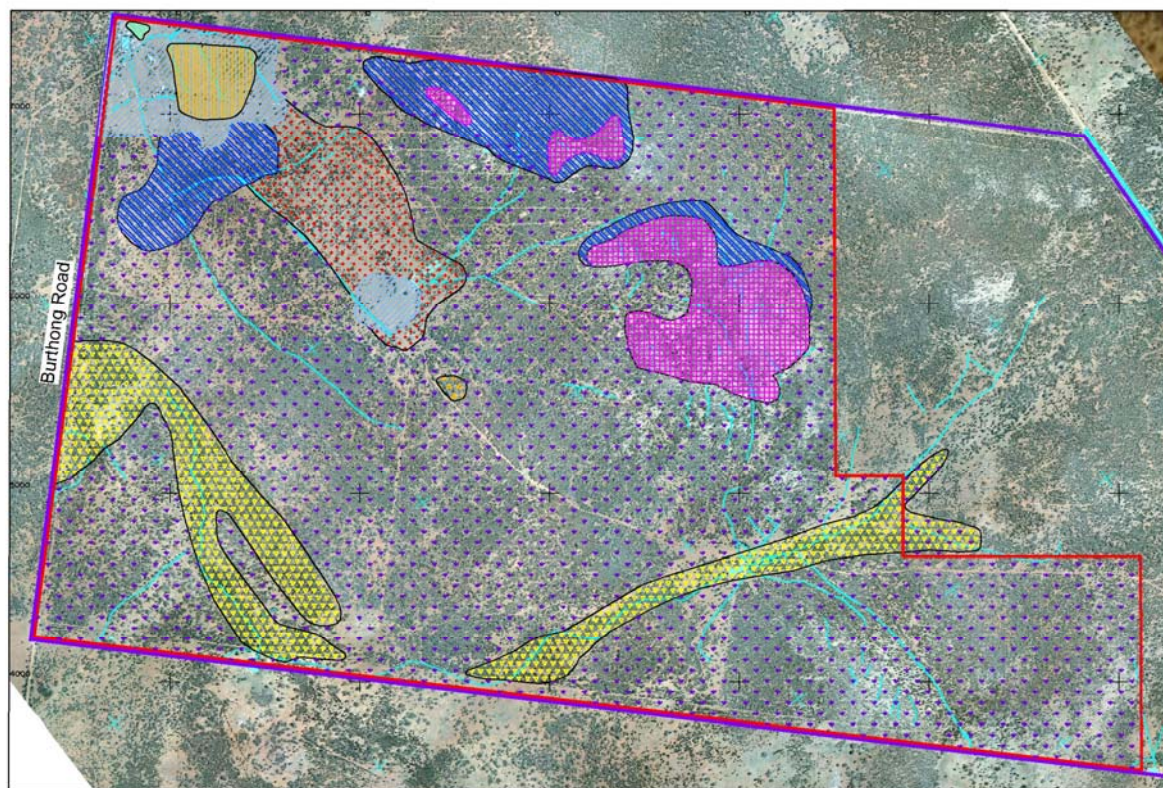
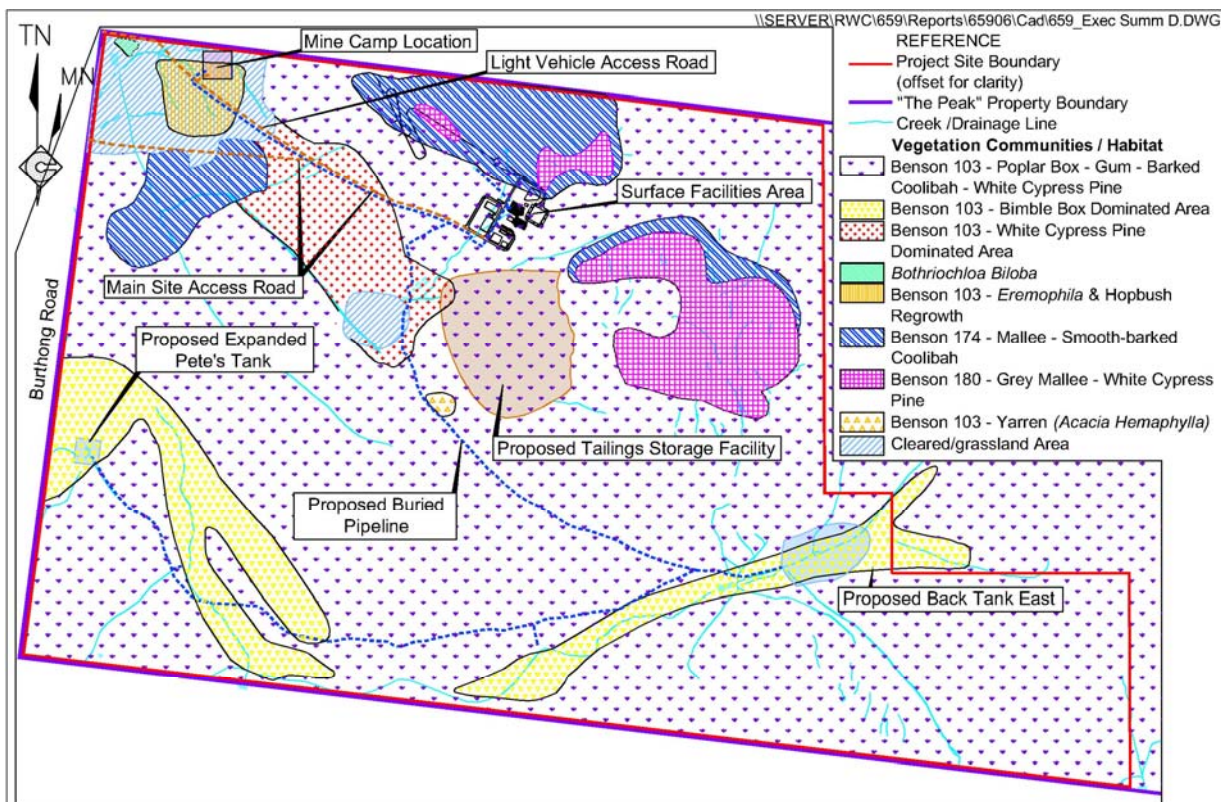
- Groundwater inflow during decline development

Groundwater would flow into the decline during development from a depth of approximately 60m below ground level (bgl). The modelled rate of this inflow would increase from nil at 60m bgl to 4.6L/s at 200m bgl. However, the actual rate of groundwater inflow is likely to be significantly less than the modelled rate of inflow once the extent of groundwater drawdown reaches a low- or zero-recharge boundary.

- Groundwater inflow at the end of mining operations.

Groundwater modelling indicates that inflows to the completed mine would be between 12L/s and 93L/s and that the theoretical extent of groundwater drawdown would be between 5 880m





SCALE 1:40 000

0.5 0 0.5 1.0 1.5 2.0 km

Source: OzArk (2011a) - Modified after Figure 6

Figure D
VEGETATION COMMUNITIES



and 15 850m from the centre of the proposed underground mine. However, it is likely that a low- or zero-recharge boundary would be reached within 1 000m of the proposed underground mine, resulting in the actual groundwater impacts being significantly less than those modelled. In that case, groundwater inflows are likely to be similar to the estimated groundwater recharge rate. Assuming that a low- or zero-recharge boundary occurs within 1 000m of the proposed underground mine, the estimated rate groundwater inflow would be approximately 0.4L/s.

- Groundwater recovery following completion of mining operations.

Following the completion of mining operations, groundwater levels are expected to recover to pre-mining levels gradually over a period of between 20 and 100 years

- Surrounding groundwater users.

The Project has the potential to impact on standing water levels within a single non-Project related registered bore (GW017386). The Proponent would negotiate an appropriate arrangement with the owner of the bore. Indicatively, this may include either:

- deepening and re-equipping (if required) the bore; or
- providing alternative water supply; or
- providing another form of mutually agreeable compensation.

- Groundwater quality and groundwater dependent ecosystems.

The Project is not expected to adversely impact on groundwater quality or groundwater dependent ecosystems within or surrounding the Project Site.

Following project approval, and prior to works commencing, a *Groundwater Monitoring and Response Plan* would be prepared to identify procedures for the

regular monitoring of standing water levels and water quality in bores and appropriate response actions required in the event the baseline groundwater quality trigger levels are exceeded.

Surface Water

Three unnamed, poorly defined ephemeral drainage lines flow through the Project Site. These drainage lines all typically flow to the northwest and form part of the Box Creek Catchment.

Two surface water storage dams, Back Tank East and Pete's Tank, would meet the operational water requirements for the Project. These dams would be located on second-order streams.

The surface water assessment undertaken for the Project Site determined that the construction of Back Tank East and the expansion of the existing Pete's Tank would not impact significantly on downstream flow rates or frequency of flows.

Modelling undertaken to determine the supply confidence of the two storage dams indicates that they would not be able to meet the operational water demands of the Project at all times. As a result, the Project would rely on groundwater to make up the water short-fall when the dams are dry.

Water management structures comprising sediment dams, settling ponds, and clean and dirty water diversion bunds would be constructed within all disturbed sections of the Project Site to ensure that potentially sediment- or chemical-laden waters do not leave the Project Site and degrade the water quality of the receiving waters in the Box Creek catchment.

The proposed design and management of the Tailings Storage Facility would ensure that seepage of leachate through the walls or floor of the structure is minimised to the greatest extent practicable, and interaction with natural groundwater or surface water is managed appropriately.



A *Surface Water, Sediment and Erosion Control Plan* would be prepared prior to any land disturbing activities. This plan would include a *Surface Water Monitoring and Response Plan* to identify procedures to monitor baseline surface water quality and to devise response actions required in the event the agreed water quality trigger levels are exceeded.

Noise and Blasting

Noise modelling for site establishment and operational noise scenarios demonstrate the predicted noise levels would be below the relevant criteria at the four closest residences.

The traffic noise assessment concluded that road traffic noise levels would be less than the relevant criteria at all residences along the proposed Project transportation route.

Finally, the blasting assessment concluded that blasting operations would result in air blast overpressure and peak ground vibration levels less than the relevant criteria at all surrounding residences.

The Proponent would prepare and implement a *Noise Management Plan* prior to the commencement of mining activities. This plan would incorporate the specific details of all noise controls to be implemented, and would provide measures to address noise criteria exceedances and/or complaints should they occur.

Aboriginal and Historical Heritage

No sites or objects of Aboriginal or historic heritage significance were identified during surveys undertaken within the Project Site. The heritage assessment concluded that there was, and remains, a low potential for the existence of any undetected Aboriginal sites or objects within the Project Site.

The Proponent would undertake further site inspections of those sections of the Mine Camp and the Tailings Storage Facility not surveyed to date prior to determination of the Project to ensure there are no objects or sites of Aboriginal heritage significance within those areas.

In the event that an Aboriginal site or object is identified, the Proponent would cease all work in the vicinity of the suspected site or object and seek advice from the OEH and Condobolin and Cobar Local Aboriginal Land Councils on how best to proceed.

Air Quality and Energy

The air quality assessment concluded that the Project is not likely to adversely impact on the air quality at the nearest non-Project related sensitive receivers. Specifically, the air quality modelling determined the following.

- The incremental and cumulative monthly dust deposition rates are predicted not to exceed the OEH criteria of $2\text{g/m}^2/\text{month}$ and $4\text{g/m}^2/\text{month}$, respectively, at all receivers;
- The annual cumulative total suspended particulate concentration attributable to the Project at all receivers would be in the range of $46.2\text{ }\mu\text{g/m}^3$ to $51.8\text{ }\mu\text{g/m}^3$, well below the goal of $90\text{ }\mu\text{g/m}^3$;
- The annual average PM_{10} concentration predicted at all receivers would be in the range of $18.5\text{ }\mu\text{g/m}^3$ to $21.8\text{ }\mu\text{g/m}^3$, well below the criterion of $30\text{ }\mu\text{g/m}^3$;
- The maximum cumulative 24-hour average PM_{10} concentration predicted for all non-project related residences would be in the range of $48.4\text{ }\mu\text{g/m}^3$ to $48.9\text{ }\mu\text{g/m}^3$. The Project would therefore comply with the $50\text{ }\mu\text{g/m}^3$ criterion at all non-Project related residences.
- The maximum cumulative 24-hour average PM_{10} concentration predicted for the Mine Camp depends heavily on assumptions in relation to particulate matter concentrations in the exhaust vent rise, with Project-related emissions varying between $1.1\text{ }\mu\text{g/m}^3$ and $20.9\text{ }\mu\text{g/m}^3$.
- The ground level incremental concentrations of metallic species in dust satisfy the applicable criteria at all receivers.



- The incremental concentrations of relevant diesel-combustion related pollutants satisfy the applicable criteria at all receivers.
- The incremental concentrations associated with the gold processing operations satisfy the applicable criteria at all receivers.

The greenhouse gas assessment determined that the Project would result in Scope 1 and 3 emissions of approximately 19 160t CO₂-e and 29,394t CO₂-e annually respectively. When the Scope 1 annual GHG emissions are compared with the NSW and Australian totals for 2008 and global total for 2004, the Project represents an increase in emissions of approximately 0.030%, 0.0084% and 0.000099% respectively.

The Proponent would implement mitigation measures to mitigate any potential impacts of the Project on the air quality. An *Air Quality Monitoring Program* would be developed in consultation with OEH and the surrounding Community to monitor the impacts of the Project on the surrounding air quality.

Traffic and Transportation

The traffic assessment concluded the following in relation to Project-related traffic impacts on the surrounding road network.

- The Project would not adversely impact on the existing level of service “A” on surrounding roads.
- The peak hour flows along Burthong Road would be less than five vehicles per hour during the operational phase.
- The proposed heavy vehicle transportation route is designated for road trains and the additional heavy vehicle traffic generated by the Project would not have an unacceptable impact upon the operation of the roads along that route.

Soils and Land Capability

Two soil landscape units (SMU) have been identified within the Project Site, namely:

- the Yackerboon Land System; and
- the Kopyje Land System.

Typically, Red Earth-type soils occur in flat areas within the Project Site and Lithosols occur on sloped areas. The physical and chemical properties of the soils within the Project Site indicate they generally:

- are stable and possess little to moderate structure;
- have moderate to high erodibility;
- are non-dispersible to variably dispersible;
- are non-saline; and
- are neutral to strongly acidic.

The use of appropriate soil stripping, handling and stockpiling procedures, together with appropriate erosion controls, would result in a minimal impact to soils within the Project Site.

The use of the site's stockpiled soils for rehabilitation activities, including the creation of the final landform, would ensure that the existing Agricultural Land Classes would be retained, namely:

- Class IV for Red Earths; and
- Class V for Lithosols.

Visual Amenity

It has been assessed that the Project would not impact significantly on the visual amenity surrounding the Project Site based on:

- the relative isolation of the activities within the Project Site from surrounding residences and public vantage points;
- the fact that the principal Project-related structures would be constructed to the east or south of 'The Peak' topographic feature; and
- the proposed landscape and visual amenity related controls.



The proposed final landform, with appropriate water management structures in place, would provide for a landscape amenable for nature conservation and should therefore eventually blend with the surrounding undisturbed lands.

Bushfire

The bushfire hazard assessment, based on the vegetation type and slopes within the Project Site, determined the bush fire attack category for the Project Site is Level 3 or extreme. It has been concluded that, with the safeguards and management controls to be implemented to:

- minimise the risk of a fire being initiated within the Project Site; and
- reduce the risk associated with a bushfire event to people and assets on the Project Site;

the Project is unlikely to increase the fire hazard rating of the Project Site and the surrounding areas.

Hazardous Chemical Management

The Project would use a number of chemicals and reagents, including hazardous chemicals, in the ore processing activities. The transport, storage and use of these chemicals would be managed in accordance with the manufacturer's instructions and the relevant Material Safety Data Sheets. A *Hydrocarbon and Chemical Management Plan* would be prepared to describe in detail the storage, handling, use and management of all chemicals, including management of emergencies and spills.

Waste Management

The Project would incorporate appropriate procedures for the management of production and non-production waste generated within the Project Site, including:

- waste rock and acid leachate generation;
- tailings from the Processing Plant including weak acid dissociable cyanide concentrations;

- hydrocarbons;
- chemicals and reagents;
- general solid waste and recyclable materials.

The management procedures would ensure:

- no potentially contaminating solid waste would leave the Project Site and enter the surrounding environment;
- no contamination of downstream local waterways, aquatic habitats and groundwater with hydrocarbons, litter and potentially acid leachate would occur; and
- no degradation of visual amenity of the surrounding environment through litter dispersal from the Project Site and improper management of waste within the Project Site would occur.

Socio-economic Setting

It is recognised that, while the impacts of the environmental issues noted above may be negligible to minor, the cumulative effect of each may have some adverse effect on the amenity of the local environment reflected in a reduction in the socio-economic setting. The cumulative effect *perceived* by Nymagee community could be greater than it would be because of the negative publicity generally associated with mining projects.

However, an assessment of the potential socio-economic impacts (both adverse and beneficial) undertaken demonstrates the beneficial impacts of the Project far outweigh its minor adverse cumulative effect. These benefits are objectively verifiable and noted below.

- Direct employment opportunities for approximately 100 full-time equivalent positions during the site establishment and operational phases.
- Some of the positions available may be filled in by local residents seeking to supplement their on-farm income.



- Flow-on benefits from the Project would include:
 - the provision of additional employment that would provide an impetus to other local businesses;
 - a contribution of \$15 million per year to the local and regional economy through wages and purchases of local goods and services;
 - further diversification of industry development within the Cobar local government area leading to increased training and employment opportunities for the residents, including in Nymagee; and
 - support of local community services and projects.
- Contributions to the economies of NSW and Australia would include:
 - approximately \$25 million per year to the State and national economy through purchases of goods and services within NSW and Australia; and
 - approximately \$3 million per year to the local, State and national governments through the payment of rates, taxes and royalties.

The Proponent would manage the Project in a manner that complies with the nominated environmental criteria and meets reasonable community expectations. A comprehensive monitoring program would be established for the Project to demonstrate compliance with environmental criteria.

Consultations with the surrounding community would continue to address any concerns as they arise. The Proponent would maintain a Complaints Register to record complaints received and actions taken to address the complaints.

PROJECT EVALUATION AND JUSTIFICATION

The Project has been evaluated and justified principally through consideration of its potential impacts on the environment and potential benefits to the local and wider community. It has been assessed in terms of a wide range of biophysical, social and economic issues.

Conclusions reached from an assessment of the Project activities against the four sustainable development principles are as follows.

- The Precautionary Principle – the proactive approach adopted in the design of the Project, comprising risk assessment and management of the identified risks, provides a high degree of certainty the Project would not result in any major impacts.
- The Principle of Social Equity – the local and regional communities would benefit from the Project through employment opportunities, increased demand for local goods and services, direct community contributions and flow-on effects.
- The Principle of the Conservation of Biodiversity and Ecological Integrity – the Proponent would ensure the onsite vegetation clearing would not be greater than the 75ha proposed for the Project, that any identified threatened species would not be impacted upon adversely, and the overall ecological value of the site would be improved through the implementation of pest and weed eradication programs.
- The Principle of Improved Valuation and Pricing of Environmental Resources – the mining would be undertaken in a cost-effective and sustainable manner, and the Project activities would be managed appropriately to ensure that the



existing environment would not be degraded such that the pricing of the mined products would be internationally competitive.

In summary, the evaluation of the Project, in terms of the risks posed to the local environment by Project-related activities following the implementation of all operational controls and through consideration of the principles of ecologically sustainable development, has found that the Project achieves a sustainable outcome for the local and the wider environment. Any minor adverse impacts can be justified in terms of the positive economic and social benefits to Nymagee, the Cobar local government area, NSW and Australia.

CONCLUSION

The Project has been, to the extent feasible, designed to address issues raised by the local community and all levels of government, as well as the principles of ecologically sustainable development. The Project provides for the mining, production, sale and despatch of gold/silver doré and base lead-zinc concentrate. The Project would be significant in generating further employment opportunities and maintaining stimulus to the local economies of Nymagee township and the Cobar local government area. The post-mining final landform would provide for the re-establishment of agricultural land and/or nature conservation.

In light of conclusions included throughout the *Environmental Assessment*, it is assessed that the Project could be operated in a manner that would satisfy all relevant statutory goals and criteria, environmental objectives and reasonable community expectations.

The *Environmental Assessment* supported by specialist consultant studies has established that the Project would:

1. satisfy ecologically sustainable development principles;
2. operate with negligible risks to the local environment, minimised through incorporation of feasible and reasonable environmental measures into the Project design;
3. result in a minimal and manageable adverse impact on the biophysical environment;
4. have a substantial positive impact on the local and wider regional and NSW socio-economic environment;
5. contribute to the continued economic activity of Cobar local government area; and
6. provide a site suitable for future agricultural activities incorporating areas for long term nature conservation.



Key Project Components

Key Project Components	
Project Summary	Develop an underground mine which includes the following.
	Extraction and processing of up to approximately 350 000 tonnes of metalliferous ore per year.
	Produce approximately 50 000 tonnes of bulk lead and zinc concentrate and gold-silver doré (unrefined bars) per year.
	Establish a Box Cut, Portal, Decline, Processing Plant, a run-of-mine (ROM) pad, a temporary Waste Rock Emplacement, a Tailings Storage Facility, a Mine Camp, Core Storage and Processing Facility, water management structures, site offices and infrastructure for mining and ancillary services.
	Transportation of all products by road.
	Rehabilitation of the disturbed areas.
Key Statistics	
Total Site Area	Approximately 1 532ha
Total Resource	Approximately 2 444 000 tonnes
Main Products	Gold-silver doré (unrefined bars). Lead and zinc concentrate for domestic and international markets.
Mining Rate	Up to approximately 350,000 tonnes of ore per year.
Project Life	9 years.
Extraction Methods	Conventional sublevel open stoping mining techniques.
Processing	Mined ore would be processed through the on-site Processing Plant and would comprise a crushing and grinding circuit, cyanide leach circuit (including leach tanks, Merrill-Crowe treatments and the use of calcining ovens for the production of gold-silver doré) and flotation circuit for the production of lead and zinc concentrate..
Product Transportation	Final products will be transported via public roads
Stockpiles	Excavated soils to be stockpiled and used in rehabilitation activities. Cleared vegetation to be stockpiled on-site and used as vegetated areas. Waste rock to be temporarily stockpiled at surface prior to transportation back underground.
Final Landform and End Land Use	Progressive rehabilitation to create a shaped and geotechnically stable final landform suitable for a mixed end land use of grazing and nature conservation. Post mining landforms would include: - bunded and fenced box cut with sealed portal; - appropriately sealed ventilation rises; - appropriately shaped and covered, free draining Tailings Storage Facility with embankment slopes of 1:3 (V:H) or less; and - shaped, covered and vegetated Surface Facilities Area with all infrastructure removed.
Biodiversity Offset	Proposed 628ha Biodiversity Offset Area to compensate for loss of habitat through clearing of approximately 75ha of native vegetation.
Revegetation	Ongoing revegetation of areas being rehabilitated.
Employment	Approximately 100 full-time equivalent positions during establishment phase and up to 100 full-time equivalent positions during the operational phase.
Capital Investment Value	Approximately \$80 million.
Hours of Operation	- Processing operations, maintenance operations, underground mining operations, construction operations (excluding Box Cut) – 24 hours per day. - Vegetation clearing and topsoil stripping, construction operations (Box Cut), rehabilitation operations – 7:00 am to 6:00 pm. - Transportation operations – 7:00 am to 10:00 pm.

