

**MT PORTER PROJECT,
NORTHERN TERRITORY:
PUBLIC ENVIRONMENTAL REPORT
EXECUTIVE SUMMARY**

NOVEMBER 2006

PREPARED FOR

ARAFURA RESOURCES NL

BY

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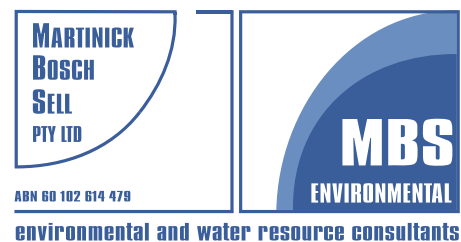


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1. INTRODUCTION

Arafura Resources NL (Arafura) proposes to develop an open cut gold mining operation at Mt Porter, approximately 180 kilometres south-east of Darwin. The proposed operation will run for approximately eight months, scheduled to take place during the regional dry season.

1.1 PROPONENT DETAILS

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1.2 PROJECT LOCATION

The Mt Porter Gold Project is located on the eastern side of Mt Porter (292 metres Australian Height Datum), which is the highest of a series of narrow crested peaks along a north-south trending ridge line. The project area is located 20 kilometres north of the town of Pine Creek, and is accessed by the Frances Creek Road leading to the Frances Creek Mine (**Figure 1**). The Mt Porter Gold Project lies approximately 20 to 25 kilometres south-east of Kakadu National Park and 20 kilometres north of the Kakadu Highway that travels to the east of the project into Kakadu National Park.

1.3 TENEMENT STATUS AND LAND TENURE

The project area is on the Mary River West Pastoral Lease PPL815, NT Portion 1630. The project area is within Mineral Lease 23839 which was granted on 2 February 2005. The Mineral Lease encompasses 362.6 hectares (**Figure 2**).

1.4 EXISTING LAND USE

Pine Creek was, until the turn of the century, one of the major centres of the Northern Territory's mining industry. Minerals such as uranium, iron ore, silver, lead and zinc were extracted and Pine Creek became a service centre for over 500 miners.

The Mt Porter Gold Project falls within the Mary River West pastoral lease. Although no pastoral activities currently occur in the immediate vicinity of the proposed mine site, there is potential for pastoral activities to be restored post-mining. Pursuant to Section 184 of the *Mining Act*, Arafura have entered into a compensation agreement with the owners of the Mary River West pastoral lease in respect to exploration and mining activities on the land.

The Mineral lease is also subject to Native Title claims. Arafura has entered into an Indigenous Land Use Agreement with the Northern Land Council to cover exploration and mining activities on the project area and this agreement has been registered. The agreement includes the possibility of any future Native Title Claims over the project area.

2. PER OBJECTIVES, STRUCTURE AND LEGISLATIVE REQUIREMENTS

2.1 PER OBJECTIVES

The objectives of the PER are to:

- Provide all interested stakeholders, including government, with concise and comprehensive information regarding the design, construction and operation of the proposal.
- Provide sufficient information to enable understanding and assessment of the scope and environmental implication of the proposal.
- Assess the environment of the project area and surrounding region.
- Identify all potential environmental impacts of the project.
- Incorporate stakeholder concerns and suggestions into project design and management.
- Outline strategies to avoid or minimise potentially adverse impacts.
- Secure environmental approval for the project from the Northern Territory Government in accordance with the *Environmental Assessment Act 1982*.

2.2 PER SCOPE AND STRUCTURE

Information outlined in the PER document applies to the design, construction and operation of the Mt Porter Gold Project including haul roads.

The geographical extent of the PER is limited to areas potentially influenced by the project.

The PER is structured into a stand-alone Executive Summary (this document) and two main volumes with Volume 1 containing the main text of the PER and Volume 2 containing supporting appendices. The PER has been prepared to conform with the Guidelines for the Preparation of a Public Environmental Report, Mt Porter Gold Project (EPA Northern Territory 2004).

2.3 LEGISLATIVE CONSENT AND LICENSING REQUIREMENTS

Commonwealth

The proposed Mt Porter project has been deemed a Controlled Action under Part 9 of the (Federal Government) *EPBC Act 1999* and requires approval under the Act.

Bilateral Agreement

Approval for the proposed Mt Porter project will be assessed under the Bilateral Agreement signed by the Australian and Northern Territory Governments under Section 45 of the *EPBC Act 1999*. This provides for accreditation of certain state environmental assessment processes,

including assessment at PER level under the Northern Territory *Environmental Assessment Act 1994*.

Under terms of the Bilateral Agreement, the Federal Government has had input into specifying the guidelines for the preparation of this PER and a separate section (Section 10) of the PER addresses issues subject to the *EPBC Act 1999*. The Northern Territory Government will provide copies of assessment documentation to the Federal Government at each stage of the approval process. The Federal Government will decide on approval of the project when the Northern Territory approval process is complete.

Northern Territory

The Environmental Assessment Act 1982 and *Environmental Assessment Administrative Procedures 1984*, which accompanies the Act, form the basis for the Northern Territory's environmental impact assessment process. Under this Act the Minister for Environment and Heritage has determined that the Mt Porter Project is to be assessed at the level of Public Environmental Report (PER). The PER will be exhibited for public review and comments for four weeks. During this period, the PER will be circulated to advisory bodies for comment in relation to their areas of expertise and responsibility.

Following the public review period, Arafura will receive a copy of submissions and be allowed to prepare and submit an addendum to the PER addressing the submissions. The Environmental Protection Agency of the Department of Natural Resources, Environment and the Arts (NRETA) will then prepare an assessment report and make recommendations to the Minister for Environment and Heritage about project approval. The report takes into account issues raised by advisory bodies, the public and the Arafura's response to the issues. The Minister for Environment and Heritage considers this report and makes recommendations about approval of the Mt Porter project. These recommendations may be incorporated in the environmental assessment process, in lease or license conditions, or relevant management procedures.

The Mt Porter Project will also be subject to other relevant Northern Territory legislation. In particular Northern Territory mining operations are regulated by the *Mining Management Act 2001*, administered by the Department of Primary Industries, Fisheries and Mines (DPIFM). Under this Act, Arafura must submit a Mining Management Plan (MMP) and apply for authorisation to carry out mining before mining can start. The MMP is the principal administrative document for the mine and can incorporate environmental conditions generated by the environmental approval process. It will also incorporate an Environmental Management Plan (EMP).

3. DESCRIPTION OF THE PROPOSED DEVELOPMENT

3.1 OVERALL MINING DESCRIPTION

The proposed mine will require:

- Construction of one open pit.
- Construction of a waste rock stockpile east of the pit.
- Installation of workshops, explosives magazine and offices.
- Upgrading of existing roads and tracks for ore haulage.
- Ore will be extracted by drilling and blasting, and then transported by haul truck or road train to the Union Reef Mill for processing. Some dewatering of the pit will be required.

A more detailed explanation of the sequential mining process is described below:

1. **Removal of Vegetation:** Any vegetation that needs to be cleared for the purposes of mining at the site, where practicable will be stockpiled for use in later rehabilitation. Clearing will be kept to the minimum required to conduct the mining project.
2. **Remove and Stockpile Topsoil:** The top 100 millimetres will be removed using scrapers or other efficient earth moving machinery and placed in low stockpiles for later re-use.
3. **Remove and Stockpile Overburden:** Waste includes both the overburden layer and the non mineralised material around the ore body. Waste will be placed in a purpose built waste landform adjacent to the pit. Approximately 2.4 million tonnes of waste is anticipated to require removal.
4. **Mining:** Extraction will be carried out using an excavator and a fleet of trucks. Blasting will generally be required to fracture the ore and waste rock sufficiently to allow excavation. Ore will be loaded onto haulage trucks and taken to a ROM stockpile at the base of the hill. The resultant pit will be about 4 hectares in area and 115 metres deep to allow production of 574,000 tonnes of ore and 2,400,000 tonnes of waste rock. It is estimated that the total volume of the pit will be one million bank cubic metres. A total of 24 hectares of land is expected to be disturbed by the operation.
5. **Transport:** Road trains will be used to transport ore to the nearby Union Reef CIL processing plant. Transport will occur on dedicated haul roads and existing public roads.
6. **Disposal of Wastes:** Waste rock will be stockpiled adjacent to the pit in a purpose built waste rock stockpile. A total of 2,400,000 tonnes of waste rock is anticipated. The waste rock stockpile will be shaped to blend with the topography and revegetated.
7. **Rehabilitation:** Rehabilitation will be undertaken with waste rock material deposited in the waste rock stockpile. Topsoil will be replaced over the waste rock stockpile as part of the rehabilitation process.

3.2 PROJECT RESOURCES

The final pit (which is based on the most favourable economic parameters) includes identified resources of 574,000 tonnes at a grade of 2.1 grams per tonne gold and waste rock totalling 2.4 million tonnes.

3.3 EXISTING SITE LAYOUT

The Mt Porter Gold Project area lies mainly within the Brocks Creek Ridge Land System, with the southern extent of the mineral lease also including the Cullen Land System. There has been extensive exploration work in the project area, however, there is no permanent infrastructure.

Frances Creek Road will serve as the main haulage route adjoining an access track leading to the project area. Offices, workshops and an explosives magazine will need to be constructed prior to commencement of mining. Proposed site layout is presented in **Figure 3**.

3.4 MINING SCHEDULE

Arafura wish to commence mining as soon as all approvals have been obtained. The current development schedule aims to allow first transport of ore in April 2007. Construction is planned to commence in March 2007 assuming all approvals have been obtained by this time. Mining equipment is planned to be mobilised in March 2007 with initial ore to be placed on a ROM stockpile in April. Mining is scheduled to be completed before the onset of the wet season in November 2007.

3.5 PIT AND WASTE ROCK STOCKPILE CHARACTERISTICS

The pit location is shown in **Figure 3**. A cross-sectional view of the proposed pit is presented in **Figure 4**.

The natural ground level of the surrounds of the proposed pit is 580 metres RL. The open pit will cover a surface area of four hectares. The final pit floor will be at about 460 metres RL, making it about 115 metres deep. It is estimated that a total of one million bench cubic metres (2.5 to 3 million tonnes) of material will be excavated from the pit. This will consist of approximately 200,000 bench cubic metres of ore and 800,000 bench cubic metres of waste for a stripping ratio of between 4:1 and 8:1.

Approximately 2.4 million tonnes of waste rock is proposed to be excavated from the pit. Waste rock will primarily be disposed of by construction of an out of pit waste rock stockpile located east of the pit. Waste rock will consist of both oxide rock (non-acid forming) and primary rock (potentially acid forming). An estimated 70 to 75% (1.75 million tonnes) of the waste rock in the pit is oxidised.

The final waste rock stockpile will cover a surface area of approximately 11.85 hectares. PAF material will be encapsulated within an envelope of the waste rock stockpile and diversion drains will be constructed to minimize the potential of water reaching the PAF material.

3.6 ORE PROCESSING

No processing will be undertaken on site. Ore from the operation will be transported 15 kilometres to the Union Reef Mill and toll treated. The mill is owned and operated by GBS Gold International. GBS announced the recommissioning of the Union Reef Mill on 23 August 2006.

On 21 September 2006 GBS entered into a License Agreement with GeoBiotics, LLC ("GeoBiotics"), a private American firm, for the use of the GEOCOAT® refractory ore treatment process at the Union Reef Mill. The GEOCOAT® process is a standard bio-oxidation process for the treatment of refractory gold ores and concentrates in a heap leach environment, with subsequent recovery of gold through a normal carbon-in-leach (CIL) circuit.

The first gold pour since recommissioning took place on 25 September, 2006.

3.7 WATER MANAGEMENT

3.7.1 Water Requirements

Water requirements for the proposed operations are limited to dust control, equipment wash down and personal use. Dust control will use most water. It includes spraying of roads, stockpiles and loading operations.

3.7.2 Water Sources and Dewatering

An estimate of 500 kilolitres per day of water will be required for site use. Rain falling in the pit will be directed to sumps at the base of the pit. This water will be used for dust suppression during mining. With the project duration planned for the dry season, quantities of rainwater are expected to be limited.

Temporary earthen dams to store water for site use will be constructed either in the waste landform footprint (prior to the full extent of the landform being reached), on the top level of the waste landform (when sufficient area is constructed) or in the office and workshop area. Water will be pumped to these dams from the open pit sump and the unnamed bore (used as makeup water if there is insufficient quantity from the open pit dewatering).

Pit inflow water is expected to increase in the final stages of the pit excavation, when the pit is below the standing water level of the unnamed bore. Quantities significantly in excess of the estimated 500 kilolitres per day required for site use will require discharge. The duration of the final stage of the pit excavation below this level is very short and will only be approximately four to six weeks of the eight month project duration. Even with a surplus of

500 kilolitres per day (twice the site usage rate), the total volume of surplus water requiring discharge will be approximately 20,000 kilolitres.

3.7.3 Water Diversion

The following water diversion measures will be required for stable construction of the waste rock stockpile:

- Drainage pipes will be placed along the creek beds, maintaining a preferred drainage path for water from the upper catchments. Unlike the dry East Gully, the Pit Gully contains a spring in its upper reaches. The spring itself is above the final crest level of the waste landform. The drainage pipes in the creek beds will ensure an underdrain system functions to remove seepage water from under the waste landform.
- Convex top surface, directing runoff to drains on the outer edge of the waste landform.
- Diversion drains will be established around the central zone designated for PAF material. These will be directed to the outer edges of the dump and then redirected back to the main drainage lines.

Other water diversion measures for locations around the mine area include:

- Installation of culverts and/or floodways as required where roads cross watercourses and drains. Water diversion structures will be armoured, where necessary, to reduce the velocity and erosion potential, of surface flows.
- Redirection of surface run-off requiring discharge to the environment to detention basins to remove sediment prior to discharge.

3.8 TRANSPORT

3.8.1 General Access to Site

Existing roads from Pine Creek provide general access to the mine site. Road access to the site from Pine Creek will be about 23 kilometres via the public roads Kakadu Highway (three kilometres) and Mt Wells Road (eight kilometres) followed by 6.5 kilometres of the private Frances Creek Road and 2.7 kilometers on the access track into the site.

3.8.2 Ore Road Haulage

Arafura Resources intends to transport ore from the mine for treatment at the Union Reef CIL processing plant, which is located approximately 10 kilometres south-southwest of Mt Porter.

The preferred route for ore to be hauled to Union Reef plant is via the:

- Access road between the Frances Creek Road and the mine site (2.7 kilometres).
- Frances Creek Road to the Mt Wells turn-off (6.5 kilometres).
- Mt Wells Road to the railway corridor (seven kilometres).

- Access road between the Mt Wells Road and the Union Reef CIL Plant mill (five kilometres).
- The transport route is shown in Figure 2.

3.9 INFRASTRUCTURE

Approximately 24 hectares of land will be disturbed for the open pit and infrastructure associated with mining operations. The NOI identified a notional area of approximately 12 hectares to locate the mobile infrastructure during the mining program. This area straddled the site access route. The botanical survey has identified a community of remnant rainforest associated with a creek line on the north side of the access road. The nominated infrastructure area and ROM stockpile area have now been amended to exclude this area and avoid disturbance of watercourses. Infrastructure areas will now be confined to the south of the access road to avoid impact on the remnant rainforest vegetation community, and will occupy an area of 8.2 hectares.

Much of the mine infrastructure will be mobile. Mobile infrastructure will include:

- | | |
|-----------------------|--|
| • Power supply | Portable generator for the site office and workshop |
| • Site office | Portable site office and ablution facilities |
| • Workshop | Sea container equipment store |
| • Fuel storage | Self bunded tanks or on ground tanks in lined bunded area |
| • Explosives magazine | Explosives will be stored in a magazine of an approved design. |

3.10 HAZARDOUS MATERIAL USE AND STORAGE

Hazardous substances to be used within the mining operation will be diesel, lubricants and explosives. Diesel and lubricants will be stored in self-bunded tanks complying with Australian Standard AS 1940:2004. The storage, use and disposal of explosives will be in accordance with the *Explosives Act 1999*, the *Explosives Regulations 2003* and manufacturer's guidelines.

3.11 SITE PREPARATION AND CONSTRUCTION

Earthmoving activities are planned to start in 2007 at the commencement of the dry season (April). These activities will be conducted by experienced earthmoving contractors.

The Mt Porter access road and Frances Creek Road will require considerable earthworks to form them to a standard suitable for use by road trains. There will be no need for construction of separate borrow pits as preliminary studies indicate that material from the upper benches of the open pit will be suitable for this purpose. This waste material will be used to construct the site access road, internal roads, the ROM pad, water storage dams and pads for workshops, stores and offices.

3.12 WORKFORCE

Once operations commence, the on-site workforce including mining and haulage operators, will rapidly build up to as many as thirty to forty persons at any one time depending on shift arrangements. It is proposed that mining operations will be scheduled for continuous operation that will comprise a day shift and night shift each of 12 hours duration.

4. PROJECT OBJECTIVES, ALTERNATIVES AND JUSTIFICATION

4.1 OBJECTIVES

Project objectives are to:

- Mine gold ore suitable for toll treatment at the nearby treatment plant owned by GBS Gold International.
- Produce gold ore for toll treatment at a low cost whilst maintaining high levels of performance in terms of quality, safety and environmental production.
- Ensure benefits of the project are shared with members of the Northern Territory and local communities.

4.2 ALTERNATIVES CONSIDERED

- *Not Proceeding with the Project:* The “no project” option would result in a loss of opportunity to add value to Australia’s raw materials and loss of employment opportunities and economic benefit, particularly within local communities.
- *Project Schedule:* The NOI proposed a campaign mining operation where mining would be conducted over a period of three dry seasons. This would require demobilisation of equipment at the onset of the wet season and then remobilisation at the onset of the dry season. This was deemed impractical when due consideration was given to the potential costs and environmental impacts associated with the wet season.
- *Infrastructure Location:* The chosen location and design of the project has taken into consideration the existing environment and potential environmental impacts. The location of administrative infrastructure and site access road took into account the proximity of surface water drainage, topography and good condition native vegetation.
- *Raw Materials:* Extraction of ore is confined to the geographical location in which it occurs. An economic alternative to diesel fuel to provide electricity and to run equipment has not been identified. Use of water supplies generated on site from pit dewatering or local bores is the most practical option. The closest alternative groundwater supply of sufficient quality and quantity to meet the designed capacity requirements of the project is located about 15 kilometres to the east. This would require substantial infrastructure in piping and power requirements to commission
- *Transport Corridors and Options:* Transport is a significant cost in the Mt Porter Gold Project. Transport of ore from the project site to the Union Reef Processing plant will use existing roads. Arafura has considered the use of the old Frances Creek railway corridor that is being refurbished by Territory Iron for use as a haul road from the nearby Frances Creek mine. However, use of this road would require coordination with Territory Iron haulage vehicles. The traffic congestion and safety aspects involved may render this option impractical.

- *Extraction and Processing Technologies:* Open pit gold mining and Carbon in Leach (CIL) processing technology is commonly used throughout the industry. No practical alternatives exist for the ore grade of the project.
- *Environmental Management Technologies:* The mining and processing technologies proposed for Mt Porter allows use of proven industry environmental management techniques. Arafura's Environmental Policy requires implementation of industry best management practices. It is the intention of Arafura to implement environmental management actions to leave the project site in a safe and stable manner that requires minimal ongoing care and maintenance
- *Workforce Accommodation:* The alternative to daily commuting of the workforce from Pine Creek is to construct an on site camp. While this may have the benefit of reducing commuting time of the workforce, it will remove employees from the Pine Creek community. This will have a detrimental effect on services and facilities at the town. The 20 kilometre commute distance is not considered excessive. Also given the short duration of the mining project, construction of an on site camp is considered impractical. The lack of an accommodation camp on site also reduces the disturbance impact on the project area.

4.3 JUSTIFICATION AND BENEFITS

Anticipated benefits resulting from the project include:

- Arafura will provide direct employment for about 30 people during construction and up to 60 people during the operation. Indirect employment is also likely to be provided as a result of supplying goods and services to the project.
- Arafura has entered an agreement with the Northern Land Council whereby the council will manage the project's register of employment and service opportunities. Preference for employment and training opportunities will be extended to people living in the Mt Porter region.
- Preference will be extended to local businesses for supply of goods and services.
- Arafura, through payment of company tax, payroll tax and royalties, will be contributing directly to the economies of the Federal and Territory governments.
- Engaging the jobs and careers unit of the Northern Land Council to provide an indigenous employment and training service to the mine.
- Funding business mentoring to help establish indigenous business entities to provide contract services to the mine.

5. EXISTING BIO-PHYSICAL ENVIRONMENT

5.1 CLIMATE

The proposed Mt Porter Gold project lies in the tropical monsoon belt of northern Australia. The region experiences hot, humid summers (the 'wet season') and cooler, dry winters (the 'dry season'). Average rainfall in the region is 1,100 to 1,300 millimetres and falls mainly during the period between October and April, especially during the months of January to March, when the area is subject to tropical cyclones and associated tropical low pressure systems and monsoon troughs.

5.2 GEOLOGY

The Mt Porter gold deposit is located in the Adelaide River-Pine Creek region of the Northern Territory and is hosted by a belt of basement rocks called the Pine Creek Inlier. The Pine Creek Inlier is a province of highly mineralised Archaean and Palaeoproterozoic rocks which extends over a roughly triangular region from near Darwin and Jabiru in the north to Katherine, some 230 kilometres to the south. It contains one of the world's largest and richest uranium provinces and contains about 15% of the world's high grade uranium resources. It is also a significant gold province with well developed infrastructure and services for the mining industry.

The metasedimentary rocks present in the Mount Porter project area belong to the Koolpin Formation of the South Alligator Group. Broadly, the Koolpin Formation is characterised by carbonaceous shales, but in the Middle Koolpin Formation, chloritic sulphidic laminated cherty "shales", with prominently developed chert nodules, ubiquitously present. These cherty units are widely regarded to be silicate facies banded iron formations (BIF).

5.3 WASTE ROCK GEOCHEMICAL CHARACTERISATION

In 2005, Arufura commissioned MBS Environmental to conduct an investigation into the chemical composition of waste rock likely to be generated by the project. This built on information collected during an earlier survey commissioned by previous owners of the project.

Arafura collected a further 35 samples for analysis, all of which were from waste horizons as defined in the current mine design. Results of the investigation showed that:

- The 35 samples could be classified into four ARD groups:
 - Twenty-one samples classified as Non Acid Forming (NAF).
 - Nine samples classified as Potentially Acid Forming (PAF) PAF-Low Capacity (<five kilograms of H₂SO₄ per tonne).
 - Two samples classified as PAF (with 35 and 88 kilograms H₂SO₄/ per tonne respectively).

- Three samples classified as PAF-High Capacity, all with greater than 150 kilograms of H₂SO₄/ per tonne.
- The percentage content of significantly PAF material appears small and all contain carbonaceous siltstone-BIF with visible sulphides. Because of the high free carbon content, the Eh value within waste rock stockpile of the PAF material should be extremely low and non-oxidising, thus minimising sulphide oxidation and the potential for acid generation.
- Due to the black coloration of the PAF material, it is likely that it will be relatively easily recognisable.

5.4 LANDFORM AND SOILS

Topography of the Mt Porter area ranges from about 150 metres AHD along Frances Creek Road in the eastern part of the tenement to 292 metres AHD at Mt Porter in the centre of the tenement. The geomorphology and land systems of the Katherine – Darwin region were described and mapped by Christian and Stewart (1946). The Mt Porter mineral lease contains two land systems:

- Brocks Creek Ridge Land System.
- Cullen Land System.

The Brocks Creek Ridge Land System is described as consisting of sharp, rocky, north/south ridges, and hills with steep slopes (up to 40 – 60%) to gentle crests that are dissected by watercourses. The Cullen Land System contains topography that varies from rough, rocky granite outcrops to gently undulating country with small areas of flat land. The base rock of this land system is Cullen Granite, which is known to commonly intrude rocks in the Brocks Creek Group from the Brocks Creek Ridge Land System. Landform units are presented in Figure 5.

5.5 GROUNDWATER

In November 2006, Arafura commissioned SKM to conduct a hydrological study of the Mt Porter project area. This report has been included in Appendix 4 of the PER.

5.5.1 Regional

The complex stratigraphic and structural geology results in a rather complex hydrogeological environment. Aquifer characteristics show extreme variation according to lithology, tectonic hiatus, and geomorphological history.

Typically airlift yields are rarely sustainable in this geological environment as with prolonged pumping the enlarging cone of drawdown intersects less permeable zones and as the more permeable zones dewater, the rate of flow at the bore is not sustained. Bore yield reduction is reported toward the end of the dry season.

5.5.2 Project Area

The dominate aquifer system within the proposed mining area is considered to be the meta-sediments of the Koolpin Formation. Permeability in this unit is largely secondary related to fractures, weathering and to a lesser extent, bedding.

The Zamu Dolerite sills form low flow boundaries throughout the site, with groundwater seeps (springs) occurring at the contact between these intrusive units and the Koolpin meta-sediments.

5.5.3 Water Quality

Regionally, the groundwater is typically of low salinity with high levels of bicarbonate and a pH that ranges from slightly acid to slightly alkaline. The fractured aquifers of the study area are characterised by groundwater that rarely exceeds a salinity of 700 milligrams per litre, is high in bicarbonate and contains the cations calcium, magnesium and sodium in proportions tending to be highest in magnesium.

5.6 SURFACE WATER

MBS (2006) prepared a surface hydrology study report of the project area. This is provided in Appendix 5 of the PER.

5.6.1 Regional Catchment Description

The proposed Mt Porter Gold Project lies in the upper catchments of the Mary River Basin. The Mary River catchment covers an area of 8,000 square kilometres, draining north-west into the ocean at Van Diemen Gulf, about 100 kilometres east of Darwin

5.6.2 Project Area Catchments

All planned development at Mt Porter is within the Nellie Creek catchment. Nellie Creek drains east over 25 kilometres to Harriet Creek, which drains into Mary River 10 kilometres downstream of the confluence. Parts of the mineral lease outside the planned operations extend into the McKinlay River catchment to the west and Watts Creek to the north. Watts Creek drains north over 20 to 30 kilometres to the McKinlay River, which is the largest tributary of the Mary River.

Drainage within the project area consists of several ephemeral gullies which drain to the south and south-east toward Nellie Creek.

5.6.3 Average and Flood Flows

During the wet season relatively large volumes of water flow through the creeks and drainage gullies. Flow ceases in the mid dry season with water remaining in a few pools that act as refuge for freshwater fish, reptiles, amphibians and macroinvertebrates. Water in some of these pools is maintained well into the dry season by groundwater seepages or small springs.

5.6.4 Regional Water Quality

The catchment in general has slightly low pH compared with relevant ANZECC (2000) default trigger values. The electrical conductivity is towards the upper end of the ANZECC trigger value range. Other studies confirm the upper Mary River catchment has elevated conductivity compared with the upper Katherine and East Alligator Rivers, (which have electrical conductivities of 38 and 22 micro siemens per centimetre respectively), but is low in comparison to other rivers in the top end of the NT such as the Daly and Roper Rivers (conductivities of approximately 600 and 1,000 microsiemens per centimetre respectively). The higher conductivity is likely to be due to different geology (Schultz et al, 2002). Nutrients (nitrogen and phosphorous) are low, generally below ANZECC (2000) trigger values. Turbidity is within the range of ANZECC (2000) trigger values.

The report “*Water Quality of the Rivers and Streams of the Mary River Catchment (N.T.)* (Schultz et al, 2002) presented metal concentrations for the Mary River catchment. The median aluminium concentration is above the ANZECC trigger value. The median concentrations of all other metals analysed are below trigger values, but at least one sample (from 45 sites) exceeded the ANZECC trigger values for each of cadmium, copper, nickel and zinc.

Further analysis focusing on upper tributaries within the Pine Creek geosyncline indicates significant concentrations of metals in runoff from these areas, which include the Frances Creek catchment.

Widespread high concentrations of aluminium suggest that biota in the area has had an extended period to adapt to high aluminium concentrations (Schultz et al, 2002). The ANZECC trigger values are therefore likely to be too conservative to be applied to protect ecosystems in the Mary River catchment.

5.6.5 Project Area Water Quality

- Overall data from the natural waters indicate that prior to any mining taking place, the ‘background’ water available to floral and faunal populations is:
- Close to neutral, mainly in the pH range from 6.5 to 7.5.
- Are low in nitrate but may contain relatively high phosphate.
- Contain moderate levels of arsenic, aluminium, copper, lead, thallium, vanadium and zinc plus significant traces of other metals and sulphate.
- Arsenic, aluminium, zinc, copper and iron are present in the soil in significant quantities and may be mobilised if acid drainage was to occur.

5.6.6 Downstream Water Users

Three main Beneficial Uses of surface water in the Mary River catchment, have been declared under Beneficial Uses legislation under the *NT Water Act (1992)*. These are:

- Cultural (including aesthetic and recreational).

- Environmental (the maintenance of healthy aquatic ecosystems).
- Riparian use (public rights to extract water for domestic/stock purposes).

These uses are the basis for waste discharge licences and water quality planning - potential waste discharge or water extraction which detrimentally impacts on these Beneficial Uses will not be permitted under the Water Act.

There are no townships within the Mary River Catchment, and the resident population was estimated at less than 200 in 2002 (Armstrong *et al*, 2002). The main uses within the project area are environmental. The area is not currently used for grazing, but as it is part of Mary River West Pastoral lease there is potential for riparian use for stock purposes.

The Mary River forms a portion of the boundary of Kakadu National Park where Harriet Creek joins it, about 35 kilometres downstream of the project area. Kakadu National Park diverges from the Mary River about 46 kilometres further downstream, and Mary River does not flow into the park, so there is minimal use of Mary River water in Kakadu. Mary River National Park covers the majority of the Mary River downstream of Kakadu.

5.7 VEGETATION AND FLORA

Dominant vegetation communities for the Northern Territory have been described and mapped by Wilson *et al*. (1990). The vegetation community mapped as being dominant within Mt Porter Gold Project area is described as *Eucalyptus tectifica* and *Corymbia latifolia* Low Woodland with *Sorghum* understorey (Wilson *et al*. 1990). Site specific studies show however that this description by Wilson *et al*. (1990) is not accurate as the dominant Eucalyptus in these parts is actually *Eucalyptus tintinans* associated with *Corymbia dichromophloia* and *E. miniata*, over a tall *Sorghum* grassland understorey (Low Ecological Services, 2005).

The vegetation is relatively homogeneous over the proposed project area with only slight changes in species richness and abundances between habitat units. Five land unit groups were identified within the project area boundaries. All land units are widespread throughout the project area, namely:

1. Ridge Crests and Slopes.
2. Low Hills.
3. Riparian.
4. Low Undulating Plains.
5. Granite Hills.

5.8 FAUNA

A fauna study of the Mt Porter Project area was conducted at the end of the wet season between April 18th and 24th, 2005. A specific survey was also conducted in June 2006 to

determine if Gouldian Finches (*Erythrura gouldiae*) were present during the late breeding season.

Fauna of the Mt Porter area is typical of the Pine Creek region. There were 87 animal species identified, including 41 birds, 26 mammals, 17 reptiles, three amphibians and one fish. No Gouldian Finches were observed in the Mt Porter project area during Survey 2 nor within the Frances Creek survey. Two species of bats listed under *EPBC Act* (1999) or *TPWC Act* (2000) legislation for conservation significance as it was in 2005 were recorded during the survey, these were Orange Horseshoe-bat *Rhinonicterus aurantius* and White-striped Sheath-tail bat *Taphozous kapalgensis*. However, only one these species is in the current list of conservation significance, the Arnhem Sheath-tail bat (*Taphozous kapalgensis*).

Fauna of Conservation Significance that may occur in the Mt Porter area are presented in Table 1.

Table 1: **Fauna Species of Conservation Significance That May Occur in the Mt Porter Area**

Common Name	Scientific Name	Status	Species sited at Mt Porter	Species sited at Frances Creek
EPBC Act Protected Matters Database				
Red Goshawk	<i>Erythrotriorchis radiatus</i>	Vulnerable	No	No
Gouldian Finch	<i>Erythrura gouldiae</i>	Endangered	No	No
Partridge Pigeon (eastern)	<i>Geophaps smithii smithii</i>	Vulnerable	No	Yes
Masked Owl (northern)	<i>Tyto novaehollandiae kimberli</i>	Vulnerable	No	No
Bare-rumped Sheath-tail Bat	<i>Saccolaimus saccolaimus nudicluniatus</i>	Critically Endangered	No	No
Northern Quoll	<i>Dasyurus hallucatus</i>	Endangered	No	No
Melville Cicadabird	<i>Coracina tenuirostris melvillensis</i>	Migratory	No	No
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	Migratory	No	No
Derby White-browed Robin	<i>Poecilodryas superciliosa cerviniventris</i>	Migratory	No	No
Rufous fantail	<i>Rhipidura rufifrons</i>	Migratory	No	No
Oriental Plover	<i>Charadrius veredus</i>	Migratory	No	No
Oriental Pratincole	<i>Glareola maldivarum</i>	Migratory	No	No
Little Curlew	<i>Numenius minutus</i>	Migratory	No	No
Magpie Goose	<i>Anseranas semipalmata</i>	Overfly marine area	No	Yes
Fork-tailed Swift	<i>Apus pacificus</i>	Overfly marine area	No	No
Great Egret (White Egret)	<i>Ardea ibis</i>	Overfly marine area	No	Yes

Common Name	Scientific Name	Status	Species sited at Mt Porter	Species sited at Frances Creek
Cattle Egret	<i>Ardea ibis</i>	Overfly marine area	No	No
Rainbow Bee-eater	<i>Merops ornatus</i>	Overfly marine area	No	Yes
Freshwater Crocodile	<i>Crocodylus johnstoni</i>	Listed	No	Yes
Salt-water Crocodile	<i>Crocodylus porosus</i>	Listed	No	No
TPWC Act 2000				
Orange Horseshoe Bat	<i>Rhinonicterus aurantius</i>	Near Threatened	Yes	Yes
Arnhem Sheath-tailed Bat	<i>Taphozous kapalgensis</i>	Near Threatened	Yes	Yes

5.9 AIR QUALITY AND NOISE

While there is no ambient air quality data available for the project area, existing air quality is expected to be generally good, given the lack of urban populations or industry. Suspended particulate levels are, however, expected to be elevated due to windblown dust and pastoral activities.

A search of the National Pollutant Inventory database indicates that the only industrial facilities and diffuse sources of pollutants within an approximately 50 kilometre radius of the Mt Porter Gold Project area are the Union Reef Gold Mine and the Pine Creek Power Station. NPI reportable emissions to air from both of these facilities are categorised as low.

No quantitative baseline noise or vibration data is available for the project area. The current extensive pastoral and mineral exploration land uses result in the project area having a relatively low background level of noise. Noise levels would increase slightly on the haul route along Frances Creek Road and Mt Wells Road.

6. EXISTING SOCIAL ENVIRONMENT

6.1 EUROPEAN HERITAGE

A search of the Australian Heritage Database was conducted in August 2005 to determine if any registered heritage sites occur in or adjacent to the project area. No sites were listed in the database.

6.2 ABORIGINAL HERITAGE

Archeological surveys of the Mt Porter area were undertaken in 1993 and 2005. The more recent survey conducted by R.G Gunn found the survey area to be rich in archaeological sites and material with 21 sites being recorded within the present development area. It was recommended, from an archaeological perspective, that the project be permitted to proceed, but with some limitations and restrictions.

Five sites were accorded a high archaeological significance and it was recommended that these be avoided by the development and protected from any or further disturbance or damage. Seven sites were accorded medium significance and need to be avoided wherever possible, but could be disturbed following permission from NRETA and further archaeological study including the collection of all surface artefacts. Nine sites were found to be of low significance and should be avoided wherever possible but could be disturbed following permission from NRETA.

Several sites may be impacted by the proposed mine. These include site MP21, MP05 and to a lesser extent MP06. Site MP21 is a low significance artefact scatter that is located on the boundary of the proposed open pit. Site MP05 is an open artefact scatter with a low artefact density. The site is cut by the access track. Site MP06 is a quarry and open artefact scatter with a low artefact density and scoring a medium level of site significance. The site is also bisected by the existing access track.

Where possible, Arafura will realign the access track to avoid these sites.

6.3 NATIVE TITLE

Mining Lease 23839 is subject to a Native Title Claim DC01/06 made by the Northern Land Council on behalf of the Wagiman, Warai and Jawoyn native title groups. In December 2004 an agreement was reached between Arafura Resources NL, the Northern Land Council and the Northern Territory Government for the Mt Porter Gold Project. The agreement addressed the concerns of the Native Title groups with respect to Aboriginal site and heritage protection, employment opportunities, mine site rehabilitation, and financial compensation when mining commences.

6.4 SOCIAL ENVIRONMENT

The Mt Porter project area is 20 kilometres north of Pine Creek, which is the nearest population centre. Pine Creek is on the Stuart Highway between Darwin and Katherine. Pine Creek district covers an area of 400 square kilometres and has a population of about 500 people of which 10% are Aboriginal (ABS, 2002).

Major industries in the district include agriculture (beef and cattle), mining and tourism. Tourism sites feature the unique landscape, Aboriginal heritage, flora and fauna in the world heritage listed Kakadu National Park, 50 kilometres north-east of Pine Creek.

Review of the 2001 census figures showed that:

- The population of Pine Creek and surrounds was 472 with about 10% of the population identified as Aboriginal or Torres Strait Islander.
- The Pine Creek population is older on average than Northern Territory and Australia as a whole with a median age of 36 compared with 30 for the Northern Territory.
- About 42% of the Pine Creek workforce is employed in the mining industry. The second largest industry in Pine Creek is accommodation, cafes and restaurants, employing 14% of the workforce.
- Pine Creek had a higher percentage of adult males in full time employment (76%) than the Northern Territory as a whole. Other towns in the Northern Territory with high levels of employment are also mining towns.
- About 44% of the population over the age of 15 has post-school qualifications.
- The median weekly personal income is \$600-699, which is greater than the Northern Territory median weekly personal income in the \$500-\$599 range.

6.5 VISUAL AMENITY

The project is in a sparsely populated area used primarily for pastoral activities. The main visible components of the project area are the open pit and haul roads. These are only visible from private roads within the project area and possibly from inaccessible hilltops within nearby pastoral leases.

The mining operations area will not be visible from any public road or railway. Transport of ore from Mt Porter to the Union Reef mill will be visible to the public as it will occur on predominantly public roads.

The final pit void and waste rock stockpile will remain at the end of the project, however the waste rock stockpile will be rehabilitated to blend in with the natural surrounds.

6.6 BITING INSECTS

No site specific biting insect information is available for the Mt Porter Area. Given the absence of standing water in the project area, the distance to permanent water, the short

duration of the proposed project and its scheduling during the dry season, no survey has been conducted.

At the conclusion of the Mt Porter project, groundwater inflow into the pit void will result in a permanent pit lake. A biting insect survey was undertaken for the nearby Frances Creek project in June 2006 due to the presence of a number of permanent water storage structures within the project area. The project area contained open pit lakes that had flooded for 30 years. The survey found most existing pits within the mining lease appeared to contain minimal mosquito breeding sites, due to the predominantly steep sides and deep water. Sites that contained significantly higher mosquito breeding habitats included dams that contained shallow water or grassy areas, small ephemeral creeklines within the mining lease and broad floodways.

The most common species of adult biting insects recorded from the Frances Creek project area were *Culex annulirostris* and *Anopheles annulipes* s.l. Several other species, including *Coquillettidia xanthogaster*, *Culex palpalis* and *Anopheles bancroftii*, also occur, but in very low numbers. *Culex annulirostris*, *Culex palpalis*, *Anopheles annulipes* s.l., *Anopheles bancroftii* and *Coquillettidia xanthogaster* were considered to have potential to become pest species given the right conditions for breeding. All bite after sundown though *Anopheles bancroftii* and *Coquillettidia xanthogaster* are known to bite during the day in shaded areas. It is also expected that *Ochlerotatus vigilax* and *Ochlerotatus normanensis* will be present though they were not recorded during the June site visit to Frances Creek. Both species have been recorded in numbers likely to cause pest problems during trapping programs at the nearby Union Reef Gold Mine.

The nuisance status, possible vectors carried and peak abundance times for those species considered most likely to become pests at Frances Creek are outlined in Error! Reference source not found..

7. POTENTIAL IMPACTS AND ASSESSMENT

Management strategies are provided in Section 13, **Table 2** of the Executive Summary which lists the commitments made in the PER to manage potential issues.

7.1 LANDFORM AND SOILS

The following potential impacts on soils and landform have been identified:

- Compaction of soil surfaces by vehicles and equipment: Mining equipment will compact the surfaces of roads and infrastructure areas throughout the mine. This will increase surface runoff during periods of rainfall.
- Erosion of disturbed surfaces: The period of disturbance during mining and rehabilitation, until vegetation is established, can produce significant erosion risk, particularly in environments such as the Mt Porter area characterised by high intensity rainfall events.
- Contamination of soils by hydrocarbons.
- Disturbance of unique land systems: Localised disturbance to identified land units, namely, Brocks Creek Ridge Land System and Cullen Land System.

Long-term change to the landscape will be minimal as a result of mining. All mining areas will be rehabilitated before closure. Disturbed surfaces will be managed to prevent excessive erosion. Infrastructure areas will be rehabilitated to their pre-mining landforms and stabilised with local provenance flora species. Rehabilitation will be conducted at the conclusion of the mining operation.

Revegetation will occur through careful management of topsoil and its contained seed resource. Supplementary seeding or planting may occur if rehabilitation monitoring demonstrates that revegetation is not proceeding in line with expected results.

7.2 WASTE ROCK MANAGEMENT

Potential issues and impacts include:

- Acid development of soils.
- Lack of acid neutralising capacity.
- Contamination of surface water or groundwater leading to toxic environmental effects.
- Erosion of external surfaces over time. This may lead to loss of sediments to surface water drainages or in extreme cases instability of structures.

Implementing the management and mitigation measures describes in Section 13 (Table 2) will result in stable vegetated landforms which have minimal impact on the environment. It will allow resumption of pre-mining low level grazing. Due to the black coloration of the PAF

material, it is likely that it will be relatively easily recognisable and thus can be managed separately to other NAF material.

7.3 GROUNDWATER

Potential groundwater issues or impacts include:

- Lowering of localised groundwater levels as a result of mining.
- Deterioration of local groundwater quality as a result of seepage of contaminants from mining activities into local aquifers.
- Groundwater abstraction may reduce the volume of surface water flows due to the potential hydraulic connection between surface and ground waters.
- Concentration of salts on road areas where groundwater is used as a dust suppressant.
- Pipeline infrastructure impacting on pastoral activities.
- Septic sewage treatment systems may pollute the groundwater if located in areas where the water table is high.
- Possible acidification of groundwater due to aerial exposure in the pit void.
- Subsequent death or damage to aquatic flora and fauna.

Potential adverse impacts on groundwater are expected to be minimal after implementing the control measures described in Section 13 (Table 2). Location of the open pit in a topographic high in the local area combined with the fractured rock nature of local aquifers means that little, if any, through flow of groundwater from the pit will occur. Any contaminants present in the pit water will be contained. If recharge fluxes are greater than evaporative losses, some leakage of soluble materials into local aquifers may occur. Impacts are likely to be localised and minimal as this scenario only occurs in the wet season when a high level of dilution will occur.

7.4 SURFACE WATER

The proposed mining operations pose the following issues for surface water:

- Diversion of surface water flows during mining and rehabilitation resulting in increased sediment loads to downstream environments.
- Contamination of surface water as a result of release of pollutants (eg sediment and hydrocarbons) associated with earthmoving, excavation and other mining activities.
- Potential for acidification of surface waters due to exposure of sulphide waste rock material to rainfall.
- Development of a lake in the pit void after mining ceased with water quality affected by increased salinity (due to concentration of salts from evaporation) and acidification (due to exposure of sulphide materials in the pit walls).
- Flooding of the project area in the post-mining wet season.

- Temporary reduction in surface water volume to ephemeral creeks as a result of diverting runoff from operational areas and catching surface water in dams to provide water for the operations.

As all mining will be undertaken during the dry season there is expected to be little or no runoff during operations, hence no impact on surface water due to stormwater runoff during operations. Implementation of the management and mitigation measures (Section 13, Table 2) will adequately manage any unseasonal rainfall events.

7.5 VEGETATION AND FLORA

Impacts on species on flora may include:

- Localised flora loss particularly for species present within the Ridge Crests and Slopes land unit.
- Loss of riparian vegetation throughout the project area, namely in the areas proposed for haulage roads and waste rock dump that transect the Swampy Meadow Riparian Zone.
- Death of vegetation as a result of groundwater drawdown in water extraction areas.
- Successful establishment of vegetation on restored landforms.
- Spread of existing weed species and the introduction of new weed species into the area.

Procedures to regulate the amount of clearing will ensure only the minimal area required to implement the project is disturbed. The small scale of the project means that only 24 hectares of land will be disturbed, with 20 hectares being rehabilitated at the conclusion of mining (eight months after clearing occurred).

The short duration of the project means that topsoil will only be stockpiled for a short period, thus minimising loss of seed viability.

Site infrastructure has been located to avoid significant vegetation features, such as the riparian rainforest. Vegetation communities to be disturbed are common and widespread in the region. No species or communities of conservation significance will be affected.

7.6 FAUNA

Developing and operating the Mt Porter Gold Project poses the following issues:

- Removing about 24 hectares of habitat during the life of the mine.
- Adversely impacting species of conservation significance such as the Orange Horseshoe Bat, Arnhem Sheathail Bat, Partridge Pigeon and Short-eared Rock Wallaby.
- Accidentally killing animals on mine roads and the haul road to the Union Reef Plant.
- Controlling feral animals such as donkeys, horses, cats and pigs.

Although habitat disturbances may result in localised population reduction in the Mt Porter project area, most species are common and widespread throughout their range and their status is unlikely to be affected.

The project will not impact on the preferred habitat of species of conservation significance, such as the Gouldian Finch, which prefers woodlands of *Eucalyptus tintinans* and *Sorghum* grasses.

Similarly the Orange Horseshoe-bat has highly specialised roost requirements. The lack of local roosting habitat indicates there will be no significant impact on populations other than temporary loss of small areas of foraging habitat.

7.7 AIR QUALITY AND NOISE

Potential air quality issues include:

- Mobile equipment emissions from engine exhausts, including carbon monoxide, carbon dioxide and nitrous oxides.
- Generation of dust from mining operations and vehicle movement on unsealed roads.
- Generating dust during material transfer operations.
- A negative impact on climate change associated with increased greenhouse gas emissions.

Potential noise issues include:

- Mobile equipment noise from engines.
- Generator noise.
- Open pit blasting noise and vibration.

Potential impacts from air and noise emissions associated with the project are expected to be minimal. The remote location of the project and the absence of nearby residential facilities will limit any adverse impacts.

7.8 WASTE AND HAZARDOUS MATERIALS

Potential impacts include:

- Spillage to the environment of hydrocarbons and hazardous materials used in the mining or associated activities.
- Incorrect storage of hazardous materials leading to contamination of soil, surface water and ground water.
- Disposal of hazardous wastes generated during construction and operations including tyres, waste oil, grease and industrial waste.
- Spillage of ore product during transport to Union Reef mill.

- Disposal of putrescible wastes in an onsite landfill.
- Storage of explosives.

By implementing appropriate storage and handling measures in accordance with industry standards and practices, dangerous goods and hazardous substances used in the operations will not present a hazard or cause environmental harm.

Hydrocarbons are the primary type of hazardous material anticipated to be required on site. No bulk chemicals are required as processing of ore will occur at another facility. Correct management through implementation of the measures described in Section 13 (Table 2) will ensure that adverse impacts are prevented or minimised.

7.9 TRANSPORT

Potential issues and impacts from transport in and out of the Mt Porter project area include:

- Dust and road traffic noise.
- Potential road safety issues between mine traffic and other local traffic.
- Increased maintenance requirements of public roads.

Traffic impacts to Pine Creek as a result of mine traffic will be minimal due to the low number of vehicle movements. No local communities are located within impact distance of the route. One residence can be accessed via the affected portion of Mt Wells Road, but it is not visible from the road.

Safety precautions and management strategies implemented by Arafura will reduce the risks associated with increased traffic on the Mt Wells road and Frances Creek road as a result of personnel movements and ore haulage. Upgrading of sections of Mt Wells Road used by ore haulage road trains will improve sight lines and watercourse crossings. The increased heavy traffic will have an adverse affect on tourist traffic using the road, however, warning signs and road improvements will keep the impact manageable.

7.10 CULTURAL ENVIRONMENT

Potential Aboriginal cultural impacts include:

- Unauthorised destruction or damage to identified sites.
- Identification of additional Aboriginal sites during the quarrying process.
- Increased levels of employment among the local indigenous population.

No significant Aboriginal sites occur in areas requiring clearing for infrastructure and landforms. Through education of employees and implementing the management measures outlined in Section 13 (Table 2), adverse impacts upon Aboriginal cultural heritage will be minimised.

Positive impacts on local Aboriginal communities will arise from increased opportunities for employment, training and education. Continuing involvement and discussions with the Northern Land Council and local Aboriginal groups shall ensure that opportunities for positive impacts are maximised.

7.11 SOCIO-ECONOMIC ENVIRONMENT

Potential social and economic impacts include:

- Increased local employment in the Pine Creek area.
- Utilisation of local processing plant (Union Reef).
- Increased use and maintenance of local roads, namely Frances Creek Road.
- Increased traffic movements as material is imported and exported from the project area.
- Increased contribution to the Northern Territory and Federal economies as a result of royalties and payroll taxes.
- Increased pressure on Pine Creek accommodation and medical services.
- Increased business opportunities for local business.
- Temporary change of land use from pastoral to mining.
- Potentially negative impact on tourism within the area.

The project will provide an economic boost to the local area and Northern Territory economy through increased business opportunities for local businesses. Increased contribution to the Northern Territory and federal economies as a result of royalties and payroll taxes will result in a net benefit.

Commitments to preferentially employ local candidates provide education and training to members of the local indigenous community and preferentially engage local goods and service providers will help to ensure the local community experiences project benefits.

7.12 VISUAL AMENITY

The only potential issues are:

- Visibility of operations from Stuart and Kakadu Highways, Mt Wells Road, and Alice Springs to Darwin Railway.
- Increased use of Mt Wells public road.
- Visibility of permanent features after closure of operations.
- Distraction of highway users by lights.

Project operations will not have a visual impact from the Stuart or Kakadu Highways other than from transporting product.

The final void and waste rock stockpile will remain at the end of the project. These will have a low visual impact following rehabilitation owing to the site's isolated location and the control measures to be implemented (Table 2).

7.13 BITING INSECTS

Potential issues and impacts relating to biting insects are:

- Local transmission of mosquito carried diseases such as Malaria.
- Increase in adult mosquito populations to pest proportions.

It is not expected that biting insects will be a concern for the Mt Porter Gold Project given the absence of standing water in the project area, the distance to permanent water, the short duration of the proposed project and its scheduling during the dry season.

Education of employees, ongoing monitoring of mosquito populations and effective management of mosquito breeding grounds will ensure that any impacts associated with biting insects are minimised or avoided.

At the conclusion of the project, groundwater inflow into the pit void will result in a permanent pit lake.

A survey for biting insects was undertaken at the nearby Frances Creek mine. The site includes open pit lakes that have flooded for 30 years. The survey found most existing pits within the mining lease appeared to contain minimal mosquito breeding sites, due to the predominantly steep sides and deep water.

Other water storage features surveyed at Frances Creek appeared to contain significantly higher mosquito breeding sites than the open pit lakes. Such features can be either permanent or ephemeral and include:

- Dams that contained shallow water or grassy areas.
- Small ephemeral creeklines within the mineral lease.
- Broad floodways.

At the conclusion of the proposed operation at Mt Porter, all water storage dams will be decommissioned and rehabilitated. Other than the open pit lake, no water storage structures will remain. The remainder of the site will revert back to the conditions existing before mining, being ephemeral creek systems with isolated soaks and springs containing permanent water.

8. ENVIRONMENTAL PROTECTION AND BIODIVERSITY ACT TRIGGERS

The Mt Porter Project has been deemed a controlled action under the Federal *Environment Protection and Biodiversity Conservation Act 1999*. The controlling actions are:

- World Heritage (Sections 12 and 15A).
- Listed threatened species and communities (Sections 18 and 18A).
- Listed migratory species (Sections 20 and 20A).

8.1 WORLD HERITAGE

The Mt Porter project area lies approximately 20 kilometres from the boundary of the Kakadu National Park World Heritage Area. This is sufficiently far enough away that the project will have no visual, dust or noise impacts upon the World Heritage values of the park.

The proposed Mt Porter Gold Project lies in the upper catchments of Nellie Creek to the south and Watts Creek to the north. Nellie Creek drains east over 35 kilometres to the Mary River. The Mary River flows along the western edge of Kakadu National Park for about 46 kilometres before flowing away from the park to the north-west. There is limited potential for surface water runoff to impact on Mary River water quality and subsequently Kakadu National Park.

The only discharges of water associated with the Mt Porter mining operation will be potential discharge of dewatering from the pit. It is anticipated that most dewatering will be used by the mining operation for dust suppression. If any discharge is required it will be a limited quantity towards the end of the dry season, and will be extremely unlikely to reach the Mary River before evaporation or infiltrating into the watercourse bed. The groundwater is of good quality and any discharge will be regulated by a waste discharge licence requiring high water quality standards to be met. There will therefore be no adverse impact on the Mary River or Kakadu.

8.2 LISTED THREATENED SPECIES

Seven fauna species listed as threatened under the *EPBC Act 1999* have been identified as potentially occurring in the project area. No threatened flora species or TECs have been identified in the project area or nearby areas. The fauna species identified were:

- Bare-rumped Sheath-tail Bat (*Saccolaimus saccolaimus nudicunius*).
- White-striped Sheath-tail Bat (*Taphozous kapalgensis*)
- Orange Horseshoe Bat (*Rhinonicterus aurantius*)
- Northern Quoll (*Dasyurus hallucatus*).
- Freshwater Sawfish (*Pristis microdon*).

- Gouldian Finch (*Erythrura gouldiae*).
- Red Goshawk (*Erythrotriorchis radiatus*).
- Partridge Pigeon (Eastern) (*Geophaps smithii smithii*).
- Masked Owl (northern) (*Tyto novaehollandiae kimberli*).

Two species of conservation significance were identified during the original Mt Porter survey. These were Orange Horseshoe-bat (*Rhinonicterus aurantius*) and White-striped or Arnhem Sheath-tail bat (*Taphozous kapalgensis*). However, as a result of changes to legislation only the Arnhem Sheath-tail bat (*Taphozous kapalgensis*) is listed as near threatened under the *Territory Parks and Wildlife Conservation Act* (2000) (*TPWC Act* (2000)) (Updated Threatened species list, NRETA Website, November 2006). Local habitat loss is unlikely to affect the status of *T. kapalgensis*, as it is a plains dwelling species.

8.3 LISTED MIGRATORY SPECIES

A number of species listed as migratory under the *EPBC Act 1999* have been identified as potentially occurring in the Mt Porter project area. These include:

Migratory Wetland Birds

- White or Great Egret (*Ardea alba*).
- Cattle Egret (*Ardea ibis*).
- Magpie Goose (*Anseranas semipalmate*).
- Painted Snipe (*Rostratula benghalensis s. lat.*).
- Oriental Plover (*Charadrius veredus*).
- Oriental Pratincole (*Glareola maldivarum*).
- Little Curlew (*Numenius minutus*).

Migratory Terrestrial Birds

- Fork-tailed Swift (*Apus pacificus*).
- Melville Cicadabird (*Coracina tenuirostris melvillensis*).
- Gouldian Finch (*Erythrura gouldiae*).
- White-bellied Sea-Eagle (*Haliaetus leucogaster*).
- Rainbow Bee-eater (*Merops ornatus*).
- Rufous Fantail (*Rhipidura rufifrons*).
- White-browed Robin (*Poecilodryas superciliosa cerviniventris*).

Migratory Reptile

- Saltwater or Estuarine Crocodile (*Crocodylus porosus*).

None of the speies listed were recorded in the Mt Porter fauna surveys. As for the listed threatened species, most of habitats disturbed do not represent preferred habitat for these species. Additionally, these species are highly mobile and will be able to relocate to nearby areas of similar habitat.

9. REHABILITATION AND CLOSURE

The purpose of decommissioning and closure planning is to describe the rehabilitation and closure strategies necessary to adequately address environmental issues to the satisfaction of regulatory authorities and Arafura at the completion of operations. The strategies are designed to ensure maintenance free or “walk away” closure over the long term.

The five basic steps involved in closure planning are:

- Removal and disposal of all infrastructure not required for other uses.
- Remediation of any soil or water contamination.
- Rehabilitation of disturbances.
- Post-closure maintenance and monitoring.
- Tenement relinquishment and financial security retirement.

As part of obtaining all permits necessary to start mining, Arafura will submit a security bond to DPIFM in case of any unplanned closure of the project.

Rehabilitation will occur nearing the end of operations and will be completed to allow a return to pre-mining land use (pastoral) once full decommissioning is complete.

Further to the overall objective for the project, specific completion criteria will be developed to address the following components of rehabilitation and closure of the site:

- Safety: Protect the public, domestic animals and wildlife from injuries.
- Geochemical and Physical stability: Ensure the physical and geochemical stabilisation of all project components in the short and long-term.
- Revegetation: Rehabilitate disturbed areas and habitat using local, native species.
- End land use: Allow a return to pre-mining land use (pastoral) once full decommissioning of operations is complete.

10. RISK MANAGEMENT

Arafura will address major hazards for the mining operation, both human-caused emergencies and natural disasters that threaten life, the environment and/or property. An environmental risk assessment was undertaken in accordance with Australian/New Zealand Standard 4360:1999 Risk Management.

To maximise the pro-active management of environmental issues it is important that manpower and other resources are allocated on priority issues. It is normally accepted that the highest risk issues receive the highest priority. The generally accepted measure of risk is the product of the likelihood of an event occurring and the consequence of the event. For example an event that has a high likelihood and moderate consequence may be considered to have similar risk as an event that has a moderate or low likelihood and high consequence. Although the process has a high degree of subjectivity, it can provide very good analysis of risk when input is provided by experienced client representatives who have knowledge of the site.

The methodology used in the risk assessment rated both likelihood and consequence on a scale of 1 to 5. Industry data was used to assess the **likelihood** of an environmental risk occurring. The **consequence** of an environmental issue was assessed by determining the severity of the effect, the area/population to be affected, the permanence of effects and the capacity of the area to recover. Control measures are specified for each potential incident to mitigate impacts and so minimise the risk associated with the activity.

11. ENVIRONMENTAL MANAGEMENT DOCUMENTS

11.1 PROJECT ENVIRONMENTAL MANAGEMENT SYSTEM

Arafura will develop and implement a Corporate Environmental Management System (EMS). The EMS will support a project / site Environmental Management Plan (EMP) and provide a formal description of the methodical framework for managing environmental issues.

The EMS aims to describe processes, procedures, practices to implement environmental considerations into all aspects of operations. An important component of the EMS is a platform for ongoing review and reporting of environmental performance of operations in a quantifiable and consistent manner.

11.2 ENVIRONMENTAL MANAGEMENT PLAN

An Environmental Management Plan (EMP) will be developed in consultation with NRETA and DPIFM, prior to start of construction.

The objective of an EMP is to clearly describe key environmental strategies to be adopted by Arafura to manage the project in accordance with the company's Environmental Policy and statutory environmental requirements. Development of an EMP is an integral component of the Mining Management Plan under Section 40 of the *Mining Management Act*.

The management plans and strategies outlined within the EMP document will apply to all components of the project during construction, operation and closure phases. The EMP will be binding on all Arafura's employees and contractors. The EMP will be developed in accordance with:

- The *Draft Environmental Management Plan (EMP) Guidelines* prepared by DPIFM (undated); the EMP requirements outlined in the draft PER Guidelines;
- DBIRD's Mining Management Plan Advisory Note (DBIRD February 2002); and
- DBIRD's Small Mining Operations Mining Management Plan Advisory Note (DBIRD November 2002).

12. PUBLIC INVOLVEMENT AND CONSULTATION

Arafura initiated a stakeholder consultation process for the project before it submitted the Notice of Intent in July 2003. Arafura prepared a consultation strategy to facilitate effective communication with regulators, local and wider community and other stakeholders. This allowed issues raised during the consultation process to be taken into consideration in the project's design, development, operation and closure.

Significant stakeholders were identified through discussions with NRETA, DPI, DPIFM and the Northern Land Council. Arafura has continued to consult stakeholders on a regular basis. Consultation has included public presentations, government presentations and discussions and/or correspondence with pastoral leaseholders, environmental groups, community groups, local members of parliament, government departments, members of local Aboriginal communities and Native Title claimants.

In December 2004 a Deed for the proposed grant of mining lease 23839 was signed by Arafura and the Northern Land Council on behalf of the Wagiman, Warai and Jawoyn Groups. The Deed accords understanding and respect for the interests of the Native Title Party and their members in the Mining Area according to Aboriginal tradition; minimises the deleterious impact upon the Native Title Party and their members; minimises the deleterious impact upon the environment; and contributes to the social and economic well-being of the Native Title Party.

13. SUMMARY OF COMMITMENTS

Commitments with respect to the design and management are made throughout the PER. For convenience, commitments and key performance indicators where applicable are summarised in **Table 2**. Commitment numbers refer to PER sections in which the commitments were made.

Table 2: Summary of Arafura's Commitments for the Mt Porter Project

Commitment Number	Commitment and Key Performance Indicators Where Applicable
Landform and Soils (PER Section 9.1)	
9.1.2.1a	An internal Land Clearance Procedure will be implemented for all ground disturbance activities, to track the cumulative clearing undertaken for the project.
9.1.2.1b	Access to all areas outside the immediate mine area and off formed roads and tracks will be prohibited.
9.1.2.1c	Vehicles and mobile equipment will be parked only in designated parking areas. Vegetated areas will not be used for parking areas.
9.1.2.2a	Stripping topsoil to a depth of about 100 millimetres where practicable and placing directly onto rehabilitation areas or stockpiles.
9.1.2.2b	Placing stockpiled topsoil in windrows less than two metres high to minimise loss of seed viability and soil biota.
9.1.2.2c	Rehabilitation of the waste landform and site infrastructure areas will be undertaken at the conclusion of mining. All rehabilitation will be performed in accordance with contemporary accepted industry best practice and conducted in accordance with an approved MMP.
9.1.2.2d	Stripping and stockpiling topsoil (where required) in dry and preferably still wind conditions, to minimise dust generation and assist rapid revegetation.
9.1.2.3a	Controlling slope gradients to minimise erosion and soil loss.
9.1.2.3b	Installing diversion bunds and drains as necessary to control local surface water runoff to minimise overland flow and consequential erosion.
9.1.2.3c	Ripping rehabilitation areas on the contour to remove compaction, improve soil structure and improve infiltration capacity.
9.1.2.3d	Routinely inspecting rehabilitated and disturbed surfaces for erosion, particularly after significant rainfall. Implementing appropriate remediation measures if soil erosion is observed during routine inspections.
Waste Rock Management (PER Section 9.2)	
9.2.2a	Ensuring all PAF material is encapsulated in the waste landform.
9.2.2b	Arafura will conduct further testing of PAF material as it is encountered during mining to ensure its geochemical properties are understood and management measures described in this PER will be effective in preventing acid generation over time.
9.2.2c	Contouring the waste rock stockpile so that it blends with the surrounding topography so that the final design is aesthetically pleasing.
9.2.2d	Contouring the waste rock stockpile top surface at gentle gradients to direct drainage off the dump and discourage infiltration over the PAF cell.

Commitment Number	Commitment and Key Performance Indicators Where Applicable
9.2.2e	Building diversion drains wherever stockpile construction obstructs significant water courses.
9.2.2f	Deep ripping the waste rock stockpile slopes on the contour to assist water absorption and minimise erosion.
9.2.2g	Spreading topsoil on the waste rock stockpile once shaping is complete to facilitate revegetation.
9.2.2h	Routinely inspecting the rehabilitated waste rock stockpile for erosion, particularly after significant rainfall. Implementing appropriate remediation measures if soil erosion is observed during routine inspections.
Groundwater Management (PER Section 9.3)	
9.3.2a	Flow meters will be fitted to groundwater extraction bores to enable monitoring of extraction volumes.
9.3.2b	Monthly monitoring of standing water levels (SWL) of production bores for the duration of the operation.
9.3.2c	Septic systems will be located in areas where there is sufficient depth to the natural watertable to allow the system to operate effectively and minimise risk of polluting the groundwater.
9.3.2d	Post-mining monitoring of ground water levels and quality twelve months after mine closure. If deemed necessary, further monitoring of groundwater will be conducted.
Surface Water Management (PER Section 9.4)	
9.4.2a	Any surface run-off requiring discharge to the environment will be directed to detention basins to remove sediment prior to discharge.
9.4.2b	Contouring the waste rock stockpile top surface at gentle gradients to direct drainage off the dump and discourage infiltration over the PAF cell.
9.4.2c	Building diversion drains where stockpile construction obstructs water courses.
9.4.2d	Shallow detention basins will be established on Pit Gully and East Gully downstream of the waste rock stockpile to remediate runoff from the waste rock stockpile.
9.4.2e	Culverts and/or floodways will be installed as required where roads cross watercourses and drains. Water diversion structures will be armoured, where necessary, to reduce the velocity and erosion potential, of surface flows.
9.4.2f	Hydrocarbon storage will be in accordance with Australian Standard AS1940 <i>Storage and Handling of Flammable and Combustible Liquids</i> .
9.4.3a	No water discharge to the environment will occur without an approved Waste Discharge Licence. Discharges will meet approved water quality criteria.
9.4.3b	Any dewatering discharge will be monitored and treated if necessary to meet agreed release criteria as specified in the MMP and waste discharge licence before release to the environment.
9.4.4a	Water management measures for infrastructure completed before the end of April will be designed to cope with major rainfall events of up to 500millimetres.
9.4.4b	Water management measures for landforms and infrastructure remaining at the end of October will be designed to manage wet season rainfall events.
9.4.4c	Water management measures for temporary disturbances and infrastructure to be removed by October will be designed to manage dry season rainfall events

Commitment Number	Commitment and Key Performance Indicators Where Applicable
	of up to 100 millimetres.
9.4.5a	A water monitoring program will be implemented under the Environmental Management Plan.
9.4.5b	The water monitoring program will include regular sampling of water unaffected by and water downstream of mining activities within the lease. Monitoring results will be reviewed against past monitoring and ANZECC guidelines to detect any deterioration in water quality and allow action to be taken.
9.4.5c	The water monitoring program will include analysis of water potentially to be discharged to the environment prior to any such discharge.
9.4.5d	Quantity of water discharge will be monitored and recorded.
9.4.5e	Dewatering and dust suppression water quality will be monitored regularly during operations. As operations will be occurring in the dry season it is likely there will be little opportunity to monitor stormwater and natural streamflow during operations, but procedures will be developed to allow opportunistic monitoring of any runoff events that occur. Post-mining monitoring of surface water quality down stream from the project area will be undertaken for at least 12 months after mine closure. If deemed necessary, further monitoring of surface water will be conducted.
Vegetation and Flora Management (PER Section 9.5)	
9.5.2.1a	Developing a Land Clearing Management Procedure as part of the EMP.
9.5.2.1b	Minimising the impact of clearing by restricting vegetation clearing to the minimum necessary for operations.
9.5.2.1c	Clearly delineating the perimeter boundary of all areas approved for clearing before clearing works begin.
9.5.2.2a	Preparing a Weed Management Plan as part of the EMP. The plan will include, but will not be limited to, issues of vehicle and personal hygiene in regards to weeds, identification of weed species (including noxious weeds) and control and eradication measures.
9.5.2.2b	Requiring all earthmoving equipment introduced to the project area to have been cleaned to remove soil and plant seeds prior to entry.
9.5.2.2c	Confining company vehicles to travelling on purpose-built roads to minimise potential vehicle-borne spread of weed species.
Fauna Management (PER Section 9.6)	
9.6.2a	Requiring employees and contractors to attend an induction program that will include a component on environmental management. In particular, the induction will clearly explain employee and contractors' roles and responsibilities to restrict impacts on fauna and habitat.
9.6.2b	Educating all employees and contractors to recognise species of conservation significance, particularly the Gouldian Finch, and requiring them to report any sightings to the Environmental Manager.
9.6.2c	Reporting sightings of species of conservation significance to the Northern Territory Parks and Wildlife Commission.
9.6.2d	A monitoring program and Management Plan will be developed specifically for the Gouldian Finch. As part of the site induction all staff will be educated in

Commitment Number	Commitment and Key Performance Indicators Where Applicable
	identifying Gouldian Finches and procedures to be followed if Gouldian Finches are observed.
9.6.2e	Restricting speeds on haulage routes and mine roads to minimise fauna death on roads.
9.6.2f	Cleared vegetation will be stockpiled and respread in the rehabilitation program to provide fauna habitats.
9.6.2g	Developing a Wildlife Rescue Procedure to operate in conjunction with land-clearing operations and where vehicle movements occur.
9.6.2h	Participating in feral animal control programs on Mary River West stations, if requested by owners.
9.6.2i	Arafura will undertake Cane Toad trapping programs during the life of the Mt Porter Project.
9.6.2j	Banning domestic animals and firearms on site.
9.6.2k	Waste management procedures will be implemented to minimise attraction of feral animals to the project area.
9.6.2l	Drill holes will be capped and appropriately rehabilitated to remove potential hazard to the local wildlife.
Atmospheric Pollution and Noise Management (PER Section 9.7)	
9.7.3a	Emission control equipment is installed on all combustion engines.
9.7.3b	Diesel combustion engines in stationary and mobile equipment and diesel-powered electric generators will be operated and maintained to minimise emissions of combustion gases.
9.7.3c	Water trucks will be used to control fugitive dust within the pit and on internal roads to minimise dust emissions.
9.7.3d	Movement of mobile equipment and vehicles will be limited to formalised tracks and roads where dust control methods can be used.
9.7.3e	Equipment operators will remain in enclosed, air-conditioned cabins to minimise exposure to dust emissions.
9.7.3f	Areas will be rehabilitated at the conclusion of operations to prevent dust generation.
9.7.3g	Joining the Federal Government's Greenhouse Challenge Plus program and monitoring greenhouse emissions and efficiency.
9.7.3h	Energy efficiency will be a major consideration in the selection and design of equipment and plant.
9.7.3i	Encouraging all employees to be energy efficient in their day to day activities and educating them on this.
9.7.3j	Reducing the noise from equipment by installing soundproofing and/or noise abatement devices, where practicable, around/on primary sources of noise such as power generators and water pumps.
9.7.3k	Maintaining, to the extent practicable, the natural acoustic barriers (for example trees and ridges) between noise sources and neighbouring communities.
9.7.3l	Hearing protection equipment will be made available and utilised in onsite areas where engineering controls are deemed inappropriate or ineffective.

Commitment Number	Commitment and Key Performance Indicators Where Applicable
Waste and Hazardous Materials Management (PER Section 9.8)	
9.8.2a	Material Safety Data Sheets will be available and accessible at all work places where hazardous materials are used.
9.8.2b	Design of on ground hydrocarbon storage tanks and secondary containment will be in accordance with AS1940 -2004 Storage and Handling of Flammable and Combustible Liquids.
9.8.2c	All mobile equipment and light vehicle servicing activities including wash down will be done on impermeable surfaces.
9.8.2d	The heavy vehicle workshop will contain a purpose-built wash down facility incorporating an appropriate sediment and oil/grease removal system.
9.8.2e	An Emergency Response Procedure will be developed to ensure appropriate response can be made to minimise the environmental impact caused by incidents involving hazardous materials or wastes.
9.8.2f	The mobile refuelling truck will carry spill containment and cleanup material at all times and the driver will be trained in the use of these materials.
9.8.2g	A register of all hazardous materials imported to the site or generated as a result of site activities will be maintained. This will document the hazardous material name, location, approximate volume, storage method and where applicable, disposal method for the substance and containers.
9.8.2h	Bringing hazardous materials to the site in bulk packaging wherever possible. This practice will minimise the number of containers and reduce risk of spillage.
9.8.2i	Hazardous waste generated by the operation will be transported offsite to licensed waste disposal facilities. This is likely to include waste oil, grease and heavy equipment oil and fuel filters.
9.8.2j	All hazardous wastes will be temporarily stored in designated containers and contents properly labelled at all times.
9.8.2k	Domestic waste from the offices and workshops will be properly handled, transported to, and disposed of in the onsite landfill.
9.8.2l	Reusable pressurised containers and vessels will be returned to suppliers. Pressurised containers and vessels that are not reusable will be punctured using suitable equipment and disposed of in the onsite landfill.
9.8.2m	Arafura staff and contractors will be trained in proper handling and disposal of waste material.
9.8.2n	Explosives magazine will be constructed and operated in accordance with regulatory requirements.
9.8.2o	A licence to Store Dangerous Goods will be obtained for the storage of diesel fuel on site.
9.8.2p	Septic systems will be located in suitable areas where there is sufficient depth to groundwater to allow the system to operate effectively.
9.8.2q	Prior to their installation, plans for the septic systems will be approved by the relevant government agency.
Cultural Environment Management (PER Section 9.9)	
9.9.2a	The location coordinates of sites of archaeological significance will be stored in a suitable database by Arafura and shall be made accessible to project design, construction and operations personnel.

Commitment Number	Commitment and Key Performance Indicators Where Applicable
9.9.2b	All employees and contractors will be required to participate in a general site induction before starting work. The induction will include: - Information on the importance of the cultural environment and protecting artefacts and archaeological sites. - Information on the correct procedure if items of potential Aboriginal or heritage significance (including bones) are discovered during quarrying or other mining activities.
9.9.2c	The Northern Land Council and NRETA will be contacted immediately if items of potential Aboriginal significance are discovered.
9.9.2d	A 50 metre exclusion zone shall be provided around sites of high archaeological significance (sites MP03, MP07, MP34, MP48 and MP49 (excluding the area currently disturbed by the access track).
9.9.2e	The access track from Frances Creek Road to the mine site will be relocated to avoid generation of dust from the road impacting MP49.
9.9.2f	Arafura will operate with a preference to employ people from the local community where suitable.
Socio-Economic Environment Management (PER Section 9.10)	
9.10.2a	On final decommissioning plant and infrastructure will be dismantled, made safe and unless requested otherwise by project stakeholders, removed from the site.
9.10.2b	Compensation agreements will be reached with landowners for loss of use of land used by Arafura for mining or associated infrastructure.
9.10.2c	Employment opportunities will be advertised locally and preference will be given to local candidates.
9.10.2d	Provision of goods and services will be advertised locally and preference will be given to local businesses.
9.10.2e	First aid facilities will be established onsite for the duration of the project. These facilities will be manned by appropriately qualified employees.
9.10.2f	A liaison will be established between onsite Emergency Response and First Aid personnel and providers of equivalent services in Pine Creek, Katherine and Darwin.
9.10.2g	Arafura will establish a complaints procedure by which the public can lodge complaints about the operation or impact of the mine.
Transport Management (PER Section 9.11)	
9.11.2a	Erecting warning signs at the junction of Frances Creek Road and Mt Wells Road to advise the public they are entering private property and must comply with all directions issued by Arafura. Discouraging casual access.
9.11.2b	Signs on Mt Wells Road, giving warning of road trains entering, leaving and travelling along the haul road.
9.11.2c	Road maintenance to be carried out to DPI standards. This will include regular grading of the Frances Creek and Mt Wells roads and additional maintenance on stream crossings on the Mt Wells Road between Pine Creek and the mine as necessary to improve all-weather access.
9.11.2d	If deemed necessary, a commuter bus will be provided to minimize traffic between Pine Creek and Mt Porter.

Commitment Number	Commitment and Key Performance Indicators Where Applicable
9.11.2e	Road train drivers will use radio communications to coordinate safe passing. Only one to two road trains will operate at any time.
9.11.2f	Licensed road going vehicles will be used for haulage and standard axle loadings will be complied with.
9.11.2g	Sufficient freeboard will be left at the top of all trailers when loading to ensure ore product can not spill.
Visual Amenity Management (PER Section 9.12)	
9.12.2a	The impact of clearing will be minimised by restricting clearing of vegetation to the minimum necessary for operations.
9.12.2b	Access to the project site will be limited to employees and authorised visitors. All project access will be well signposted to control traffic movement in and out of the project area.
9.12.2c	The waste rock stockpile will be contoured so it ties in with the surrounding topography.
Biting Insects Management (PER Section 9.13)	
9.12.2a	During the site specific induction advising all employees of the potential for seasonal problems relating to biting insects including their potential pest, nuisance and disease carrying potential. All employees will be made aware of the diseases mosquitoes may carry.
9.12.2b	During site specific inductions, all staff will be advised on personal protection measures to protect themselves from mosquitoes and other biting insects.
9.12.2c	If mosquito breeding reaches significant levels, Arafura will liaise with the MEB to determine appropriate larvicides to use to control the problem.
Rehabilitation and Closure Management (PER Section 11)	
11.1a	As part of obtaining all permits necessary to start mining, Arafura will submit a security bond to DPIFM in case of any unplanned failure of the project. The size of this security bond will be reviewed in conjunction with DPIFM to ensure it remains consistent with level of disturbance caused by the project at any specific time.
11.1b	Monitoring will be conducted after completion of rehabilitation to establish the effectiveness of rehabilitation over time. Monitoring will consider physical stability, erosion, minimisation, vegetation establishment (species diversity, density, cover) and weed presence.

14. REFERENCES

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FIGURES

Figure 4: Cross-sectional View of Open Pit.

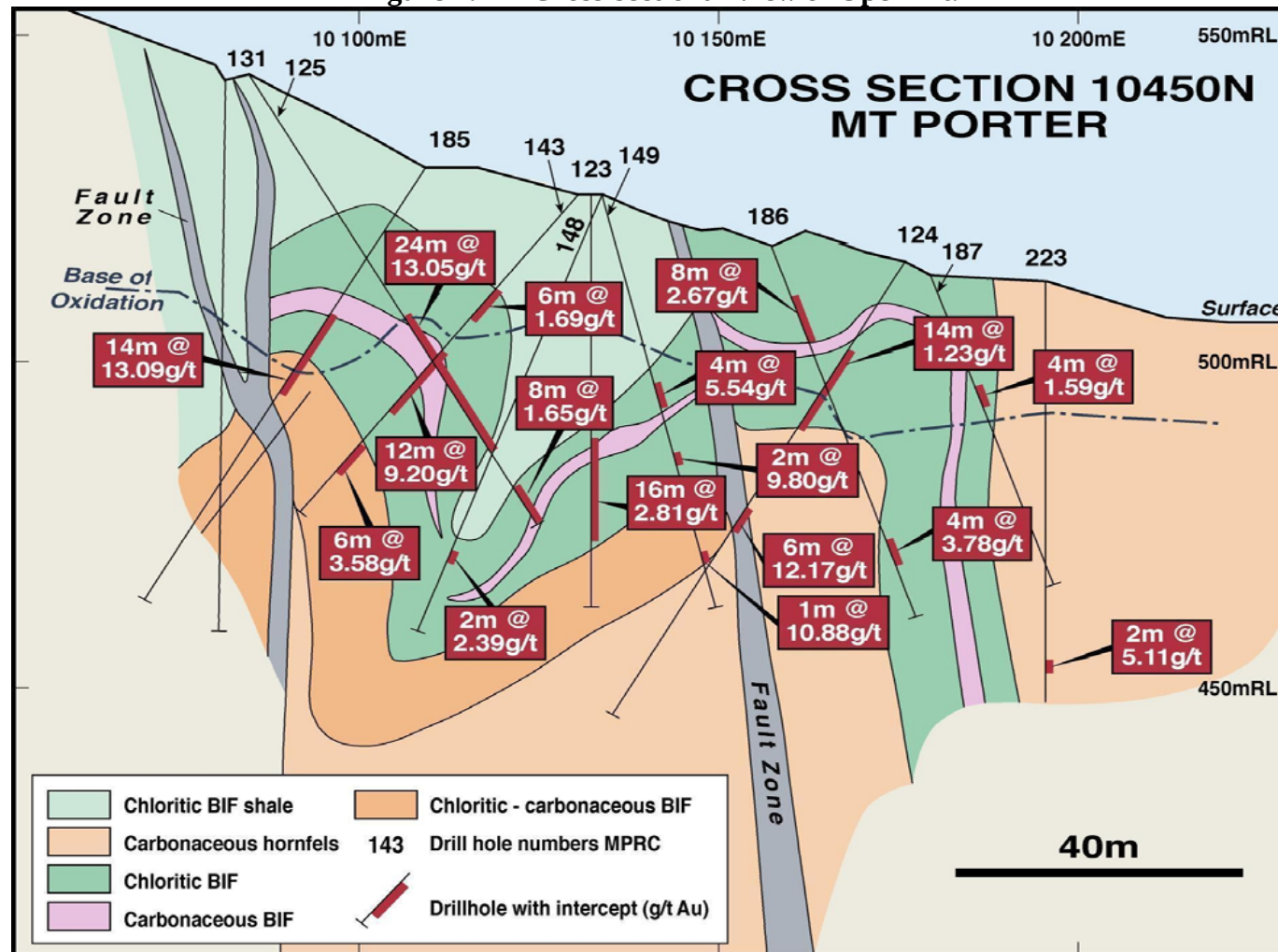


Figure 5: Landform Unit Distribution in the Mt Porter Area

