BHP Iron Ore (Goldsworthy) Limited.

GOLDSWORTHY EXTENSION PROJECT PHASE II

BHP Iron Ore

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GOLDSWORTHY EXTENSION

PROJECT

PHASE II

BHP Iron Ore

SEPTEMBER 1992

GOLDSWORTHY EXTENSION PROJECT

PHASE II

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1.0 SUMMARY

This proposal is to develop a mining operation at Yarrie.

The ore reserve in the proposed mining area is approximately 30 million tonnes of high grade iron ore and extraction of this product is planned at 5 million tonnes per year.

The project will involve a 30 kilometre extension to the existing Shay Gap railway line, relocation of the Shay Gap crusher and train loading facilities to Yarrie, erection of a contractors camp site and provision for power and water. The total cost of this development is around $40 million.

Thw workforce will peak during the development phase at approximately 200. During the production phase, it is anticipated that the workforce will stabilise at around 100 people on site.

2.0 INTRODUCTION

2.1 Objective

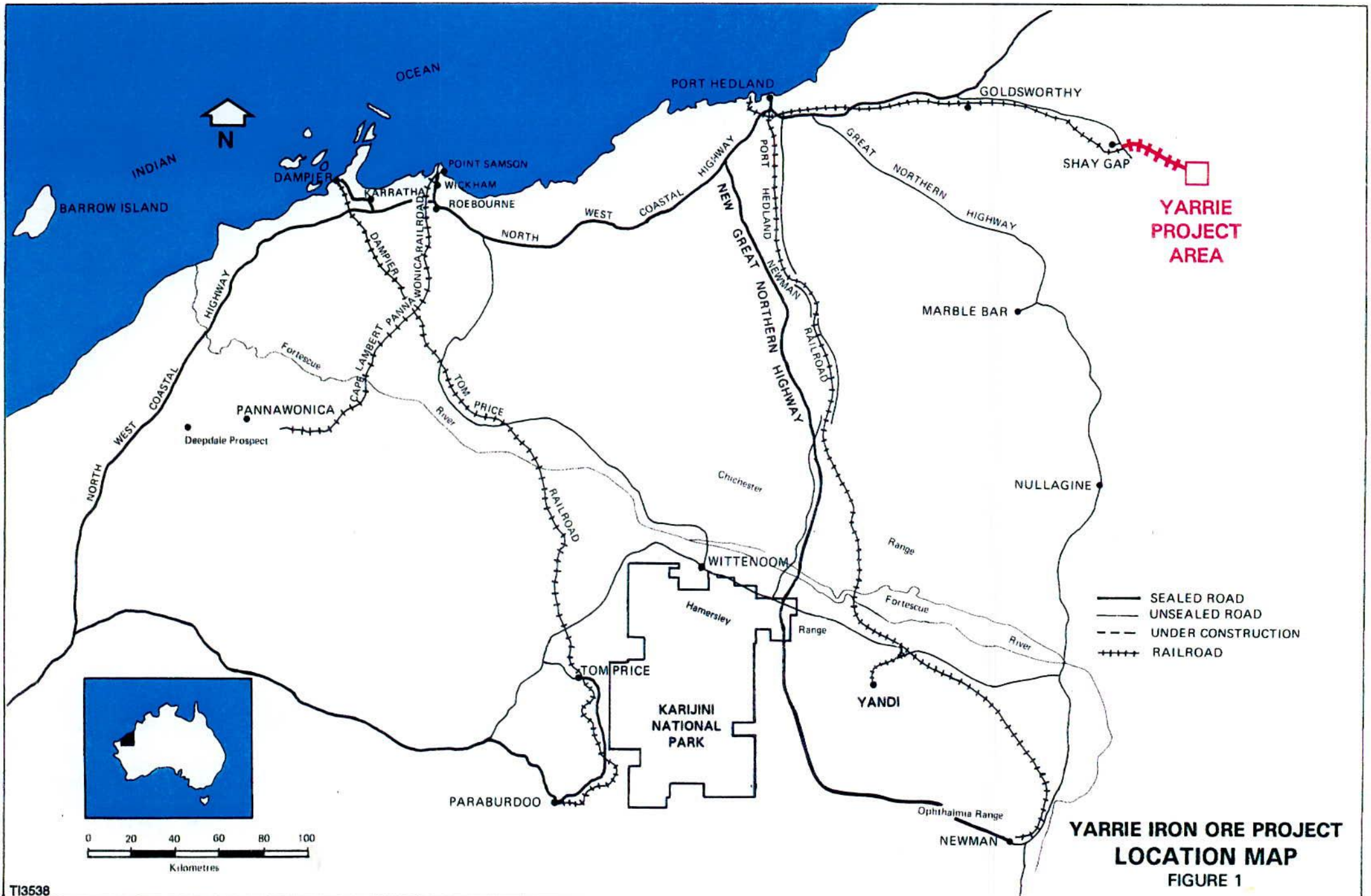
The aim of this project is to move the principal Goldsworthy mining operations to the Yarrie area. This proposal is submitted by BHP Iron Ore (Goldsworthy) Limited ("The Company") pursuant to Clause 8 of the Iron Ore (Goldsworthy - Nimingarra) Agreement Act.

Plans to move to Yarrie were outlined in November 1985 in the "Goldsworthy Extension Project", copies of which were submitted to the State Government of Western Australia through the then Department of Resource Development. The project was divided into two distinct phases; Phase I - Mining of Nimingarra, Sunrise Hill and Shay Gap areas, and Phase II - Kennedy Gap and Yarrie.

A Notice of Intent was submitted for Phase I in December 1986 which indicated this phase would continue through to the year 1999.

Since the acquisition by BHP Minerals and its Japanese partners in 1990 of the Hanson interest in the Mount Goldsworthy Mining Associates joint venture, an intensive drilling program has been undertaken on the Nimingarra/Sunrise Hill/Shay Gap areas and also the Yarrie area. From the results of this program, an extensive study was made of the ore reserves with the result that mining at Yarrie has been moved forward to commence full production in 1994.

Drilling is continuing in the Kennedy Gap area and any proposal for that development will be the subject of a separate submission pursuant in the Iron Ore (Goldsworthy) Agreement Act.



YARRIE IRON ORE PROJECT
LOCATION MAP
FIGURE 1

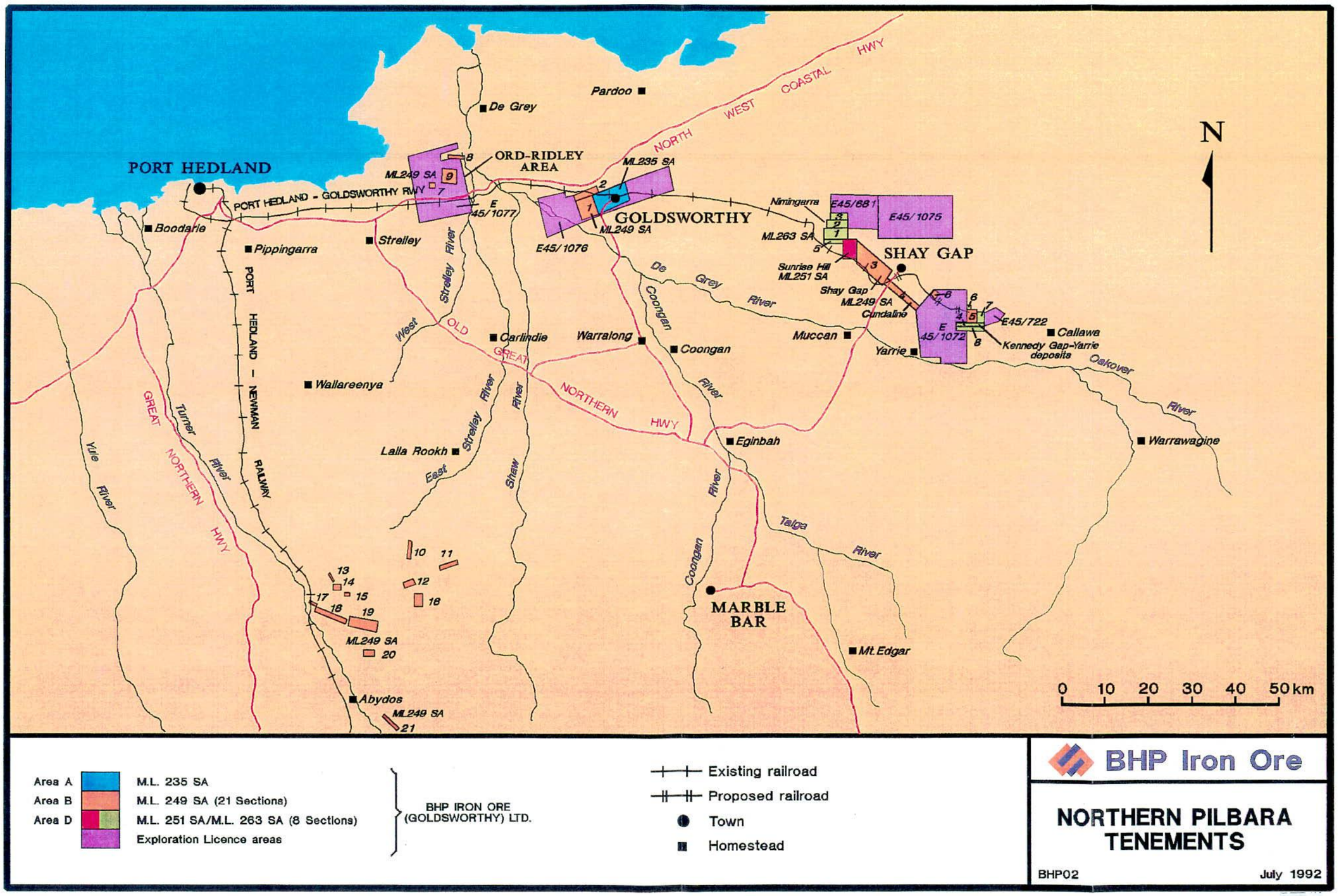

PORT HEDLAND
ORD-RIDLEY AREA
ML249 SA
ML235 SA
PORT HEDLAND - GOLDSWORTHY RWY
E 45/1077
GOLDSWORTHY
ML249 SA
E45/1076
ML263 SA
Nimingarra
E45/681
E45/1075
SHAY GAP
Sunrise Hill ML251 SA
Shay Gap ML249 SA
Cundaline
E 45/1072
E45/722
Kennedy Gap-Yarrie deposits
Callawa
Yarrie
Muccan
Warralong
Carlindie
Coongan
Wallareenya
Lalla Rookh
Eginbah
Warrawagine
MARBLE BAR
Mt.Edgar
Abydos
ML249 SA
Boodarie
Pippingarra
Strelley
Pardoo
De Grey
NORTH WEST COASTAL HWY
NORTHERN HWY
GREAT NORTHERN HWY
PORT HEDLAND - NEWMAN RAILWAY
Strelley River
West Strelley River
East Strelley River
Shaw River
De Grey River
Coongan River
Oakover River
Turner River
Yule River
Telga River
N
0 10 20 30 40 50 km
Area A
Area B
Area D
M.L. 235 SA
M.L. 249 SA (21 Sections)
M.L. 251 SA/M.L. 263 SA (8 Sections)
Exploration Licence areas
BHP IRON ORE (GOLDSWORTHY) LTD.
Existing railroad
Proposed railroad
Town
Homestead
BHP Iron Ore
NORTHERN PILBARA TENEMENTS
BHP02
July 1992

Figure 2

2.2 Location

The current mining operation of Mount Goldsworthy Mining Associates is located in the Pilbara region of the north-west division of Western Australia - see Figure 1.

Tenements that the company holds in this region are as follows:

1. **Goldsworthy area**
   a) Goldsworthy ML235SA
   b) Goldsworthy ML249SA Sect 1 and 2
   c) E 45/1076

2. **Shay Gap area**
   a) Shay Gap ML249SA Sect 3
   b) Cundaline ML249SA Sect 4
   c) Sunrise Hill ML251SA
   d) Nimingarra ML263SA Sect 1,2,3 and 5
   e) E 45/681
   f) E 45/1075

3. **Yarrie area**
   a) Kennedy Gap ML249SA Sect 5
   b) Cattle Gorge ML249SA Sect 6
   c) Yarrie ML263SA Sect 4,6,7 and 8
   d) E 45/722
   e) E 45/1072

These tenements are shown on Figure 2 together with nearby tenements in the Ord - Ridley and Abydos areas.

2.3 Ownership

The Mount Goldsworthy Mining Associates Joint Venturers are the owners of the Goldsworthy operations. These joint venturers are:

BHP Australia Coal Limited	30%
BHP Iron Pty Limited	55%
Mitsui Iron Ore Corporation	7%
C I Minerals Australia Pty Ltd	8%

The manager for the project is BHP Iron Ore (Goldsworthy) Ltd of 200 St George's Terrace, Perth, Western Australia.

2.4 History

Goldsworthy Mining Limited (name changed to BHP Iron Ore (Goldsworthy) Ltd in 1991) was the first iron ore mining company to commence operations in the Pilbara.

Formal Government approval for construction, and subsequent mining operations at Mount Goldsworthy, was achieved with the passing of the Iron Ore (Mt Goldsworthy) Agreement Act in December 1964, which superseded previous acts passed in 1962 and 1963.

Initial contracts with Japanese Steel Mills, finalised in February 1965, provided for the export of 16.8 million tonnes of high grade lump ore, over a seven year period. The next 15 months of construction at Mt Goldsworthy and Finucane Island marked the commencement of the 'iron ore boom' and sparked off a new era in the development of the Pilbara area.

In the twenty-six years since the first iron ore shipment was made from the Goldsworthy Project in June 1966, approximately 150 million tonnes of ore have been mined and shipped to customers in Japan, South-East Asia, Europe and Australia. Mining was initially based on the Goldsworthy orebodies, but with the increasing market demand, capacity was expanded and operations were extended in 1972-1973 to include the Shay Gap/ Sunrise Hill deposits.

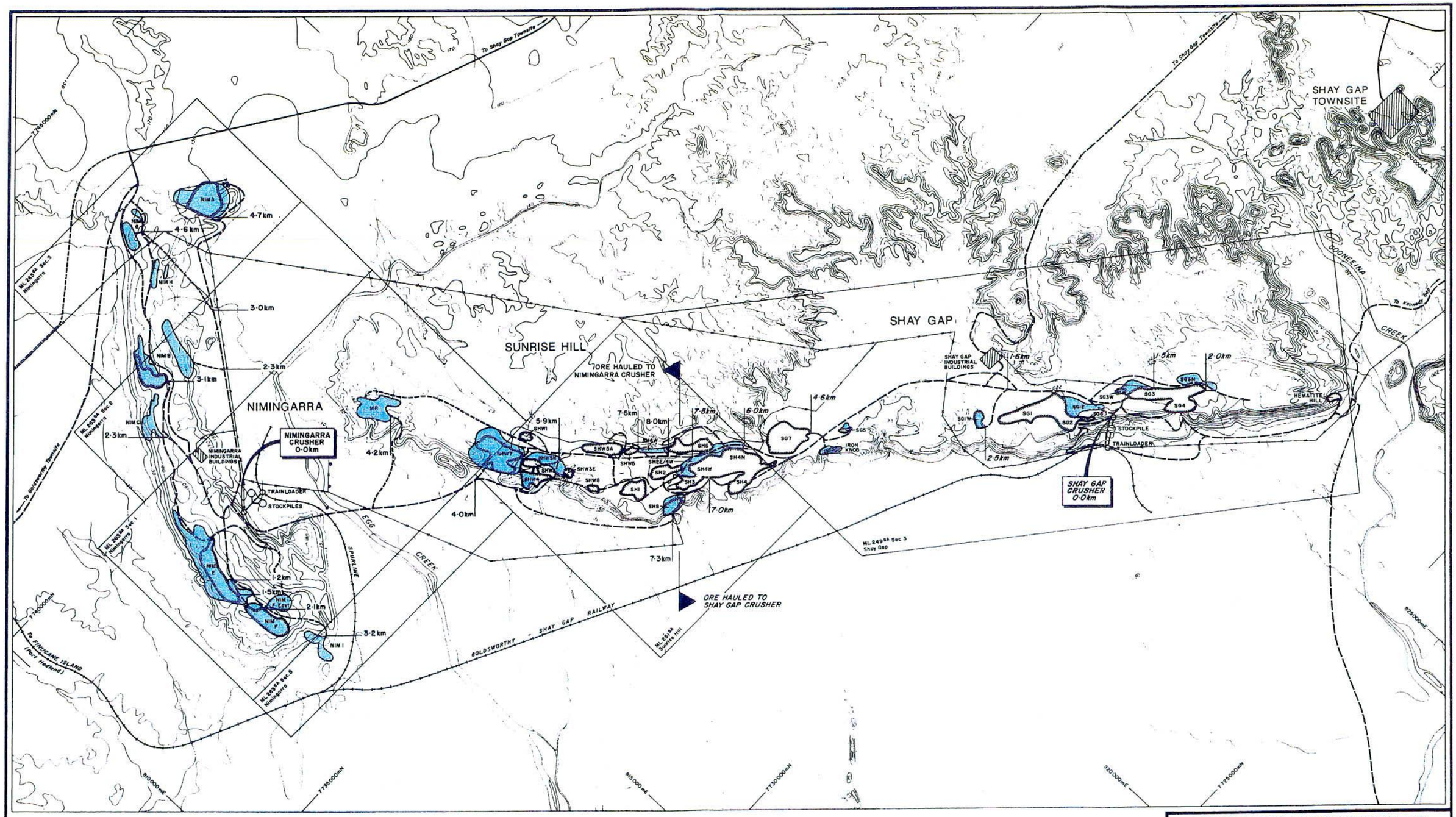
The original deposits at Goldsworthy were mined out in December 1982, and all mining operations have since been concentrated at Shay Gap and Sunrise Hill. However, since the economically mineable high grade ore reserves accessible to the Shay Gap crusher were limited, the Company changed the basis of its operations and adopted a new production concept, which commenced in January 1989. This concept allowed the operations to continue in the Shay Gap/Sunrise Hill area while continuing to utilise its existing assets in that area, as well as the existing railway to Finucane Island and the port facilities located there.

This change in operations was the subject of the Goldsworthy Extension Project - Phase I. The concept involved an expansion in the mining areas to include the Nimingarra area. In addition a beneficiation plant was constructed at the port facilities at Finucane Island to upgrade low grade ore to a high grade saleable product.

2.5 Existing Facilities

2.5.1 Mining

The ore reserves at Nimingarra, Sunrise Hill and Shay Gap are Archaean in origin and occur mainly as narrow steeply dipping lodes, striking along an east-west trending ridge and also as shallower crust type ore deposits adjacent to these lodes. A relatively large number of small deposits have been developed and have been mined using conventional open cut methods. See Figure 3.



Pit mined out
Proposed pit
Water bore
Powerline
Drainage
Contour (10m interval)

Sealed road
Gravel road
Proposed road
Tenement boundary
4·0km One way distance to Shay Gap crusher
4·0km One way distance to Nimingarra crusher

NIM Nimingarra
MR Midnight Ridge
SHW Sunrise Hill West
SH Sunrise Hill
SG Shay Gap

SCALE
0 1 2 3
KILOMETRES

BHP IRON ORE (GOLDSWORTHY) LTD

NIMINGARRA - SUNRISE HILL - SHAY GAP

AREA LOCATION MAP

showing

OREBODIES AND MINING FACILITIES

DESIGNED	H. Newman	DATE	May 1991
DRAWN	C. Kennedy	APPROVED	
PLAN No.	GNA-MISC-48	SCALE	As shown

Figure 3

Primary blast holes, 310cm in diameter and up to 15m deep, are drilled in the ore and the waste, in predetermined patterns for blasting. The blasted material is then excavated by front end loaders and loaded into a fleet of 24 x 120 tonne haulpak trucks, which transport the ore to either the Nimingarra or Shay Gap crusher, and the waste to nearby dumps. The ore is primary crushed and stockpiled, ready for trainloading.

2.5.2 Railing

The 180 km standard gauge heavy duty railway line, which links the Nimingarra train loader and the Shay Gap train loader to the Port operations at Finucane Island, traverses relatively flat country (see Figure 2). There are twelve bridge crossings, the longest of which is 427 metres over the De Grey River.

Trains, consisting of rakes of 75 to 80 ore cars, each carrying 75 tonnes of ore, are hauled by a single 3750 HP locomotive. All railway operations and maintenance, including track maintenance, were controlled from the town of Goldsworthy. These operations have been transferred to Port Hedland with the completed changeover finalized in July 1992.

2.5.3 Port Ore Handling Facilities

Upon delivery to the Port, the ore is discharged and stacked in a surge pile, from which it is selectively withdrawn as required for secondary and tertiary crushing and screening. The high grade crushed ore is screened into two products for shipment, nominally -30 +6mm lump and nominally -6mm fines, which are stacked and blended on the shipping product stockpiles. The low grade crushed ore is directed to separate stockpiles ahead of the beneficiation plant (see Figure 4 - Port Area Layout).

INDIAN OCEAN

NORTH POINT

NEW SINGLE ACCOMODATION

TOWNSHIP

ELEVATED TANK

ADMINISTRATION BLOCK

HUNT POINT

FLAT ROCK

Navigation Channel

TRUE NORTH

PLANT NORTH

PILOT PLANT

TAILINGS POND

SHIPPING STOCKPILES

SURGE PILES

SAMPLE PLANT

SURGE BIN

RAIL UNLOADING HOPPER

WORKSHOPS AND OFFICES

FINES FEEDPILE

LUMP FEEDPILE

BENEFICIATION PLANT

THICKENER

WATER TANK

REJECTS BIN

RODMILL FEEDPILE

SEC LEASE

TANK

FINUCANE ISLAND

LEASE BOUNDARY

PORT HEDLAND

BERTH

BERTH EXTENSION

MANGROVES

WEST CREEK

SCALE

METRES 0 50 100 200 300

FEET 0 500 1000

1 : 3600

REFERENCE DRAWINGS		
DRG. No.	TITLE	

REFERENCE DRAWINGS		
DRG. No.	TITLE	

REVISIONS				
No.	DATE	REVISION	Drn.	Chd. App.

BHP Iron Ore (Goldsworthy) Ltd

Project

Area FINUCANE IS.

Title

PORT AREA LAYOUT

DRAWN WJD 27-8-86

CHECKED

APPROVED

Figure 4

REV.

The beneficiation plant consists of two jigs, one each to treat the lump and fines fractions. The concentrates from the jigs are dewatered, conveyed and blended with direct high grade ore. The middlings from the lump jig are quaternary crushed and returned to the fines feed stockpile. The middlings from the fines ore jig pass to a rod mill before treatment in a spiral circuit. Slimes which are separated by cycloning are pumped to a Wet High Intensity Magnetic Separator. Plant water is conserved by using a thickener from which tailings are pumped to a pond.

When shiploading, the ore products are reclaimed from the stockpile and conveyed to the berth, at a maximum rate of 4500 TPH, averaging about 3000 TPH, after allowing for hatch changes, draft surveys, etc. The ore is sampled, as it is loaded, and the samples are reduced and combined for final analysis.

The Goldsworthy berth, as it presently stands, is capable of accommodating and loading ships up to approximately 180 000 tonnes. Marine activities and the sailing drafts are governed by the large tidal movements, which can be as much as 7.3 metres. Vessel movements within the harbour are controlled by the Port Hedland Port Authority.

2.5.4 Townships

To house its employees, the Company has constructed three townships at Goldsworthy, Shay Gap and Finucane Island and also maintains a large number of houses in South Hedland.

Since mining ceased in the Goldsworthy area, the township of Goldsworthy has been used as a service point for the railway and housing for the train crews. These functions have now been transferred to Port Hedland.

The Goldsworthy town was totally vacated in July 1992 and removal of all infrastructure and rehabilitation of the site is in progress.

Table 1 below summarises the number of dwellings of each type and the total population in each township.

TABLE 1

EMPLOYEE ACCOMMODATION - AS AT JULY 1992

Township	No. of Employees	No. of Contractors	Total Town Population	Houses	Flats Townhouses	Single Persons
Shay Gap	305	72	862	145	48	251
Finucane Is	41	20	144	40	9	108
South Hedland	311	-	914	90	44	-
TOTAL	657	92	1920	275	101	359

2.5.5 Communications

Each centre is linked by up to date telephone and other communication services.

2.5.6 Power Supply

Initially the Company provided all its own power requirements, which were generated at two small power stations, one at Goldsworthy and one at Finucane Island. The station at Finucane Island was closed in the mid '80s and power for the Port operations and the Finucane Island community is now drawn from the State Energy Commission system at South Hedland, through a Company provided power line.

Power for the Goldsworthy and Shay Gap townships and Shay Gap mine area was generated at the Company's 13.8 MW power station at Goldsworthy and transmitted by an overhead transmission line to Shay Gap. With the introduction of the Goldsworthy Extension Project - Phase I, a State Energy Commission power line was erected which linked Port Hedland and Goldsworthy. The Goldsworthy power station was decommissioned and all power used by the company is now purchased from SECWA.

2.5.7 Water Supply

The water supply for the Shay Gap and Goldsworthy townships is obtained from nearby bore fields, and the Company maintains the required water treatment facilities and sewerage treatment plants.

The bore field and sewerage treatment plants at Goldsworthy will be decommissioned, removed and rehabilitated with the removal of the townsite.

2.5.8 Roads/Airstrips

Roads have had to be constructed and maintained by the Company, linking the towns to the main road system. This includes the road from the Hedland light industrial area to Finucane Island, and from the main road turn off to Goldsworthy and Shay Gap.

Airstrips have also been constructed, at Goldsworthy and Shay Gap. A request has been made by the local pastoral holders to leave the Goldsworthy airstrip in place when the Goldsworthy township and associated facilities are removed and rehabilitated.

3.0 PROJECT DESCRIPTION

3.1 Introduction

This proposal describes Phase II of the Goldsworthy Extension Project. This phase as outlined in 1986 was due to commence in the year 1999. Exploration drilling programs have been an ongoing activity in the operations with an intense program taking place in 1991/92 throughout the Nimingarra/Shay Gap area as well as the Yarrie area. The remaining reserves at Nimingarra/Shay Gap which resulted from this program have shown that the life expectancy of the area is much shorter than originally thought.

Conversely, the mining reserve shown to exist at Yarrie is an increase on original estimates. Although there is a requirement to remove a large volume of overburden, the improved grade of the iron ore combined with other technical advantages dictate that an immediate move to Yarrie is necessary for the ongoing viability of the total Goldsworthy operations.

The Yarrie area is located approximately 32 km south-east of the Shay Gap crusher location (see Figure 5).

Plate 1 shows a general view taken from the top of the Yarrie mesa looking south-west.

The required extraction of high grade direct product ore is proposed at about 5 million tonnes per year, depending on sales contracts.

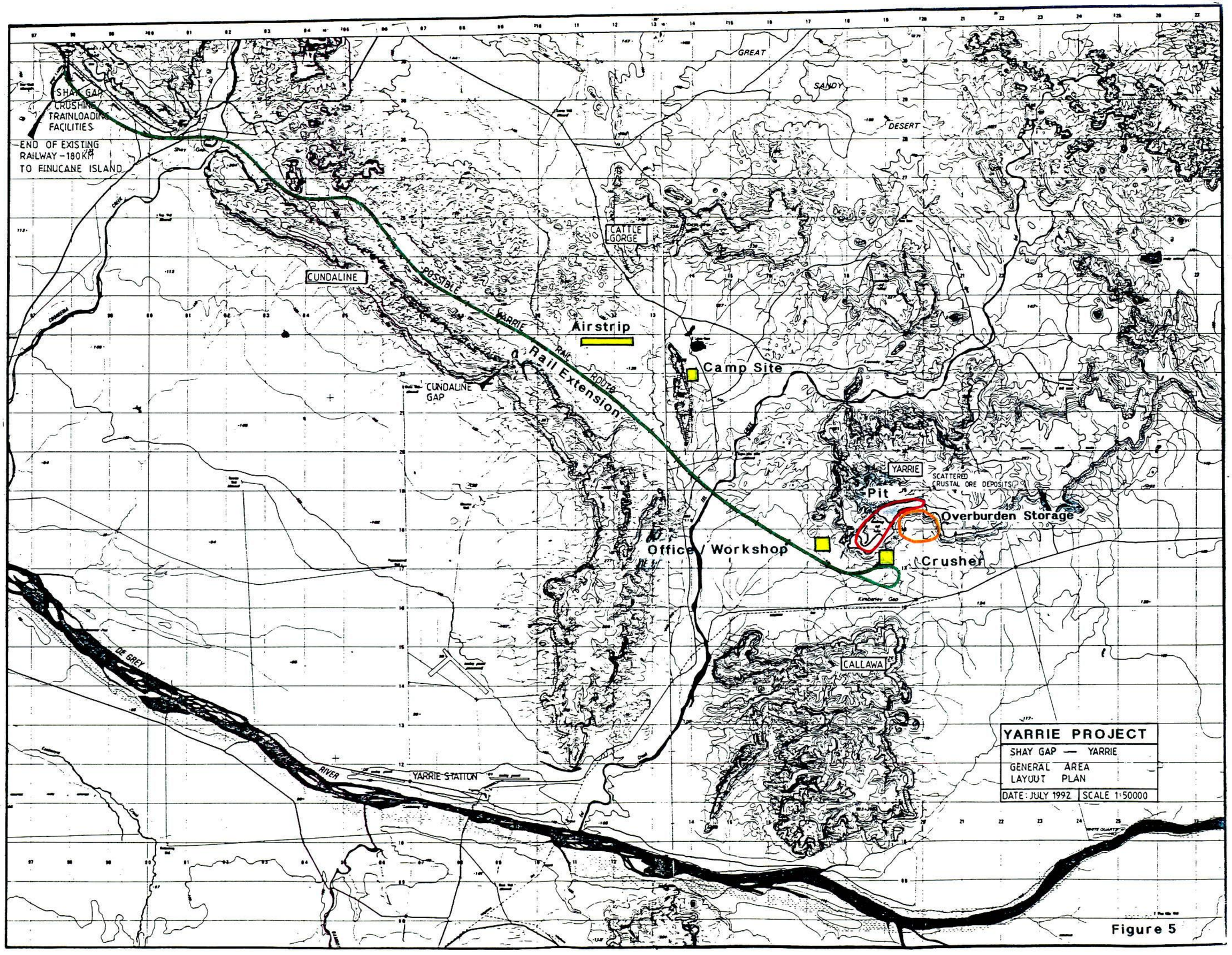

SHAY GAP
CRUSHING
TRAINLOADING
FACILITIES
END OF EXISTING
RAILWAY - 180 KM
TO EINUCANE ISLAND
GREAT
SANDY
DESERT
CATTLE
GORGE
CUNDALINE
POSSIBLE
YARRIE
RAIL
ROUTE
Rail Extension
Airstrip
Camp Site
CUNDALINE
GAP
YARRIE
SCATTERED
CRUSTAL ORE DEPOSITS
Pit
Overburden Storage
Office / Workshop
Crusher
CALLAWA
DE GREY
RIVER
YARRIE STATION
YARRIE PROJECT
SHAY GAP — YARRIE
GENERAL AREA
LAYOUT PLAN
DATE: JULY 1992
SCALE 1:50000

Figure 5

3.2 Mining

3.2.1 Yarrie

The mining method proposed for Yarrie is the same as that currently utilised at Nimingarra/Shay Gap, ie. the selective removal of the overburden and the opening up of the orebody for conventional open-cut mining by means of drilling, blasting and loading by a large hydraulic excavator and large front end loaders into off-highway rear dump haul trucks for transport to the crusher.

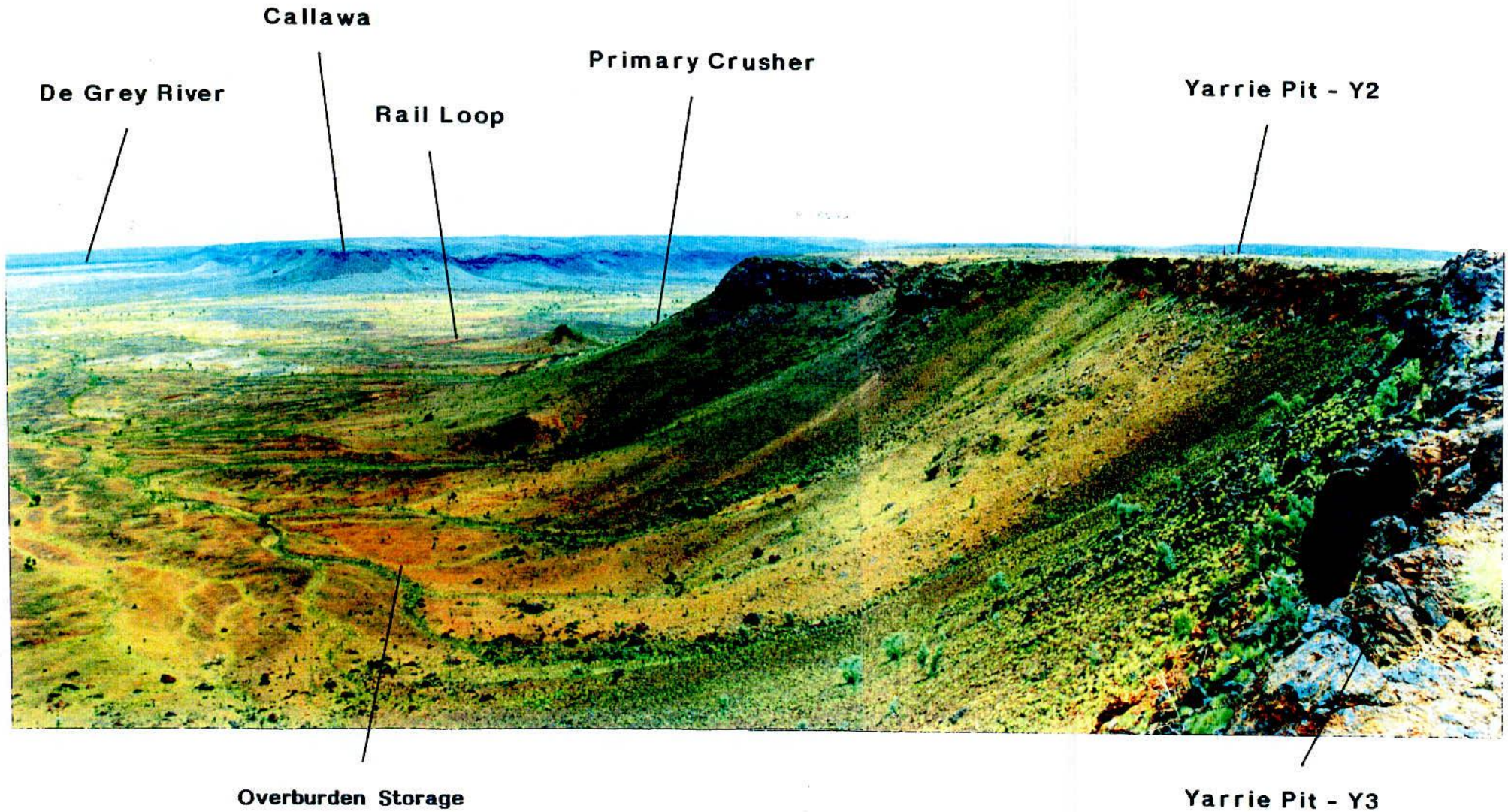
The mining face height proposed is 12 metres which is the same height currently employed in the Goldsworthy operation. The drills would be the same as are currently used producing 310 mm diameter holes. Conventional ANFO or water resistant slurries would be employed as the blasting agent. It is envisaged that an excavator equivalent in size to a Liebherr 994 and front end loaders equivalent to a Cat 994 will be employed to load the ore and waste material. The off-highway trucks would be of a size equivalent to a Cat 785 or Cat 789.

A contractual mining operation is planned for the Yarrie area. This style of operation is seen as the most appropriate method to exploit this size and style of deposit as it allows for flexibility due to:

a) variation in the overburden waste removal requirements over time;

b) variation in production levels due to market demand; and

c) requirement for campaign mining.



YARRIE MINE SITE

March 1992

Plate 1

A development phase of approximately 9 months duration is required to remove around 8 million tonnes of overburden to uncover the high grade iron ore. Mining of the high grade is scheduled to commence in April 1994. The extraction rate of saleable ore is proposed at about 5 million tonnes per year. A reserve of approximately 30 Mt has been identified with a strip ratio of around 2:1 (overburden:ore). Exploration drilling has intersected deeper ore in the Y2 area and further economic analysis needs to be made to assess the viability of this ore.

Pit dewatering will not be required until the latter years of the project when mining has reached approximately 110 m RL.

A preliminary pit plan which illustrates a total extraction pit is shown on Figure 6 which is included at the back of this report. Confirmation of this design is subject to an economic analysis of the deeper ore in the Y2 area.

3.2.2 Nimingarra/Sunrise Hill

Following the development of mining operations at Yarrie, Goldsworthy will still have contracts with customers for ore types which are not available from the Yarrie area. These contracts vary in amounts up to 1,500,000 tonnes per year.

It is proposed that this ore will be sourced from the current Nimingarra/Sunrise Hill area. Mining will take place in campaigns by deploying part of the contractors mining fleet at Yarrie to Nimingarra. Sufficient product stockpiles will be created next to the rail spur to last for several months to meet contracts.

At the above extraction rate, this area will be mined out in 1997.

3.3 Ore Processing

3.3.1 Mine

It is proposed to relocate the existing Shay Gap crusher to Yarrie. The crusher will be positioned on the side of the escarpment at Yarrie in the general location as indicated in Figure 6 taking advantage of the height to reduce the haulage distance.

Ore will be direct tipped to the crusher from haul trucks or loader fed from adjacent run-of-mine stockpiles. Primary crushing will take place to produce a nominal -150mm size product. The crushed ore will be conveyed to a trainloading facility, again relocated from Shay Gap, for loading the current fleet of rail cars. The possibility of crushing to a -100mm size product will be considered.

The existing Nimingarra crusher will be utilised for crushing ore from mining campaigns in Nimingarra/Sunrise Hill area. This ore, once mined and crushed will be placed onto the existing Nimingarra stockpiles. Train loading will take place using the existing conveyor and ore bin facilities.

3.3.2 Port

All existing plant and equipment used for train unloading and stockpiling, crushing and screening and product stockpiling and shiploading will continue to be used.

The beneficiation plant, as described in Section 1.5.3, will continue to receive low grade ore from the mine site for upgrading and then blending with the run-of-mine product.

3.4 Rail

An extension to the existing Goldsworthy rail line which currently terminates at the Shay Gap crusher is proposed.

Goldsworthy holds a Special Lease No.3116/5978 for a rail line which connects Shay Gap and Kennedy Gap - the original proposed alignment for Phase II of the Extension Project. The rail line extension now proposed to Yarrie is positioned further south than this Special Lease which therefore will be surrended in the future.

The currently planned extension of approximately 30 kilometres, will continue in a south-easterly direction, through Shay Gap and run just north of the Cundaline Ridge, cross Eel Creek and terminate in the Kimberley Gap between Yarrie and Callawa. This route is shown on Figure 5.

The proposed rail alignment is along flat lying ground and very little cut and fill is required. Several minor drainage patterns which carry water from Cundaline Ridge to the drainage creeks to the north are crossed with the rail line. Culverts will be utilised along the rail route so as not to interfere with this run off flow.

Before crossing Eel Creek, the alignment has been kept to the southern side of a large tributary to minimise major waterway crossings. Large culverts will be utilised to cross Eel Creek.

The line will terminate in a loop or a turning Y to facilitate moving the locos to the head of the train.

A train length consisting of up to 160 cars is proposed. This is an increase over the current maximum length of 80 cars. A requirement therefore exists at Finucane Island for a re-design of the vehicle access road and the location of the road crossing.

This becomes necessary with increased train lengths because the train will restrict access along the current road alignment as ore cars at the end of the train are unloaded. It is therefore proposed to move the road crossing further away from the Island to allow free movement of vehicles.

3.5 Overburden and Residue Management

3.5.1 Overburden

The total quantity for removal of overburden material is estimated at 60 million tonnes. If it should prove economic to mine the deeper ore in the Y2 area of Yarrie, this overburden tonnage will increase as a deep cover occurs in this area.

Overburden dumping will take place in contour layers in the embankment on the southern side of the mesa (Plate 1). This location will enable the dump to be blended with the natural topography. The proposed dump design is shown on Figure 6.

Contouring of the dump will be formed as mining progresses deeper in the pit. In this way, an overall angle of around 20° can be maintained.

At the completion of mining, the dump will be shaped to blend with the existing land form and rehabilitated to BHP standards.

Where possible, mined out areas, which will occur on the eastern half of the deposit, will be back-filled with overburden material.

3.5.2 Residue Management

The newly constructed extension to the beneficiation plant residue pond at Finucane Island to receive residue material from the thickener is of adequate size to continue to receive this material for the duration of the project. No additional facilities are required in this area.

3.6 Workforce

A contractor mining operation is proposed for mining the Yarrie orebody. This same workforce will be utilised for campaign mining at Nimingarra/Sunrise Hill.

At the peak, during the development phase, it is estimated a workforce of 200 will be employed. This will stabilise at 100 people on site during production.

It is envisaged that the contractor will operate his workforce on a periodic work/recreation shift system.

3.7 Support Facilities

3.7.1 Mine Area

Upon moving to Yarrie, all support facilities will be established at the Yarrie mine site. These facilities will consist of:

Camp Site
Air Strip
Mine Offices
Workshop
Mine Plant and Light Vehicle Parking areas
Fuelling facilities
Power facilities
Water supply facilities
Explosive stores.

A contractors camp site will be erected close to the Yarrie mine site but of sufficient distance so as not to be disturbed by the mining activity. See Figure 5. The camp site will consist of full accommodation and messing facilities together with recreation facilities for the entire mine site workforce - company and contractor.

An airstrip will be constructed for light aircraft close to the camp site.

The mine facilities, offices, workshops etc will be located at plain level in the area indicated on Figure 5. This area is placed sufficiently far from the pit to avoid blast damage.

Fuel facilities will be placed in an area designed in accordance with current regulations as will the explosives storage compound located and constructed in a remote area away from other infrastructure.

Power for the camp site, mine offices, workshop, crushing and train loading facilities will be sourced from the SECWA line that currently terminates at the Shay Gap township. This line will be extended to Yarrie.

The water supply will be obtained from the nearby Eel Creek aquifer. Several bores will be located along the Creek which will pump water to nearby storage tanks. This water will be used for drinking and domestic purposes at the camp and mine site as well as dust suppression in the mine area.

3.7.2 Port Area

All existing port area support facilities will remain unchanged.

3.8. Work Schedule

A work schedule has been devised to have Yarrie commence in the shortest practical time period. This places the timing for the commencement of the production phase at December 1993.

In order to meet this date, the commencement of site work on the railway, which is on the critical path, is scheduled at 1 April 1993.

3.9 Exploration Potential

In addition to the ore defined in the Yarrie deposit, the area contains further reserves in the form of shallow 'crustal' deposits and the cemented conglomerate deposit of Kennedy Gap. Further definition of these areas will be obtained during the mining phase at Yarrie.

These additional deposits are of lower quality than Yarrie and as such, do not form part of this proposal. Should a market be found for these products, a further proposal will be submitted.

4.0 EXISTING ENVIRONMENT

4.1 Regional Setting

The Goldsworthy Yarrie Project is located in the North Pilbara Region of Western Australia, 30 kms south east of Shay Gap. The closest major population centre is the town of Port Hedland which is the major service centre of BHP Iron Ore's processing and shipping operations.

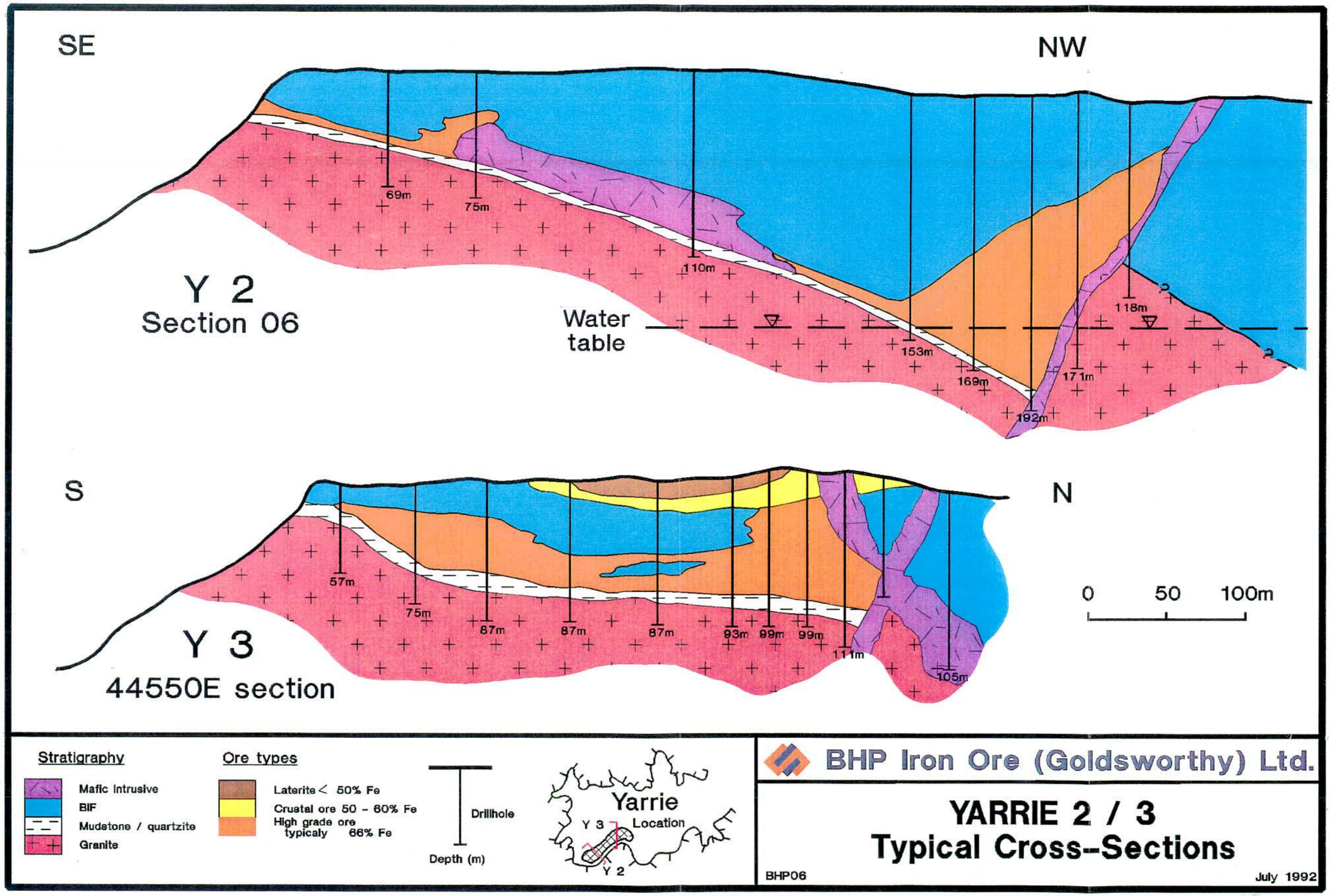
4.2 Geology

In general, the Yarrie Y2/3 deposit is located adjacent to the southern escarpment of a prominent east-west trending range, which rises about 120 metres above the plain level. It occurs within a thick sequence of Archaean age banded iron formation (BIF) of the Cleaverville Formation, in a similar stratigraphic position to the deposits seen in the Shay Gap and Sunrise Hill deposits to the west.

The Cleaverville Formation overlies an intrusive complex of Archaean granite to the south. To the north, it is succeeded by a sandstone/siltstone member.

The Y2 deposit strikes east-west and outcrops for a strike length of approximately 1000 metres. The high grade hematite ore is flat lying in this eastern half and is covered by a lateritic capping material up to 20 metres thick.

The western Y2 deposit (a deep extension of the Y3 deposit) is covered by some 40 - 100 metres of overburden BIF. The ore in this area is bounded to the north by a fault, and ore continues to depths of approximately 110 metres below the plain level. Figure 7 shows a typical cross section in the Y2 and the Y3 areas of the Yarrie deposit.



BHP Iron Ore (Goldsworthy) Ltd.

YARRIE 2 / 3
Typical Cross-Sections

BHP06

July 1992

Figure 7

4.3 Climatology

The background climate of the north west of Western Australia is tropical. During the summer months, in particular, temperatures are frequently high, particularly inland, and humidity is high in coastal regions. Rainfall throughout the region shows a strong summer maximum with very dry conditions during the late winter and spring. Winds are predominantly from the south east, with sea breezes along the coast, particularly during the warmer months.

There are four specific weather phenomena which are of greatest importance to this region. The summer monsoon brings most of the annual rainfall to the region. Its influence decreases southward. Much of this rain comes from tropical cyclones, which are also associated with damaging winds, flooding and storm surges. During the winter months development or intensification of anticyclones over southern Western Australia and South Australia may produce strong easterly winds over parts of the north west. Also during winter, major cloud bands may develop which extend from off the northwest coast across the continent and bring significant rain to the northwest and interior of the country.

In summer, inland temperatures can be extreme. Near the coast, the climate is modified somewhat, although humidity in coastal areas may be high. Table 2 shows temperature and rainfall data for Port Hedland.

In addition to the extremes of wind, the high temperatures and generally dry conditions result in annual evaporation exceeding rainfall by as much as 2500 mm/year. Rainfall occurs mostly in the summer period and averages 250-300mm/year. Most of the rain falls as a result of cyclonic or thunderstorm activity.

TABLE 2

CLIMATOLOGY - PORT HEDLAND

	Temperature (°C)				Rainfall (mm)		
	Mean Low	Mean High	Min	Max	Min	Max	Avg.No. of Rain days
January	25.4	36.3	18.1	47.5	0	454	5
February	25.3	36.3	16.3	47.1	0	360	7
March	24.4	36.8	15.8	44.5	0	251	4
April	21.1	35.2	12.2	42.4	0	352	2
May	17.0	30.3	7.0	38.8	0	170	3
June	13.7	27.1	4.7	34.4	0	125	3
July	11.9	26.6	3.2	33.8	0	81	2
August	12.9	28.6	3.7	36.8	0	35	1
September	15.3	32.4	8.4	40.9	0	9	1
October	18.0	34.7	11.1	43.7	0	8	1
November	21.2	36.5	12.4	47.4	0	67	1
December	23.8	36.7	16.6	47.9	9	219	2

4.4 Hydrology

4.4.1 Surface Water Hydrology

There is no major creek or river directly impacted by this proposal. Streamflow in the area is highly ephemeral and for most of the year the creeks are dry, except for occasional pools in gullies formed on the ridge. Large streamflows are associated with rain-bearing depressions or high intensity winter rainfall. Along some of the ridges of the area there are permanent pools which have been used by the Aboriginals.

4.4.2 Hydrology of the Orebody

The majority of Yarrie Y2/3 deposit being located on the top of the ridge with a surface elevation of RL270 m is well above the watertable which is located at RL110 m. The watertable is below the plain level at Kimberley Gap (RL124 m). The Yarrie Pit will require dewatering in the latter stages of mining if the ore in the deep Y2 area is extracted. If this is to occur, at the cessation of mining, the pit will fill with water, and a waterbody some 13 hectres in area and 70m deep will be formed once the water level reaches the present level. It is estimated that it would take 40 million tonnes of overburden to backfill the pit to just above the existing watertable and if this was a requirement, would make the Yarrie project uneconomic.

4.5 Vegetation and Flora

4.5.1 Summary

The description of the vegetation and flora of the Yarrie Area is based on a field survey carried out 12-13 August 1992. Much of the area has been subject to cattle grazing but the vegetation associations appear generally resilient. The area is floristically and structurally similar to those found over large area of the north - eastern Pilbara, to the west of the Great Sandy Desert. The predominant formations are Tree Steppe on the ranges, Shrub Steppe on plains and broad valley systems, with Riveraine Sclerophyll Woodland lining the well defined, major drainage systems.

4.5.2 Objectives and Methods

The vegetation was examined on foot and by vehicles at a number of locations along the rail route and in the mining area. Several large sections of the rail route had been burnt within the last 12-18 months. In these areas identification of seedling regeneration was necessary to confirm vegetation communities.

The mining area is well roaded and was examined in some detail. Several valley systems were examined as well as the upper plateaux and the hummock grasslands to the south.

Voucher specimens were collected for later confirmation of all those species which could not be positively recognised in the field.

4.5.3 Results

4.5.3.1 Flora

A total of 80 plant species was recorded, representing 46 genera and 29 families. These are listed in Table 3. Plant families best represented by numbers of species are the Mimosaceae, with some 13 species of *Acacia* recorded; the Fabaceae, Amaranthaceae and Myrtaceae are also well represented.

The Poaceae and ephemerals were under represented at the time of the survey, most of the grasses flower in summer and a good range of Asteraceae and other ephemerals would be expected to be present later in the season.

4.5.3.2 Vegetation

The Railway Extension Route

Hummock grasslands of the soft spinifex *Triodia pungens* are the most frequent components of the Shrub Steppe along the railway extension route. Some of the more frequent shrub / small tree species present include *Acacia ancistrocarpa, A. inaequilatera, A. holosericea and A. tumida*, with scattered specimens of *Hakea macrocarpa, H. suberea and Grevillea wickhamii*. Local patches of low wattles including *Acacia translucens, A. hilliana and A. adoxa* occur amongst the spinifex. Infrequent specimens of *Eucalyptus terminalis* and *E.* aff.*papuana* are the tallest species of the Shrub Steppe. Steeper side slopes carry some *Eucalyptus leucophloia* with *Triodia wiseana* replacing *T.pungens* as the main spinifex species.

TABLE 3

YARRIE AREA

SYSTEMATIC LIST OF PLANT SPECIES

FAMILY	Species	Vernacular
POACEAE	[Grass family]	
	Cymbopogon procerus (R.Br.) Domin	Lemon grass
	Eriachne mucronata R.Br.	
	Triodia brizoides N. Burb.	
	Triodia longiceps J. Black	
	Triodia pungens R.Br.	Soft spinifex
	Triodia wiseana C. Gardner	Buck spinifex
CYPERACEAE	[Sedge family]	
	Cyperus rigidellus (Benth.) J. Black	
	Fimbristylis depauperata R.Br.	
MORACEAE		
	Ficus platypoda (Miq.) A. Cunn. ex Miq.	
PROTEACEAE		
	Grevillea refracta R.Br.	
	Grevillea wickhamii Meisn. in DC.	
	Hakea chordophylla F Muell.	
	Hakea macrocarpa A. Cunn. ex R.Br.	
	Hakea suberea S. Moore	
LORANTHACEAE		
	Amyema preissii (Miq.) Tiegh.	
AMARANTHACEAE		
	Aerva javanica (Burm. f.) Juss ex Schultes	
	Ptilotus astrolasius F. Muell.	
	Ptilotus calostachyus F. Muell. (F. Muell.)	
	Ptilotus clementii (Farmer) Benl.	
	Ptilotus gaudichaudii (Steudel) J. Black	
	Ptilotus obovatus (Gaud.) F. Muell.	
	Ptilotus polystachyus (Gaud.) F. Muell.	
NYCTAGINACEAE		
	Boerhavia schomburgkiana Oliver	
MIMOSACEAE	[Wattle family]	
	Acacia adoxa Pedley	
	Acacia ampliceps Maslin	
	Acacia ancistrocarpa Maiden & Blakely	
	Acacia bivenosa DC	

	Acacia hilliana Maiden in Ewart & O.B. Davies	
	Acacia holosericea A. Cunn. ex G. Don.	
	Acacia inaequilatera Domin	
	Acacia orthocarpa F. Muell.	
	Acacia pyrifolia DC	
	Acacia trachycarpa E. Pritzel	Minniritchee
	Acacia translucens A. Cunn. ex Hooker	
	Acacia tumida F. Muell. ex Benth.	
	Acacia victoriae Benth. in Mitch.	Prickly acacia
CAESALPINACEAE [Cassia family]		
	Cassia glutinosa DC.	Sticky cassia
	Cassia notabilis F. Muell.	Cockroach bush
	Cassia venusta F. Muell.	
	Petalostylis labicheoides R.Br. in Sturt.	
FABACEAE [Pea family]		
	Clianthus formosus (G. Don.) Ford & Vickery	Sturt pea
	Crotalaria cunninghamii R.Br.	
	Indigofera monophylla DC	
	Psoralea pustulata F. Muell.	
	Rhyncosia minima (L.) DC.	
	Templetonia hookeri (F. Muell.) Benth.	
	Tephrosia rosea F. Muell. ex Benth.	
	Tephrosia uniovulata F. Muell.	
ZYGOPHYLLACEAE		
	Kallstroemia platyptera (Benth.) Engler	
EUPHORBIACEAE		
	Euphorbia australis Boiss.	
SAPINDACEAE [Hopbush family]		
	Atalaya hemiglauca (F. Muell.) F. Muell. ex Benth.	White wood
TILIACEAE [Lime family]		
	Corchorus walcottii F. Muell.	
	Triumfetta micrantha F. Muell.	
	Triumfetta plumigera F. Muell.	
MALVACEAE [Hibiscus family]		
	Abutilon exonemum F. Muell.	
	Hibiscus coatesii F. Muell.	
	Sida clementii Domin	
COMBRETACEAE		
	Terminalia canescens (DC.) Radlk.	
MYRTACEAE		
	Eucalyptus camaldulensis Dehnh.	River red gum
	Eucalyptus coolabah Blakely & Jacobs	Coolabah
	Eucalyptus aff *papuana* F. Muell.	Cabbage gum
	Eucalyptus leucophloia Brooker	Snappy gum
	Eucalyptus terminalis F. Muell.	Bloodwood

	Melaleuca glomerata F. Muell.	
	Melaleuca leucadendra (L.) L	Cadjeput
APIACEAE		
	Trachymene oleracea (Domin) B.L. Burtt.	
OLEACEAE		
	Jasminum lineare R.Br.	Jasmine
APOCYNACEAE		
	Carissa lanceolata R.Br.	
CONVOLVULACEAE		
	Evolvulus alsinoides (L.) L.	
	Ipomoea muelleri Benth.	Poison morning glory
BORAGINACEAE		
	Trichodesma zeylanicum (Burm f.) R.Br.	
VERBENACEAE		
	Clerodendrum lanceolatum F. Muell.	
SOLANACEAE		
	Solanum dioicum W.V. Fitzg.	
	Solanum lasiophyllum Dunal ex Poiret in Lam.	Flannel bush
CUCURBITACEAE		
	Mukia maderaspatana (L.) M. Roemer	
GOODENIACEAE		
	Dampiera candicans F. Muell.	
	Goodenia microptera F. Muell.	
	Goodenia scaevolina F. Muell.	
ASTERACEAE [Daisy family]		
	Pterocaulon glandulosum F. Muell.	
	Streptoglossa decurrens (DC.) C.R. Dunlop	

Botanical names after J. W. Green (1985). Census of the Vascular Plants of Western Australia. (Second Edition), W.A. Herbarium, Department of Agriculture, Perth.

The central part of the railway extension traverses a section on basic soils. Here *Triodia pungens* gives way to *Triodia wiseana*, and the shrub *Acacia bivenosa* is a prominent associate with the fire resistant species *Acacia inaequilatera*. The shrub *Carrissa lanceolata* occurs as an ungrazed remnant of the shrub component on alluvial soils adjacent to the main creek, downslope of the basic soils. Several patches of the somewhat salt-tolerant *Acacia victoriae* may indicate saline patches. In recently burnt sections of the hummock grasslands *Clianthus formosus and Indigofera monophylla* are prominent with *Cassia notabilis* amongst seedling regeneration of the dominant *Acacia* species.

Eucalyptus coolabah is present on the alluvial levees of major creeks, where *Triodia longiceps* tends to replace *Triodia pungens* as the main ground cover species. Lining creek banks, and rooted into obvious aquifers, are medium sized specimens of the phreatophytic species *Eucalyptus camaldulensis, Melaleuca leucodendra and M. glomerata*. Other prominent species of riveraine sites include the miniritchee wattle *Acacia trachycarpa,* and also *Acacia pyrifolia, Acacia ampliceps, Psoralea, Crotalaria* and *Indigofera* species. Amongst seral species regenerating after fire in the riveraine formations the following species occur: *Cassia venusta, Ipomoea muelleri, Mukia maderaspatana and Trichodesma zeylanicum.*

Several moist soaks occur throughout the plains. Most of these are now far from pristine as a result of intensive use by cattle and the feral donkey and horses. Formerly these would have carried dense grass cover of *Eriachne* species, presently only the longer lived trees are present. In the first section of the railway route such soaks carry patches of *Melaleuca or Acacia ampliceps*. Elsewhere, away from the route, patches of tall *Acacia tumida* or *A. holosericea* occur. The largest areas are lined with a peripheral ring of unthrifty *Eucalyptus coolabah* trees.

The Mining Area

The most typical woody perennial species of the plateaux of the mining area is the bloodwood *Eucalyptus terminalis*. This produces abundant sprout growth in areas burnt recently. *Triodia pungens* is common on moisture gaining sites, replaced by *Triodia brizoides / T. basedowii* on elevated water shedding stony habitats. Other prominent woody perennials include *Hakea suberea, Acacia inaequilatera, Grevillea wickhamii* and *Cassia glutinosa.* Smaller forbs include *Euphorbia australis* and *Evolvulus alsinoides*. Several species of *Ptilotus* occur along roadsides and scattered throughout the plateaux. *Templetonia hookeri* and *Acacia orthcarpa* are thin, delicate, shrubs of more open areas where also the low forb *Boerhavia* occurs amongst the *Triodia basedowii* hummocks.

Shallow gullies and moisture gaining faults running across the plateaux are clothed in dense stands of *Acacia tumida*, sometimes with *Tephrosia* and Solanum species as understory. On steep slopes *Eucalyptus leucophloia* occurs with *Triodia wiseana* and *Kallstroemia platyptera*. Lining steep - sided valleys, and in crevices and ledges, clumps of *Eriachne mucronata, Cymbopogon procerus* and *Cyperus* species break the monotony of the spinifex species.

Larger valleys have several eucalypts present including those mentioned above as well as *Eucalyptus* aff *papuana*. *Terminalia canescens* and *Atalaya hemiglauca* are other trees present. *Carrissa lanceolata* is a shrub of this habitat and *Ficus platypoda* is seen rooted on bare rock all up the sides of steep valleys and on ledges.

Typical, relatively short-lived, seral species following fire on the plateaux of the mining area include: the shrubby species of *Sida*, *Corchorus* and *Triumphetta*, the forbs *Indigofera monophylla*, *Cassia notabilis* and *Solanum* species and the herbaceous *Trachymene oleracea*.

Hummock Grasslands to the South

Immediately south of the mining area *Triodia pungens* dominates the vegetation. Scattered trees of *Eucalyptus terminalis* and less frequently *E.leucophloia*, are the tallest plants present. A series of narrow channels carry water, in season, from the highlands and these are exclusively dominated by *Acacia tumida* to a 3m height. These drainage lines also have a range of grass species and similar shrubs to those associated with *A tumida* in the breaks across the plateaux ie. *Solanum*, *Tephrosia* and *Crotalaria*, *Clerodendron species*.

None of the species identified from either the railway extension route or the mining area are of any specific importance in the context of conservation value.

4.6 Fauna

A preliminary fauna survey was conducted on 12-13 August 1992. Observations were made of birds, mammals and reptiles. The only significant species which may inhabit the area is the pebble-mound mouse *psendomys chapmani*. Many stone mounds were observed in the development area. Some are old and show no recent habitation. A list of 21 species of birds sighted during the course of the survey is given in Table 4.

TABLE 4

YARRIE AREA

LIST OF BIRD SPECIES RECORDED

Species	Common name
Anthus novaeseelandiae	Richard's pipit
Aquila audax	wedge tailed eagle
Artamus cinereus	black faced wood swallow
Cacatua roseicapilla	galah
Coracina novaehollandia	black faced cuckoo shrike
Corvus bennetti	little crow
Cracticus nigrogularis	pied butcher bird
Ephthianura tricolor	crimson chat
Falco berigora	brown falcon
Grallina cyanoleuca	mudlark
Lichenostomus keartlandi	grey headed honeyeater
Lichenostomus penicillatus	white plumed honeyeater
Lichenostomus virescens	singing honeyeater
Malurus assimilis	variegated wren
Manorina flavigula	yellow throated miner
Ocyphaps lophotes	crested pigeon
Petrophassa plumifera	spinifex pigeon
Podargus strigoides	tawny frogmouth
Poephila guttata	zebra finch
Rhipidura leucophrys	willy wagtail
Turnix velox	little button quail

5.0 ABORIGINAL HERITAGE

Archaeological and ethnographic surveys were conducted in the Yarrie Mining area in 1991. Because of the importance of the general Yarrie-Shay Gap area, an agreement was entered into by the company, which the Aboriginal people see as protecting their religious interests in the area. Additionally, during the past year, the Aboriginal people have been kept informed of the project development and more detailed archaeological work will be carried out in all areas of potential disturbance. There have been four archaeological and two ethnographic sites identified on Yarrie. Only one known archaeological site will be disturbed in the mining area and a final report on sites along the railroute camp and airstrip is still pending.

6.0 SOCIAL IMPACTS

6.1 Land Use

Apart from mining, the only other land use has been for cattle grazing from sparsely located stations. Mining will continue at much the same level of activity as in the past and is confined to a relatively small area.

The rail extension will traverse pastoral land, but because of the flat nature of the surrounds, there is very little cut and fill required. In the restricted areas where cut and fill is to take place, there is only a very minor change in elevation to that of the surrounding landform.

It is therefore considered that the mining activity together with the rail extension will have negligible impact on the pattern of land use.

Consultations will be held with the pastoral lease holder of Muccan 3114-713 and Yarrie 3114-1179 (same person) regarding the location of the proposed rail alignment.

5.2 Heritage

The region is remote and arid, and only contains areas of low scenic beauty with no features of special interest.

5.3 Social Environment

In keeping with BHP's objective of becoming a more efficient miner who can compete at the very competitive international level, a significant change to the operation of the workforce needs to occur.

A change from a company workforce to a contractual mining operation is seen as the most appropriate method of mining the Yarrie / Nimingarra orebodies. Flexibility is the most important parameter to vary ore and/or waste movement as appropriate to meet market demand and the variation of the individual orebodies.

Without such flexibility, the Goldsworthy operation could not compete internationally and would cease to exist.

Appropriate consultation will be held with unions and employees to ensure this change in work force is accomplished smoothly.

7.0 ENVIRONMENTAL IMPACT AND MANAGEMENT

7.1 Construction Phase

7.1.1 Landform

Changes to the topography of the project area will result from earthworks required to prepare the principle development sites including camps, rail spur, access roads, airport, minesite buildings. To minimise the impacts of this stage of development, only the minimum area required for the construction will be disturbed and once construction is completed, all areas no longer required for the operation of the facility, will be contoured, slopes stabilised, topsoil replaced and vegetated.

7.1.2 Borrow Pits

Borrow pits will be required for construction materials at the minesite, airport and along the rail spur. Borrow pits for all construction materials will be selected and operated to minimise erosion and land disturbance and the Newman Guidelines for borrow pit development and rehabilitation will be applied.

7.1.3 Flora and Fauna

The Railway Extension Route

The main impacts on plant and associated animal communities will be associated with bridge crossings. As moisture in this arid environment is scarce the main drainage channels of the area are focii of both plant and animal diversity. Consequently care will need to be exercised at all stages of construction in relation to the extent of damage imposed on the riveraine systems.

The building of the railway will require the destruction of plant communities along the length of the rail extension. However the area of vegetation cleared will be small in comparison to the floristic units present in the general area, and all the species affected are well represented in the surrounding areas.

7.1.4 Archaeological Sites

Any archaeological sites requiring disturbance will be assessed and approval to use the land under Section 18(2) of the Aboriginal Heritage Act will be obtained.

7.2 Operational Phase

7.2.1 Landform

Mining ore from the Yarrie orebody will result in the formation of a large mined out pit. Overburden from the mining operation will be deposited in a dump located in a crescent shaped gully to the south of the mine (see Plate 1). A portion of the overburden will be backfilled into the eastern area of the pit. All dumps will be stabilised by resloping and rehabilitation using BHP Iron Ore Standard techniques similar to those used at Newman and presently at Goldsworthy.

7.2.2 Hydrology

No significant impacts are expected to the hydrology of the area during mining, however, when the mining activity is completed, a small body of water will remain in the base of the pit.

While mining below the water table and dewatering is taking place, the discharged water will be used as much as possible for mining activities. It is estimated a discharge rate of 50 l/sec will be required. Any excess water will be released to the environment along a natural water course and allowed to seek its way to Eel Creek. It is likely that the water will only reach the creek during high rainfall periods.

7.2.3 Flora and Fauna

The Railway Extension Route

The principal impact from the operation of the railway will be impediment to overland movement of large mammals. Of these, three groups can be distinguished: native animals (mainly euro, *Macropus robustus*) domestic cattle (*Bos taurus*) and feral animals (mainly donkey, *Equus asinus* and brumby *Equus caballus*). Some tactical pastoral fencing may be required to manage cattle. Loss of habitat for smaller animals, including reptiles, will also occur. Impediment to overland flow may affect the health and density of plant communities on the down slope of the rail access corridor. Adequate culverting will minimise such impacts.

The Mining Area and Grasslands to the South

The principal impact from the mining of the plateaux will be loss of habitat. Of the fauna, the main species affected will be the euro (*Macropus robustus*). This is a common and abundant species, other hilly areas in the vicinity of the development, which will not be mined, contain similar habitat and sustain similar population densities. The grassy plain below the mine, which will be the repository of overburden material, will become a new hill. In this sense one habitat sequence will be exchanged for another and many plant and the associated faunal species will eventually return.

Gullies and caves in the mining area provide niches for amphibia, snakes and bat species. None of these are likely to suffer any important loss of genetic diversity due to the temporary local extinction due to mining. Mounds associated with the Pebble-mound mouse (*Pseudomys chapmani*) occur in *Triodia basedowii / T. brizoides* spinifex hummock grasslands on the plateaux adjacent to the mining area. It is not known whether the mouse has current populations in these areas, many of the mounds are apparently of some antiquity. Disturbance of areas not subject to mining where these nests are located will be kept to a minimum. It is recommended that a survey of the distribution of mounds, with estimation of their relative activity potential / ages be undertaken. This research would provide mine management with a realistic set of management options to conserve the species should it prove to be present. However it must be noted that although this species is at present poorly known, mounds are widespread throughout much of the Pilbara region.

Destruction of plant communities will be systematic and thorough throughout the area to be mined. Considerable disturbance to plant communities will also occur due to the associated infrastructure works. The vegetation cleared and destroyed is not unique and is repeated on similar hill systems in the general area. The area destroyed will be small in comparison to the floristic units present in the region, and all the plant species affected are well represented in the surrounding areas.

7.2.4 Dust and Noise

The camp facility will be located several kilometres to the north west of the mining site and as such, will generally be unaffected by the operational activities. At the mining site during construction and operational phases of the development, normal means of dust control will be applied to the various dust sources. However, recent studies have indicated that water is still the best dust suppressant available for most applications except roads, where there has been recent success with sealants such as waste oil and other surface agents.

7.2.5 Hazardous Materials

The development and operation of the proposed project will necessitate the use of a wide range of products which may be termed "Hazardous Materials". These substances include such products as fuels, lubricants, detergents and paints. The handling, use, and disposal of these products will comply with all local and State regulations.

7.2.6 Other Wastes

The mine will generate several types of less toxic waste including; scrap metal, tyres, wood, paper and domestic solid and liquid waste. These wastes will be disposed of in approved land fills and in the case of liquid wastes, will be treated by approved processes.

7.2.7 Rehabilitation

Following the closure of the Yarrie mine, all building and other structures will be removed. Roads, camps, railroads and all other land disturbance will be rehabilitated to a condition similar to that prior to mining.

7.2.8 Environmental Management Plan

A detailed environmental Management Plant including monitoring and control systems to address potential environmental impacts will be included with the formal environmental report.