

## 5.0 Infrastructure

### 5.1 Introduction

This section describes the existing infrastructure at McArthur River mine and Bing Bong port and details proposed changes to infrastructure and service arrangements for the proposed open cut operation.

### 5.2 Accommodation

The accommodation village is located approximately 1.5 km from the mine facilities and 1 km from the airport. An aerial view of the village is shown in Figure 5.1.

The range of accommodation types at the village includes the following:

- A number of houses provided for senior staff including a house for visitors.
- Contactor accommodation (90 beds) consisting of two blocks demountable buildings utilising communal ablution and laundry facilities located in close proximity to the sleeping quarters.
- Five buildings designated as barracks (46 beds). These buildings are self-contained with the accommodation and ablution/laundry facilities being housed under the one roof.
- Single-persons quarters for permanent MRM employees (172 beds). These facilities comprise two demountable buildings joined by a common covered breezeway.

An additional 29 rooms have recently been added to house staff working on the Test Pit project. These facilities are the same configuration as the current contactor facilities.

The village has a dry mess comprising kitchen and dining facilities with a crib preparation area. Staff are able to make a crib for their lunch from the self service area. A wet mess is also available providing a bar area with games room and a covered all weather beer garden.

The following recreation facilities are provided at the village for the benefit of staff and visitors:

- Swimming pool;
- Volley ball court;
- Tennis/basketball court;
- Indoor cricket facility;
- Gymnasium and TV room; and
- Covered bar-b-que area.

Two additional single-persons quarters will be provided to accommodate senior managers associated with the open cut operations. No additional accommodation facilities will be required for the open cut operational workforce.

The construction workforce will be accommodated in a purpose-built construction camp to be located adjacent to existing accommodation village. The buildings and infrastructure at the construction camp will be constructed using conventional demountable components. All necessary infrastructure will be installed including water, sewerage, drainage and electricity. The construction workers will use the facilities of the existing accommodation village including:

- Dining;
- Wet canteen;
- Recreation/entertainment;
- Medical/first aid; and
- Laundry.

The camp will provide single status accommodation only. The residents will work under fly-in fly-out arrangements.

## **5.3 Water Supply**

### **5.3.1 Accommodation Village**

The potable water used in the accommodation village for human consumption and sanitary purposes is sourced from groundwater bores in the Mimex borefield. This water is treated through filtration, the addition of a salt softener, and automatic dosing with chlorine. Untreated groundwater (raw water) is for used non-potable purposes such as irrigation and fire fighting.

Potable water at the village is reticulated through polypropylene, copper and galvanised pipe work. Non-potable water used for gardening etc is reticulated through polypropylene pipes.

Storage capacity of water at the accommodation village is 300 kL, while potable water storage capacity is 155 kL. The total consumption rate of water at the village is approximately 150 ML per year.

As the overall workforce will decrease as a result of the open cut project (from 330 to 270), there will be no changes required to the existing village water supply system as a result of the project although the consumption rate will decrease in proportion to the reduction in workforce numbers.

There is adequate capacity in the existing system to cater for the additional short-term demand from the construction workforce.

### **5.3.2 Mine**

Water for existing mine use is sourced from 16 groundwater bores: 5 at the Mimex borefield; 7 at the Emu borefield; and 4 at the Donkey borefield. There is also some surface water utilisation from the site's surface water management system.

Approximately 80% of the mine's process water comes from recycled water. The remaining 20% is water from the above borefields. Bore water is used as raw water or it is treated and used as either softened or potable water. The treatment consists of filtration, softening and chemical treatment processes.

Raw water used at the mine is stored in a tank with a capacity of 620 kL. A tank of 700 kL is used for softened water and a 55 kL tank is used to store potable water. The mine's consumption rate for raw, soft and potable water is 1,796 ML per year. The consumption rate of extracted surface water is approximately 96 ML per year.

As discussed in Section 12, the site water management system that will operate once the open cut operations commence will result in the mine becoming a net producer of water. Because of this it may be necessary to remove water from the system. The preferred means of doing this will be by evaporation. Modelling has indicated that there is a 10% chance of needing to install an evaporation spray system on the tailings storage facility by year 8. The modelling has also indicated that after year 2, there will be no further need to supply borewater to the mine facilities except for potable uses. This will significantly reduce the need to use groundwater as a source of water.

### **5.3.3 Bing Bong Port**

Water used at Bing Bong is sourced from the Federation groundwater bore (25 km distance from Bing Bong) and is treated for the potable uses of camp facilities, machinery washing and drinking water.

Storage capacity for raw water at Bing Bong is 34 kL and for potable water it is 20 kL (10 kL in each of two tanks). Approximately 8 ML of water is used per year at the port facility.

There will be no significant change in water demand at Bing Bong from the open cut project.

## **5.4 Sewerage**

### **5.4.1 Accommodation Village and Mine**

The existing accommodation village and mine, including shower, toilet and crib room facilities, has a reticulated sewerage system. Sewage is treated in approved and commercially available treatment plant, in which undergoes a process of intermittent and extended aeration and settlement. The treatment plant has a capacity of 300 equivalent persons. After treatment, the effluent is irrigated via sprinklers in a specially designated area approximately 500 m from the village. The area is signposted and fenced to exclude the entry of stock and any unauthorised personnel. Water quality in Barney Creek is monitored to ensure that there are no downstream impacts occurring.

As the overall workforce will decrease as a result of the open cut project, there will be no changes required to the existing village sewerage system as a result of the project.

During the construction phase, a package sewage treatment plant will be installed to cater for the construction workforce. Treated effluent from the plant will be irrigated in the same manner as the existing sewerage plant effluent.

### **5.4.2 Bing Bong Port**

At the port facility, sewage is treated by an approved sewage purification system and irrigated after treatment. This will not change with the open cut project.

## **5.5 Roads**

The mine site is connected to Darwin by road via the Carpentaria Highway to Daly Waters and then the Stuart Highway to Darwin. The site is also connected to Mt Isa via the Tablelands and Barkly Highways. Current the mine traffic using these routes is as follows:

- Two triple road trains each week from Darwin carrying consumables and general supplies;
- Three triple road trains per week from Queensland through Mt Isa also carrying consumable and general supplies; and
- One fuel truck from Darwin each fortnight.

In addition, there are approximately ten light vehicle trips per week between the mine site and Borroloola for workers at McArthur River who live in Borroloola.

It should be noted that the above are average annual figures and effort is made to increase the frequency of truck deliveries immediately prior to the wet season to increase on-site inventories in the event that roads become cut.

There is unlikely to be any significant change in the above road traffic patterns from the open cut project except for during the construction stage when one additional fuel truck per week from Darwin can be expected.

Apart from those that live locally, all construction and operational workers will fly in and out of the mine site.

As discussed in Section 4.4, concentrate is hauled by road from the mine site to the port at Bing Bong. With the open cut project the haulage rate will decrease slightly in line with the reduction in annual concentrate production. The frequency of truck trips (return trips) will decrease from 4,200 per year to 4,100 per year. This will result in approximately 11 truck trips per day, seven days per week. Thus the impact on the existing road system will be less than it is for the existing operations.

## 5.6 Airstrip

At the mine site there is a single sealed runway 1,500 m in length and 23 m in width with sealed and paved turning areas at each end. The airstrip is fenced to exclude cattle.

At the western end of the runway are turning areas, a parking apron and the terminal building. The parking apron is capable of holding one Dash 8-sized aircraft and the parking area can hold approximately four general aviation aircraft. The runway and approach areas have regulation runway lighting.

The terminal building is of modular construction, containing a waiting area, office, ticketing/baggage area and ablution facilities.

National Jet Systems is the only regular operator into the aerodrome, providing 8 flights (14 movements) weekly into the aerodrome. The operation is primarily to provide rotation of mining personnel, although some “outside” passengers are also carried.

The aerodrome is licensed under a “private” rating, and users must submit a request to operate into the aerodrome 24 hours before the intended operation.

Approved fuel storage facilities at the airstrip comprise:

- Jet A1 (30 kL capacity ) for turbo-propeller or jet aircraft; and
- AvGas (2 x 1.5 kL transportable pods) for piston-engine planes.

The airstrip will continue to be used by the workforce for the open cut project. With the reduced workforce from the open cut project there may be a slight reduction in the number of trips to and from the site each week although the number of trips will increase slightly during the construction phase.

## 5.7 Power

The existing gas-fired mine site power station has a generation capacity of 18 MWh per day or 134 GWh per year. The gas is sourced from the Amadeus Basin via an offtake from the main pipeline that provides gas to Darwin. The power station is owned and operated by a third party who has a contract to supply the mine with power.

Power is distributed from the power station to the processing plant at 11 kV through three feeders. The voltage is then stepped down through a number of transformers for 3.3 kV, 1000 V and 415 V usage at the plant.

The accommodation village is supplied with power from the power station. Power is supplied at 240 V to the accommodation blocks and other facilities by a combination of overhead and underground cabling

There will be no increase in the power demand with the open cut operation and hence no change to the existing power facilities is required.

## 5.8 Communications

The telephone system at McArthur River Mine comprises the following internal and external components:

- Internal:
  - PABX with facsimile support. It has capacity for 200 extensions, 30 of which are digital. Within the camp and mine site, 68 of the extensions currently remain unused.
  - Switched network/Cat5e/Multi-platform Server farm; and
  - Approximately 130 Client Networked Devices.
- External:
  - Frame relay based WAN with up to 768 K PVC bandwidth capacity;
  - Fibre connected trunk to Boroloola Exchange; and
  - Secondary trunk supporting data and telephone to Katherine Exchange Server Version 5 (approximately 120 users), to be used in the event of failure of the trunk to Boroloola Exchange.

In addition, MRM has seven satellite phones available for use at the mine site but no mobile phone coverage is available.

The mine operates email system Microsoft Exchange Server Version 5 with approximately 120 users. All client workstations have internet and intranet browsing capability via DSL modem.

The site's existing telecommunications facilities will be adequate for the open cut operation.