BHP Iron Ore Pty Ltd

OREBODY 18

ENVIRONMENTAL MANAGEMENT PROGRAMME

July 1996

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BHP Iron Ore Pty Ltd

OREBODY 18

ENVIRONMENTAL MANAGEMENT PROGRAMME

Attachment A

To be read in conjunction with the Orebody 18 Consultative Environmental Review

NOTE

This document has been prepared in a draft form to provide details of BHP Iron Ore's proposed Environmental Management Programme (EMP) at the Orebody 18 mine. The EMP will need to include issues raised in the assessment of the Consultative Environmental Review by the Environmental Protection Authority and subsequent licences from the Department of Environmental Protection and other government agencies. Some details in this EMP may be revised in accordance with the assessment and any licence conditions.

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Appendix A BHP Iron Ore Environmental policy

1.1 PURPOSE OF THIS DOCUMENT

This document has been prepared to satisfy BHP Iron Ore Pty Ltd's (BHP Iron Ore) commitment in the Consultative Environmental Review (CER) to prepare an Environmental Management Programme (EMP) and Ministerial Conditions for the Orebody 18 proposal.

The EMP has been prepared now in draft form so that members of the public may comment on it together with the CER. The EMP will need to incorporate issues raised by the Environmental Protection Authority (EPA) during its assessment of the CER as well as the provisions of licences issued subsequently by the Department of Environmental Protection (DEP) and other agencies. Some details in this EMP may therefore be revised in accordance with the assessment and licence conditions.

The EMP addresses, but is not limited to, the following:

- topsoil management;
- surface drainage;
- groundwater;
- flora and fauna;
- overburden storage;
- rehabilitation;
- Aboriginal sites;
- dust;
- noise;
- waste management and hazardous materials;
- · decommissioning; and
- continuous improvement.

This document provides information on the management objectives and performance indicators for each topic, the management practices to achieve the objectives, the responsibilities for actions and a review of the critical dates.

1.2 BACKGROUND

BHP Iron Ore proposes to establish a mine at Orebody 18, 32 km east of Newman, producing up to 15 Mtpa (dry) of iron ore (Figure 1.1). This Draft EMP is being released for public review at the same time as the CER prepared under Part IV of the *Environmental Protection Act 1986* covering the proposed development of Orebody 18.

The public review will be for a four week period. Following this, the Environmental Protection Authority (EPA) will provide formal advice to the Minister for the Environment on the environmental acceptability of the proposal.

The Project will be managed by BHP Iron Ore Pty Ltd for the owners Mount Newman Joint Venturers which consists of BHP Minerals Pty Ltd, Mitsui-Itochu Iron Pty Ltd and CI Minerals Aust Pty Ltd.

The major elements of the Project are:

- An open-cut mine producing 120 million tonnes (Mt) of ore at an initial rate of 5 Mtpa (dry) increasing up to 15 Mtpa (dry). Material will be drilled, blasted and loaded into off-highway rear dump trucks for transport to the crusher or overburden storage areas.
- A processing plant capable of processing up to 15 Mtpa (dry). Ore will be fed through primary and secondary crushers before being transferred to stockpiles prior to transport to the port by rail.
- Rail load out facilities consisting of an 8 km rail spur from the existing Jimblebar line and a loading facility.
- Mine infrastructure comprising mine offices, workshops, explosives store, fuel facilities, water supply and waste handling facilities.
- An overhead power transmission line from the Pilbara Energy Pty Ltd power station at Newman to the mine site.



During the preparation of the CER, BHP Iron Ore made the following commitment to manage potential environmental and social impacts of the Project.

The Proponent will prepare, to a timetable agreed upon by the DEP, and implement an Environmental Management Programme (EMP) for the Orebody 18 Project to the satisfaction of the EPA on advice from the Department of Environmental Protection and the Department of Minerals and Energy.

The EMP will be developed in accordance with statutory conditions applied to the approved operations. The EMP will be reviewed and updated as required.

The EMP will address the following topics:

- Topsoil Management;
- Surface Drainage;
- Groundwater;
- Flora and Fauna;
- Overburden Storage;
- Rehabilitation;
- Aboriginal Sites;
- Dust;
- Noise;
- Waste Management and Hazardous Materials;
- Decommissioning; and
- Continuous Improvement.

1.3 EXISTING BHP ENVIRONMENTAL PROGRAMMES IN THE NEWMAN AREA

BHP Iron Ore is committed to achieving a high standard of environmental management in its mining activities in the Newman area and adhering to all environmental obligations relevant to its activities. This requires the integration of all monitoring and management programmes to refine and continuously improve the environmental management of its operations. BHP Iron Ore has demonstrated a commitment to regional conservation and land management through the implementation of research and management programmes, including:

- Western Pebble-mound Mouse management strategy at Jimblebar, Yarrie and Yandi, in consultation with the Department of Conservation and Land Management (CALM);
- survey work for the Priority 3 plant species *Ptilotus aphyllus*, in consultation with CALM;
- rehabilitation of 16,000 ha of degraded pastoral stations;
- decommissioning and rehabilitation of the Goldsworthy, Shay Gap and Koolan Island iron ore operations, including their associated towns;
- initiation of an environmental management plan for the Weeli Wolli Springs area;
- initiation of the Marillana Creek hydrological and hydrogeological studies; and
- · initiating and maintaining a herbarium of Pilbara plant species.

1.4 RESPONSIBILITY, DATA MANAGEMENT AND REPORTING

A Site Environmental Officer will be designated for the Orebody 18 operation. The main responsibilities of this officer will be to:

- ensure that the management aims and monitoring responsibilities of the Orebody 18 EMP are met;
- maintain routine contact with the operation manager to ensure the integration of environmental objectives with the mining operation;
- provide monthly reports to site management on environmental issues and conduct regular audits;

- provide information/training to employees and contractors regarding their environmental obligations; and
- liaise with the contractor, other BHP Iron Ore staff and government agencies, as required.

The Orebody 18 EMP is a management and monitoring programme. Being a long-term commitment it will be periodically reviewed and updated, based on the results of monitoring, auditing and improving industry practices. An integral part of this improvement process involves an effective feedback system. To provide this feedback, the Site Environmental Officer will ensure that:

- regular inspections of key areas highlighted in the EMP are undertaken; and
- environmental incidents (e.g. major hydrocarbon spills, disturbance to rehabilitation areas) are reported and rectified.

As part of BHP Iron Ore's commitment to ensure products removed from site are disposed of or recycled in an environmentally acceptable manner, all contractors are to provide a copy of their licence which must stipulate their authority to handle the material to be removed from site. This documentation will be kept on file at the operation.

BHP IRON ORE ENVIRONMENTAL MANAGEMENT SYSTEM

2.1 ENVIRONMENTAL POLICY

The Environmental Management System (EMS) developed for BHP Minerals applies to BHP Iron Ore which is part of the Minerals Division of BHP and to the development proposed at Orebody 18.

This EMP formally incorporates and is consistent with the BHP Iron Ore Environmental Policy Statement (Appendix A) and policy notes.

2.2 ENVIRONMENTAL MANAGEMENT SYSTEM GOALS

The goals of the BHP Minerals EMS are to plan, audit and report on environmental issues relevant to Company operations in an orderly way. The EMS ensures that:

- environmental management plans are incorporated in business planning;
- activities are subject to periodic environmental audit; and
- environmental performance is reported to the BHP Board of Directors.

The EMS is designed to fulfil the requirements of the ISO 14000 standard for environmental management. A flowchart of the systems approach is shown in Figure 2-1.

In Western Australia EMS activities are relevant to:

- compliance with government licence conditions;
- DEP/EPA compliance audits;
- annual internal audit by qualified personnel from the BHP site;
- triennial audit by qualified BHP personnel from an independent site; and
- the development of an Environmental Performance Improvement Programme to rectify deficiencies identified by the audits.

2.0

FIGURE 2-1



ENVIRONMENTAL MANAGEMENT SYSTEM OVERVIEW

3.0 LEGISLATIVE REQUIREMENTS

Following the formal assessment of the CER for the Orebody 18 Project, the State Minister for the Environment will issue a statement under Section 45 of the *Environmental Protection Act 1986* stating the management and environmental protection conditions to be applied to the Project. In addition, works approval and licencing under Part V of the *Environmental Protection Act 1986* will be sought.

In addition to obtaining approval from the State Minister for Environment, the Proponent must also comply with relevant legislation and regulations administered by other State and Federal Government agencies. These Acts and their application to Orebody 18 are listed in Table 1-1.

TABLE 1-1

Act	Application
Environmental Protection Act 1986	CER, Works Approvals, Pollution Control Licences
Wildlife Conservation Act 1950	Rare Flora and Fauna Protection
Conservation and Land Management Act 1984	Management of Flora and Fauna and Reserves
Rights in Water and Irrigation Act 1914	Water Use, Pollution of Water Resources
Water Authority Act 1984	Licencing of Groundwater Abstraction
Bush Fires Act 1954	Management of Fire Safety
Agriculture and Related Resources Protection Act 1976	Management of Weeds and Pests
Soil and Land Conservation Act 1945	Controls Land Degradation and Clearing of Land
Land Act 1933	Classification of Land Tenure
Mines Safety and Inspection Act 1995	Occupational Health and Safety Issues
Mining Act 1978	Controls Licencing of Extractive Industries
Explosives and Dangerous Goods Act 1961	Specifies Storage, Handling and Blasting Requirements
Aboriginal Heritage Act 1972-1980 (in particular Section 18)	Controls Aboriginal Sites, Particularly Disturbance
Australian Heritage Commission Act 1975	Lists Areas of National Heritage Significance
Native Title Act 1993	Deals with Aboriginal Claims for Land Ownership
Health Act 1911 - 1979	Sewage Disposal Facilities
Iron Ore (Mount Newman) Agreement Act 1964	Controls Mining Developments by the Joint Venturer

ENVIRONMENTAL LEGISLATION AND ITS APPLICATION

ENVIRONMENTAL MANAGEMENT PROGRAMME

4.0

The EMP presented in this document provides an overview of the environmental initiatives to be undertaken by BHP Iron Ore at the Orebody 18 mine. This document is not intended to provide details of the daily activities and procedures to be implemented at the site (e.g. seed and fertiliser rates), but to indicate the approach to be taken, the performance indicators to be met and the responsible personnel. In this draft EMP, details are provided on the objectives for management.

The detailed daily environmental management activities to be undertaken will be developed on site. These will comprise the environmental management procedures contained in the BHP Minerals EMS.

Performance indicators for the planned environmental management programmes have been proposed, however these may be revised following the issue of the DEP licence, water abstraction licence and other licences, as required, for the operation.

Responsibility levels have been identified for the various practices together with the critical dates for major works and reviews.

A brief description of monitoring programmes to be implemented has been provided. Detailed monitoring procedures will be developed by site personnel.

Orebody 18

5.1 IMPACT

Development of the pit and overburden storage areas will result in the permanent alteration of approximately 317 ha. Other infrastructure such as roads and rail access corridors, borrow pits, stockpile areas and crushing facilities will occupy approximately 130 ha which will eventually be rehabilitated.

5.2 EMP OBJECTIVE

Control of the impact of mine operations on the surrounding environment (i.e. flora and fauna habitats, landform and drainage systems) by adopting a minimum disturbance policy. Where disturbance is unavoidable, it will be undertaken in a manner which limits the area cleared to the minimum necessary, reduces the potential for erosion and promotes the natural return of vegetation and fauna.

5.3 MANAGEMENT PRACTICES

BHP Iron Ore has a policy of minimum environmental disturbance. This practice will be applied to mining at Orebody 18. The following measures will be undertaken.

- A plan will be produced for all major (greater than one hectare) clearing works and approved by the Site Environmental Officer before clearing occurs.
- No unauthorised clearing is to occur, in accordance with contractual obligations (see Section 18.0). The importance of these obligations shall be communicated to all employees and contractors through the induction process.

The overburden storage areas outside the pit will be constructed to be stable and form shapes consistent with the surrounding landforms:

- vegetation, where present, will be removed and used immediately or stored for later return;
- topsoil will be removed and used immediately or stored for later use in rehabilitation;
- final surfaces will be formed and battered to slopes of 20° or less where and as soon as it is safe and practical to do so;
- reserved topsoil will be respread; and
- native species will be seeded where required.
- Areas of disturbance will be progressively rehabilitated and demarcated. Further disturbance to these areas will not be permitted without approval of the Site Environmental Officer.
- A plan will be kept indicating areas of disturbance and type of disturbance. This plan will also indicate rehabilitated areas and will be updated periodically.

Infrastructure locations will have vegetation and topsoil stripped and retained for later use in rehabilitation. At the end of construction, all areas no longer required, such as borrow pits, temporary access roads and hardstand areas, will be contoured as necessary, topsoiled (where soil is available), spread with cleared vegetation (where available) and then ripped. If required, areas will then be seeded with a mixture of local species.

Mining contractors will be closely supervised by BHP Iron Ore to ensure conformity with these procedures. A condition which prohibits unauthorised clearing will be included in all contracts.

5.4 PERFORMANCE INDICATORS

- BHP Iron Ore will comply with the requirements of the DEP, CALM, Department of Minerals and Energy (DME) and other relevant decision making authorities as contained in the appropriate regulations, codes of practice and legislation.
- Clearing will comply with site approved plans.

5.5 **RESPONSIBILITY**

The Mine Production Manager and Contractor Manager are responsible for activities required to fulfil the EMP. These activities will be regularly reviewed by the BHP Iron Ore Environmental Manager and the Mine Manager.

5.6 CRITICAL DATES

A clearing plan to be developed prior to the commencement of construction. As construction occurs, a plan will be developed indicating the areas disturbed by construction and the types of disturbance. This plan will be updated on the commencement of rehabilitation to show areas being rehabilitated.

Annual self-audit by site management will be undertaken together with triennial environmental performance improvement audits conducted by BHP Minerals Group and Divisional personnel.

5.7 MONITORING

The Site Environmental Officer will be responsible for monitoring of rehabilitated areas to assess the success of the rehabilitation programme.

6.0

6.1 IMPACT

Vegetation and topsoil will be removed from all areas associated with the Orebody 18 pit, overburden and stockpile areas and all other areas of infrastructure.

(Note: Topsoil is the general term applied to the surface portion of the soil including the average plough depth or the A horizon, where it is deeper.)

6.2 EMP OBJECTIVE

To conserve and reuse the vegetation and topsoil which contains seeds, nutrients, organic matter and micro-organisms required for establishing vegetation on rehabilitated areas.

6.3 MANAGEMENT PRACTICES

The following management practices will be implemented.

- A plan will be prepared showing all major (greater than one hectare) areas requiring topsoil removal before stripping occurs.
- Vegetation will be removed and stored for later reuse.
- Topsoil will be stripped prior to land disturbance, wherever it is present and safety accessible.
- Wherever possible, topsoil will be applied immediately to areas being rehabilitated. However, if stripped topsoil exceeds rehabilitation requirements at that time, the excess topsoil will be stored in stockpiles for later use.
- Topsoil and vegetation stockpiles will be linear and will not exceed 1.8 m in height.
- Stockpiles shall be clearly marked in the field and identified on a site plan. Plans indicating the location and volume of topsoil stockpiles will be updated periodically.

6.4 PERFORMANCE INDICATORS

- BHP Iron Ore will comply with the requirements from the DEP, DME and other relevant decision making authorities contained in the appropriate regulations, codes of practices and legislation.
- Topsoil movement will comply with site-approved plans.

6.5 **RESPONSIBILITY**

The Mine Production Manager and Contractor Manager are responsible for activities required to fulfil the EMP. These activities will be regularly reviewed by the BHP Iron Ore Environmental Manager and the Mine Manager.

6.6 CRITICAL DATES

Prior to the commencement of construction, a plan will be prepared indicating major areas requiring topsoil movement. This plan will be periodically updated during the life of the mine to include the location and volume of topsoil stockpiles.

Annual self-audit by site management will be undertaken together with triennial environmental performance improvement audits conducted by BHP Minerals Group and Divisional personnel.

6.7 MONITORING

Regular inspections will be undertaken to ensure that vegetation and topsoil is being conserved.

7.1 IMPACT

The storage of approximately 116 Mt of overburden outside the Orebody 18 pit area will result in the permanent alteration of approximately 154 ha in the immediate mine area.

7.2 EMP OBJECTIVES

To ensure the area of overburden storage is minimised.

To ensure overburden storage areas are stable.

To ensure overburden storage areas are consistent with the surrounding landforms.

7.3 MANAGEMENT PRACTICES

BHP Iron Ore has a policy of minimum environmental disturbance. This will apply to overburden storage at Orebody 18.

To reduce the environmental impact of the storage of overburden material, the following measures will be undertaken.

- An overburden storage plan will be produced before mining commences and approved by the Site Environmental Officer and the Mine Manger. All overburden placement will be in accordance with this plan.
- The overburden storage plan will be reviewed periodically and alternative placement options considered. Where modifications are required, the DEP will be advised via the annual reporting process.
- Overburden storage areas will be constructed to be consistent with the surrounding landforms.

Procedures developed by BHP Iron Ore over many years and used successfully at Newman and on a large scale at the decommissioned operations at Mount Goldsworthy and Shay Gap-Nimingarra will be employed in the rehabilitation of the overburden storage areas.

- Wherever possible vegetation and topsoil will be removed prior to overburden placement and stored for later use in rehabilitation.
- Slopes will be progressively battered to an overall angle of 20° or less, spread with stored topsoil and vegetation (where available) and stabilised to prevent erosion and encourage vegetation establishment and fauna recolonisation.
- Topsoil will be returned wherever available.
- Water harvesting techniques will be applied to the slopes which will promote water collection and aid in the harvesting of airborne seed.
- The slopes will be seeded, where required, using a mixture of local species.
- Wherever practical, overburden will be placed inside the mined out pit perimeter. The opportunities for in-pit placement will depend on mined out locations becoming available. These locations cannot be predetermined as the mining sequence depends on the actual ore grades encountered, their location and the changing specifications required to achieve a consistently blended product. The order and rate of mining in sections of the pit will vary through the life of the mine. Overburden return is only feasible once the final level in part of the pit is reached. As this usually occurs near the end of operations, the opportunities to return overburden are limited. Options for in-pit overburden return will, however, be periodically reviewed.

These works will be carried out in accordance with the rehabilitation programme developed in consultation with the DEP, the DME and any other relevant authorities.

7.4 PERFORMANCE INDICATORS

- BHP Iron Ore will comply with the requirements of the DEP, DME and other relevant decision making authorities as contained in the appropriate regulations, codes of practices and legislation.
- Overburden storage will conform with a site-approved plan.

7.5 **RESPONSIBILITIES**

The Mine Production Manager and Contractor Manager are responsible for activities required to fulfil the EMP. These activities will be regularly reviewed by the BHP Iron Ore Environmental Manager and the Mine Manager.

7.6 CRITICAL DATES

Prior to the commencement of mining, an overburden storage plan will be developed.

Annual reporting by site management.

Annual self-audit by site management will be undertaken together with triennial environmental performance improvement audits conducted by BHP Minerals Group and Divisional personnel.

7.7 MONITORING

Regular monthly inspection will be undertaken of overburden storage areas to assess conformity with the approved placement plan.

Monitoring of the rehabilitated storage areas will continue until the vegetation is seen to be progressing towards a stable condition.

8.1 IMPACT

The Orebody 18 mine development will have a limited impact on the surface water resources in the area. However, the pit and overburden storage areas will intercept surface flows in the immediate mine area.

8.2 EMP OBJECTIVES

To minimise impacts on the quality of surface water and contain any contaminated water on site.

To ensure that the quality of water returned to local and regional surface water resources will not result in significant deterioration of those resources.

8.3 MANAGEMENT PRACTICES

BHP Iron Ore will design, install and maintain silt traps, as required, on drainage paths downstream of disturbed areas and stockpiles.

Water released to the environment will, as necessary, be discharged via settling ponds to ensure that the water finally released meets the criteria specified in licence conditions.

Licences will be applied for under Part V of the *Environmental Protection Act 1986* for all water discharges.

8.4 PERFORMANCE INDICATORS

BHP Iron Ore will comply with the conditions of the operating licence issued under the *Environmental Protection Act 1986* in relation to the quality of discharge water. It is expected that the conditions applying to licenced discharge points will be as follows:

"The nature and composition of any waste water discharged to the environment shall at all times conform to the following schedule:

- pH in the range 6.0 to 8.5;
- total dissolved solids less than 1500 mg/L;
- suspended solids less than 80 mg/L*;
- oil and grease less than 5 mg/L; and
- other substances less than the scheduled values in "Guidelines for Drinking Water Quality in Australia" (National Health and Medical Research Council and Australian Water Resources Council, 1987).
- *Note: Consideration will be given to the impact of extreme rainfall events when appraising the operations performance in relation to these conditions."
- Note: The performance indicators will be updated with the requirements from the DEP operating licence issued to BHP following the assessment of the Project.

8.5 **RESPONSIBILITY**

The Mine Production Manager and Contractor Manager are responsible for activities required to fulfil the EMP. These activities will be regularly reviewed by the BHP Iron Ore Environmental Manager and the Mine Manager.

8.6 CRITICAL DATES

Prior to the commencement of operations, an application will be made for a licence under Part V of the *Environmental Protection Act 1986* for all water discharges.

Prior to the commencement of mining, a drainage management plan will be prepared, showing the inputs, outputs and control structures needed for surface water flow. Following the commencement of mining, the monitoring programme for surface water will be reviewed.

Annual reporting.

Annual self-audit will be conducted by site management.

triennial environmental performance improvement audits conducted by BHP Minerals Group and Divisional personnel.

8.7 MONITORING

Water samples will be collected from permanent discharge points to ensure compliance with licence requirements. The location and frequency of this programme will be consistent with the drainage management plan. It will be reviewed routinely following commencement of mining operations.

Data required by the DEP/EPA will be submitted regularly and will be made available for public review.

9.1 IMPACT

Some potential exists for drawdown in groundwater levels near the water supply borefield. Groundwater levels at both the mine site and water supply borefield are deep (36 m - 50 m below surface) and do not support any phreatophytic vegetation. Therefore, the impacts of any drawdown are likely to be negligible.

About 8 ha of the 163 ha pit will be mined below the watertable. A waterbody 43 m deep and with an approximate surface area of 8 ha will form in this part of the pit. The waterbody will become saline in time. However, due to the low permeability of the underlying shales there is not likely to be any movement of water from the pit to the adjacent aquifer systems.

9.2 EMP OBJECTIVES

To minimise the short and long-term effects caused by groundwater use.

To ensure the maximum volume of water abstracted for mining operations is as stipulated in the Water Corporation licences.

To monitor for changes in groundwater level and quality during mining to ensure that changes in groundwater quality, if detected, do not cause significant degradation of surrounding resources.

9.3 MANAGEMENT PRACTICES

Licences will be applied for under the *Water Authority Act 1984* and Part V of the *Environmental Protection Act 1986* for water extraction and all water discharges.

The dewatering of the small portion of ore below the water table will be by use of in-pit sumps and dewatering bores when the pit base reaches the water table. A pipeline from the borefield to the site will be constructed along the shortest route possible to minimise the area disturbed. The pipeline will be located to avoid large trees and shrubs along the route.

During dewatering, all efforts will be made to use this water for process requirements. However, excess water will be discharged to the environment via properly designed settling ponds to ensure that any water released meets the conditions specified in the licence conditions. Discharge waters will comply with the licence conditions which are likely to be similar to the schedule presented in Section 8.3 of this EMP.

BHP Iron Ore will install and maintain monitoring facilities, as required by the Water Corporation, to sample water resources adjacent to the mine site, ore processing area and associated facilities. Representative water samples will be taken at the sites specified in the conditions of the operating licence.

To maintain the quality of the groundwater resource:

- potentially hazardous wastes will be removed from the site;
- on-site solid waste disposal will be minimised and properly managed;
- process and washdown water will be collected and treated in accordance with DEP licence conditions; and
- emergency procedures will be established for handling accidents involving toxic substances.

9.4 PERFORMANCE INDICATORS

(This Section to be updated pending confirmation of expected licence conditions from DEP Pollution Prevention Division).

Note: The performance indicators will be updated with the requirements from the DEP operating licence issued to BHP following the assessment of the Project.

9.5 RESPONSIBILITY

The Mine Production Manager and Contractor Manager are responsible for activities required to fulfil the EMP. These activities will be regularly reviewed by the BHP Iron Ore Environmental Manager and the Mine Manager.

9.6 CRITICAL DATES

Prior to the commencement of operations:

- an application will be made for a licence to abstract water under the *Water Authority Act 1984*; and
- a monitoring programme will be developed for water resources adjacent to the site.

Prior to the commencement of dewatering, a monitoring programme will be developed to assess possible watertable drawdown outside the pit area.

Annual self-audit by site management will be undertaken together with triennial environmental performance improvement audits conducted by BHP Minerals Group and Divisional personnel.

9.7 MONITORING

In compliance with the conditions of EPA licences, pumping rates and groundwater levels will be regularly monitored. Monitoring will include:

- the sampling of monitoring bores at a frequency determined by the EPA licence conditions;
- water samples will be analysed for the specific analytes specified in the EPA licence conditions; and
- monthly recording of output volumes of production bores.

Samples of discharged bore waters will be routinely submitted to NATA-registered laboratories for analyses detailed in the relevant licences.

Data required by the DEP/EPA will be regularly submitted and will be made available for public review.

On the commencement of dewatering, monitoring will be carried out to assess any drawdown of the watertable outside the pit area. Three monitoring bores are already in place to the south of the proposed pit and baseline groundwater level and quality data has been collected by consultants.

10.1 IMPACT

The construction of the Orebody 18 iron ore mine will result in the loss of vegetation through clearing activities. In a regional context, the area lost due to the operation is not considered likely to have a significant impact.

The development of the mine will lead to the removal of three of the twelve populations of the Priority 2 flora species *Triumfetta maconochieana* ms. identified in the area. This impact is considered to be moderate locally but not significant regionally as this species is distributed over a wide range.

10.2 EMP OBJECTIVE

To ensure the conservation status of all flora species is not threatened.

10.3 MANAGEMENT PROCEDURES

All clearing operations will be kept to a minimum to reduce the impact on surrounding ecosystems. Clearing Plans will be prepared prior to clearing and monitored regularly to ensure adherence to the plan. A condition prohibiting unauthorised clearing will be included in all contracts.

10.4 PERFORMANCE INDICATORS

BHP Iron Ore will comply with the provisions of the Wildlife Conservation Act 1950.

The location of *Triumfetta maconochieana* ms. populations in the mine area has been mapped. Removal of populations other than those noted in the CER as requiring removal for mine development purposes will not be permitted and will be stipulated in all mining contracts.

10.5 RESPONSIBILITIES

The Mine Production Manager and Contractor Manager are responsible for activities required to fulfil the EMP. These activities will be regularly reviewed by the BHP Iron Ore Environmental Manager and the Mine Manager.

10.6 CRITICAL DATES

Annual self-audit by site management will be undertaken together with triennial environmental performance improvement audits conducted by BHP Minerals Group and Divisional personnel.

11.1 IMPACT

The Orebody 18 mining operation will result in the loss of some fauna habitat. This will result in a moderate local and minor regional impact on the fauna of the area. Eleven active Western Pebble-mound Mouse (*Pseudomys chapmani*) mounds will be removed.

11.2 EMP OBJECTIVE

To ensure the conservation status of Rare and Endangered fauna species is not threatened.

11.3 MANAGEMENT PRACTICES

The impacts of the mine operation on fauna will be minimised by staging clearing, limiting clearing to that which is absolutely essential and limiting road and track development.

To limit habitat disturbance, the construction contractor will be closely supervised to ensure that the minimum area required for the construction of mine infrastructure is disturbed. A condition will be included in contracts which prohibits unauthorised clearing. The contractor will not be permitted to leave the site until any such disturbance is rehabilitated.

Return of cleared vegetation (eg. spinifex clumps, tree limbs etc) on rehabilitated areas will promote return of fauna species by providing habitat, shelter and food sources.

Where active Western Pebble-mound Mouse mounds will be disturbed, a management plan will be developed in consultation with CALM where mice must be removed. A licence to collect mice for research will be sought from CALM. Management of the Western Pebble-mound Mouse will include the following:

- a workforce induction programme to raise the awareness of BHP Iron Ore employees and contractors in regard to the conservation value of the Western Pebble-mound Mouse, relevant legislation and the company's and employee's responsibilities;
- a clearing plan to ensure the minimum area of mouse habitat is disturbed.

General workforce training will be undertaken to ensure that the workforce causes minimal accidental or intentional impacts on fauna. This will include the prohibition of:

- firearms on site;
- off-road use of recreational vehicles;
- pets on-site;
- the unnecessary removal of habitat; and
- capture of fauna.

11.4 PERFORMANCE INDICATORS

BHP Iron Ore will comply with the provisions of the Wildlife Conservation Act 1950.

The location of the Western Pebble-mound Mouse mounds have been mapped. Removal of the mounds will not occur without the approval of the Minister for the Environment.

Clearing will be minimised and consistent with approved clearing plans.

11.5 RESPONSIBILITY

The Mine Production Manager and Contractor Manager are responsible for activities required to fulfil the EMP. These activities will be regularly reviewed by the BHP Iron Ore Environmental Manager and the Mine Manager.

11.6 CRITICAL DATES

Prior to the commencement of construction:

- active Western Pebble-mound Mouse mounds in the mining area will be mapped;
- a licence will be sought from CALM for the collection of Western Pebble-mound Mice;
- a programme will be developed, in consultation with CALM, for the collection of Western Pebble-mound Mice;
- a clearing plan will be developed to minimise the disturbance of active mounds in the mining area; and
- approval will be sought from the Minister for the Environment to remove active mounds.

Annual reports as required under licence conditions.

Annual self-audit by site management will be undertaken together with triennial environmental performance improvement audits conducted by BHP Minerals Group and Divisional personnel.

11.7 MONITORING

Periodic monitoring of rehabilitated areas will be undertaken. Parameters to be monitored will include the establishment and development of fauna habitats and evidence of the return of fauna species.

12.1 IMPACT

A number of Aboriginal archaeological sites have been identified in the vicinity of the Orebody 18 mine site. Nine of these sites, which are considered to have low significance, are likely to be disturbed by the mine development.

12.2 EMP OBJECTIVES

To limit disturbance to Aboriginal sites.

To ensure that the disturbance of any site is properly approved consistent with the *Aboriginal Heritage Act 1972-1980*.

12.3 MANAGEMENT PRACTICES

Wherever possible, disturbance to Aboriginal sites will be avoided. Approval has already been granted to disturb seven sites of low significance. Two newly recorded sites (an artefact scatter and two trees) are in the vicinity of the proposed railway loop alignment. Detailed design of the loop has avoided these sites. All identified Aboriginal sites have been documented, indicated on appropriate plans and will be marked in the field as required to avoid unauthorised disturbance.

Ministerial approvals to disturb sites will be sought, in accordance with the Act, if any further sites are identified which cannot be avoided.

To minimise damage to Aboriginal sites, all employees and contractors will undergo a compulsory induction into their responsibilities under the *Aboriginal Heritage Act 1972-1980*. There is also a standing BHP Iron Ore requirement that all employees and contractors promptly report any potential sites discovered in the vicinity of operations to the Company.

12.4 PERFORMANCE INDICATORS

BHP Iron Ore will comply with the provisions of the Aboriginal Heritage Act 1972-1980.

12.5 RESPONSIBILITY

The Mine Production Manager and Contractor Manager are responsible for activities required to fulfil the EMP. These activities will be regularly reviewed by the BHP Iron Ore Environmental Manager and the Mine Manager.

12.6 CRITICAL DATES

Permission has been sought and approval received under the *Aboriginal Heritage Act* 1972-1980 to disturb Aboriginal sites.

12.7 MONITORING

No routine monitoring is required.

13.1 IMPACT

The development of the mine at Orebody 18 will increase noise levels in the immediate vicinity of the site. Noise will be generated by mining plant and equipment, the ore processing plant and the movement of ore trains. The mine site is isolated, with the nearest homestead 30 km away. Therefore, noise generated by the mine operation will not result in neighbourhood annoyance and will cause little impact beyond the mine boundary.

13.2 EMP OBJECTIVES

To take all reasonable and practicable measures to prevent or minimise the generation of noise from the mining, processing and rail operations.

To comply with DEP licence conditions.

To ensure that noise generated does not result in neighbourhood annoyance, consistent with noise regulations.

13.3 MANAGEMENT PRACTICES

The *Mine Safety and Inspection Regulations 1995* set an action level for noise exposure of 85 dB(A) over an eight hour period in relation to occupational health and safety. The regulations require that noise levels above the action level associated with the construction and operation of the mine must be reduced as much as practicable by engineering noise controls.

Based on the requirements of these regulations, the following measures will be implemented to reduce noise levels:

- the use of low-noise equipment;
- the use of silencers, where necessary; and
- the use of exhaust mufflers.

To minimise the noise impact caused by blasting activities, blasting will only be undertaken during daylight hours.

The Orebody 18 mine will be located 30 km from the nearest settlement, therefore, it will readily comply with the *Noise Abatement (Neighbourhood Annoyance) Regulations 1979*.

13.4 PERFORMANCE INDICATORS

BHP Iron Ore will comply with the provisions of the *Noise Abatement (Neighbourhood Annoyance) Regulations 1979.* Note that these regulations are expected to change in the future. The appropriate regulations will be kept under review and complied with.

For the protection of workers, the operation will comply with the requirements of the *Mine Safety and Inspection Regulations 1995.*

Note: The performance indicators will be updated with the requirements from the DEP operating licence issued to BHP following the assessment of the Project.

13.5 **RESPONSIBILITIES**

The Mine Production Manager and Contractor Manager are responsible for activities required to fulfil the EMP. These activities will be regularly reviewed by the BHP Iron Ore Environmental Manager and the Mine Manager.

13.6 CRITICAL DATES

Annual self-audit by site management will be undertaken together with triennial environmental performance improvement audits conducted by BHP Minerals Group and Divisional personnel.

13.7 MONITORING

Noise monitoring for employee protection will be undertaken as required by the relevant legislation. Periodic monitoring will be undertaken at the site boundary to verify that neighbourhood annoyance is not occurring.

14.1 IMPACT

Mining at Orebody 18 will involve the movement of large volumes of dry material which can generate dust. There is, however, limited vegetation cover in the region generally resulting in the natural generation of dust in high wind conditions. The production of dust from the proposed mine is not expected to have significant additional environmental impact.

14.2 EMP OBJECTIVES

To take all reasonable and practicable measures to prevent or minimise the generation of dust from all handling operations, stockpiles, open areas and transport

To comply with DEP licence conditions.

To ensure that nuisance dust levels are not experienced by other land users.

14.3 MANAGEMENT PRACTICES

Occupational and ambient dust levels will be controlled, at source, by fitting suppression systems throughout the processing plant. The following measures will be implemented to reduce dust generation:

- water tankers will be used to apply water to sites within the operations area which have the potential to generate dust, including unsealed roads, haul roads and construction areas;
- transfer points will be enclosed and fitted with water sprays;
- · spray systems will be fitted to the crusher and ore stockpiles; and
- a dust collection and extraction system will be installed in the train loadout facility.

Dust suppression equipment used at the mine will be maintained in efficient operating conditions in accordance with the relevant regulations.

Mine regulations require that the area be cleared of all personnel during blasting operations and that re-entry is not permitted until safe work conditions (which includes a safe breathing atmosphere) exist.

Routine maintenance and housekeeping practices shall be employed to ensure that waste materials in or around the premises do not accumulate and lead to the generation of unacceptable airborne dust.

Where occurrences of visible dust (>250 μ g/m³) are observed, further dust suppression controls may need to be implemented. This is dependent upon site factors such as soil moisture and wind speeds which have caused dust generation.

All employees and contractors will be informed of the importance of minimising ambient dust levels.

14.4 PERFORMANCE INDICATORS

BHP Iron Ore will take all reasonable and practicable measures to prevent or minimise the generation of dust from all materials handling operations, stockpiles, open areas and transport activities in accordance with the conditions of its operating licence.

BHP Iron Ore will comply with the guidelines for nuisance dust levels, that is to maintain dust levels below 1,000 μ g/m³ (15 minute sample) at neighbouring residential properties. Periodic monitoring will be undertaken at the site boundary to verify that nuisance dust levels are not being generated.

Note: The performance indicators will be updated with the requirements from the DEP operating licence issued to BHP following the assessment of the Project.

14.5 **RESPONSIBILITIES**

The Mine Production Manager and Contractor Manager are responsible for activities required to fulfil the EMP. These activities will be regularly reviewed by the BHP Iron Ore Environmental Manager and the Mine Manager.

14.6 CRITICAL DATES

Prior to the commencement of construction, the need for a dust monitoring programme will be developed which will quantify the significance of dust emissions, determine the ambient dust conditions and initiate appropriate control practices.

Annual self-audit by site management will be undertaken together with triennial environmental performance improvement audits conducted by BHP Minerals Group and Divisional personnel.

14.7 MONITORING

A dust monitoring programme will be implemented to quantify the significance of dust emissions and to determine the ambient dust conditions.

Dust control equipment will be checked regularly to ensure effective operation.

15.1 IMPACT

The mining operation at Orebody 18 will generate waste materials which, while not hazardous, require disposal.

15.2 EMP OBJECTIVES

To minimise the generation of waste from the site by reducing waste streams and recycling material wherever practicable.

To dispose of waste in an environmentally acceptable manner and in compliance with all regulatory and BHP Iron Ore requirements.

To dispose of non-recyclable solid waste in accordance with the DEP Code of Practice for Country Landfill Management.

15.3 MANAGEMENT PRACTICES

The management of stormwater and dust suppression water on-site will involve an 'open' water system directing runoff water from rainfall events and dust suppression around areas where hazardous materials are stored or used. Runoff from the overburden storage areas will be included in this system.

To prevent potentially contaminated waste water from affecting surface or groundwater, all water from potentially contaminated areas (e.g. workshops) will be collected via a closed system. This water will pass through an oil separator before being discharged to an impermeable, properly sized evaporation pond.

Potential spillage will be contained and appropriately managed by techniques including the placement of absorbent material and the excavation and removal of contaminated soil to a remediation site. Washdown from hardstand areas (e.g. workshop floors and washdown pads) will be directed to drains and passed through an oil separator.

Water samples will be collected from major discharge points of the open water system after significant rainfall events and analysed for sediment load, salinity, pH and selected elements.

Oily wastes generated at site will be collected and disposed of in accordance with conditions specified by the DEP Division of Waste Management. Waste oil will be recycled by a contractor, wherever possible.

Domestic sewage will be collected in underground septic tanks. If these require cleaning this will be done by an approved contractor.

Waste material will be disposed of in a sanitary landfill operated in accordance with the DEP *Code of Practice for Country Landfill Management*. The design and operation of the landfill will ensure that:

- surface water is diverted from the landfill site;
- the putrescible face is regularly (weekly) covered to a depth of 230 mm; and
- a litter fence is constructed around the landfill perimeter.

Wherever practicable, materials (e.g. batteries, 205 L drums, scrap metal) will be recycled.

Materials to be recycled will be neatly stored in a designated area until their removal.

15.4 PERFORMANCE INDICATORS

BHP Iron Ore will ensure that all matter containing potentially polluting substances (e.g. metals, hydrocarbons) will be retained within impervious holding facilities such that there is no significant impairment of surface water or groundwater quality. Sewerage disposal facilities servicing the mine offices and amenities shall treat and dispose of wastes in accordance with the *Health Act 1911 - 1979* and to the satisfaction of the local authority.

All solid wastes, excluding toxic and hazardous substances, will be disposed of by landfill to the satisfaction of the local authority. Such landfills shall be located away from areas subject to flooding or erosion. Toxic and hazardous solids will be exported offsite for disposal as advised by the Health Department of WA.

15.5 RESPONSIBILITY

The Mine Production Manager and Contractor Manager are responsible for activities required to fulfil the EMP. These activities will be regularly reviewed by the BHP Iron Ore Environmental Manager and the Mine Manager.

15.6 CRITICAL DATES

Prior to the commencement of construction a closed water management system will be designed to control potentially contaminated wastes.

Prior to the commencement of production

- a monitoring plan will be developed for the landfill site to ensure guidelines are being met; and
- procedures will be developed for the recycling of hydrocarbons and appropriate materials and to record the quantities of waste material recycled.

Annual self-audit by site management will be undertaken together with triennial environmental performance improvement audits conducted by BHP Minerals Group and Divisional personnel.

15.7 MONITORING

Water samples will be collected from all permanent discharge points and other source flows that discharge into surface water courses.

Regular inspections of the landfill site will be undertaken to ensure the guidelines are being met and that recyclable materials are not entering the waste stream.

Details of quantities of waste material recycled (e.g. hydrocarbons) will be kept for reporting purposes.

16.1 IMPACT

The development and operation of the Orebody 18 mine will require the use of a range of products termed 'hazardous'. These materials have the potential to cause atmospheric, soil or water contamination and could potentially pose risks to human health and the environment.

16.2 EMP OBJECTIVE

To ensure that the transport, handling and storage of hazardous materials is in accordance with the *Explosives and Dangerous Goods Act 1961*, the *Dangerous Goods Regulations* 1992 and the associated applicable codes, guidelines and Australian Standards.

16.3 MANAGEMENT PRACTICES

To ensure the safe handling of all hazardous materials used on site, BHP Iron Ore will adopt a formal Hazardous Materials Management Programme (HMMP) which will incorporate the following elements:

- adoption of a formal policy statement;
- · designation of responsibility for all elements of the programme;
- employee participation;
- training of personnel;
- dissemination of information;
- establishment of purchasing and inventory controls; and
- environmental monitoring.

The storage, handling and disposal of these materials will comply with all local and State regulations.

- Bulk fuel will be stored in above-ground tanks located in impermeable, bunded enclosures in accordance with DME requirements and the Australian Standard for *The Storage and Handling of Flammable and Combustible Liquids (AS 1940-1993)*.
- Explosives will be stored in a magazine remote from workshops and the mine site. Care will be taken to ensure that nitrate-based explosives cannot escape into the environment.
- All waste collecting systems will be designed for ease of use and prevention or capture of spillage.

Potential spillage will be contained and appropriately managed by techniques including the placement of absorbent material and the excavation and removal of contaminated soil to a remediation site.

Hydrocarbons and oily wastes (e.g. fuels, greases, de-greaser, emulsified oils and oily waste water) will be managed using the following practices:

- appropriate storage and handling procedures;
- minimal generation of waste and associated contaminants;
- segregation of hydrocarbon waste from stormwater and other water;
- clean-up procedures for spills; and
- environmentally acceptable recycling or disposal of captured waste.

All soil contaminated by hydrocarbons will be disposed of in a designated site for bioremediation in accordance with the EPA *Guidelines for Oil Farming of Oily Wastes*. Oily wastes generated at the site will be collected and disposed of in accordance with the conditions specified by the DEP Division of Waste Management.

16.4 PERFORMANCE INDICATORS

All toxic or hazardous mining or process materials shall be stored within weatherproof enclosures, with impervious flooring and perimeter bunding designed to minimise the threat to the environment resulting from spillage, fire or extreme weather conditions.

All fuel storage tanks (exceeding 200 L capacity) including associated pipework, valving and fuelling installations shall be aboveground and contained within impervious bunding designed to fully contain the contents of the largest tank in the event of equipment failure or accidental spillage.

16.5 **RESPONSIBILITY**

The Mine Production Manager and Contractor Manager are responsible for activities required to fulfil the EMP. These activities will be regularly reviewed by the BHP Iron Ore Environmental Manager and the Mine Manager.

16.6 CRITICAL DATES

Prior to the commencement of production, a Hazardous Materials Management Programme will be developed.

Prior to the transport of hazardous materials to the mine site:

- procedures will be developed for the handling of the spillage of hazardous materials;
- procedures will be developed for notification of the spillage of hazardous materials; and

Annual self-audit by site management will be undertaken together with triennial environmental performance improvement audits conducted by BHP Minerals Group and Divisional personnel.

16.7 MONITORING

Regular inspections will be carried out to ensure that hazardous waste management systems are effective and in compliance with relevant regulations.

The operations at Orebody 18 are estimated to have a 12 - 15 year life. Residual impacts at the completion of mining will require the stabilisation of post-mining landforms and monitoring of hydrological changes.

17.1 EMP OBJECTIVES

To define an acceptable end land use, rehabilitation criteria and mine closure strategy.

To monitor hydrological changes as a result of mining.

17.2 MANAGEMENT PRACTICES

At the completion of construction activities:

- borrow pits will be rehabilitated in accordance with the guidelines established by BHP Iron Ore (Walker, undated);
- all compacted surfaces, temporary access roads and hardstand areas resulting from construction activities, which are not required for mining, will be contoured, topsoiled and ripped to promote water penetration and the catchment of seed; and
- any contaminated soils will be removed.

At the completion of mining:

- all infrastructure will be removed and concrete footings excavated and buried;
- remaining surfaces of borrow pits or overburden storage areas will be battered to an angle of 20° or less;
- topsoil which was stripped and stored prior to the commencement of mining will be returned to the areas to be rehabilitated;

- stabilisation techniques will be applied to exposed surfaces and local native seed applied, where necessary;
- safety bund walls will be constructed around the decommissioned pits and their design will comply with guidelines established by the Department of Mines (1991); and
- all compacted surfaces resulting from the operation of the mine will be ripped to promote water penetration and the catchment of wind blown seed.

To minimise erosion in ensuing years, pre-existing drainage networks will be reestablished where appropriate. Revegetation activities will continue beyond the mine closure to enable final overburden storage areas to be contoured and stabilised.

The primary goal of the rehabilitation programme will be the re-establishment of the treesteppes of *Eucalyptus* over *Triodia* to create habitats consistent with the surroundings.

17.3 PERFORMANCE INDICATORS

The following rehabilitation criteria have been developed for the Orebody 18 development.

TABLE 17-1

Site Element	Final Landform	Final Vegetation	Note
Overburden storage areas	Flat topped spurs, 20° scree outslopes, stabilised; rounded forms like existing hills.	Early successional species first, final objective is scattered eucalypts over spinifex.	
Open pit	Open pit to DME safety standards, possibly with occasional open water or partially filled with overburden.	Accessible internal benches and pit floors will be ripped and seeded.	Opportunity for filling with overburden below watertable will be reconsidered when the EMP is reviewed with DEP in future.

REHABILITATION CRITERIA

Site Element	Final Landform	Final Vegetation	Note
Scree mining areas	Shallow areas recontoured to blend with surroundings. Deep areas filled or treated similarly to main pit.	Early successional species first; final objective is scattered eucalypts over spinifex, where appropriate.	
Process plant	Consistent with existing. All infrastructure removed.	Site topsoiled, ripped and seeded with species consistent with the vegetation type on outwash plains.	
Road/rail spurs	Consistent with existing. All infrastructure removed.	Site topsoiled, ripped and seeded with species consistent with the vegetation type on outwash plains.	17
Powerline	Consistent with existing. All infrastructure removed.	Site topsoiled, ripped and seeded with species consistent with the vegetation type on outwash plains.	
Borefield	Consistent with existing. All infrastructure removed.	Site topsoiled, ripped and seeded with species consistent with the vegetation type on outwash plains.	

17.4 RESPONSIBILITY

The Mine Production Manager and Contractor Manager are responsible for activities required to fulfil the EMP. These activities will be regularly reviewed by the BHP Iron Ore Environmental Manager and the Mine Manager.

17.5 CRITICAL DATES

Prior to the commencement of construction, an end land use plan will be agreed with the DEP.

Prior to the commencement of construction, a rehabilitation programme will be developed for temporary disturbances created during construction. Within 12 months of production commencing, a progressive overburden storage rehabilitation plan will be developed and implemented. This programme will be regularly reviewed and modified during the life of the operation.

Following the completion of construction, all areas no longer required for mining will be rehabilitated.

Following the commencement of rehabilitation activities:

- the rehabilitation programme is to be regularly reviewed (the review interval has yet to be decided); and
- any disturbance to rehabilitated land is to be immediately reported to the Site Environmental Officer and rectified.

At least 12 months prior to the cessation of mining, a final closure plan will be developed for review by the DEP and implemented.

Annual self-audit by site management will be undertaken together with triennial environmental performance improvement audits conducted by BHP Minerals Group and Divisional personnel.

17.6 MONITORING

Regular inspections will be carried out during operations and following the completion of mining to access the progress of rehabilitation.

Mining at Orebody 18 will be undertaken by a mining contractor managed by BHP Iron Ore.

18.1 EMP OBJECTIVES

To ensure that the environment is protected by incorporating environmental responsibilities into written contracts which require contractors to comply with this EMP.

To ensure that BHP Iron Ore maintains appropriate information on the activities and environmental performance of contractors.

18.2 MANAGEMENT PRACTICES

Contractors will be employed by BHP Iron Ore to undertake construction and operation activities at Orebody 18. The activities for which contractors will be used will include:

Mining:

- clearing;
- topsoil stockpiling;
- overburden removal;
- ore recovery; and
- rehabilitation.

Infrastructure:

- rail spur;
- crushing facilities;
- other infrastructure;
- power line; and
- load out facilities.

Contractors will also be used for the disposal of domestic and industrial solid waste and the removal of waste oil for recycling.

These contracts will have environmental clauses, to ensure contractors meet environmental standards.

As part of BHP Iron Ore's commitment to ensure products removed from site are disposed of or recycled in an environmentally acceptable manner, all contractors are to provide a copy of their licence which should stipulate their authority to handle the material to be removed from site. This documentation will be kept on a file at the operation.

18.3 **RESPONSIBILITY**

The Mine Production Manager and Contractor Manager are responsible for activities required to fulfil the EMP. These activities will be regularly reviewed by the BHP Iron Ore Environmental Manager and the Mine Manager.

18.4 CRITICAL DATES

Prior to the commencement of construction, a mining service contract:

- environmental clauses will be written into all appropriate contracts;
- contractors must supply BHP Iron Ore with copies of their licences stipulating their authority to handle material to be removed from the site;
- contractors will liaise with site staff to ensure appropriate design of environmental management facilities; and
- procedures will be developed for the monitoring and reporting of contact compliance.

Annual reviews of contractor environmental performance will be undertaken.

18.5 MONITORING

The monitoring of contractors will be carried out to ensure compliance with issues raised during the audit process and conditions specified in contracts.

The BHP Environmental Management System embodies the concept of continuous improvement.

The interim Australian/New Zealand Standard for Environmental Management Systems - AS/NZS ISO 14004 (Int) (Standards Australia/Standards New Zealand, 1995) identifies the continuous improvement process as:

- identifying areas of opportunity for the improvement of the environmental management system which leads to improved environmental performance;
- determining the root cause or causes of nonconformities or deficiencies;
- developing and implementing a plan of corrective and preventative action to address root causes;
- verifying the effectiveness of the corrective and preventative actions;
- · documenting any changes in procedures resulting from process improvement; and
- making comparisons with objectives and targets.

The BHP Iron Ore EMS provides mechanisms to evaluate the practices, procedures and processes by which its various mining activities are managed. This EMP, as one component of the EMS, presents performance indicators against which the Orebody 18 mine environmental performance will be evaluated.

Performance Improvement Plans form the means for continuously improving deficiencies identified periodically.

Through the process of staff training, audits, corrective actions and the inclusion of new initiatives in environmental management the EMP will be continuously reviewed and improved to ensure stated objectives and environmental management plans are achieved.

- National Health and Medical Research Council and Australian Water Resources Council. 1987. Guidelines for Drinking Water Quality in Australia. NHMRC and AWRC, Canberra, Australian Capital Trerritory.
- Standards Australia/Standards New Zealand. 1995. Environmental Management Systems -General Guidelines on principles, systems and supporting techniques. Jointly published by Standards Australia, Homebush, New South Wales and Standards New Zealand, Wellington, New Zealand.
- Walker. Undated. BHP Newman Guidelines for Borrow Pit Development. Unpublished report prepared for BHP pty Ltd, Perth, Western Australia.

21.0 ABBREVIATIONS

AWRC	Australian Water Resources Council
dB(A)	decibels (A-weighting)
BHP Iron Ore	BHP Iron Ore Pty Ltd
CALM	Department of Conservation and Land Management
CER	Consultative Environmental Review
DEP	Department of Environmental Protection
DME	Department of Minerals and Energy
EMP	Environmental Management Plan
EMS	Environmental Management System
EPA	Environmental Protection Authority
ha	hectares
HMMP	Hazardous Materials Management Programme
km	kilometre
mg/L	milligrams per litre
Mt	million tonnes
Mtpa	million tonnes per annum
NATA	National Association of Testing Authorities.
NHMRC	National Health and Medical Research Committee
μg/m ³	micrograms per meter cubed

APPENDIX A

BHP IRON ORE ENVIRONMENTAL POLICY



BHP Iron Ore

ENVIRONMENTAL POLICY

It is BHP's policy to achieve a high standard of environmental care in conducting its business as a resources and industrial company contributing to society's material needs. BHP's approach to environmental management seeks continuous improvement in performance by taking account of evolving scientific knowledge and community expectations.

Specifically, it is BHP's policy to:

- comply with all applicable laws, regulations and standards; uphold the spirit of the law; and where laws do not adequately protect the environment, apply standards that minimise any adverse environmental impacts resulting from its operations, products or services;
- communicate openly with government and the community on environmental issues, and contribute to the development of policies, legislation and regulations that may affect BHP;
- ensure that its employees and suppliers of goods and services are informed about this policy and aware of their environmental responsibilities in relation to BHP business;
- ensure that it has management systems to identify, control and monitor environmental risks arising from its operations;
- conduct research and establish programs to conserve resources, minimize wastes, improve processes and protect the environment.

Maryelloch

G. L. Wedlock Group General Manager BHP Iron Ore 1 March 1996

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