Central Pilbara Mineral Province Study

Project Brief

PROJECT BRIEF

CENTRAL PILBARA MINERAL PROVINCE STUDY

Background

The Central Pilbara region has a large iron ore resource with many very large deposits and numerous smaller deposits. The area is extensively covered by various forms of mining tenements over the many ore types which include Marra Mamba, Brockman pisolite and detrital ores.

BHP currently operates mines at Marillana Creek (Yandi), Mt Whaleback (Newman), and Orebodies 23/25/29 (Newman). Hamersley Iron operates mines at Paraburdoo, Tom Price, Channar, Brockman and Marandoo and is expected to commence mining the Yandicoogina deposit in 1999.

Future iron ore mine developments will be concentrated in the Central Hamersley Range area between Karijini National Park and Newman. Deposits including Hope Downs, Mining Area C, West Angelas, Giles Mini, Rhodes Ridge and Yandicoogina have extensive reserves of high iron content, low impurity ores. Mining of these deposits may be expected to progressively occur over the next 25 years and because of the magnitude of the reserves will constitute long term operations.

Based on the existing and likely future mines, the study area is shown on the attached map included as appendix 1. It takes in the towns of Paraburdoo and Tom Price in the east and extends to Newman in the west and south from the Wittenoom-Roy Hill Road to about the Tropic of Capricorn. This represents an area of about 30,000 sq. kms.

Three towns exist in the study area: Tom Price (population around 3,600), Newman (population around 4,000), and Paraburdoo (population around 2,200). In 1988 a study was undertaken for a suitable site for a townsite to service the Central Pilbara area, and a Section 19 exclusion from pegging under the Mining Act was created to protect the preferred site.

A camp comprising temporary accommodation units has been constructed for the Marillana Creek iron ore mining project's fly-in/fly-out workforce. A similar camp is proposed for the Hamersley Iron Yandicoogina iron ore project, which will also use a fly-in/fly-out workforce.

An all-weather airport is located at Newman, however, the area contains numerous light aircraft landing grounds suitable for daytime, dry weather use. The abovementioned Section 19 exclusion area includes a potential site for an airport.

The railway systems in the Central Pilbara are owned and operated by iron-ore companies and were specifically constructed as heavy duty railways to transport iron ore from the mine sites to the port facilities. The only iron ore operation not directly linked to a railway is the Channar project which is connected to the Hamersley Iron train loading facilities at Paraburdoo by means of a 21km conveyor.

The area is traversed by the Great Northern Highway which forms part of the National Highway. The Great Northern Highway was previously routed from Newman to Port Hedland through Nullagine and Marble Bar. However, it was constructed on its present alignment in the late 1980's and early 1990's to provide access to potential iron ore mining projects in the Central Pilbara area, as well as facilitating more direct road access for tourism to Karijini National Park.

The main drainage system in the area is provided by the Weeli Wolli Creek and its tributaries, Marillana Creek and Yandicoogina Creek. The Weeli Wolli, in turn, is a major tributary of the Fortescue River to the north. There is also the Ashburton River and its two tributaries in the southern part of the area. Two major aquifers exist in the area; the Marillana Creek pisolite aquifer system and the Wittenoom dolomite aquifer system. Both yield potable water.

The Karijini National Park, located in the middle of the study area, is widely known for its topography and largely undisturbed flora and fauna. It is further recognised for its Aboriginal heritage values and recreational (tourist) use. The Park contains numerous Aboriginal heritage sites which are protected under the Aboriginal Heritage Act. High environmental and cultural values are also reflected in the surrounding country.

The southern portion of the study area has been identified as containing high quality Mulga woodlands. (Mulga woodland communities are currently poorly represented in conservation reserves.) Consideration is currently being given within Government to classifying some sections of land as Natural Resource Management Areas which would recognise both the biological value and mining development potential of the area.

Development Potential

The Central Pilbara area is expected to progressively become the major mining area for high grade (+55%) iron ore beyond year 2000. Within about ten years it is possible that the area could be producing some 100 million tonnes per annum from up to six iron ore mines - located at Marillana Creek (Yandi), HI Yandi, Area C, Giles Mini, West Angelas and Hope Downs. These are all major deposits and will have long operating lives.

Each mining operation will require rail linkage to the coastal ports, power and water supplies, communications, and service and access roads. Development of each of these services will entail access to, and disturbance of, land areas with the consequent potential for land use conflicts and environmental degradation. With most major services, including railways, the co-ordination of road construction will be required to provide a number of service corridors in the area in an optimum way. The establishment of planning guidelines for channelling these services into suitably located and defined multi-user corridors will be a major component of the study.

The iron ore companies operating the mines may be expected to employ in excess of 2,500 persons in the area, either directly or through contractor workforces. If most of the workforces will operate on a long term fly-in/fly-out basis, this will require the development of reliable all-weather aviation facilities and appropriately located camp accommodation areas.

The scale, projected longevity and diverse ownership of the iron ore projects in a relatively confined area may attract a range of multi-client service industries. Because of the remoteness of the mines from existing towns, these industries may create the need for a service centre or centres providing land and services for industrial and residential purposes.

No downstream iron ore processing projects have been proposed for the Central Pilbara, although the huge ore reserves, apparently ample water resources and the availability of gas via a spur line from the Goldfields Gas Pipeline may encourage consideration of further processing in the future.

Tourism, focused on Karijini National Park, is expected to become of greater importance in the area. While the Department of Conservation and Land Management has encouraged, and is currently negotiating the development of, tourist facilities in Karijini National Park, conservation and environmental constraints within the Park will limit the scale and range of any facilities developed.

To adequately cope with the projected tourist numbers, more substantial and diversified infrastructure (eg tourist resorts, airport, recreation facilities, etc) would need to be located outside the Park. The Central Pilbara area is strategically located and has the potential to meet major tourism needs - with direct road access (via the Great Northern Highway), an area of flat flood-free land for airport and recreation facility development, and apparently adequate groundwater resources.

The Central Pilbara area contains sites of scenic, recreational and Aboriginal heritage value. Currently there are no public roads (other than the highway), nor is there effective management of these sites. With anticipated future activity and population build-up in the area, consideration should be given to controlled access to, and protection of, the sites deemed worthy of conservation.

Traffic on Great Northern Highway may undergo a significant increase in future years. As well as industrial and tourism developments within the Central Pilbara area generating new traffic, the Highway is expected to be the main conduit for heavy freight traffic from southern Australia to major project developments in the Pilbara and Kimberley Regions. The volume of traffic will be further increased on completion of an all-weather Eastern Goldfields to Pilbara road link, as most road freight from the Eastern States will use this shorter route in preference to the North West Coastal Highway via Perth.

While the new route of the Great Northern Highway between Newman and Port Hedland has been constructed to a high standard suitable for high speed traffic, developments in the Central Pilbara area which may interfere with the highway vehicle flow (eg railway crossings, local traffic) need to be given careful consideration.

Objective

A comprehensive development planning study of the Central Pilbara area is to be undertaken. To ensure that there is a successful outcome from this study the State and Federal Governments and the iron ore industry are all to be involved.

The study will focus on the infrastructure and service needs arising from mineral resource developments but will also examine the impacts on other potential interests, for example, environmental, tourism and Aboriginal culture. Recommendations will draw on the outcomes of the Pilbara Land Use Strategy and the Pilbara Regional Transport Strategy.

It is estimated that the demand for iron ore from the Pilbara Region of Western Australia could reach 200 Mt/a by 2006, assuming that the strong growth in Asian steel production is sustained in the long term. The projected demand compares with 150 Mt of iron ore shipped from the Pilbara in 1997.

New mines will be required to supply this forecast increase in tonnage, as well as to replace existing production as premium quality ore deposits are depleted. Over the next decade it is likely that new mining capacity in the order of 100 Mt/a of high grade, low impurity iron ore will be required.

The study must cover three key areas:

a) An overview of the demand for iron ore and the scenarios for project development and expansion over the next decade, with the trends identified for the following five years or so to the year 2015 ;

b) The identification of infrastructure requirements and opportunities taking into account the utilisation of existing infrastructure and the effectiveness of new investment in infrastructure ; and

c) An investigation of the appropriate means to ensure the co-ordinated development of infrastructure provision by Government and industry.

Scope of Work

The Consultant is expected to cover all of the following issues, applying resources to each area according to its importance and to the effort required to provide a quantifiable outcome. It is expected that the Consultant will obtain necessary information from Government sources as well as the four mining companies (BHP Iron Ore, Hamersley Iron Pty Limited, Robe River Mining Co Pty Ltd and Hope Downs Ltd) observing complete confidentiality. A visit to the region, liaising closely with the companies and other interested parties, is a part of the study activities.

1. Assessment of Demand

Complete a desk study of iron ore demand, by quantity and ore type, utilising available data on demand for ores, taking into account the likely future trends in processing and technologies. This should utilise easily available information and provide an overall demand forecast to be used as the basis for the analysis and evaluations on which infrastructure recommendations will be made. This section of the report should be reviewed by the participating iron ore companies before further work proceeds. It will be a key section in the study report.

2. Assessment of Resources and Development

Complete an overall assessment of the Pilbara iron ore reserves by utilising the ore demand data and through liaison with the iron ore companies, prepare a high, most likely and low development scenarios for new mining (and processing) projects in the area over the next 10 years with projections to the year 2015.

3. Infrastructure

Evaluate the existing and potential resource developments and forecast the key factors affecting infrastructure services including the influences of population changes and trends. Access to privately owned infrastructure must be carefully considered. Ongoing security of major transport routes should be considered. The effect of fringe benefits taxation (FBT) as a disincentive to investment or development of local infrastructure should be considered and recommendations made. The opportunities for Government to take on additional roles or responsibilities is also a consideration.

The following require individual sections in the report.

- Review and report on population changes and growth with particular regard to the established centres and to the need for any new centres for population or services,

including fly-in/fly-out requirements. Any deficiencies in the existing social infrastructure of health and education should be noted. Recommend the locations for any new town or centres or locations that may be required beyond the need for minesite accommodation.

- Review and report on groundwater resources. Assess existing and future demands and report on the location, quality and quantity of the water resources and recommend a plan and estimated cost for further exploration where necessary. Locations of demand with shortfall in supply should be highlighted with recommendations noted.

- Examine and report on transport infrastructure requirements considering railways and roads and their location and future development. Plan new multi-user services corridor routes to also include power lines and water pipelines and optimise access to potential users to minimise environmental disturbance and disruption between transport modes. Provide cost estimates for recommended upgrading or new works.

- Examine the existing, planned and potential power generation and transmission within the study area and note any linkage or beneficial connections with services outside the study area. The benefits of centralised generation, interconnection and electrical reinforcement potential should be considered.

- Assess the aviation requirements of all likely mining operations, tourism and other activities and report on the location and development of services to meet future requirements.

- Investigate the existing communications services in the region and recommend the means to provide for the necessary upgrading and expansion of the telecommunications system to meet the needs of all potential users in the Central Pilbara. New and developing technologies should be taken into account.

4. Service centres

Investigate the potential for mining industry service centres in the region to provide for accommodation and services support of enterprises and personnel for the industry. This investigation should also cover tourism and other permanent or temporary habitation and provide the basis for the size, content and location of such sites.

5. Commercial activities

Assess whether there is potential for commercial activities other than those associated with the mining industry. Tourism resort development, nature-based tourism and pastoral activities should be included in the review.

6. Recreational and heritage sites

Compile a data base of existing sites of significant recreational, environmental and heritage value and recommend means of protecting the sites and providing controlled access as appropriate.

Study Management

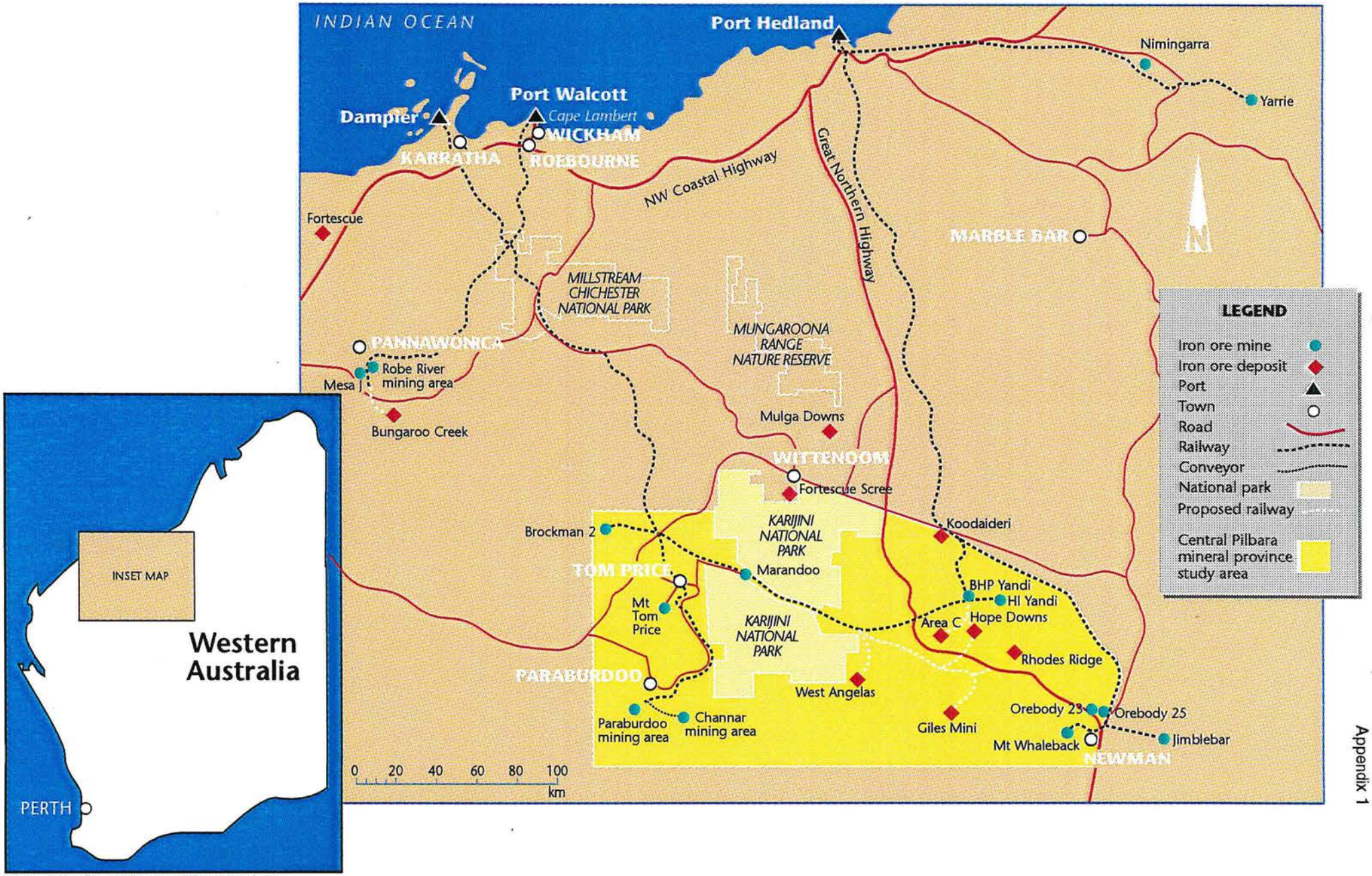
The DRD will manage the study and report on a monthly basis to a management committee consisting of both Government and the private sector. An independent Committee Chairman will be appointed. The Study Leader will attend the management committee meetings.

The Chairman of the management committee will be a member of a Principals committee made up of the Federal Minister for Resources and Energy, State Ministers for Resources Development and Transport and the CEO's of the mining companies. The Principals committee shall monitor progress of the Study and will receive the Study Report.

Proposed Study Program

Item Time	Aug 98	Sep 98	Oct 98	Nov 98	Dec 98	Jan 99	Feb 99	Mar 99	Apr 99
Finalise Brief	xxx								
Advertise Request for Tender (5/09/98)		x							
Close Tenders (25/09/98)		xxxx							
Evaluate Submissions and Recommend Consultant		x	x						
Appointment of Consultant (8/10/98)			x						
Consultant's Study			xxxx	xxxxx	xxxxxx	xxxxx			
Draft Report (							xxxx		
Comment on Draft							xx	xxx	
Final Report								xx	xx

Central Pilbara Mineral Province Study Area



DataMac/DRDstuff/Maps/Pilbara Maps/Pilbara.Various layers

Appendix 1