Beenup Titanium Minerals Project (formerly Beenup Mineral Sands) - Change to environmental conditions

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BHP Titanium Minerals Pty Ltd

Report and recommendations
of the Environmental Protection Authority

Environmental Protection Authority
Perth, Western Australia
Bulletin 815
April 1996

THE PURPOSE OF THIS REPORT

This report contains the Environmental Protection Authority's environmental assessment and recommendations to the Minister for the Environment on the environmental acceptability of the proposal.

Immediately following the release of the report there is a 14-day period when anyone may appeal to the Minister against the Environmental Protection Authority's report.

After the appeal period, and determination of any appeals, the Minister consults with the other relevant ministers and agencies and then issues his decision about whether the proposal may or may not proceed. The Minister also announces the legally binding environmental conditions which might apply to any approval.

APPEALS

If you disagree with any of the contents of the assessment report or recommendations you may appeal in writing to the Minister for the Environment outlining the environmental reasons for your concern and enclosing the appeal fee of $10.

It is important that you clearly indicate the part of the report you disagree with and the reasons for your concern so that the grounds of your appeal can be properly considered by the Minister for the Environment.

ADDRESS

Hon Minister for the Environment
12th Floor, Dumas House
2 Havelock Street
WEST PERTH WA 6005

CLOSING DATE

Your appeal (with the $10 fee) must reach the Minister's office no later than 5.00 pm on 10 May 1996.

Environmental Impact Assessment Process Timelines

Date	Timeline commences from receipt of full details of proposal from proponent for public review	Time (weeks)
30/10/95	Proponent Document Released for Public Comment	-
4/12/95	Public Comment Period Closed	5
14/12/95	Issues Raised During Public Comment Period Summarised by EPA and Forwarded to the Proponent	2
20/2/96	Proponent Response to the Issues Raised	9
26/4/96	EPA Reported to the Minister for the Environment	10

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Summary and recommendations

The Environmental Protection Authority (EPA) has received a proposal from BHP Titanium Minerals Pty Ltd to change the existing environmental conditions set on its Beenup Mineral Sands project in the following ways:

- amend the approved mining area boundary to incorporate an additional 1900 ha of mineralisation (see Figure 1);
- remove a commitment which prohibits the discharge of dredge pond water
- modify a commitment relating to the planning of rehabilitation for land not owned by BHP Titanium Minerals Pty Ltd.

The Environmental Protection Authority identified the main environmental topics requiring detailed consideration as:

- effect upon the Scott National Park, Scott River, and Blackwood River;
- fate of significant remnant vegetation;
- need for additional flora/fauna surveys;
- release of dredge pond water;
- impact of dust on nearby residents; and
- noise levels.

The extended mining area is generally closer to a greater portion of the Scott National Park, Scott River, and Blackwood River. The EPA has considered effects upon these areas resulting from: groundwater drawdown, spread of plant disease (in particular dieback), destruction of adjacent wildlife habitat, discharge of dredge pond water, and turbid surface water flow from mining areas into natural areas. Existing management programmes and commitments made by the proponent are designed to prevent detrimental effects upon these areas.

Declared rare and priority flora are known to be present on areas of the proposed extension. BHP Titanium Minerals Pty Ltd has made the necessary commitments to ensure that significant remnant vegetation is identified ahead of mining operations and management agreed with the relevant authorities.

Detailed flora and fauna surveys have not been conducted over the entire proposed mine extension. However, sufficient information on the flora and fauna of the initial mining area is presently available, and BHP Titanium Minerals Pty Ltd has made commitments which ensure detailed surveys of all areas are conducted before mining of each area commences.

Release of dredge pond water into the Scott or Blackwood Rivers could be necessary when mining sections of the proposed extension. The rate of discharge would be small and BHP Titanium Minerals Pty Ltd has made commitments to only discharge water of an equivalent or better standard than the receiving waters. Additionally, the EPA recommends that discharge should only occur following the preparation and acceptance of a dredge pond water discharge plan for each area where discharge may be necessary.

The proposed extension has little potential to increase dust generation. An approved dust management programme will be applied to the extended mining area. BHP Titanium Minerals Pty Ltd has also made commitments which ensure dust is monitored and controlled.

The proposed mine extension brings the mine closer to a larger number of residents, in particular the residents of Molloy Island. Existing noise limits contained in the present statement of approval are inconsistent with existing and proposed noise regulations. The EPA recommends that these limits be removed and that the Noise Abatement (Neighbourhood Annoyance) Regulations be used to determine acceptable noise levels for the project. In addition BHP Titanium Minerals Pty Ltd has made commitments to monitor noise and ensure compliance with acceptable noise levels.

Following the assessment of this proposal, and the modifications and management commitments made by the proponent, the Environmental Protection Authority finds the proposal to extend the approved mining area to be environmentally acceptable.

Recommendation No.	Summary of recommendations
1	The Environmental Protection Authority recommends that the proposal by BHP Titanium Minerals Pty Ltd to extend the approved mining area is environmentally acceptable subject to the Environmental Conditions and Commitments as for the previously approved mining operation and recommendations 2 and 3.
2	The Environmental Protection Authority recommends that the discharge of dredge pond water into the Scott and Blackwood rivers should be avoided where possible, but where discharge may be required, such discharge should only occur following and in accordance with the agreement of the Environmental Protection Authority.
3	The Environmental Protection Authority recommends that Environmental Condition 9 of the previous Statement of Environmental Conditions for the Heavy Mineral Sands Mine - Beenup be deleted.
4	The Environmental Protection Authority recommends that a new Statement of Environmental Conditions for the Heavy Mineral Sands Mine - Beenup be drafted: to incorporate the extended mining area; to address recommendation 2; and to include the consolidated list of environmental management commitments.

1. Introduction and background

1.1 Purpose of this report

The Environmental Protection Authority (EPA) was requested by the Minister for the Environment to report on the proposed changes to the environmental conditions for the Beenup Mineral Sands project under Section 46 of the *Environmental Protection Act 1986*. The changes are required as a result of the BHP Titanium Minerals Pty Ltd proposal to extend the mining area and to alter some commitments given in 1991.

This report and recommendations provides the EPA's advice to the Minister for the Environment on the environmental acceptability of the proposed extension of the mining area and consequent changes to the statement of approval.

1.2 Background

In May 1991 Mineral Deposits Limited received approval from the Minister for the Environment to develop a heavy mineral sands mine at Beenup, located 17 km north-east of Augusta. The Minerals Sands project was assessed by the Environmental Protection Authority at the level of Environmental Review and Management Programme (EPA 1990).

The key environmental issues associated with the Beenup Mineral Sands project were identified by the EPA in 1990 as:

- management of surface water flows;
- management of clay fraction tailings (slimes);
- protection of Scott National Park;
- identification and management of rare flora;
- comprehensive dieback management;
- monitoring of groundwater aquifers;
- development of a suitable package to support local infrastructure;
- management of impacts on nearest neighbours;
- transportation; and
- rehabilitation (EPA 1990).

The Environmental Conditions applied to the original Beenup Mineral Sands project addressed the management of these impacts. A copy of the Minister's Statement of Conditions for the original project is included as Appendix 2.

In 1992 the Main Roads Department accepted responsibility for the Environmental Conditions and Commitments relevant to the haulage route. The Minister for the Environment agreed that the Main Roads Department be proponent for construction and operation of the haulage road from the mine.

In 1994 the Mineral Deposits Pty Ltd changed its name to BHP Titanium Minerals Pty Ltd (BHPTM). This resulted in BHP Titanium Minerals Pty Ltd being formally nominated as the proponent for the project in accordance with the requirements of Condition 13 of the existing statement (Appendix 2).

Due to a recession in titanium mineral markets, work did not commence on the project until January 1995. During this delay mineral exploration was continued which resulted in a major extension of the limits of economic mineralisation beyond the area originally approved.

In order to efficiently extract this ore BHPTM has sought to change the existing environmental conditions and commitments in the following ways:

- Amend the approved mining area boundary to incorporate an additional 1900 ha of mineralisation (see Figure 1).
- Remove a commitment which prohibits the discharge of dredge pond water.
- Modify a commitment relating to the planning of rehabilitation for land not owned by BHP Titanium Minerals Pty Ltd.

BHP Titanium Minerals referred the current proposal to the EPA in September 1995 and the Minister for the Environment requested the Authority to report under Section 46 of the Environmental Protection Act.

1.3 Structure of the report

This document has been divided into eight sections.

Section 1 describes the historical background to the project and its assessment, and describes the structure of this report. Section 2 briefly describes this present proposal (more detail is provided in the proponent's proposal document [BHPTM 1995]) and the approved project. Section 3 provides a review of the environmental topics and an analysis of public submissions in order to determine issues which require further EPA evaluation.

Section 4 sets out the evaluation of key environmental issues associated with the proposal. Each subsection includes, the objectives of the assessment, the likely effect of the proposal, the advice to the EPA from submissions, and the proponent's response to submissions. Then the adequacy of the response by the proponent is considered in terms of project modifications and environmental management commitments in achieving an acceptable outcome. The EPA's analysis and recommendations with respect to the identified issues are contained in this section. Where inadequacies are identified, recommendations are made to achieve the environmental assessment objective.

Section 5 examines changes made to the list of consolidated environmental management commitments.

Section 6 summarises the conclusions and recommendations. Section 7 describes the recommended environmental conditions. References cited in this report are provided in Section 8.

2. Summary description of proposal

2.1 Approved project

The approved project is to mine heavy mineral sands from the Beenup region which is located NE of Augusta. The mining will be carried out from a dredge pond with the ore being extracted by an electrically powered dredge. As the ore is dredged it is fed into a concentrator plant which floats behind the dredge. Tailings from the concentrator plant will be disposed of by one of two alternative methods depending upon the phase of the mining operation. During the development phase of the mine, which will continue until the dredge pond is large enough to accommodate the sublay process, tailings will be disposed of into a tailings dam. In the operational phase, tailings will be disposed of immediately into the dredge pond behind the dredge and concentrator plant via a sublay process designed to quickly stabilise the tailings.

Briefly, the sublay process involves transporting the dilute fines suspension to the bottom of the pond in a vertical pipe in order to prevent fines dispersing throughout the pond, then covering with a thin layer of sand tailings. This process increases the rate of dewatering the tailings and removes the need for tailings dams.

Concentrated ore is then transported to a processing plant located near the mine site where the ore is separated into ilmenite product, rutile product, and tailings. The products are then taken to the port of Bunbury via road and the tailings from this stage returned to the mining area.

Rehabilitation of the mined area will occur progressively behind the dredge pond as the dredge advances through the mining area. Topsoil will be stripped in advance of the dredge pond and will be either respread on areas behind the pond, or stored in dry conditions until required.

2.2 Proposed changes

The proposed changes to the project are to expand the area that is to be mined and to change environmental conditions and commitments which are affected by this expansion. The approved mining area and the proposed expansion are shown in Figure 1. This proposal seeks

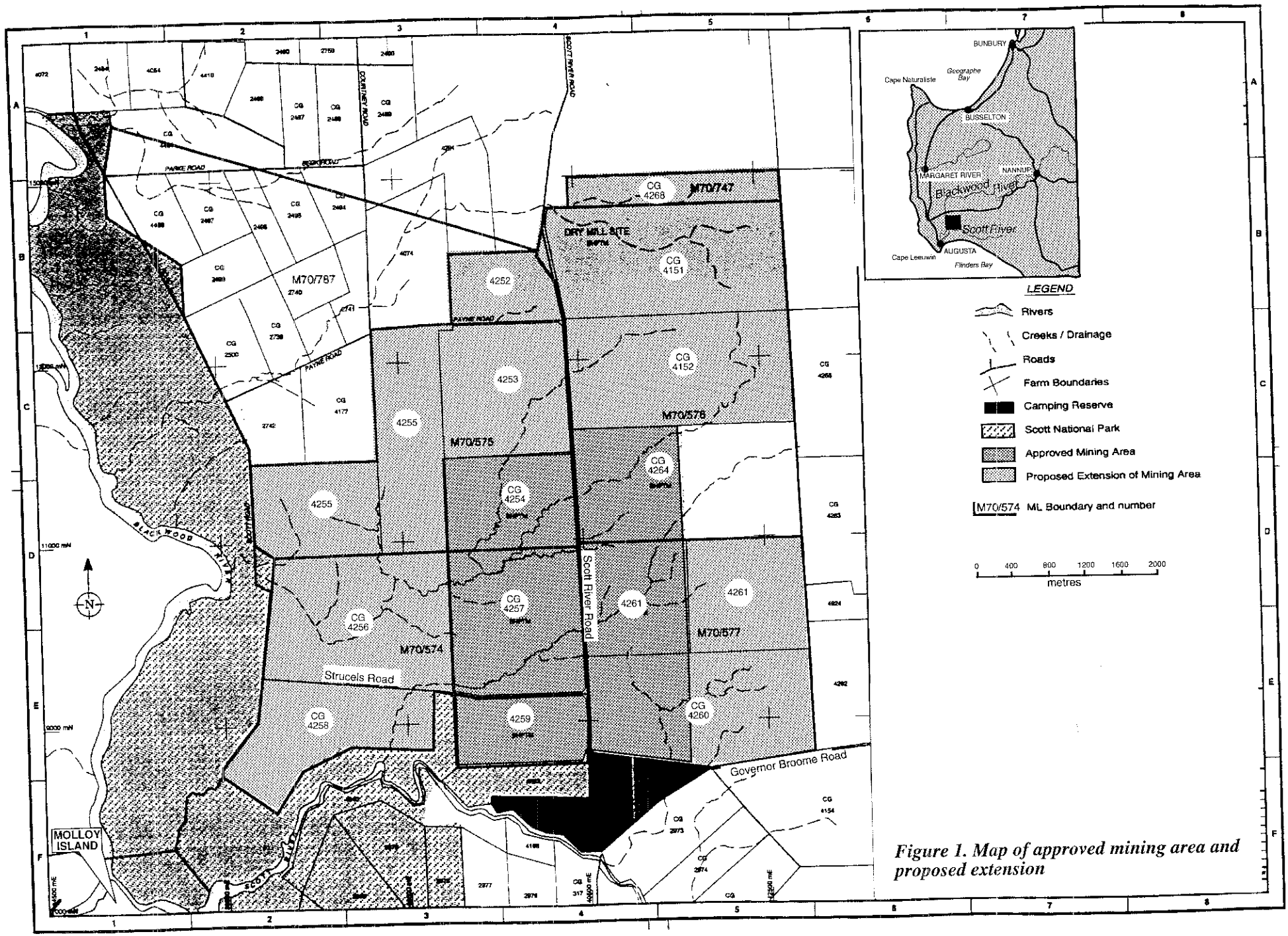


Figure 1. Map of approved mining area and proposed extension

to increase the mining area from 1000 ha to 2900 ha, with the extended area being private farmland presently used for grazing cattle and sheep, and for hay production. Approximately 70% of this land has been cleared. The extension has a longer common boundary with the Scott National park and is closer in some sections to the Blackwood River, than the approved area. The distance of the mining area from the nearest residence is decreased from 800m to 600m. BHPTM does not propose to change the rate of mining or the area cleared for mining at any given time.

There are two specific commitments which require change due to the extension of the mining area. The first relates to the discharge of dredge pond water into the Scott or Blackwood rivers. It may be necessary to discharge dredge pond water in those sections of the proposed expansion which slope steeply towards the Scott and Blackwood Rivers. The need for discharge would depend upon the seasonal pond water level when mining these areas. Estimates of the rate of discharge necessary give values less than 0.2% of the Blackwood River flow, and less than 0.8% of the Scott River flow. The currently approved project prohibits any discharge of pond water to the rivers and therefore the commitment concerning discharge requires change. The second commitment requiring change relates to the final rehabilitation of land after mining. While the approved project lies completely within land owned by BHPTM, the proposed extension covers land which is privately owned and will be mined under agreements with the land holders. This requires a change to the rehabilitation commitment, to include input from the land holder in determining the rehabilitation programme for land not owned by BHPTM.

3. Identification of environmental issues

3.1 Method of assessment

The purpose of the Section 46 process in relation to changing previously set environmental conditions is to determine if the changes are environmentally acceptable or not, or, whether modifications to the proposed changes would make them environmentally acceptable. The administrative procedures to implement the method of assessment of the proposed changes in conditions are shown in the flow chart in Appendix 1. Appendix 2 contains the original conditions set on 24 May 1991.

The first step in the method is to identify the environmental topics to be considered in relation to the proposed changes. These topics are then considered by the proponent in its Section 46 report. The proponent's report is checked to ensure that each topic has been discussed in sufficient detail prior to release for government agency and public comment. The submissions received are summarised by the DEP on behalf of the EPA. This process can add environmental topics that need to be considered in terms of the acceptability of potential environmental impact.

Proponents are invited to respond to the topics raised in submissions. Appendix 3 contains a summary of public submissions and the proponent's response to those submissions. A list of submitters is provided in Appendix 4.

This information, ie the proponent's report, the submissions, and the proponent's response, are then subjected to analysis by the EPA. Each environmental topic is reviewed to determine if it represents an issue requiring further evaluation by the EPA. For each environmental issue, an objective is defined and an appropriate evaluation framework identified.

The expected environmental impact of the proposal, with due consideration to the proponent's commitments to environmental management (refer Appendix 5), is then evaluated against the assessment objective. The EPA then determines the acceptability of the environmental impact. Where the proposed changes to conditions has unacceptable environmental impacts the EPA can either advise the Minister for the Environment against the changes or make recommendations to ensure environmental acceptability of the proposal.

Limitation

This evaluation has been undertaken using information currently available. The information has been provided by the proponent through preparation of the Section 46 report (BHPTM 1995), by Department of Environmental officers utilising their own expertise and reference material, by utilising expertise and information from other State government agencies, information provided by members of the public, and by contributions from Environmental Protection Authority members.

3.2 Public and agency submissions

Comments were sought on the proposal from the public, community groups, as well as local and State government agencies. Copies of the proposal (BHPTM 1995) were sent to the relevant government agencies and community organisations. Additionally, a four page background note describing the proposal was sent by the proponent to all those who made a public submission on the original Environmental Review and Management Programme (ERMP). Forty submissions were received by the EPA from the following sources:

- 6 from State or local government agencies;
- 5 from groups and organisations; and
- 29 from members of the public.

The main topics of concern in this assessment were:

Biophysical impacts

- effect upon the Scott National Park, Scott River, and Blackwood River;
- groundwater drawdown;
- loss of remnant vegetation;
- insufficient flora and fauna surveys of the mining area;
- acidification of the soil due to the exposure of pyrite;
- planning of rehabilitation for land not owned by BHPTM;

Pollution management

- release of dredge pond water into the Scott or Blackwood Rivers;
- dust; and
- noise.

The EPA has considered the submissions along with the proponent's responses to the submissions as part of the assessment procedure.

3.3 Review of topics

Submissions received by the EPA were concerned with the following topics:

Effect upon the Scott National Park, Scott River, and Blackwood River

Many submissions expressed concern that mining in the proposed extended area would have an adverse effect upon adjoining National Park and rivers. The extended mining area has a longer

common boundary with the park and is generally closer to the rivers than the approved area. This was thought to significantly increase the impact of the mine upon park and rivers in a number of ways which included: groundwater drawdown, spread of plant disease (in particular *Phytophthora cinnamomi* (Pc) dieback), destruction of adjacent wildlife habitat, discharge of dredge pond water, and turbid surface water flow from mining areas into natural areas. Two of these topics, regarding groundwater drawdown and water discharges, are treated separately and will be described elsewhere in this report.

Of the remaining topics, the most frequent concern was that of inadequate surface water management. It was felt that the proposed area would provide insufficient retention and buffering of surface water which will run across the area, and that this would lead to turbid water leaving the mining site and entering the National Park and rivers.

The adequacy of a 100m buffer (exclusion zone) between the dredge pond and the natural areas was questioned and some justification of the 100m figure requested.

The EPA's evaluation of the impact of the proposed extension on the Scott National Park, Scott River, and Blackwood River is contained in Section 4.1.

Groundwater drawdown

It was suggested that disturbance of groundwater levels caused by the presence of a dredge pond and the use of bore water by the mining operation, could affect nearby groundwater users and the vegetation in the surrounding areas. The existing project is subject to an Environmental Condition which limits the drawdown attributable to mining to 0.5m when measured at the boundary of any neighbouring land. This limit of 0.5m was felt to be inappropriate to the preservation of flora in the Scott National Park. Additional groundwater monitoring was called for to accommodate the larger proposed mining area. Also, some doubts were expressed over the reliability of groundwater modelling carried out to date and it was suggested that additional modelling, using recently collected data from piezometers, should be carried out before the proposal be approved.

The EPA's evaluation of the issue of groundwater drawdown is included in Section 4.1.

Remnant vegetation

A number of submitters questioned whether areas of remnant vegetation should be mined and what type of rehabilitation should be applied if such areas were mined. It was also pointed out that Department of Conservation and Land Management (CALM) records show a number of declared rare and priority species in the proposed extended mining area. Particular sections of the proposed mining area of concern were: Lot 4261 which is recorded as containing declared rare flora; Lot 4152 which contains an important summer swamp; and Lots 4255 and 4256 which contain vegetated land near the National Park which is thought to provide a valuable buffer for the park and habitat for its fauna. Doubts were expressed whether revegetation after mining would ever recreate the richness and diversity of the existing remnant vegetation. It was also suggested that rehabilitation techniques should be trialed and evaluated before mining if remnant vegetation was to be destroyed by mining.

The EPA's evaluation of the impact of the proposed mining extension on significant remnant vegetation is contained in Section 4.2.

Insufficient flora and fauna surveys of the mining area

Concern was expressed that the area of the proposed mine expansion had not yet been completely surveyed for flora and fauna and that a complete survey should be conducted before approval to extend the mining area was given.

CALM and the National Parks and Nature Conservation Authority (NPNCA) both requested that further flora surveys be undertaken in the spring of 1996 in order to locate any rare and priority flora in the proposed extended mining area.

The need for additional flora and fauna surveys is considered by the EPA to require further evaluation (refer Section 4.3).

Acidification of the soil due to the exposure of pyrite

It was stated by some members of the public that the presence of pyrite in the soil profile had not been given adequate attention, particularly since acidity levels in the trial pond (bulk sample area) were reputedly very high due to the exposure of pyrite. The bulk sample area was presented as evidence that the proponent had demonstrated a lack of knowledge of the geochemistry of the area and would not be able to prevent an acid problem developing in the full scale dredge pond. Acidification of the dredge pond was considered to be problem in two ways. Firstly, since the proposed extension of the mining area may require some discharge of dredge pond water into the surrounding rivers, acidic pond water would have an adverse effect upon the Scott or Blackwood Rivers. Secondly, should an acidity problem develop, this would leave the soil in the mining area acidic which would prevent successful rehabilitation of the area.

Since the bulk sample work the proponent has developed a pyrite management programme for the approved mining area. This programme is described in the Environmental Management Programme (EMP) for the project (BHP Mineral Deposits 1994, app D) and is based upon experience gained from the bulk sample operation and further testwork carried out in the area. The management programme puts in place management strategies and practices to achieve the following aims:

- to identify the nature and occurrence of pyrite ahead of activities;
- to minimise the opportunity for pyrite oxidation through selective materials handling and appropriate management of any unavoidably exposed materials;
- to source low sulphur material for construction purposes;
- to collect and treat, as required, runoff from potentially sulphur containing material; and
- to establish monitoring programmes that will provide an early indication of any requirement to modify management practices or implement treatment programmes.

The approved pyrite management programme will be extended to the proposed extended mining area and is considered by the EPA to adequately manage any potential impacts caused by pyritic material in the mining area. The aspect related to quality of any discharge water is dealt with in Section 4.4.

Planning of rehabilitation for land not owned by BHPTM

Commitment 51 allows for input from the landowner in the process of rehabilitating land not owned by BHPTM. This change does not exempt BHPTM from the requirements of other Conditions and Commitments (Condition 9, Commitments 43-50) relating to rehabilitation and is therefore considered by the EPA to have no environmental impact.

Release of dredge pond water into the Scott or Blackwood Rivers

Most submissions from members of the public were opposed to the release of any dredge pond water into the Scott or Blackwood Rivers. It was argued that this was a significant issue in the original assessment and had resulted in a commitment being made to no discharge. Any discharge was considered unacceptable because the rivers are prone to silting, a problem which would be compounded by any discharge of turbid waters, and also because the river is considered sensitive to any further input of nutrients or other pollutants. The proponent's need

to discharge any water was also disputed by the belief that the proponent had not adequately considered engineering alternatives.

CALM and the NPNCA both requested that water quality standards be set for any discharge into natural areas.

The EPA's evaluation of the impact of the release of dredge pond water is contained in Section 4.4.

Dust

Some members of the public declared that dust suppression measures employed by the proponent during the construction phase of the project had been inadequate and that the proposed dust control measures would also prove to be inadequate if the proposed extension was approved.

The EPA's evaluation of the impact of dust on nearby residents is contained in Section 4.5.

Noise

The issue of noise was of particular concern to the Molloy Island community. The proposed extension brings mining closer to Molloy Island. As a result it was believed that the existing noise limits in Environmental Condition 9 would be incompatible with the lifestyle of Molloy Island residents. Complaints were also made of noise pollution during the construction phase and that the noise experienced so far implied that anticipated noise levels would be unacceptable.

The impact of noise upon nearby residents is considered by the EPA to require further evaluation and is discussed in Section 4.6.

4. Evaluation

The Environmental Protection Authority has considered the topics raised during the environmental impact assessment process including matters identified in public submissions. Table 1 summarises the topics raised, characteristics of the proposal, and the comments received in order to identify issues warranting evaluation. The Authority has evaluated the following key environmental topics arising from this proposal, based on existing information and advice from other Government agencies:

- effect upon the Scott National Park, Scott River, and Blackwood River;
- fate of significant remnant vegetation;
- need for additional flora/fauna surveys;
- release of dredge pond water;
- impact of dust on nearby residents; and
- noise levels.

The EPA considers that other topics raised during the environmental assessment process can be managed by existing Environmental Conditions and Commitments for the approved project.

In giving advice regarding the environmental acceptability of the proposed changes to the environmental conditions for the Beenup Mineral Sands project, the Environmental Protection Authority has assessed the above key environmental issues in relation to the proposed extension outlined by BHP Titanium Minerals.

Table 1: Identification of issues requiring Environmental Protection Authority evaluation.

TOPICS	PROPOSAL CHARACTERISTICS	GOVERNMENT AGENCY'S COMMENTS	PUBLIC COMMENTS	IDENTIFICATION OF ISSUES
Biophysical impacts				
Effect upon the Scott National Park, Scott River, and Blackwood River.	The common boundary between the Scott National Park and the mine is significantly increased from 2.3 km to 9.6 km. The extended area is generally closer to the Scott and Blackwood rivers.	NPNCA & CALM: Concerned about the adequacy of water containment practices. Require protocols capable of detecting any detrimental effects on the Scott National Park. WAWA: Satisfied with surface water management as described in EMP.	100m buffer (exclusion zone) is too little. Doubts expressed about the retention and buffering of rainfall runoff in the western area.	Effect upon the Scott National Park, Scott River, and Blackwood River. Requires EPA evaluation to ensure that impacts are managed.
Groundwater drawdown.	Ore is mined by dredge operating below the water table. The presence of a pond could affect local groundwater levels through losses to evaporation or the filling of the initial void by the local aquifers. The level of the dredge pond is not altered to change the mining depth.	WAWA: Additional modelling based upon measured parameters is required.	A drawdown limit of 0.5m is not appropriate for preservation of flora in the Scott National Park.	The EPA evaluated this topic in the original proposal. This resulted in Condition 4 which specifies a maximum drawdown of 0.5m. Requires EPA evaluation to ensure that impacts are managed.
Loss of remnant vegetation.	70% of the area has been cleared. Much of the remaining 30% has been grazed by cattle. Any remnant vegetation in the mine path will be destroyed.	NPNCA & CALM: Both declared rare and priority flora are known to be present in the proposed extension.	The eastern portions of Lots 4261 and CG4152 should be excised from the mining area.	Fate of significant remnant vegetation. Requires EPA evaluation to ensure that impacts are managed.

TOPICS	PROPOSAL CHARACTERISTICS	GOVERNMENT AGENCY'S COMMENTS	PUBLIC COMMENTS	IDENTIFICATION OF ISSUES
Insufficient flora/fauna surveys of the extended mining area.	Flora surveys have been conducted over two locations within the proposed mining area and over the entire approved area. A large part of the extension was surveyed for fauna in the original proposal.	NPNCA & CALM: Further flora surveys in the spring of 1996 will be required in order to locate any additional populations of rare and priority flora.	Before approval is given to mine south of Strucels Road it is essential that a vegetation survey and plant inventory be completed.	Need for additional flora/fauna surveys. Requires EPA evaluation to ensure that impacts are managed.
Acidification of the soil due to the exposure of pyrite.	A reactive form of pyrite exists in the mine area which has the potential to cause acidification of the soils if mishandled during mining.	Since recognising this problem changes have been made to both the mining and processing operations. These changes are described in EMP(1994).	There is a need to ensure that the risks of the release of acid waters, and the management of pyrite both within the dredge pond and the rehabilitated land are acceptable.	Management will be as described in EMP(1994). No further evaluation required.
Planning of rehabilitation for land not owned by BHPTM	A new commitment has been made (Commitment 51) which allows for the input of the land owner in the process of rehabilitating land not owned by BHPTM.			Rehabilitation is also addressed by a number of other Conditions and Commitments. This change is considered to have no environmental impact. No further evaluation required.

TOPICS	PROPOSAL CHARACTERISTICS	GOVERNMENT AGENCY'S COMMENTS	PUBLIC COMMENTS	IDENTIFICATION OF ISSUES
Pollution management				
Release of dredge pond water.	There may be a need to release dredge pond water into the Scott and Blackwood rivers system. The rate of release of water is predicted to be < 0.5% of the Blackwood River flow.	NPNCA & CALM: Water quality standards need to be set for any discharge into natural areas. The release of pond water into a river would require a DEP licence.	No discharge of dredge pond water into the Scott or Blackwood rivers should be allowed.	Dredge pond discharge. Requires EPA evaluation to ensure that impacts are managed.
Impact of dust on nearby residents.	Stripping of topsoil prior to dredging has the potential to generate dust.		During the construction phase of the project, dust control measures were inadequate.	Impact of dust on nearby residents. Requires EPA evaluation to ensure that impacts are managed.
Noise	The proposed extended mining area is closer to a larger number of residences. Predicted noise levels are within the limits of existing regulations.	DEP: There is an administrative inconsistency between the noise condition in the existing statement (Condition 9) and the Noise Abatement (Neighbourhood Annoyance) Regulations.	Anticipated noise levels would disrupt the quiet lifestyle of Molloy Island residents.	Noise levels. Requires EPA evaluation to ensure that impacts are managed.

4.1 Effect upon the Scott National Park, Scott River, and Blackwood River

4.1.1 Objective

To ensure that the proposed extension of the mining area has no adverse effect upon the Scott National Park, Scott River, or Blackwood River.

4.1.2 Evaluation framework

The proposed extension of the mining area has a common boundary with the Scott National Park of 9.6 km compared with 2.3 km for the approved project. It therefore has the potential to effect a much greater area of the park. Potential impacts upon the park and rivers include:

- inflow of turbid surface water;
- spread of plant disease (Pc dieback in particular);
- destruction of adjacent wildlife habitat;
- groundwater drawdown; and
- release of dredge pond water.

Evaluation of the issue of groundwater drawdown is included in this section due to its identification as a potential impact upon the Scott National Park. The issue of dredge pond water release will be evaluated in Section 4.4 while wildlife habitat is considered here and also in Sections 4.2 and 4.3.

The issue of groundwater drawdown was previously considered by the Authority in its assessment of the original proposal and resulted in the setting of Environmental Condition 4 in the statement of approval (Appendix 2). This requires the drawdown attributable to the project to not exceed half a metre at the boundary of any neighbouring land, including the Scott National Park.

Technical information

Surface water management

In compliance with Environmental Condition 5 of the present approval a surface water management programme was submitted by the proponent in 1994 (BHP Mineral Deposits 1994, app A) for the existing approved mining area. This programme has the aims of :

- preventing the release of turbid or otherwise unacceptable quality waters from the site;
- maintaining existing surface flows into neighbouring properties; and
- preventing major long term changes to current drainage patterns.

Measures to achieve these aims include: the installation of diversion drains ahead of mining; the installation of silt traps capable of containing 1 in 20 year storm events; and a network of surface water monitoring stations to measure pH, Electrical Conductivity (EC), Total Dissolved Salts (TDS), nutrients, and turbidity.

This surface water management programme, required by Condition 5, has been evaluated by the Department of Environmental Protection (DEP) and the Water Authority of Western Australia (WAWA) and was assessed to be adequate to manage the impact of any surface water leaving the currently approved mine site.

Pc Dieback

A dieback survey has been conducted of a section of the Scott National Park adjacent to the approved mining area (Hart, Simpson, and Associates 1991). It found that most (86%) of the area was Pc dieback infected, that all drainage lines were infected, and that infections had spread uphill into areas not prone to flooding. In particular, the areas down-gradient from the existing project and drainage lines receiving runoff from the project, were already Pc dieback infected and these infections had been present for many years.

Groundwater drawdown

The issue of groundwater drawdown was considered by the Authority in its assessment of the original proposal and resulted in the setting of Condition 4 in the statement of approval (Appendix 2). This requires the drawdown attributable to the project not to exceed half a metre at the boundary of any neighbouring land, including the Scott National Park. This limit was considered sufficient by the Authority to manage any potential impacts on the park.

Environmental Condition 4 also requires preparation of a comprehensive groundwater monitoring programme. A groundwater monitoring programme has been prepared by the proponent for the existing project and has been accepted by the Minister for the Environment on advice provided by the EPA, Department of Minerals and Energy, and WAWA.

Dredging will always remain at least 100 m from the National Park boundary. This 100 m buffer (exclusion zone) was originally proposed to manage groundwater drawdown effects upon the National Park and to prevent the spread of Pc dieback into the park. Groundwater modelling of the first year of dredging (BHP Mineral Deposits 1994, app B) concludes that measurable changes in groundwater level will extend to less than 200 m from the dredge pond.

Comments from key Government agencies

Both CALM and the NPNCA expressed concerns over the adequacy of water containment practices described in the proposal document (BHPTM 1995) and stated that water quality standards should be set for any discharge into natural areas. CALM also commented that protocols would need to put in place which would detect any detrimental impact upon the Scott National Park and that the results of such monitoring should be made available to CALM. In addition monitoring sites would need to be discussed with CALM to ensure their security and fire management requirements.

WAWA expressed some doubts about the reliability of groundwater modelling carried out to date and suggested that additional modelling, using recently collected data from piezometers, should be carried out before the proposal be approved.

Public submissions

Doubts were expressed about the retention and buffering of rainfall runoff in the western area. It was believed that this would result in high silt loads being deposited into the rivers.

Fauna in the national park should be monitored, as the extended boundary with the mining area and the increased length of time the mine operates will have a greater effect on the fauna.

The 100m buffer (exclusion zone) between the dredge pond and the national park was considered to be too little.

It was suggested that disturbance of groundwater levels caused by the presence of a dredge pond and the use of bore water by the mining operation, could affect nearby groundwater users and the vegetation in the surrounding areas. The existing project is subject to a condition which limits the drawdown attributable to mining to 0.5m when measured at the boundary of any neighbouring land. This limit of 0.5m was felt to be inappropriate to the preservation of flora in the Scott National Park.

Also, additional groundwater monitoring was called for to accommodate the larger proposed mining area.

4.1.3 Response from the proponent

Surface water management

Approved surface water management and monitoring programmes will be implemented in the extended mining area to ensure that only water of an acceptable quality is released to the Scott and Blackwood Rivers (Commitment 15). The parameters to be monitored to determine acceptable quality will be agreed with the Department of Environmental Protection (in consultation with the Waters and Rivers Commission) and will include at least pH, TDS, nutrients and turbidity. Acceptable quality will be determined on the basis that the agreed parameters are of equal or better quality than receiving rivers (Q1.0.1). Silt traps will be constructed on major drainage channels downstream of the mining operation, in advance of dredging activities (Commitment 9).

As the project enters the operations phase the Company will develop a more frequent programme of liaison with CALM. The results of monitoring in the national park will be made available to CALM and CALM will also be one of the parties involved in determining final land use and rehabilitation of areas adjacent to the national park (appendix 3,Q1.1.5, Q1.1.6, & Q1.5.6)

Wildlife habitat and dieback

BHPTM will undertake flora and fauna monitoring at annual intervals and periodic dieback monitoring, in a buffer strip within the National Park (Commitment 34). Habitats in areas adjacent to the National Park will be re-established by planting native vegetation in similar proportions to that which occurred prior to mining (subject to agreement of the land owner) and by providing trial nest boxes (Commitments 36 & 51)

Groundwater drawdown

The approved groundwater monitoring programme will be implemented and expanded to incorporate the proposed extended mining area (Commitment 6). Should monitoring of the Scott National Park indicate a 0.5m drawdown is detrimental to the park, practices will be adopted to reduce drawdown, such as maintaining the watertable at a higher level by pumping (Commitment 40 & Q1.2.6).

The 100m buffer is proposed for the same reasons as agreed in the original approved proposal. As the dredge makes its first approach towards the Scott National Park it will turn at a distance of 350m from the national park (appendix 3, Q1.1.2).

4.1.4 Evaluation

Surface water management

The existing surface water management programme for the project (BHP Mineral Deposits 1994, app A) has been previously evaluated by the DEP and WAWA and assessed to be adequate to manage any impact due to rainfall runoff upon the National Park and rivers. This programme will be expanded to incorporate the proposed extended mining area with details of the expanded programme being reported in an Environmental Management Programme to be produced before mining in the extended area commences (Commitment 62).

Wildlife habitat

Any disturbance of fauna within the park will be temporary and little greater than the level of disturbance presently existing due to farming activities in the area. BHPTM's commitments to monitor flora/fauna within the park and modify mining practices if necessary, are adequate to protect the conservation values of the Scott National Park.

Dieback

The Scott National Park is already infected by the *Phytophthora cinnamomi* dieback disease, it is therefore unlikely that the proposed extension would have any adverse effect on the park through the spread of Pc dieback.

Groundwater drawdown

The issue of groundwater drawdown was considered by the Authority in its assessment of the original proposal and resulted in the setting of Environmental Condition 4 in the statement of approval (Appendix 2). This requires the drawdown attributable to the project not to exceed half a metre at the boundary of any neighbouring land, including the Scott National Park. This limit was considered sufficient by the Authority to manage any potential impacts on the park.

While concern has been expressed over the 0.5m value, the proposed extension does not provide any cause for the Authority to reconsider this value. Mining will take place closer to a much larger portion of the Scott National Park. However, the objective of minimising drawdown effects within the park remains, and the criterion of 0.5m is considered adequate for the extended mining area.

Environmental Condition 4 also requires a groundwater monitoring programme to be prepared. This programme has been prepared and accepted by the Minister for the Environment. The accepted programme includes the progressive installation of monitoring bores and will be expanded to encompass the proposed extended mining area.

Given the requirements of Condition 4 and the groundwater modelling carried out to date, there is little need for further groundwater modelling before mining commences. Monitoring of drawdown once mining and pumping commences will be important in terms of ensuring groundwater drawdown objectives are met and is covered by Environmental Condition 4 and Commitments 4, 5, 6, and 7.

The Environmental Protection Authority considers that these issues (surface water management, spread of Pc dieback, destruction of adjacent wildlife habitat, and groundwater drawdown) can be adequately addressed through compliance with existing Environmental Conditions and the proponent's commitments as modified to the extended mining area.

4.2 Fate of significant remnant vegetation

4.2.1 Objective

The Environmental Protection Authority's objective is to protect any significant remnant vegetation within the proposed extended mining area.

4.2.2 Evaluation framework

Areas of significant remnant vegetation and flora should be determined by detailed surveys and be defined as areas containing vegetation communities and flora which are not well represented in the region. This would include areas containing declared rare or priority flora.

Declared rare or priority flora are protected by the requirements of the Wildlife Conservation Act 1950 which place restrictions on the taking of protected flora.

Technical information

Any remnant vegetation within the mine path will be destroyed by the dredge mining process.

The proposed mining area extension is on land which is predominantly used for agriculture. Approximately 70% of this land has been cleared and much of the remainder has been grazed by cattle.

Remnant vegetation communities in locations 4255 (Lot 1) and 4256 have been surveyed by Mattiske Consulting Pty Ltd (Mattiske Consulting 1995). No populations of rare or endangered flora species were found. The vegetation in these locations was also found to be well represented in the adjacent State forest and National Park areas.

Declared rare or priority species are protected by regulations under the Wildlife Conservation Act 1950. In the case of declared rare flora (Wildlife Conservation Act 1950, Section 23F), taking is permissible only with the written consent of the Minister for the Environment.

A species of declared rare flora is recorded by CALM as being present on Location 4261, which is within the extended mining area.

Comments from key Government agencies

CALM and NPNCA advised that both declared rare and priority flora are known to be present within areas of the proposed extension and that a further flora study should be undertaken in the spring of 1996 in order to locate any additional populations. CALM also stated that prior to mining or any other disturbance, agreement would need to be reached with CALM on the fate of the populations of declared rare and priority species flora.

Public submissions

Some members of the public stated that BHPTM should be prohibited from disturbing remnant vegetation as revegetation after mining would be unlikely to recreate the richness and diversity of the existing remnant vegetation. Others were aware that Lot 4261 and Lot 4152 contained either rare or priority flora and suggested that the eastern halves of these Lots should be excised from the proposed mining areas. It was also stated that before approval is given to mine south of Strucels Road it is essential that a vegetation survey is completed, specific proposals to protect significant flora completed, and a rehabilitation programme that accommodates the complex lowland area be trialed and evaluated.

4.2.3 Response from the proponent

Native vegetation will be restored during rehabilitation in similar proportions to the remnant vegetation which existed before mining (Appendix 3, Q1.5.3.).

BHPTM will botanically survey all areas of remnant vegetation, ahead of planned mining activities, so that management of areas of conservation significance can be agreed with the relevant regulatory authorities (this would include the EPA and CALM). The results of these surveys will be submitted to the Department of Environmental Protection (DEP) in EMP's in advance of mining operations. If required, BHPTM will exclude areas of conservation significance from the mining area. (Commitment 38)

Of the areas surveyed to date, only Location 4264 has been found to support declared rare flora. This Location was excluded from the mining area in the currently approved project and is also excluded from this proposal to extend the mining area (Appendix 3, Q1.5.7).

BHPTM is aware of and will comply with the regulations regarding declared rare and priority flora.

4.2.4 Evaluation

Flora surveys carried out to date indicate that the proposed extended mining area does not include areas of significant remnant vegetation, with the exception of Locations 4261 and 4152 on which declared rare or priority flora have been recorded. BHPTM's commitment to survey all areas ahead of mining will ensure that all significant remnant vegetation in the mining area will be identified within sufficient time for decisions on the taking of such vegetation to be

made, and agreement reached between BHPTM, CALM and the EPA on the management of these areas. In regard to Locations 4261 and 4152, on which significant remnant vegetation is known to exist, BHPTM's commitment to manage areas of conservation significance with the agreement of the relevant authorities ensures compliance with the Wildlife Conservation Act 1950. The Authority understands that the agreed management referred to by BHPTM in Commitment 38, may include prohibiting mining activities on areas containing declared rare or priority flora, as has previously occurred for Location 4264.

The Environmental Protection Authority considers that this issue can be adequately addressed through compliance with the proponent's commitments and through compliance with the Wildlife Conservation Act in relation to declared rare or priority flora.

4.3 Need for additional flora/fauna surveys

4.3.1 Objective

The Environmental Protection Authority's objective is to ensure the flora and fauna values of the mining area have been documented and significant flora and fauna is protected.

4.3.2 Evaluation framework

The Wildlife Conservation Act 1950 provides the policy framework for the protection of fauna and flora of high conservation value.

Technical information

All of the approved mining area has been surveyed for vegetation, flora and fauna. The results of these surveys were reported in the ERMP (Lewis Environmental Consultants 1990) for the existing project.

The remnant vegetation on two locations of the proposed extended mining area, Locations 4255 (Lot 1) and 4256, have been assessed by Mattiske Consulting Pty Ltd to determine their conservation significance. These areas, together with the approved areas, contain the planned dredge path for the first few years of the project.

The remaining areas; Locations 4268, 4252, 4151, 4253, 4152, 4255 (excluding Lot 1), 4261(eastern half), 4258, and 4260 (eastern half); have not yet been surveyed for flora.

Comments from key Government agencies

Both CALM and NPNCA have advised that a flora study should be undertaken in the spring of 1996 in order to locate any additional populations of declared rare or priority flora.

Public submissions

Some members of the public questioned why Locations 4255 and 4258 were not included in the vegetation mapping, given that both locations appear to contain substantial areas of remnant vegetation which are contiguous with the National Park. It was also stated that before approval is given to mine south of Strucels Road it is essential that a vegetation survey and plant inventory of this region be completed.

There was also some expression of dissatisfaction with the competency of the surveys carried out to date.

4.3.3 Response from the proponent

BHPTM will botanically survey all areas of remnant vegetation, ahead of planned mining activities, so that management of areas of conservation significance can be agreed with the relevant regulatory authorities. If required BHPTM will exclude areas of conservation significance form the mining area. (Commitment 38)

In addition, BHPTM will assess all areas of significant remnant vegetation, that have not been surveyed previously for fauna prior to mining (Commitment 41).

4.3.4 Evaluation

The Environmental Protection Authority considers that this issue is adequately addressed by the surveys carried out thus far, the proponent's commitments to carry out further surveys ahead of mining operations, and the need to comply with the Wildlife Conservation Act.

4.4 Release of dredge pond water

4.4.1 Objective

The Environmental Protection Authority's objective is to ensure that the discharge of dredge pond water into the Scott or Blackwood Rivers does not adversely effect the quality of water in these rivers or have any other detrimental effect upon these rivers.

4.4.2 Evaluation framework

Technical information

In its response to public submissions for the assessment of the existing project (EPA 1990, p. 54, QI08) Mineral Deposits Limited stated that there would be no discharge of dredge pond water. This arose from an undertaking in the ERMP (Lewis Environmental Consultants 1990, p. 57) to design the mining method to accommodate the rise in pond level in the winter months and avoid the need to discharge water from the pond.

However, due to the greater fall of the land in the south-west section of the proposed extension, it may become necessary for dredge pond water to be discharged in order to prevent the dredge pond overflowing. Modelling of this scenario suggests that the rates of discharge will be: less than 1% of the rate of flow of the Scott River when discharging into this river; and less than 0.2% of the rate of flow of the Blackwood River when discharging into this river. A more complete summary of the expected discharge rates is contained in Appendix 3, Q2.1.3.

The discharge water will be taken from the rear of the dredge pond, which is designed to be still water, remote from the more turbid water close to the dredge head.

Any discharge of dredge pond water would be covered by the Environmental Protection Regulations 1987 concerning Waste Water Discharge (regulation 5 (2) (a)). Under these regulations BHPTM would be required to obtain a licence from the DEP to discharge waste water. Licences of this kind require regular monitoring and reporting of all discharges, and also specify water quality standards which must be met by all discharges.

Comments from key Government agencies

Both CALM and NPNCA stated that water quality standards should be set for any discharge into natural areas, particularly the Scott and Blackwood Rivers.

Public submissions

Most submissions from the public were opposed to any release of dredge pond water into the Scott or Blackwood Rivers. There was concern that discharge into these rivers would intensify the problem of silting up of these rivers. It was a commonly held view that BHPTM was seeking to change a commitment prohibiting discharge into the rivers without adequately considering engineering alternatives and therefore the change was not justified. A few submitters stated that BHPTM should carry out a Marine Environmental Study of the Scott and Blackwood Rivers before considering discharging dredge pond water into them.

4.4.3 Response from the proponent

If there is a requirement to discharge water from the dredge pond:

- BHPTM will monitor quality ahead of the requirement to determine acceptability for discharge;
- discharge will be via existing water channels to the Scott or Blackwood Rivers;
- where practicable small earth bunds will be used to avoid the requirement to discharge;
- during periods of discharge water will be monitored daily; and
- discharge will be limited to that required to prevent pond overflow. (Commitment 14)

Approved surface water management and monitoring programmes will be implemented to ensure that only water of acceptable quality is released to the Scott or Blackwood Rivers (Commitment 15).

The results of monitoring any discharge from the dredge pond will be reported to the regulatory authorities and these reports will be publicly available (Commitment 16). Parameters to be monitored will include at least pH, TDS (Total Dissolved Salts), nutrients, and turbidity. Acceptable quality discharge will be determined on the basis that the agreed parameters are of equal or better quality than the receiving waters. (Appendix 3, Q2.1.4)

4.4.4 Evaluation

BHPTM has indicated it will avoid the need to discharge dredge pond water wherever possible and has made a commitment to this effect (Commitment 14). The low rates of discharge coupled with the fact that discharge will only be required during winter, when the river flow rates are high, imply that the flow of the Scott and Blackwood Rivers will not be significantly altered by any discharge of dredge pond water. Discharge via existing water channels and the installation of silt traps will prevent the discharge from adding to the silt load of the rivers. BHPTM's commitment to monitor agreed parameters and to only discharge water which is of an equivalent or better quality than the receiving water, effectively sets water quality standards which ensure the quality of water in the rivers cannot be degraded by the discharge. By monitoring water quality ahead of any requirement to discharge, BHPTM will know in advance whether mining of steeply sloping areas will be feasible or not, given the requirements which must be met by any discharge. If monitoring indicates that dredge pond water would not meet standards required for discharge, then BHPTM will have to alter the mine path to avoid those areas where discharge would be necessary. Along with BHPTM's self-imposed standards, the DEP will also set water quality standards in the conditions of any licences issued for dredge pond discharge.

The Authority supports the position of BHPTM to avoid discharges whenever possible, and to only discharge water which meets ambient standards at a discharge rate which is only a minor fraction of river flows.

In addition to BHPTM's commitments relating to dredge pond discharge, the EPA believes that discharge should only occur following the preparation and acceptance of a dredge pond water discharge plan for each area where discharge may be necessary. Accordingly, before mining commences in any area where discharge may be necessary or otherwise where discharge becomes necessary, the proponent should prepare a dredge pond water discharge plan to the requirements of the Environmental Protection Authority, which:

- justifies the requirement to discharge dredge pond water;
- describes the expected quality and quantity of dredge pond water to be discharged;
- establishes water quality standards to be met by any discharge;
- sets out the methods which will be employed to improve water quality; and
- demonstrates that the discharge of dredge pond water will have no detrimental effect upon the Scott or Blackwood rivers. (Recommendation 2.)

The Environmental Protection Authority considers that this issue can be adequately addressed through: implementation of Recommendation 2; compliance with the proponent's commitments; and through compliance with licences issued by the Department of Environmental Protection under Part V of the Environmental Protection Act.

4.5 Impact of dust on nearby residents

4.5.1 Objective

The Environmental Protection Authority's objective is to prevent unacceptable levels of dust adversely affecting nearby residents.

4.5.2 Evaluation framework

Technical information

The proposed extension to the mining area has limited potential to increase dust generation. The mining is carried out via a dredging operation with the product and tailings having a high moisture content. The major source of dust generation in the mining area will be the stripping of topsoil prior to dredging and the replacement of topsoil at the beginning of the rehabilitation process. The proposed extension does not increase the area of land affected by mining at any given time and so does not increase the rate of dust generation. It does however move areas of dust generation closer to a number of residences during certain phases of mine development.

Public submissions

Some members of the public commented that dust suppression measures employed by the proponent during the construction phase of the project had been inadequate and that the proposed dust control measures would also be inadequate if the proposed extension was approved

4.5.3 Response from the proponent

The generation of dust from areas such as topsoil, tailings, concentrate heaps and haul roads will be controlled as necessary to minimise dust emissions from the mine-site during the life of the project (Commitment 22). Dust control measures for the mine area include the avoidance of topsoil stripping under high wind conditions.

A dust monitoring programme will be implemented to monitor the effectiveness of dust control measures, when the project is commissioned. Dust control measures will be modified to rectify any dust control problems identified by monitoring. (Commitment 24)

4.5.4 Evaluation

The proposed extension of the mining area has limited potential to generate dust and BHPTM's commitments to dust control and monitoring are sufficient to manage the impact of dust on nearby residents.

The Environmental Protection Authority considers that this issue can be adequately addressed through compliance with the proponents commitments.

4.6 Noise

4.6.1 Objective

The Environmental Protection Authority's objective is to prevent unacceptable levels of noise at nearby residences.

4.6.2 Evaluation framework

Acceptable noise levels are determined by the Noise Abatement (Neighbourhood Annoyance) Regulations 1979. The Noise Abatement (Neighbourhood Annoyance) Regulations set maximum acceptable noise levels for residences, which are determined by the character of the neighbourhood surrounding the residence (ie rural, residential, commercial, or industrial).

Allowable noise levels for this project are presently set by Environmental Condition 9 of the current statement of approval (appendix 2). These levels were determined by the levels contained in proposed new noise regulations at the time the statement was issued. The levels in the proposed regulations are no longer those limits and therefore the noise levels of Condition 9 are inconsistent with existing regulations and proposed changes to existing regulations.

Technical information

There is an inconsistency between the maximum allowable noise levels set in Condition 9 of the existing statement of approval (Appendix 2) and the levels set in the Noise Abatement (Neighbourhood Annoyance) Regulations 1979. The levels set in Condition 9 are less stringent than those which arise from the application of the Noise Abatement (Neighbourhood Annoyance) Regulations 1979 to this project and nearby residences. A comparison of the levels is provided in Table 2.

BHPTM has carried out noise modelling for the approved project (Lewis Environmental Consultants 1990, p. 69) which indicated noise levels would be within the limits prescribed by the Noise Abatement (Neighbourhood Annoyance) Regulations 1979. Modelling was carried out for residences as close as 1.8 km from the dredge. A summary of this information is also contained in Table 2.

Measurements of the existing ambient noise levels were made as part of the Environmental Review and Management Programme for the approved project (Lewis Environmental Consultants 1990, p. VI-6). The mean level for nearby locations between the times 7 am to 7 pm was 34 dB(A).

The proposed extension of the mining area does not alter the nature of the mining operation and hence the results of the original modelling remain valid.

Table 2: Noise: Comparison of regulations, conditions, and modelling

	Modelling Sound levels at Beenup residences (Lewis Environmental Consultants, 1990 p 69.)	Noise Abatement Regulations 1979 Assigned outdoor neighbourhood noise levels A2 category : Only or predominantly residences with infrequent transportation.	Condition 9 of the Existing Statement Maximum noise levels at residential premises	
Monday to Friday 7am to 7pm	<40dB(A)	45dB(A)	50dB(A)	Monday to Saturday 7am to 7pm
Monday to Friday 7pm to 10pm and weekends and public holidays 7am to 10pm	35dB(A) - 39dB(A)	40dB(A)	45dB(A)	Always 7pm to 10pm & Sunday 7am to 7pm
Always 10pm to 7am	26dB(A) - 35dB(A)*	35dB(A)	40dB(A)	Always 10pm to 7am

* Study noted that the occasional use of earthmoving equipment between these hours would need to be assessed under operating conditions.

Public submissions

The issue of noise was of particular concern to the Molloy Island community. The proposed extension brings mining closer (to within 1.8 km) to Molloy Island. As a result it was believed that the existing noise limits would be incompatible with the lifestyle of Molloy Island residents. Complaints were also made of noise pollution during the construction phase and that the noise experienced so far implied that anticipated noise levels would be unacceptable.

4.6.3 Response from the proponent

BHPTM will carry out noise assessment studies [utilising measurements made under operating conditions] for the proposed extension to the mining area and develop mitigation measures to meet the stipulated noise conditions. In addition to meeting the stipulated noise levels, BHPTM will respond to the concerns of nearby residents as they arise. (Commitments 30 & 32)

BHPTM will implement a noise monitoring programme when the project is commissioned to ensure compliance with the stipulated noise levels at the closest residence to the operations. This programme will be continued for a period of three years and then reviewed in consultation with the DEP (Commitment 31).

4.6.4 Evaluation

Determination of acceptable noise levels should, in the absence of other constraints, be determined by the application of the appropriate State Government regulations, which are at this time the Noise Abatement (Neighbourhood Annoyance) Regulations 1979. Environmental Condition 9 sets noise levels which, at the time, were intended to be consistent with future regulations, but which have resulted in levels which are inconsistent with existing regulations and which are likely to be inconsistent with future regulations. The noise levels set by Environmental Condition 9 are higher than those of the Noise Abatement (Neighbourhood

Annoyance) Regulations. Noise modelling carried out by BHPTM indicates the project can comply with the existing noise regulations. Therefore the statement of approval should be changed by deleting the condition (Appendix 2, Condition 9) which specifies noise limits and allow the application of appropriate noise regulations to determine acceptable noise levels (Recommendation 3).

The Environmental Protection Authority considers that this issue can be adequately addressed through compliance with the proponent's commitments and through compliance with the Noise Abatement (Neighbourhood Annoyance) Regulations 1979.

5. Changes to the list of consolidated environmental management commitments

As part of the process of this assessment the proponent was asked to prepare a list of consolidated environmental commitments which included commitments made in the initial ERMP and any commitments made subsequently. Part of this preparation required recasting the original commitments into the currently accepted form. It is therefore necessary for the Environmental Protection Authority to ensure the recast list of commitments contains all those original commitments which are not explicitly subject to change via this present assessment.

The commitments which are subject to change are those dealing with the discharge of dredge pond water and the planning of rehabilitation for land not owned by BHPTM (Commitment 51). The issue of dredge pond discharge was considered in Section 4.4 and the topic of rehabilitation planning was considered in Section 3.3.

The Environmental Protection Authority considers that the list of consolidated environmental commitments contained in Appendix 5 are an accurate and complete description of commitments made to date, with the exception of those commitments which are explicitly subject to change via the present assessment. A summary of the original commitments and their representation in the new list of consolidated commitments is contained in Table 3.

There already exists an accepted Environmental Management Programme for the approved mining area. BHPTM has made a commitment (Commitment 62) to update this EMP to incorporate the proposed extended mining area before mining commences in the extended area.

6. Conclusions

The Environmental Protection Authority concludes that the proposal by BHP Titanium Minerals Pty Ltd to extend the approved mining area is environmentally acceptable subject to the proponents commitments and the Environmental Protection Authority's recommendations.

In reaching this conclusion the Environmental Protection Authority identified the main environmental topics requiring consideration as:

- effect upon the Scott National Park, Scott River, and Blackwood River;
- fate of significant remnant vegetation;
- need for additional flora/fauna surveys;
- release of dredge pond water;
- impact of dust on nearby residents; and
- noise.

Table 3: Relationship between:
existing Environmental Conditions and recommended Environmental Conditions; and
existing Commitments and list of Consolidated commitments.

Original Condition or Commit-ment N^{0}	Requirements (summarised)	Evaluation	New Condition or Commitment Number	New Condition or Commitment Text
Environmental Conditions				
1	Fulfil commitments	Modified to include consolidated commitments	1	1-1 In implementing the proposal (including the documented modifications of September 1995), the proponent shall fulfil the relevant environmental management commitments made in the *Proposal to Extend Approved Mining Area* in September 1995, and reported on in Environmental Protection Authority Bulletin 8XX; in the Environmental Review and Management Programme (1990), and published in Environmental Protection Authority Bulletin 483 as Appendix B, and in response to issues raised following public submissions; provided that the commitments are not inconsistent with the conditions or procedures contained in this statement. A schedule of those environmental management commitments which labelled those which will be audited by the Department of Environmental Protection was published in Environmental Protection Authority Bulletin 8XX (Appendix 5) and a copy is attached.
2	Implement the proposal as described.	Wording changed to recast condition into contemporary format.	2	
3	Prepare an Environmental Management Programme and review/update this annually.	Wording changed to recast condition into contemporary format.	3	
4	Prepare and implement comprehensive groundwater programme. Groundwater drawdown is not to exceed 0.5m.	Wording changed to recast condition into contemporary format.	4	
5	Prepare and implement surface water management programme.	Wording changed to recast condition into contemporary format.	5	
6	Report on slimes handling after one year's operation of the dredge.	Wording changed to recast condition into contemporary format.	7	
7	Develop dieback management programme.	Wording changed to recast condition into contemporary format.	8	

Original Condition or Commit-ment N^{0}	Requirements (summarised)	Evaluation	New Condition or Commitment Number	New Condition or Commitment Text
8	Establish formal liaison, monitoring and public reporting processes.	Wording changed to recast condition into contemporary format.	9	
9	Noise levels	Condition deleted in accordance with Recommendation 2.		Recommendation 3 The Environmental Protection Authority recommends that Environmental Condition 9 of the previous Statement of Environmental Conditions for the Heavy Mineral Sands Mine - Beenup be deleted and that acceptable noise levels then be determined by the application of the Noise Abatement (Neighbourhood Annoyance) Regulations 1979, or any subsequent regulations should these be repealed.
10	Manage noise associated with product haulage and review haulage after 12 months of operations.	Wording changed to recast condition into contemporary format.	10	
11	Develop and implement rolling rehabilitation plan. Review/update plan annually.	Wording changed to recast condition into contemporary format.	11	
12	Prepare and implement decommissioning plan.	Wording changed to recast condition into contemporary format.	12	
13	No change of proponent unless approved by the Minister for the Environment.	Wording changed to recast condition into contemporary format.	13	
14	Project to be commenced within 5 years or the approval shall lapse and be void.	Project to be commenced within 2 years of issuing of statement of approval.	14	14-1 If the proponent has not substantially commenced the project within two years of the date of this statement, then the approval to implement the proposal as granted in the statement of 24 May 1991 shall lapse and be void. The Minister for the Environment shall determine any question as to whether the project has been substantially commenced. Any application to extend the period of two years referred to in this condition shall be made before the expiration of that period to the Minister for the Environment. Where the proponent demonstrates to the requirements of the Minister for the Environment on advice of the Department of Environmental Protection that the environmental parameters of the proposal have not changed significantly, then the Minister may grant an extension not exceeding two years.
Proponent's Commitments				

Original Condition or Commit-ment N°	Requirements (summarised)	Evaluation	New Condition or Commitment Number	New Condition or Commitment Text
6.1.1	Accommodate temporary workforce.	Prior to the current proposal, changes have been made to this commitment with the agreement of the shire and community.	1 & 2	
6.2.1	Environmental awareness.	No change	3	
6.2.2	Protect the water table.	Expanded into a number of commitments. This commitment is also partially duplicated by Condition 4.	4, 5, 6, 7 & 63	
6.2.3	Manage surface water.	Expanded into a number of commitments and provides for discharge from the site when required.	8, 9, 11, 12, 13, 14, 15, 16, 60 & 63	14 BHPTM will avoid off site discharge of dredge pond water where possible and ensure that discharge of dredge pond water has no significant adverse effects on the receiving waters. If there is a requirement to discharge water from the dredge pond: BHPTM will monitor quality ahead of the requirement to determine acceptability for discharge; discharge will be via existing water channels to the Scott or Blackwood Rivers; where practicable small earth bunds will be used to avoid the requirement to discharge; during periods of discharge water will be monitored daily; and discharge will be limited to that required to prevent pond overflow. 15 Approved surface water management and monitoring programmes will be implemented to ensure that only water of acceptable quality is released to the Scott or Blackwood Rivers. 16 The results of monitoring any discharge from the dredge pond will be reported to the regulatory authorities and these reports will be publicly available.
6.2.4	Slimes will be directed to settling ponds for disposal. Portion of slimes will be incorporated into the topsoil.	Slimes ponds are no longer required due to the sublay process. However the commitment has been retained and expanded.	10 & 17	
6.2.5	Clearing will be kept to a minimum for safe and efficient operations	No change	18	
6.2.6	Treat vegetation and soil ahead of mining. Log millable timber, remove/store/return topsoil.	This commitment has been split into two commitments. Millable timber and topsoil.	19 & 46	

Original Condition or Commit-ment N^{o}	Requirements (summarised)	Evaluation	New Condition or Commitment Number	New Condition or Commitment Text
6.2.7	Notify the WA Museum of Aboriginal material uncovered and of limestone platforms.	Original commitment retained and another added to determine the requirement for archaeological assessment of the extended mining area.	20 & 21	21 BHPTM will liaise with the appropriate authorities to determine the requirement for archaeological assessment, of areas within the proposed mining extension, not previously surveyed. Where further assessment is required this will be carried out, documented and submitted to the DEP in advance of mining operations.
6.2.8	Control the generation of dust.	Commitment has been retained and expanded to include to include dust monitoring.	22, 23 & 24	
6.2.9	Protect flora of conservation value by excluding eastern half of Loc 4264 from mining.	Original commitment retained and expanded to include development of a management programme. Additional commitments added to address this topic in the extended mining area.	33, 39, 40, & 61	39 BHPTM will comply with the requirements of the Wildlife Conservation Act. 40 BHPTM will carry out botanical monitoring in areas of conservation significance when they are adjacent to mining activities ie National Park, Camping Reserve, Governor Broome Rd and areas containing declared rare flora, to determine the effects of the allowable drawdown on the vegetation in these areas. If the 0.5m drawdown is found to be detrimental BHPTM will modify its practices to reduce the drawdown. 61 Assessment of Locations 4152 (particularly the faunal values of the summer swamp) and 4261 (particularly for declared rare flora) will be carried out, and the results provided to the DEP, in advance of mining operations. If required, BHPTM will exclude these areas from the mining area.
6.2.10	Prevent disturbance by light emissions.	No change.	25	
6.2.11	Monitor noise.	Original commitment retained and a new commitment added.	28 & 31	31 BHPTM will implement a noise monitoring programme when the project is commissioned to ensure compliance with the stipulated noise levels at the closest residence to the operations. This programme will be continued for a period of three years and then reviewed in consultation with the DEP.

Original Condition or Commit-ment N°	Requirements (summarised)	Evaluation	New Condition or Commitment Number	New Condition or Commitment Text
6.2.11	Implement noise mitigation measures.	Original commitment expanded into number of commitments and two new commitments added.	26, 27, 29, 30 & 32	30 BHPTM will carry out noise assessment studies for the proposed extension to the mining area and develop mitigation measures as required, and to the satisfaction of the DEP, to meet the stipulated noise conditions. This will be completed, documented and submitted to the DEP prior to mining in these areas. 32 In addition to meeting the stipulated noise levels, BHPTM will respond to the concerns of nearby residents as they arise.
6.3	Rehabilitate the mining area.	Original commitment expanded into number of commitments and a new commitment added. Condition 11 also deals with this topic and so there is some repetition.	36, 43, 44, 45, 47, 48, 49, 50, 51 & 63	50 Rehabilitation, on land not owned by BHPTM, will be carried out with the input of the landowner and to the satisfaction of the regulatory authorities. 51 BHPTM will plant native vegetation, in areas adjacent to the National Park, in similar proportions to that which occurred prior to mining, if the landowner is agreeable.
6.4.1	Manage the supply of water to the project.	Original commitment expanded into two commitments.	65 & 66	
6.4.2	Dispose of garbage and workshop wastes at an approved disposal site in the shire.	No change.	68	
6.4.2	Return waste products removed from the concentrate to the minesite for disposal.	No change.	67	
6.4.3	Minimise impacts on visual amenity by screening dry mill and office.	No change.	64	
6.5.1	Transport mineral product as described in ERMP. Upgrade roads, cover trucks, and no haulage on Sat-Sun.	Original commitment expanded into a number of commitments. Commitments relating to the transport route have become the responsibility of the Main Roads Department.	69, 70, 71, 73 & 75	
6.5.1 ERMP 4.3.2.3	Prepare and implement dieback management programme for haulage route.	This commitment is now the responsibility of MRD.	74	
6.5.2	Manage noise emissions from transport activities.	This commitment is superseded by commitments 26, 27, 29, 30 ,& 32; and more specifically by condition 10.		

Original Condition or Commit-ment N°	Requirements (summarised)	Evaluation	New Condition or Commitment Number	New Condition or Commitment Text
6.5.2	Design road to manage noise in consideration of nearby residences.	This commitment is now the responsibility of MRD.	72	
6.5.2	Construct road to manage noise in consideration of nearby residences.	This commitment is now the responsibility of MRD.	72	
6.6	Manage dieback.	This commitment has been retained and expanded into a number of commitments.	52, 53, 54, 55, 56, 57, 58, 59, 60 & 63	59 BHPTM will assess the dieback status of the proposed mining extension and develop management measures to the satisfaction of CALM and the DEP, before mining operations commence. The results of assessment and management measures will be provided to the DEP and will be publicly available.
6.7	Reduce emissions of green house gases to as low as practicable.	Commitment has been retained and expanded into two commitments.	76 & 77	
6.8.3	Carry out a flora and fauna survey.	Commitment retained and expanded into a number of commitments. New commitment to survey fauna and flora in extended area.	34, 35, 38, 41 & 63	38 BHPTM will botanically survey all areas of remnant vegetation, ahead of planned mining activities, so that management of areas of conservation significance can be agreed with the relevant regulatory authorities. The results will be submitted to the DEP in advance of mining operations. If required, BHPTM will exclude areas of conservation significance from the mining area. 41 BHPTM will assess all areas of significant remnant vegetation, that have not been surveyed previously for fauna, prior to mining. Results and management measures will be submitted to the DEP in advance of mining operations.
6.8.3	Carry out flora and fauna survey of proposed route upgrading.	Commitment has been retained.	37	

Note: Requirements were summarised from the Minister's statement for Conditions and from the DEP audit table for Commitments.

The Environmental Protection Authority believes that these topics are adequately addressed by the commitments made by the proponent, the proponent's response to issues raised in the public submissions, the requirements of relevant Acts and Regulations, and the Environmental Protection Authority's recommendations in this report. Table 4 provides a summary of the EPA's position on these key topics.

The Environmental Protection Authority is satisfied that, using information currently available, the following recommendations may be made to the Minister for the Environment.

Recommendation 1

The Environmental Protection Authority recommends that the proposal by BHP Titanium Minerals Pty Ltd to extend the approved mining area is environmentally acceptable and the Environmental Protection Authority recommends that it should proceed subject to the Environmental Conditions and Commitments as for the previously approved mining operation and recommendations 2,3, and 4.

Recommendation 2

The Environmental Protection Authority recommends that the discharge of dredge pond water into the Scott and Blackwood rivers should be avoided where possible, but where discharge may be required, such discharge should only occur following and in accordance with the agreement of the Environmental Protection Authority. Accordingly, before mining commences in any area where discharge may be necessary or otherwise where discharge becomes necessary, the proponent should prepare a dredge pond water discharge plan to the requirements of the Environmental Protection Authority, which:

- **justifies the requirement to discharge dredge pond water;**
- **describes the expected quality and quantity of dredge pond water to be discharged;**
- **establishes water quality standards to be met by any discharge;**
- **sets out the methods which will be employed to improve water quality; and**
- **demonstrates that the discharge of dredge pond water will have no detrimental effect upon the Scott or Blackwood rivers.**

Recommendation 3

The Environmental Protection Authority recommends that Environmental Condition 9 of the previous Statement of Environmental Conditions for the Heavy Mineral Sands Mine - Beenup be deleted and that acceptable noise levels then be determined by the application of the Noise Abatement (Neighbourhood Annoyance) Regulations 1979, or any subsequent regulations should these be repealed.

Table 4:Summary of Environmental Protection Authority recommendations.

ISSUES	OBJECTIVE	EVALUATION FRAMEWORK	PROPONENT'S COMMITMENT	EPA RECOMMENDATION
Effect upon the Scott National Park, Scott River, and Blackwood River.	Ensure the proposed extension has no adverse effect upon the Scott National Park, Scott River, or Blackwood River.	Any water flow leaving the site must be of an acceptable standard. Surface water management plan for the approved project was previously assessed by the EPA and approved. Groundwater drawdown should not exceed 0.5m.	Will develop and implement a surface water management programme to prevent the release of turbid or otherwise unacceptable quality waters from the site. (Commitment 12) Approved surface water management and monitoring programmes will be implemented to ensure that only water of acceptable quality is released to the Scott or Blackwood rivers. (Commitment 15) Carry out botanical monitoring in areas of conservation significance (including the Scott National Park) to determine the effects of the allowable drawdown. If 0.5m drawdown is detrimental, BHPTM will modify practices to reduce the drawdown. (Commitment 40)	Not considered necessary as proponent's commitments are adequate.
Fate of significant remnant vegetation.	To protect significant remnant vegetation.	Assess remnant vegetation for declared rare or priority species. Declared rare or priority species are protected by regulations under the Wildlife Conservation Act.	BHPTM will botanically survey all areas of remnant vegetation, ahead of planned mining activities, so that management of areas of conservation significance can be agreed with the relevant regulatory authorities. The results will be submitted to DEP in EMPs to be submitted in advance of mining operations. If required, BHPTM will exclude ares of conservation significance from the mining area. (Commitment 38)	Not considered necessary as the proponent's commitments and compliance with the Wildlife Conservation Act will protect significant remnant vegetation.

ISSUES	OBJECTIVE	EVALUATION FRAMEWORK	PROPONENT'S COMMITMENT	EPA RECOMMENDATION
Need for additional flora/fauna surveys.	Ensure there is adequate information on the flora and fauna of the mining area for environmental decisions to be made.	Flora and fauna of the region was previously surveyed for the original proposal. Additional detailed surveys of the areas to be mined in the first few years have been conducted.	BHPTM will botanically survey all areas of remnant vegetation, ahead of planned mining activities, so that management of areas of conservation significance can be agreed with the relevant regulatory authorities. If required, BHPTM will exclude ares of conservation significance from the mining area. (Commitment 38) BHPTM will assess all areas of significant remnant vegetation, that have not been surveyed previously for fauna prior to mining. (Commitment 41)	Not considered necessary as proponent's commitments are adequate.
Release of dredge pond water.	Ensure released water does not adversely affect the Scott or Blackwood rivers.	No discharge which would affect water quality or produce silting in the rivers. Discharge to rivers is a prescribed activity and will require a licence from the DEP.	Monitor dredge water quality ahead of need to discharge and limit discharge to that required to prevent pond overflow. (Commitment 14) Approved surface water management and monitoring programmes will be implemented to ensure only water of acceptable quality is released to the rivers. (Commitment 15) Monitoring reports will be publicly available. (Commitment 16)	BHPTM should prepare dredge pond water discharge plans to the requirements of the EPA, before the need for discharge arises (Recommendation 2).

ISSUES	OBJECTIVE	EVALUATION FRAMEWORK	PROPONENT'S COMMITMENT	EPA RECOMMENDATION
Impact of dust on nearby residents.	Prevent unacceptable levels of dust adversely affecting nearby residents.	Proposed extension has little potential to increase dust generation. Approved dust management programme will be applied to the extended mining area.	The generation of dust from areas such as topsoil, tailings, concentrate heaps, and haul roads will be controlled as necessary to minimise dust emissions. (Commitment 22) A dust monitoring programme will be implemented to monitor the effectiveness of dust control measures, when the project is commissioned. Dust control measures will be modified to rectify any dust control problems identified by monitoring. (Commitment 24)	Not considered necessary as proponent's commitments are adequate.
Noise	Ensure acceptable levels of noise.	Acceptable noise levels are determined by the Noise Abatement (Neighbourhood Annoyance) Regulations 1979.	Carry out noise assessment studies and develop mitigation measures as required. (Commitment 30) Implement noise monitoring programme. (Commitment 31) Will respond to the concerns of nearby residents as they arise. (Commitment 32)	The proponent's commitments and compliance with the Noise Abatement Regulations 1979, will ensure noise levels are acceptable. Recommend that Environmental Condition 9 of the original statement of approval be deleted.

Recommendation 4

The Environmental Protection Authority recommends that a new Statement of Environmental Conditions for the Heavy Mineral Sands Mine - Beenup be drafted: to incorporate the extended mining area; to address recommendations 2 and 3; and to include the consolidated list of environmental management commitments.

7. Recommended environmental conditions

Based on its assessment of this proposal and the recommendations in this report, the Environmental Protection Authority considers that the following Recommended Environmental Conditions are appropriate for the Project:

1 Proponent Commitments

The proponent has made a number of environmental management commitments in order to protect the environment.

1-1 In implementing the proposal (including the documented modifications of September 1995), the proponent shall fulfil the relevant environmental management commitments made in the *Proposal to Extend Approved Mining Area* in September 1995, and reported on in Environmental Protection Authority Bulletin 79X; in the Environmental Review and Management Programme (1990), and published in Environmental Protection Authority Bulletin 483 as Appendix B, and in response to issues raised following public submissions; provided that the commitments are not inconsistent with the conditions or procedures contained in this statement.

A list of environmental management commitments was published in Environmental Protection Authority Bulletin 815 (Appendix 5) and a copy is attached.

2 Implementation

Changes to the proposal which are not substantial may be carried out with the approval of the Minister for the Environment.

2-1 Subject to these conditions, the manner of detailed implementation of the proposal shall conform in substance with that set out in any designs, specifications, plans or other technical material submitted by the proponent to the Environmental Protection Authority with the proposal.

2-2 Where, in the course of the detailed implementation referred to in condition 2-1, the proponent seeks to change the designs, specifications, plans or other technical material submitted to the Environmental Protection Authority in any way that the Minister for the Environment determines, on the advice of the Environmental Protection Authority, is not substantial, those changes may be effected.

3 Environmental Management Programme

3-1 Prior to site or road construction works or excavation of the dredge pond, the proponent shall prepare a comprehensive Environmental Management Programme, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority. (See also, conditions 4 and 5.)

3-2 The proponent shall review (and if necessary update) this programme annually, to the requirements of the Minister for the Environment.

3-3 The proponent shall implement the programme required by condition 3-1 and updated by condition 3-2.

4 Groundwater

4-1 Prior to excavation of the dredge pond, the proponent shall develop a comprehensive groundwater monitoring programme, as part of an overall Environmental Management Programme, to the requirements of the Minister for the Environment on the advice of the Environmental Protection Authority, the Department of Minerals and Energy and the Water and Rivers Commission.

4-2 The proponent shall implement the programme required by condition 4-1.

4-3 The proponent shall not cause/allow any additional drawdown attributable to the project to exceed half a metre at the boundary of any neighbouring land.

5 Surface Water Management

5-1 Prior to site construction works, or excavation of the dredge pond the proponent shall prepare a comprehensive surface water management plan, as part of an overall Environmental Management Programme, to the requirements of the Minister for the Environment on the advice of the Environmental Protection Authority, the Water and Rivers Commission and the Department of Agriculture.

5-2 The proponent shall implement the plan required by condition 5-1.

6 Discharge of Dredge Pond Water

6-1 Prior to mining in any area where the discharge of dredge pond water into the Scott or Blackwood rivers may be necessary or otherwise where discharge becomes necessary, the proponent shall prepare for the particular area, a dredge pond water discharge plan, to the requirements of the Environmental Protection Authority, which:

1. justifies the need to discharge dredge pond water;
2. describes the expected quality and quantity of dredge pond water to be discharged;
3. establishes water quality standards to be met by any discharge;
4. sets out the methods which will be employed to improve water quality; and
5. demonstrates that the discharge of dredge pond water will have no detrimental effect upon the Scott or Blackwood rivers.

6-2 The proponent shall only discharge dredge pond water into the Scott or Blackwood rivers in accordance with a dredge pond water discharge plan for the particular area required by condition X-1.

7 Slimes Handling Operations

7-1 Within the three months following the completion of one year's operation of the dredge, the proponent shall review and report on slimes handling operations, to the requirements of the Environmental Protection Authority. Continued operation shall be to the requirements of the Minister for the Environment, on advice of the Environmental Protection Authority in consultation with the Department of Minerals and Energy.

7-2 In the event that the review of slimes handling operations indicates unsatisfactory performance in the opinion of the Minister for the Environment, the proponent shall develop within a further 12 months a contingency plan for slimes handling, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

7-3 The proponent shall implement any contingency plan required by condition 6-2.

8 Dieback

8-1 Prior to any site construction works at the mine-site, road construction or to obtain construction materials for earthworks, the proponent shall develop comprehensive dieback management prescriptions, in consultation with the Department of Conservation and Land Management, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority and the Department of Conservation and Land Management.

8-2 The proponent shall implement the prescriptions required by condition 7-1.

9 Community Liaison

9 Prior to commissioning of the dredge and in order to facilitate monitoring, review and management of the social impact of the project throughout its life, the proponent shall, establish formal liaison, monitoring and public reporting processes, to the requirements of the Minister for the Environment on the advice of the Environmental Protection Authority.

10 Noise (Haulage)

10-1 The proponent shall manage the noise levels associated with the road transport for product haulage to the requirements of the Minister for the Environment.

10-2 The proponent shall periodically review the noise levels associated with product haulage operations at appropriate locations along the road route to the requirements of the Minister for the Environment. The initial review and reporting shall be undertaken 12 months after commencement of product haulage operations.

11 Rehabilitation

11-1 Within one year of the commencement of productive mining the proponent shall develop a rolling rehabilitation plan (including the decommissioning phase), to the requirements of the Minister for the Environment on the advice of the Environmental Protection Authority, the Departments of: Minerals and Energy; Agriculture; and Conservation and Land Management.

11-2 The proponent shall review and if necessary update this plan annually, and it shall be publicly available.

11-3 The proponent shall implement the plan required by condition 10-1 and updated by condition 10-2.

12 Decommissioning

12-1 The proponent shall satisfactorily decommission the project, remove the plant and installations, and achieve the final rehabilitation of the site and its environs.

12-2 At least six months prior to decommissioning, the proponent shall prepare a decommissioning and final rehabilitation plan.

12-3 The proponent shall implement the plan required by condition 11-2.

13 Proponent

These conditions legally apply to the nominated proponent.

13-1 No transfer of ownership, control or management of the project which would give rise to a need for the replacement of the proponent shall take place until the Minister for the Environment has advised the proponent that approval has been given for the nomination of a replacement proponent. Any request for the exercise of that power of the Minister shall be accompanied by a copy of this statement endorsed with an undertaking by the proposed replacement proponent to carry out the project in accordance with the conditions and procedures set out in the statement.

14 Time Limit on Approval

The environmental approval for the proposal is limited.

14-1 If the proponent has not substantially commenced the project within two years of the date of this statement, then the approval to implement the proposal as granted in the statement of 24 May 1991 shall lapse and be void. The Minister for the Environment shall determine any question as to whether the project has been substantially commenced.

Any application to extend the period of two years referred to in this condition shall be made before the expiration of that period to the Minister for the Environment.

Where the proponent demonstrates to the requirements of the Minister for the Environment on advice of the Department of Environmental Protection that the environmental parameters of the proposal have not changed significantly, then the Minister may grant an extension not exceeding two years.

15 Compliance Auditing

To help determine environmental performance, periodic reports on progress in implementation of the proposal are required.

15-1 The proponent shall submit periodic Performance and Compliance Reports, in accordance with an audit programme prepared by the Department of Environmental Protection in consultation with the proponent.

Procedure

1 Unless otherwise specified, the Department of Environmental Protection is responsible for assessing compliance with the conditions contained in this statement and for issuing formal clearance of conditions.

2 Where compliance with any condition is in dispute, the matter will be determined by the Minister for the Environment.

Note
The proponent is required to apply for a Works Approval and Licence for this project under the provisions of Part V of the Environmental Protection Act.

Deletion of condition

Condition 9 in the statement of 24 May 1991 on noise levels at nearby residences is deleted.

8. References

BHP Titanium Minerals Pty Ltd 1995, *Beenup Titanium Minerals Project: Proposal to Extend Approved Mining Area*

Environmental Protection Authority 1990, *Heavy Minerals Mine—Beenup: Mineral Deposits Limited: Report and Recommendations of the Environmental Protection Authority*, Bulletin 483, Environmental Protection Authority, Perth WA.

BHP Mineral Deposits Pty Ltd 1994, *Environmental Management Programme*

Lewis Environmental Consultants 1990, *Heavy Minerals Mine Beenup: Environmental Review and Management Programme*, Mineral Deposits Limited.

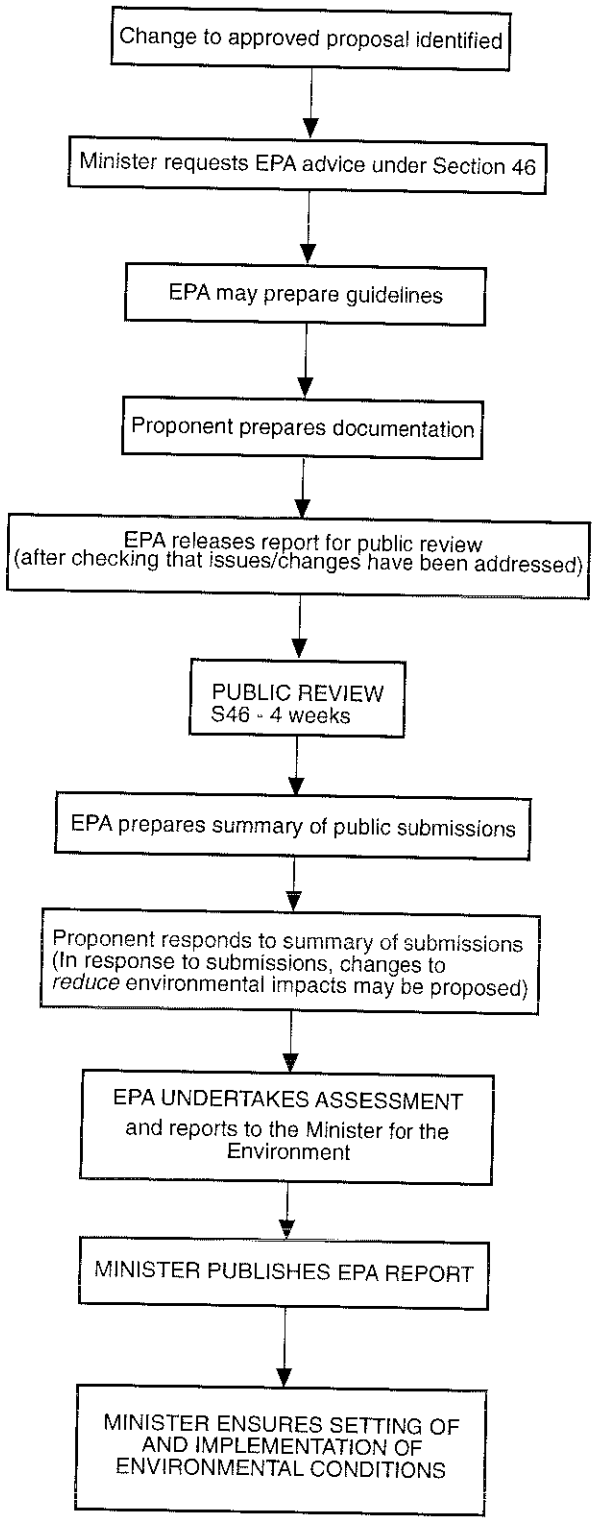
Hart, Simpson, and Associates 1991 *Beenup Project. Dieback in the Scott National Park*, report prepared for Mineral Deposits Pty Ltd.

Mattiske Consulting Pty Ltd 1995, *Flora and Vegetation on the Beenup Survey Area*, report prepared for BHP Titanium Minerals Pty Ltd.

Appendix 1

Environmental Impact Assessment flow chart

EIA PROCESS FLOW CHART



There is no right of appeal on this request

EPA usually completes summary in 2-3 weeks

Report release often 3-5 weeks after receipt of response to submissions

Any body may appeal on EPA report to Minister within 14 days. Minister may remit to EPA or take appeal into consideration when setting conditions

Proponent may appeal on conditions within 14 days of issue

Appendix 2

Statement of conditions of approval (24 May 1991)

Ass # 312

Bull # 483

State # 140

WESTERN AUSTRALIA

MINISTER FOR THE ENVIRONMENT

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED (PURSUANT TO THE PROVISIONS OF THE ENVIRONMENTAL PROTECTION ACT 1986)

HEAVY MINERAL SANDS MINE, BEENUP, SHIRE OF AUGUSTA - MARGARET RIVER

MINERAL DEPOSITS LIMITED

This proposal may be implemented subject to the following conditions:

1 In implementing the proposal, the proponent shall fulfil the commitments (which are not inconsistent with the conditions or procedures contained in this statement) made in the Environmental Review and Management Programme and subsequently (a copy of the consolidated commitments is attached) to the satisfaction of the Minister for the Environment.

2 Subject to these conditions, the manner of detailed implementation of the proposal shall conform in substance with that set out in any designs, specifications, plans or other technical material submitted by the proponent to the Environmental Protection Authority with the proposal. Where, in the course of that detailed implementation, the proponent seeks to change those designs, specifications, plans or other technical material in any way that the Minister for the Environment determines on the advice of the Environmental Protection Authority, is not substantial, those changes may be effected.

3 Prior to site or road construction works or excavation of the dredge pond, the proponent shall prepare a comprehensive Environmental Management Programme, to the satisfaction of the Minister for the Environment on advice of the Environmental Protection Authority. (See also, conditions 4 and 5.) The proponent shall review (and if necessary update) this programme annually, to the satisfaction of the Minister for the Environment.

4 Prior to excavation of the dredge pond, the proponent shall develop and subsequently implement a comprehensive groundwater monitoring programme, as part of an overall Environmental Management Programme, to the satisfaction of the Minister for the Environment on the advice of the Environmental Protection Authority, the Department of Mines and the Water Authority of Western Australia.

The proponent shall not cause/allow any additional drawdown attributable to the project to exceed half a metre at the boundary of any neighbouring land.

5 Prior to site construction works, or excavation of the dredge pond the proponent shall prepare and implement a comprehensive surface water management plan, as part of an overall Environmental Management Programme, to the satisfaction of the Minister for the Environment on the advice of the Environmental Protection Authority, the Water Authority of Western Australia and the Department of Agriculture.

6 Within the three months following the completion of one year's operation of the dredge, the proponent shall review and report on slimes handling operations, to the satisfaction of the Environmental Protection Authority. Continued operation shall be to the satisfaction of the Minister for the Environment, on advice of the Environmental Protection Authority in consultation with the Department of Mines

Published on

24 MAY 1991

In the event that the review of slimes handling operations indicates unsatisfactory performance in the opinion of the Minister for the Environment, the proponent shall develop and implement within a further 12 months a contingency plan for slimes handling, to the satisfaction of the Minister for the Environment on advice of the Environmental Protection Authority.

7 Prior to any site construction works at the mine-site, road construction or to obtain construction materials for earthworks, the proponent shall develop comprehensive dieback management prescriptions, in consultation with the Department of Conservation and Land Management, to the satisfaction of the Minister for the Environment on advice of the Environmental Protection Authority and the Department of Conservation and Land Management.

8 In order to facilitate monitoring, review and management of the social impact of the project throughout its life, the proponent shall, prior to commissioning of the dredge, establish formal liaison, monitoring and public reporting processes, to the satisfaction of the Minister for the Environment on the advice of the Environmental Protection Authority.

9 The proponent shall not cause maximum noise levels at residential premises surrounding the proposed mine and dry mill to exceed:

50dB(A) from 0700 hours to 1900 hours, Monday to Saturday
45dB(A) from 0700 to 1900, Sunday
45dB(A) from 1900 to 2200, every day
40dB(A) from 2200 to 0700, every day

and shall not cause unacceptable annoyance due to tonal or impulsive components or other characteristics contributing to annoyance, in the opinion of the Minster for the Environment on the advice of the Environmental Protection Authority.

10 The proponent shall manage the noise levels associated with the road transport for product haulage to the satisfaction of the Minister for the Environment. In addition, the proponent shall periodically review the noise levels associated with product haulage operations at appropriate locations along the road route to the satisfaction of the Minister for the Environment.

The initial review and reporting shall be undertaken 12 months after commencement of product haulage operations.

11 Within one year of the commencement of productive mining the proponent shall develop and subsequently implement a rolling rehabilitation plan (including the decommissioning phase), to the satisfaction of the Minister for the Environment on the advice of the Environmental Protection Authority, the Departments of Mines, Agriculture and Conservation and Land Management. The rehabilitation plan shall be publicaly available.

The proponent shall review (and if necessary update) this plan annually, to the satisfaction of the Minister for the Environment.

12 The proponent shall be responsible for decommissioning and removal of the plant and installations, to the satisfaction of the Environmental Protection Authority. At least six months prior to decommissioning, the proponent shall prepare and subsequently implement a decommissioning plan, to the satisfaction of the Environmental Protection Authority on advice of appropriate agencies.

13 No transfer of ownership, control or management of the project which would give rise to a need for the replacement of the proponent shall take place until the Minister for the Environment has advised the proponent that approval has been given for the nomination of a replacement proponent. Any request for the exercise of that power of the Minister shall be accompanied by a copy of this statement endorsed with an undertaking by the proposed replacement proponent to carry out the project in accordance with the conditions and procedures set out in the statement.

14 If the proponent has not substantially commenced the project within five years of the date of this statement, then the approval to implement the proposal as granted in this statement shall lapse and be void. The Minister for the Environment shall determine any question as to whether the project has been substantially commenced. Any application to extend the period of five years referred to in this condition shall be made before the expiration of that period, to the Minister for the Environment by way of a request for a change in the condition under Section 46 of the Environmental Protection Act. (On expiration of the five year period, further consideration of the proposal can only occur following a new referral to the Environmental Protection Authority).

Bob Pearce, MLA
MINISTER FOR THE ENVIRONMENT

24 MAY 1991

In the attached document Mineral Deposits Limited submits to the EPA responses to the questions raised by the public and Government Departments on the proposed Heavy Mineral Mine at Beenup. The proponent also outlines below the commitments already made in the ERMP together with the additional commitments it has made (printed in bold type) as a result of extra work completed since the ERMP was published. The proponent has also summarized (in part B below) the changes and modifications it has made to the project through public consultation.

A. PROJECT COMMITMENTS SUMMARY

6.0 SUMMARY OF ENVIRONMENTAL MANAGEMENT COMMITMENTS

If approval for the project is granted, the proponent will carry out the following actions before, during and after the proposed operation, according to the particular requirements of each commitment, to the satisfaction of the EPA.

6.1 CONSTRUCTION PHASE

6.1.1 Accommodation for temporary workforce

During the peak construction period, temporary single persons quarters, recreation facilities and messing facilities will be provided adjacent to the dry mill site. Accommodation for married personnel will be provided via existing commercial caravan parks and, subject to Shire Council agreement, at a caravan park to be constructed at the old Bullers Mill site adjacent to the Alexandra Bridge. This caravan park will be handed over to the Shire Council at the conclusion of the construction phase for management as a community facility.

The Company is proposing that its single persons quarters be located on site and that a wet mess be located in this area. Following discussions with the Shire and local business groups, it is no longer proposed to build the Alexander Bridge Caravan Park. It is now proposed that the married accommodation be supplied within Augusta in the Flinders Bay Caravan Park. This would enable families of the construction workforce to integrate with the local community and bring some benefits, from an economic point of view, back into the Augusta township.

6.2 MINING

6.2.1 Environmental awareness

An environmental awareness programme will be established for the Company's workforce. All personnel working on the project will be required to observe environmental guidelines both within the mine site and in adjoining areas.

6.2.2 Groundwater

The mining operation will be designed to avoid substantial draw-down of the water table; if water table draw-down does occur during the summer months, it will be minor and confined to the immediate locality of the dredge pond. During summer, if required, make-up water will be supplied to the dredge pond from several bores in the Lesueur Formation at a depth of 150 to 200 m.

6.2.3 Surface water

Existing surface drainage channels that are encountered by the mining operation will be temporarily diverted around the dredge pond. These channels will be established at least 12 months prior to requirement, to enable vegetation to regenerate and stabilize. Silt traps will be constructed on major drainage channels, downstream of the mining operation. Where practical, water from the slimes dam will be decanted and returned to the dredge pond. Providing turbidity is at an acceptable level, excess decant water from the slimes dam will be discharged into existing drainage channels (during the winter wet season).

6.2.4 Slimes disposal

Slimes will be directed to settling ponds for disposal after they have dried. A portion of the slimes will be incorporated into the topsoil destined for pasture areas and the remainder will be incorporated into the tailings near the surface.

6.2.5 Minimization of disturbance

Clearing of native vegetation will be kept to an absolute minimum. Wherever possible, access roads and easements will follow existing tracks.

6.2.6 Site preparation

The treatment of vegetation and soil on land in advance of mining will as described in Section 3.1.9.2 of the ERMP.

6.2.7 Aboriginal artefacts

Should any archaeological material be uncovered during the process of earth moving, the Department of Aboriginal Sites of the Western Australian Museum will be immediately notified.

The proponent will report any occurrence of Limestone platforms to the W.A. Museum.

6.2.8 Dust control

The generation of dust from areas such as topsoil, tailings, concentrate heaps and haul roads will be controlled as necessary by the control measures detailed in Section 4.7.2 of the ERMP.

6.2.9 Flora and vegetation of conservation value

The eastern half of Location 4264 will be excluded from mining.

6.2.10 Lighting

If lighting causes direct illumination at neighbours residences, the Company will install appropriate light shields.

6.2.11 Noise Mitigation

The Company will design if necessary a series of sound barriers to prevent the escape of noise from loading areas. It will apply to have the pitch of reversal horns reduced and will avoid, wherever possible, disruptive noise at night. The Company is currently undertaking further base line noise monitoring and will continue with periodic monitoring during both the construction and operation phases.

6.3 REHABILITATION

The type of vegetation to be returned to the mined area will be as drawn up after consideration of the recommendations by the final land use Work Party and the Community Consultative Group viz:

(a) 72% agriculture, including possible community purposes, e.g. a commercial tree crop.

(b) 13% rehabilitation of the main remnants of native vegetation back to native vegetation.

(c) 11% planting of native plants along major water courses, to assist in stabilizing the soil and absorbing fertilizer nutrients leached from farming activities.

(d) 4% planting of a buffer zone of native tree and understorey species along the southern boundary, adjacent to the Scott National Park.

Rehabilitation procedures will be as listed in Section 4.2.2 of the ERMP document.

Detailed rehabilitation plans will be prepared well in advance of the commencement of mining operations and these will be available for public inspection. There will be a continuing programme of evaluating proven rehabilitation techniques and modifying them as necessary for the Beenup situation. Members of the public will be kept informed of this programme through the Consultative process.

The Company will co-operate in regeneration trials for Rare and Endangered Flora species, Reserve List Species and Species of Interest as appropriate with CALM and the Kings Park Board.

6.4 Mineral Processing

6.4.1 Water supply

The water supply for the dry mill will be obtained from two bores in the Lesueur Formation at a depth of 150 to 200 m, which will not affect the water table nearer the surface. Much of the water in the plant will be recycled and the discharge of excess water is not planned. As a precaution, a silt trap will be constructed downstream of the settling dam.

6.4.2 Waste disposal

Sand and other waste products which are removed from the concentrate in the mineral processing will be returned to the mine site for disposal. The disposal of other wastes such as garbage and workshop waste will be disposed of at an approved disposal area within the Shire.

6.4.3 Visual amenity

The dry mill and office will be screened from the road by planting of indigenous trees and shrubs.

The Company proposes to clad its site buildings with appropriately coloured green colourbond, thereby minimizing the visual disturbance with the surrounding land.

6.5 TRANSPORT OF MINERAL PRODUCT

6.5.1 Transport route

The selection of the preferred transport route, the upgrading of parts of this route as required and the conditions under which the mineral product will be transported will be as described in Section 4.3.2 of the ERMP document reiterated below.

4.3.2.1 Upgrading of roads

The total length of the preferred route will be sealed. All roads will be constructed to MRD or Shire standards as appropriate.

At the intersections where Scott River Road and Sues Road meet the Brockman Highway, the highway will be widened to incorporate a deceleration lane. The intersection of Sabina Road with the Vasse Highway will include an acceleration lane. All intersections will be positioned to provide clear visibility for a distance of 400 m in both directions.

"Stop" signs will be installed at the three intersections. Signs will be placed along the route to indicate the presence of heavy haulage vehicles.
Speed restrictions will be imposed in populated areas.

Sound levels at the two houses near the intersection of Scott River Road and Brockman Highway will be recorded under actual operating conditions and appropriate measures will be taken, if necessary, to reduce the sound levels to acceptable levels.

The provision of a sealed all weather road, suitable for heavy haulage, between Capel and the project site, will alter existing traffic patterns. It is anticipated that heavy haulage traffic along the Bussell Highway between Capel and Margaret River will be reduced. To quantify these changes, the proponent is currently undertaking a traffic study. (*) The study should be completed by April, 1990.

(*) This study has been completed and given to MRD.

4.3.2.2 Operation of trucks

The proposed hours of operation are 24 hours per day in three shifts, five days per week. No haulage of mineral product is proposed during Saturday and Sunday. As a condition of the haulage contract, the contractor will be required to maintain the vehicles in a safe operating condition. The mineral will be securely covered by a tarpaulin to prevent spillage en-route.

4.3.2.3 Management of dieback

The widening and re-alignment of some sections of the transport route, and the extraction of gravel for road construction, have the potential to spread dieback. A dieback management programme for these operations will be developed by the proponent to the satisfaction of CALM and EPA.

The proponent will carry out the following studies.

(a) Description and appraisal of the vegetation and flora along the entire Sues Road-Sabina Road route. The condition of the vegetation will be assessed, with particular emphasis on the occurrence of dieback. A more detailed study will be carried out in the proposed Whicher Reserve section, where a number of possible route alternative (Figure 4.3) will be studied to ensure minimum impact, both with respect to dieback control and flora.

(b) Description of the terrain, drainage and soils with particular emphasis on regional drainage and how the proposed upgrading may affect this drainage.

(c) Description of the fauna and faunal habitats of areas that would be disturbed by the proposed upgrading.

(d) Survey the areas that would be disturbed by the proposed upgrading for cultural and archaeological sites.

The proponent will endeavour to obtain gravel from private sources, including an investigation of the iron pan contained within the proposed mining area.

If there is any shortfall in requirements, the proponent will make a formal approach to CALM for its requirements. The spread of dieback will be prevented by using only uninfected sources of gravel in areas currently free of dieback.

6.5.2 General

A new heavy haulage route from the mine to Capel will be developed. This route will use Scott River Road, Brockman Highway, Sues Road and then a route selected by BSD (a consultant to the MRD) to link Sues Road and the Capel Bypass. This route will be constructed to comply with the latest Austroad standards and will meet MRD requirements.

The heavy haulage route from Vasse Highway to the mine will be clearly designated as a heavy haulage route with warning signs.

The Company is willing to meet the costs associated with the haulage of its mineral product. It is finalizing agreement with the Shire's on the proportion of upgrading, sealing and maintenance levels for all haulage roads.

The Company is willing to reconsider the use of rail if it should ever become viable and competitive.

6.5.2 Noise mitigation

Noise levels at the intersection of Scott River Road and Brockman Highway will be reduced to acceptable levels if necessary by the use of measures outlined in Section 4.8.3 of the ERMP document.

6.6 CONTROL OF THE SPREAD OF DIEBACK

6.6.1 Dieback survey

To enable a dieback management plan to be incorporated into the mine management plan, a detailed dieback survey will be carried out over the entire mining area, after approval to proceed is granted and before operations commence.

6.6.2 Drainage

The drainage on the mining area will not be altered after mining. Existing drainage lines will be reconstituted after mining in positions and flow directions similar to the pre-mining situation.

6.6.3 Control measures

Vehicles moving from infected to uninfected areas will be washed down. Trucks transporting mineral products from the dry mill to Bunbury will not travel further south than the dry mill. The access of vehicles of mine workers to the mining area will be restricted to raised gravel surfaced roads and raised gravel parking areas.

6.6.4 Further studies

Measures to control and contain any dieback in native vegetation areas to be returned after mining, will be studied in the early years of mining, when the rehabilitation will be largely in the form of pastures.

6.6.5 Publication

The Company will make its dieback control strategies available to the public via the EPA Library, the Shire Library and the Company's offices. A dieback survey of the Eastern and Northern sections of the Scott National Park will be completed early in 1991 and this will be made available to the public. Ongoing monitoring of these sections of the National Park will occur. All aspects of the Dieback Management strategy will be to the satisfaction of EPA and CALM.

6.7 AUDIT OF GREENHOUSE GASES

Commitments to reduce the emission of greenhouse gases to as low as practical will be as outlined in Section 4.5 of this ERMP.

6.8 MONITORING

Monitoring will be undertaken in the following areas and the results reported as appropriate to the Department of Mines, the Department of Conservation and Land Management and the Environmental Protection Authority. The results from various monitoring programmes will be viewed regularly in relation to the appropriate management programme and the management programme will be modified as necessary.

6.8.1 Groundwater

The number of bores being monitored will be increased and during the initial years, these bores will be monitored on a weekly basis.

6.8.1.1 Groundwater Monitoring

The Company has increased its monitoring of bores prior to approval and construction to a fortnightly basis in winter and a quarterly basis during summer, to obtain detailed information on groundwater fluctuations.

6.8.2 Surface water

Monitoring of the water quality of the Blackwood and Scott Rivers will continue on a regular basis. The major drainage channels on and leaving the mining area will also be monitored regularly.

6.8.2.1 Surface Water Monitoring

Monitoring of the water quality in the Blackwood and Scott Rivers, is currently being undertaken on a fortnightly basis during winter and a quarterly basis in summer. In addition, major drainage channels are also being monitored. This information will be used to assist in the development and on-going monitoring of the surface water management plan.

6.8.3 Flora, Fauna and vegetation

A buffer strip within the Scott National Park, in that section where the Park is contiguous with the mining area, will be botanically surveyed before mining commences and monitored annually thereafter.

6.8.3.1 Flora and Fauna Monitoring

Flora and fauna surveys of the eastern and northern sections of the Scott National Park will be completed over the period October 1990 to June 1991. The results of these surveys will be available to the public.

The Company will provide some trial nest boxes in areas of native re-vegetation to determine whether these assist in the return of fauna to the rehabilitation sites.

The Company will provide detailed studies of flora and fauna along the proposed transport route, which crosses CALM land, to CALM prior to the route being finalized.

6.8.4 Rehabilitation

The progress of rehabilitating areas will be monitored regularly and reported annually.

6.8.5 Dieback

Methods for monitoring the presence of the dieback organism in the dredge pond and drainage channels will be researched. Other parts of the mining area will be monitored for dieback as required, dependent on the results of the dieback survey. The buffer strip referred to in Section 6.8.3 will also be monitored for the presence of dieback.

6.9 ECONOMIC

6.9.1 Employment

The proponent will advertise all permanent positions in the local newspaper, in keeping with the policy of employing suitably qualified local residents where possible.

Electrical and mechanical apprenticeships offered by the proponent will be available for suitable local school-leavers.

Where competitive with alternative suppliers, local business activities will be supported.

The proponent is an equal opportunity employer.

The Company will provide training programmes for plant operators who have no appropriate experience.

The Company will favour local people when employing its permanent workforce.

The Company will provide an induction programme for its construction and permanent workforce to highlight sensitive environmental and local issues.

6.9.2 Infrastructure

The capital cost of infrastructure for the project will be borne by the proponent, in conjunction with other major users of the infrastructure facilities.

Upon obtaining approval for the project, agreement will be reached with the Shire to ensure that the Shire is not financially disadvantaged by the project.

A total funding package is being finalized with the Shire to enable them to cater for the incoming population.

6.9.3 Agricultural production

Areas of the pastoral land (937.3 ha), currently owned by MDL, that are not committed to the mining operation, will remain available for agricultural production. Post mining areas of rehabilitated pasture will be made available for agricultural use as soon as is practical.

6.9.4 Tourism

The potential for tours of the operation will be investigated in conjunction with the Augusta-Margaret River Tourist Bureau. Any funds generated from the tours will be for the benefit of the Tourist Bureau or local charities.

6.10 SOCIAL

6.10.1 Workforce

Suitably qualified local residents will be employed where possible. This will provide direct interaction between existing residents and employees new to the area. The proponent will provide the necessary training for plant operators, rather than rely on obtaining personnel who already have the appropriate work skills.

6.10.2 Accommodation

During the construction phase, single persons quarters will be provided on site to minimize pressure on existing rental accommodation.

The viability of constructing a caravan park for use by married persons during the construction phase, and then handing the management of the facility over to the Shire Council, will be further investigated.

Consultation with the Shire and the Beenup Consultative Group will continue, to determine means of minimizing the impact of the incoming construction and permanent operational workforce on existing housing.

The Company is proposing that its single persons quarters be located on-site and that a wet mess be located in this area. Following discussions with the Shire and local business groups, it is proposed that the married accommodation be supplied within Augusta in the Flinders Bay Caravan Park. This would enable families of the construction workforce to integrate with the local community and bring some benefits, from an economic point of view, back into the Augusta township.

6.10.3 Social infrastructure

The need for additional social facilities to meet current population growth and the increase in population due to the project will be investigated in conjunction with the Shire Council and the Beenup Consultative Group.

It is hoped that the Beenup Consultative Group will play an active role in assisting newcomers to assimilate to their new environment.

MDL personnel currently involved in consultation with the community will continue to be involved through the construction phase and into the operational phase, to maintain continuity of the consultative process.

The Company will provide annual updates on anticipated workforce changes to the Education Department prior to the new academic years to enable the Department to undertake informed planning.

6.11 MANAGEMENT PLANS

A surface water management plan and a Dieback management plan will be submitted and approved by the EPA. These plans will be available to the public for inspection.

B. PUBLIC CONSULTATION

Public consultation has continued since the publication of the ERMP. A number of changes and modifications to the plans originally considered by the Company, have occurred due to public input. These developed during and after the preparation of the ERMP.

a) No lowering of the water table is proposed: This is a major change to the proponents original plans and is now the basis of its water management programme.

b) Monitoring of surface waters: Following discussions with local fishermen, farmers, the Consultative Group and attendance at the Blackwood Conference, the proponent held discussions with the Waterways Commission to commence monitoring of the Scott and Blackwood Rivers. It has also included extensive monitoring of the surface drainages from the mine/mill areas impacted by the proposal.

c) Flora, Fauna and Dieback studies of the National Park: Discussions with locals and CALM have shown there is little information available on the Scott National Park. The proponent has commissioned studies of the eastern and northern sections of the Park to commence in October 1990.

d) Publication of Monitoring Results: The proponent has agreed to make all monitoring programmes and the National Park studies available to the public.

e) Construction Workforce: Original proposals to house married construction workers at a new caravan park at Alexander Bridge has been changed following requests from Augusta Business people, the Shire, and numerous local residents. It is now proposed that the married construction workers will be located at the Flinders Bay Caravan Park in Augusta.

f) Noise Studies: Following expressions of public concern, arrangements were made with the EPA for a two week continuous noise survey to be carried out at the nearest neighbour's property. A similar survey will also be conducted in summer.

g) Tree Planting: The proponent has agreed to commence the planting of about 4,000 trees as sight and noise screens in the autumn of 1991 at the dry mill site and at other appropriate locations around the mine site.

h) Continued Consultation: Although the present form of the Beenup Consultative Group will now change, the Company is committed to a continued consultative process. Discussions with the Shire Council are continuing to develop a consultative process that is acceptable to the Company, the Shire and the community.

i) Local Employment: The Company has received over 80 letters enquiring about permanent employment. There have been many local applicants with mining or trucking/farming experience and therefore it is confident that the commitment to employ locally as much as possible will be very successful.

j) Transport Route: One of the factors taken into account in selecting the Sues Road transport route as its preferred option was the extensive input recieved from the public. This came via local community meetings, direct letters to the Company, the Beenup Consultative Group, the local press and numerous local individuals.

Appendix 3

Summary of public submissions and proponent's response

FOREWORD

The information in this report is provided in response to the public submissions relating to the Company's proposal to extend the mining area associated with the Beenup Titanium Minerals Project. The summary of public submissions was provided to the Company by the Department of Environmental Protection.

Many of the submissions request similar information. To allow any submission and response to be read in isolation the Company has repeated information throughout the document as required.

A summary of the Company's updated and consolidated environmental commitments is provided at the end of the document.

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1 IMPACTS ON PHYSICAL AND BIOLOGICAL ENVIRONMENT

Q1.0.1

There is a need for a competent survey of the biological diversity of the region, along with an assessment of the likely impact of the mine on water quality in the adjacent Scott and Blackwood Rivers.

Surveys of vegetation, flora, fauna and dieback have been completed by independent consultants within the approved mining area, the adjacent Scott National Park and the Camping Reserve.

Vegetation surveys of two locations within the proposed extension have been completed. The Company has undertaken in section 5.1.1, relating to flora and vegetation, that "Remnant vegetation communities on the proposed extension to the mining area will be progressively surveyed to determine their conservation significance and the requirement for specific management strategies." And in Section 6.9 that "if any areas of conservation significance are found during subsequent surveys, their management will be agreed with the regulatory authorities". It is also stated in Section 6.11 relating to fauna that " Any areas of significant remnant vegetation that have not been surveyed will be assessed prior to mining".

Approved surface water management and monitoring programmes will be implemented to ensure that only water of acceptable quality is released to the Scott or Blackwood Rivers. The parameters to be monitored to determine acceptable quality will be agreed with the Department of Environmental Protection (in consultation with the Waters and Rivers Commission) and will include at least pH, TDS, nutrients and turbidity. Acceptable quality will be determined on the basis that the agreed parameters are of equal or better quality than receiving rivers. All water released from the site will be monitored at the point of release and the results reported to the regulatory authorities. These reports will be publicly available.

The Company currently monitors four locations on the Scott River and three locations on the Blackwood River for major water quality parameters ie pH, salinity, nutrients, major ions and turbidity on a monthly basis. A more comprehensive analysis of these waters is carried out twice yearly.

The quantity of water expected to be released to the river if there is a requirement to discharge water from the dredge pond has been predicted by modelling. The modelled discharge is presented below as a percentage of river flow.

Location	Month	Average Daily Flows 1982 - 1995 (x 1000 m^3)	Discharge as % of Average Daily River Flow
Scott River Brennans Ford	Jun	247	0.72
	Jul	720	0.25
	Aug	874	0.2
	Sep	729	0.24
Blackwood River Hut Pool	Jun	1287	0.14
	Jul	4313	0.04
	Aug	5626	0.03
	Sep	4887	0.04

On the basis of the strict quality criteria that any water discharged from the pond would be required to meet and the relatively low volume of discharge, in relation to the average flow of the rivers, the Company does not believe that there will be any significant impact on the rivers.

Q1.0.2

What is the conservation significance of the Karri (Eucalyptus diversicolor) woodland on Lot 4255?

The conservation significance of the Karri woodland at the time of survey was very low as the area had been largely cleared, logged, significantly impacted by regular grazing by cattle and burnt only a few months prior to survey (by the landholder). This stand has been regularly grazed for some years by the landholder and the understorey is highly disturbed. In a local and regional context this vegetation community is also represented south of Scott River on private land and westwards of Blackwood River on private and State Forest land. This pocket of Karri is not considered to be locally or regionally significant.

1.1 Scott National Park

Q1.1.1

The amended proposal includes mining in close proximity to the Scott National Park and so increases the likelihood of the water table in the park being lowered by mining activity. It is known that some native vegetation cannot adjust to a rapid change of the water table. Banksias in particular are vulnerable and it is doubtful whether they will survive.

The amended proposal does not increase the proximity of mining to the National Park although it does increase the length of the boundary with National Park.

The original project proposal, which bordered the Scott National Park, Governor Broome Rd and Strucels Rd , was approved on the basis that:

- drawdown at the boundary of neighbouring properties would not exceed 0.5m (seasonal fluctuation in the water table on the approved mining area has been measured at 1.5 - 2.0m);
- a buffer zone of 100m would be maintained between dredging activities and the boundary of the National Park; and
- that a buffer strip within the National Park , where the Park was contiguous with the mining area would be botanically surveyed before mining commences (this has been completed) and annually thereafter.

These conditions and commitments were made to ensure that there would not be unacceptable impacts on the hydrology of the National Park and apply to the proposed extension to the mining area. The baseline survey of the National Park has been completed.

The results of botanical monitoring will be reviewed annually and if deleterious effects are detected, practices will be adopted such as maintaining the watertable at a higher level by pumping when adjacent to these areas.

The nature of the optimal dredge path provides sufficient time for such review. The current optimal mine path develops as follows:

- during the first year of dredging the mine path proceeds in a westerly direction and by the middle of year two, the dredge path is 350 m from the boundary of the National Park. The path then turns to head back in an easterly direction. This approach and turn takes eight months and the length of dredge path that is parallel with, and 350m from, the National Park boundary is 600m;
- the mine path then continues to the east and it is not until approximately Year 5 that it again approaches the National Park. On this and subsequent approaches (Years 9, 16 and 19) to the National Park the dredge path is the agreed 100m from the National Park boundary.

As the mine path approaches the National Park it is heading down hill, in a westerly direction. Therefore the pond water level at the western end of the pond should be at or near surrounding ground level resulting in minimal drawdown.

Q1.1.2

A 100m exclusion zone along the National Park boundary is insufficient.

A 100m buffer zone along the National Park boundary is proposed for the same reasons as agreed in the original and approved project proposal. In addition to the 100m buffer zone the Company has a requirement to ensure that watertable drawdown does not exceed 0.5m at the boundary of the National Park or neighbouring properties.

The Company has undertaken to monitor a buffer strip within the National Park where the Park is contiguous with the boundary of the mining area. The results of this monitoring will be reviewed annually and if a 0.5m drawdown is found to be detrimental the Company will change its practices to reduce this drawdown. The nature of the optimal dredge path provides sufficient time for such review. The current optimal mine path develops as follows:

- during the first year of dredging the mine path proceeds in a westerly direction and by the middle of year two, the dredge path is 350 m from the boundary of the National Park. The path then turns to head back in an easterly direction. This approach and turn takes eight months and the length of dredge path that is parallel with, and 350m from, the National Park boundary is 600m;
- the mine path then continues to the east and it is not until approximately Year 5 that it again approaches the National Park. On this and subsequent approaches (Years 9, 16 and 19) to the National Park the dredge path is the agreed 100m from the National Park boundary.

Q1.1.3

In the amended proposal, mining will start near the National Park much earlier than in the original proposal. This no longer allows time for the rehabilitation technique using the sludge to be developed and proven before it is used next to the National Park.

The tailings disposal method for Beenup has been developed over several years and trialed and proven (at a reduced depth) at two sites within the Beenup Project area and at the Company's operating mines on the East Coast

Under Ministerial Condition 6 of the original project approval the Company is required to:

> "Within three months of one years operation of the dredge , the proponent shall review and report on slimes handling operations, to the satisfaction of the Minister for the Environment on the advice of the Environmental Protection Authority in consultation with the Department of Mines. In the event that the review of the slimes handling operations indicates unsatisfactory performance in the opinion of the Minister for the Environment, the proponent shall develop and implement within a further twelve months a contingency plan for slimes handling to the satisfaction of the Minister for the Environment on advice of the Environmental Protection Authority"

The timing of the optimal dredge path in relation to proximity to the National Park is as follows:

- the dredge path does not approach the National Park until the middle of year two at which time it is 350 m from the boundary of the Park. The review on slimes handling procedures will be completed by this time.
- the mine path then continues to the east and it is not until approximately Year 5 that it again approaches the National Park. On this and subsequent approaches (Years 9, 16 and 19) to the National Park the dredge path is the agreed 100m from the National Park boundary.

Q1.1.4

The proposed extension of the mine will increase the boundary shared with the National Park, and the length of time the mine will operate. This will increase the impact on the park and its fauna. Therefore fauna populations should be monitored in the park to ensure that any adverse effects are detected and remedied.

The National Park has been subjected to the long term effects of surrounding pastoral clearing and is still in relatively good condition as fauna habitat. A buffer of 100m will be maintained between the dredging operations and the National Park.

It was an original and ongoing commitment of the Company that:

> " A buffer strip within the Scott National Park, in that section where the Park is contiguous with the mining area will be botanically surveyed before mining commences and monitored annually thereafter".

The monitoring of fauna will be carried out in the same areas and at the same times (a commitment made in the responses to public submissions on the original ERMP for the project).

Rehabilitation will include planting native vegetation in similar proportions to that which existed prior to mining to ensure that any effects will be temporary.

Q1.1.5

When detailed mine plans are available it would be appropriate to develop the mine path in consultation with CALM in order to minimise the possible detrimental effects on values managed by CALM.

As the project moves from the construction phase into operations, the Company will develop a more frequent programme of liaison with regulatory authorities such as the Department of Conservation and Land Management (CALM).

Several commitments relating to the development of the mine path have already been made by the Company to minimise possible detrimental effects on lands managed by CALM.

Q1.1.6

There is some concern about the effect of a 0.5 metre drawdown of surficial aquifers and the impacts of dust on the vegetation on the adjacent National Park. The monitoring system proposed for the mine extension must include protocols capable of detecting any such detrimental effect. The results of monitoring should be made available to CALM.

The Company will undertake monitoring to determine the effects of the allowed drawdown on vegetation in the adjacent National Park. The results of this monitoring will be reviewed annually. If a 0.5m drawdown is found to be detrimental the Company will change its practices to reduce this drawdown.

The Company has instigated a dust management and monitoring programme that is aimed at minimising and measuring dust emissions from the site.

It was an original and ongoing commitment of the Company that:

> "A buffer strip within the Scott National Park, in that section where the Park is contiguous with the mining area will be botanically surveyed before mining commences and monitored annually thereafter".

The results of monitoring at the Beenup Project would be made available to CALM as part of the statutory reporting process.

1.2 Groundwater

Q1.2.1

With regard to section "5.7.1 Groundwater" of this proposal. The comments and assumptions appear to be presumed from existing data. However, there are no groundwater monitoring bores west or south of the existing approved mining area to quantify or prove this.

The comments about groundwater in the proposed extension to the mining area are based on extensive drillhole information and groundwater monitoring data collected from that area.

Groundwater monitoring bores were installed outside the approved mining area during earlier hydrological studies for the region. While in most instances these bores are now known to be monitoring a composite water table, information from them has been used to develop and confirm the validity of the hydrological model in what is now the proposed extension to the mining area.

The hydrological model for the proposed mining extension was developed in the same way as the model for the approved mining area. A geological model in the form of very detailed cross-sections was derived from drilling in the area. The various lithological units of this model were then hydrologically characterised to develop the hydrological model. Modelling for the current mining area and the proposed extension was verified using data gained from the extensive groundwater monitoring bore network.

Q1.2.2

No water monitoring bores are located outside the boundaries of the mine site extension to measure the drawdown of the water table in the neighbouring land.

Groundwater monitoring bores were installed outside the approved mining area during earlier hydrological studies for the region. While in most instances these bores are now known to be monitoring a composite water table, information from them has been used to develop and confirm the validity of the hydrological model in what is now the proposed extension to the mining area.

Ground water monitoring bores will be installed progressively ahead of the mining sequence. Their locations and design will be determined on the basis of the hydrological model to ensure that any drawdown effects are monitored.

Q1.2.3

What are the groundwater contours for the new mining area?

The groundwater contours in the proposed mining extension are similar to those in the approved mining area where a number of aquifers have been identified as follows :

- between 0 and 5 m below ground level (bgl) a perched, surficial aquifer occurs within the Warren Sands, which are of limited permeability;
- between 25 and 60 m bgl the Lower Beenup Beds aquifer is encountered. This aquifer is under pressure and rises to between 3 and 5 m bgl when intersected. This aquifer is separated from the Warren Sands aquifer by the Upper Beenup Beds which are a virtual aquitard. The Lower Beenup Beds aquifer will maintain dredge pond water levels;
- below 60m bgl the Scott Sands are encountered comprising a coarse grained beach deposit which is a localized aquifer and a dense, fine grained dune sand deposit which is of low permeability;
- the Scott Sands are underlain by the Dennis Rd unit which is a virtual aquitard and separates the local aquifers from the regional Lesueur aquifer below.

Q1.2.4

The natural barriers to the movement of water underground must necessarily be destroyed in the process of dredging to 50 metres depth. Water quality of the soils adjacent to the river and the mine could be adversely affected by the influx of salt water from the river in its summer phase, leading to the retention of salt, and ultimately , damage to the vegetation and possible invasion of the new water table by salt water.

The Blackwood River lies within a very large, infilled paleochannel. The paleochannel has been infilled with silt-clay material , of low permeability, which acts as a hydrological barrier between the river system and the groundwater of the adjacent mining area. Dredging activities will not interfere with this hydrological barrier.

Q1.2.5

Will monitoring of surface and groundwater resources be increased as a result of the expansion? Increased monitoring and feedback on results is considered appropriate due to the increased risks associated with a larger activity in closer proximity to the Scott River and National Park.

This proposal does not result in an increased mining activity at any time although it does increase the area over which dredging will ultimately occur. Surface water monitoring and groundwater monitoring networks will be extended to ensure a full coverage over this area. The installation of bores will be progressive in advance of the dredging operations.

The final monitoring programme and frequency of monitoring will be agreed with regulatory authorities as part of the Environmental Management Programmes (EMPs) to be submitted in advance of operations. The results of monitoring required by the EMP's will be reported to the statutory authorities and will be publicly available. Scheduled meetings with the regulatory authorities and the Beenup Consultative Group provide avenues for feedback to the Company and the Community.

Q1.2.6

The impact of changes in surface water and surficial aquifers (perched water tables) on the vegetation of Scott National Park, south of Strucels Road and along Governor Broome Rd are not adequately resolved by the proposal. It is therefore essential before approval is given that either :

1. **a clearly focussed research programme establishes that deleterious effects on the vegetation of Scott National Park and along Governor Broome Rd can be managed and the vegetation restored to near pristine condition;**

2. **or drawdown limits at the boundary with Scott National Park and along Governor Broome Rd be revised to zero or are based on research that establishes non-deleterious drawdown levels.**

The original project proposal, which bordered the Scott National Park, Governor Broome Rd and Strucels Rd , was approved on the basis that:

- drawdown at the boundary of neighbouring properties would not exceed 0.5m (seasonal fluctuation in the water table on the approved mining area has been measured at 1.5 - 2.0m);
- a buffer zone of 100m would be maintained between dredging activities and the boundary of the National Park; and
- that a buffer strip within the National Park , where the Park was contiguous with the mining area would be botanically surveyed before mining commences (this has been completed) and annually thereafter.

These conditions and commitments were made to ensure that there would not be unacceptable impacts on the hydrology of the National Park and apply to the proposed extension to the mining area. Similarly, when mining occurs adjacent to Governor Broome Rd and the

Camping Reserve to the south of this road, the Company will also undertake botanical monitoring in these areas. Baseline surveys of the National Park, the Camping Reserve and Governor Broome Rd have been completed.

The results of botanical monitoring will be reviewed annually and if deleterious effects are detected, practices will be adopted such as maintaining the watertable at a higher level by pumping when adjacent to these areas.

The nature of the optimal dredge path provides sufficient time for such review. The current optimal mine path develops as follows:

- during the first year of dredging the mine path proceeds in a westerly direction and by the middle of year two, the dredge path is 350 m from the boundary of the National Park. The path then turns to head back in an easterly direction. This approach and turn takes eight months and the length of dredge path that is parallel with, and 350m from, the National Park boundary is 600m;
- the mine path then continues to the east and it is not until approximately Year 5 that it again approaches the National Park. On this and subsequent approaches (Years 9, 16 and 19) to the National Park the dredge path is the agreed 100m from the National Park boundary.

As the mine path approaches the National Park it is heading down hill, in a westerly direction. Therefore the pond water level at the western end of the pond should be at or near surrounding ground level resulting in minimal drawdown.

1.3 Scott and Blackwood Rivers

Q1.3.1

A Marine Environmental Study of the rivers is needed before allowing effluent to be pumped into them. In particular, the Scott River and Scott River Basin are quite shallow and could not withstand any disturbance or discharge.

The Company is not proposing to discharge pollutants to the river systems (which is suggested by the term 'effluent').

On the basis of the strict quality criteria that any water discharged from the pond would be required to meet and the relatively low volume of discharge, in relation to the average flow of the rivers, the Company does not believe that there will be any significant impact on the rivers.

The quantity of water expected to be released to the river if there is a requirement to discharge water from the dredge pond has been predicted by modelling. The modelled discharge is presented below as a percentage of river flow.

Location	Month	Average Daily Flows 1982 - 1995 (x 1000 m^3)	Discharge as % of Average Daily River Flow
Scott River Brennans Ford	Jun	247	0.72
	Jul	720	0.25
	Aug	874	0.2
	Sep	729	0.24
Blackwood River Hut Pool	Jun	1287	0.14
	Jul	4313	0.04
	Aug	5626	0.03
	Sep	4887	0.04

The Company will minimise release of dredge pond water to the Scott River during periods of low flow during summer months. Discharged water will be of such low volume and turbidity that river bed aggradation from this source is not possible during the life of the mine.

Approved surface water management and monitoring programmes will be implemented to ensure that only water of acceptable quality is released to the Scott or Blackwood Rivers. The parameters to be monitored to determine acceptable quality will be agreed with the Department of Environmental Protection (in consultation with the Waters and Rivers Commission) and will include at least pH, TDS, nutrients and turbidity. Acceptable quality will be determined on the basis that the agreed parameters are of equal or better quality than receiving rivers. All water released from the site will be monitored at the point of release and the results reported to the regulatory authorities. These reports will be publicly available.

The Company currently monitors four locations on the Scott River and three locations on the Blackwood River for major water quality parameters ie pH, salinity, nutrients, major ions and turbidity. A more comprehensive analysis of these waters is carried out twice yearly

Q1.3.2

Insufficient testing of the Scott and Blackwood Rivers has been carried out to establish a base line of the rivers condition from which any effects caused by the mining operation could be measured. A marine study on these waters should be carried out before mine activities begin to affect these rivers.

The commitment to minimise turbid runoff from the site, the strict quality criteria that any water discharged from the pond would be required to meet and the relatively low volume of discharge, in relation to the average flow of the rivers, is such that the Company does not believe that there will be any significant impact on the rivers.

Approved surface water management and monitoring programmes will be implemented to ensure that only water of acceptable quality is released to the Scott or Blackwood Rivers. The parameters to be monitored to determine acceptable quality will be agreed with the Department of Environmental Protection (in consultation with the Waters and Rivers Commission) and will include at least pH, TDS, nutrients and turbidity. Acceptable quality will be determined on the basis that the agreed parameters are of equal or better quality than receiving rivers. All water released from the site will be monitored at the point of release and the results reported to the regulatory authorities. These reports will be publicly available.

The Company currently monitors four locations on the Scott River and three locations on the Blackwood River for major water quality parameters ie pH, salinity, nutrients, major ions and turbidity. A more comprehensive analysis of these waters is carried out twice yearly

Q1.3.3

During winter months and periods of high rainfall, the flow of water down local streams and water courses in the vicinity of the dredging operation which are intended to be diverted around the dredge pond can be very substantial. Now that the mining area is proposed to move further to the west and south, the ability to ensure no erosion occurs in the diversion channel or in the recently mined areas is considered unlikely. A consequence of erosion is a significant risk that high turbidity and silt loads will be experienced in the Blackwood and Scott Rivers.

The proposed mining extension does move operations further to the west but not further southwards of the approved mining area.

The Company is committed to ensuring that there are no releases of unacceptably turbid waters to the surrounding environment.

Clearing and disturbance within the mine area will be minimised and generally restricted to the active mining area. Mine site surface water runoff will continue to flow along current drainage lines unless intersected by the dredge path. In the event that a drainage line is intersected, diversion channels will be constructed to direct drainage around the mining area. This water will be released into existing water courses via a silt trap.

The requirement to divert surface water will be closely linked to mine planning activities to ensure that diversion channels are in place well in advance of mining operations in an area and to ensure that the channels are grassed and stable prior to receiving water flow.

Drainage diversion channels and silt traps will be engineered structures designed to cope with storm levels of 1 in 20 years as specified in the approved surface water management programme. The final design of channels will depend on the volume of water that they are required to carry. The dimensions (slope and cross-section) of all channels constructed to divert runoff or accept flows from the site will be designed to avoid scouring and erosion

Runoff from disturbed areas and recently rehabilitated areas will continue to be directed to silt traps until the vegetative cover has established sufficiently and sediment loads within the runoff are reduced to acceptable levels.

Surface water discharge from water management structures will be monitored for turbidity.

Rainfall and runoff modelling has been completed for the three major drainage systems that traverse the site. The results of this modelling will be utilised in the design of surface water management structures, including those that divert runoff around the dredge pond.

Q1.3.4

As the proposed area of mining is now much closer to the Scott National Park and the Scott River, water quality standards should be set for any discharge into natural waters.

Prior to commissioning the project, the Company is required to apply for an operating licence from the Pollution Prevention Division of the Department of Environmental Protection (DEP). Water quality standards will be set by the DEP (in consultation with the Water and Rivers Commission) at this stage.

1.4 Molloy Island

Q1.4.1

What assurance can the operators give over the lifetime of the mine, that silt levels produced by an unnatural increase in water flow resulting from discharged water, will not decrease the already shallow river levels on the south-west side of Molloy Island to such an extent that it is no longer an island.

Discharged water will be of such low volume and turbidity that river bed aggradation from this source is not possible during the life of the mine. Monitoring of all releases will be carried out to ensure stipulated turbidity levels are met. The results of such monitoring will be reported to the regulatory authorities and these reports will be publicly available.

1.5 Mining Area

Q1.5.1

Acidity levels in the trial pond, due to exposing pyrite, were reputedly very high. It is questionable whether it will be possible to rehabilitate the dredged areas to normal farm land , as restoration of a major bogland following mining has never been attempted in Australia and experience in Capel suggests acidity will be a major problem.

From experience gained during the trial mining operations the Company has developed a management programme for pyritic material that will minimise the potential for oxidation and therefore acidification of the pond waters. Aspects of the full scale operation that differ from the trial and will allow more effective management of pyrite include:

- the depth of mining will allow the return of pyritic material to below the watertable. Material of low acid producing potential will be selectively placed during final pond filling to ensure the long term success of rehabilitation;
- experience gained from the trial mining operation has indicated the need to manage pyrite that may be exposed in the walls of the dredge pond ; and

- siderite and calcite (carbonaceous minerals) are present in the lower half of the mining profile and will provide the acid neutralising potential that is absent in the upper layers of the pond (to which the trial mining operation was restricted).

The Company is confident that it can return the area to normal farmland with remnant vegetation. The Company is very successfully restoring native vegetation at its Hawks Nest operations in New South Wales which are also lowland communities.

Q1.5.2

The proponent should be prohibited from disturbing the remnant vegetation.

The Company believes there is no justification for excluding any areas of remnant vegetation that have been surveyed to date (except the area on the eastern half of Loc 4264 that has already been excluded). The conservation status of as yet unsurveyed areas will be determined and management agreed with the regulatory authorities.

Vegetation surveys of the approved and proposed mining areas have determined that :

- the vegetation communities on Location 4264 are of high conservation status and hence they are excluded from mining in the original and this subsequent proposal;
- all but one of the vegetation communities on the approved mining area are represented in the adjacent National Park - this community occurs along the Scott River Rd reserve and *Adenanthos detmoldii* was recorded in this area. This species was previously thought to be threatened , however previous surveys and reconnaissance studies on this project highlighted its occurrence (thousands of plants) in other areas (including Governor Broome Rd). This species is also in cultivation for horticultural purposes;
- all but one of the vegetation communities identified on the proposed mining extension to date are represented in the adjacent National Park. The one community of *Eucalyptus diversicolor* - Karri, is discussed in Q 1.0.2 and is not considered to be locally or regionally significant.

Q1.5.3

It is doubtful whether revegetation following mining could ever recreate the richness and diversity of the areas natural plant community.

The greater proportion of the land being disturbed by the Company (approximately 70%) is pasture used for grazing cattle and will be restored as such.

Remnant vegetation will be restored in similar proportions (approximately 30%) to that which existed prior to mining. Much of the remnant vegetation that occurs over the area has been regularly grazed.

Within the project area, the Company has undertaken to implement the following strategies (see Section 6.3 of the Proposal) to maximise the richness and diversity of rehabilitation of remnant vegetation where warranted:

- all topsoil will be removed before mining, conserved during mining and returned to mined areas after mining. Removal and storage of topsoil will be carried out under dry soil conditions to maximise the preservation of soil structure and biological activity.;
- erosion by wind and water will be minimised both during and following the rehabilitation process;
- the introduction of noxious pests and weeds will be minimised;
- seed mixes will be developed on the basis of baseline biological information that will promote the return of a diverse and self-sustaining ecosystem in areas that are being returned to native vegetation;
- means of promoting fauna return into establishing rehabilitation areas will be investigated as appropriate; and

- all areas will be monitored regularly to assess progress and the results reported as part of the regulatory reporting process.

Q1.5.4

Lot 4261 contains rare plants and Lot 4152 contains a summer swamp which is an important fauna refuge and breeding area. Therefore the eastern half of lots 4261 and 4152 should be excised from the proposed extension of the mining area.

Fauna assessment carried out in 1989 for the original project identified the importance of the swamp on Location 4152. Data provided by the Department of Conservation and Land Management , from 1988, identifies populations of declared rare flora on Location 4261.

Locations 4261 and 4152 are not owned or managed by the Company.

Should the Company ever wish to carry out mining on Locations 4261 or 4152 (they are outside the current optimal twenty year mine path), it will submit an Environmental Management Programme (EMP) for these areas ahead of mining operations. The EMP would include an assessment of the swamp on Location 4152 for floral and faunal values. Similarly Location 4261 will be assessed to determine its status, particularly in relation to declared rare flora or priority species, at that time.

On the basis of these assessments, management would be agreed with the regulatory authorities.

Q1.5.5

A large proportion of the land adjacent to the Scott National Park, in the proposed extension is currently vegetated, providing valuable additional buffer and habitat. This is particularly so with Location 4255 and the northern section of 4256. Mining such areas would have an adverse effect on the park.

The Company has agreed to maintain a buffer of 100m between its dredging activities and the National Park boundary, although in many areas previous agricultural clearing has occurred right to the National Park boundary.

The agreed final land use plan for the approved mining area included a buffer planting of native vegetation along the southern boundary of the mining area which is adjacent to the National Park. This area of land is owned by the Company.

With respect to the western boundary of the proposed mining extension (also bordering the National Park), it is possible that land access arrangements will be negotiated that do not transfer ownership of the land to the Company. In these situations, final land use plans will be established in consultation with the landowner and the regulatory authorities.

The Company will plant native vegetation in these areas, adjacent to the National Park, in similar proportions to that which existed prior to mining, if the landowner is agreeable.

The Company has agreed to monitor a buffer strip within the National Park where the Park is contiguous with the boundary of the mining area. This commitment applies to the proposed extension.

Q1.5.6

CALM would like to be involved in the planning for the rehabilitation of the boundary adjacent to the National Park to ensure sympathetic management objectives. CALM would also like this rehabilitation effort extended to include the western boundary of the proposed mine extension.

The agreed final land use plan for the approved mining area included a buffer planting of native vegetation along the southern boundary of the mining area which is adjacent to the National Park. This area of land is owned by the Company. The Company will liaise with the Department of Conservation and Land Management (CALM) when planning the rehabilitation of this area as stated in Section 6.3 of the proposal :

"Condition 11 of Ministerial approval for the Beenup project requires that - within one year of the commencement of productive mining the proponent shall develop and subsequently implement a rolling rehabilitation plan (including the decommissioning phase), to the satisfaction of the Minister for the Environment on the advice of the Environmental Protection Authority, the Department of Mines, Agriculture and Conservation and Land Management. The rehabilitation plan shall be publicly available".

With respect to the western boundary of the proposed mining extension (also bordering the National Park), as stated in Section 6.3 of the Proposal, it is possible that land access arrangements will be negotiated that do not transfer ownership of the land to the Company. In these situations, final land use plans will be established in consultation with the landowner and the regulatory authorities (one of which would be CALM).

Q1.5.7

A number of declared rare and priority flora species exist on the areas outlined for extension to the mine. The camping reserve to the south of the mine also contains declared rare and priority flora. All the remnant vegetation areas in the proposed mining area need to be assessed for rare and priority flora species in the spring of 1996 as there is a very high probability that additional populations will be found. Prior to mining or other disturbance, agreement will need to be reached with CALM on the fate of these populations.

Of the areas that have been surveyed to date (all of the approved mining area and two locations within the proposed mining extension), only Location 4264 has been found to support Declared Rare Flora. This Location has been excluded from the proposed mining area. Department of Conservation and Land Management (CALM) records from 1988 (the most recent available at present from the regional office) indicate the presence of Declared Rare Flora on Location 4261.

All areas of remnant vegetation that have not yet been surveyed (including those on Location 4261 which in the past have been found to support declared rare flora) will be mapped and assessed for rare and priority flora species ahead of mining. Current data from CALM will also be sourced. If on the basis of the surveys and data from CALM any areas of conservation significance are identified, their management will be agreed with the relevant regulatory authorities.

Such surveys will not necessarily be carried out in the Spring of 1996, but they will be carried out ahead of mining at times considered by the consultant botanist to be most opportune for data collection (generally late spring into early summer). The results of these surveys and agreed management strategies will be detailed in the EMP's to be submitted for each area ahead of mining.

Q1.5.8

What level of remnant vegetation will be cleared adjoining the National Park and what impact will this have on the biodiversity and hydrology of the land forms associated with the Park?

Remnant vegetation will be cleared from all areas required for mining activities. The final configuration of the mining area and the sequence of mining will be determined on the basis of drill hole results, dredge and plant performance and mineral economics. These parameters will be progressively assessed in line with development of the dredge path.

Due to the extent of agricultural clearing currently adjacent to the Park the Company does not believe that there will be a significant increase in impact on the biodiversity of landforms associated with the Park. However, as has been mentioned previously, the Company will be conducting annual flora and fauna monitoring in a buffer strip within the National Park where the Park is contiguous with the boundary of the mining area.

The original project proposal, which also bordered the Scott National Park, was approved on the basis that:

- drawdown at the boundary of neighbouring properties would not exceed 0.5m (seasonal fluctuation in the water table on the approved mining area has been measured at 1.5 - 2.0m);
- a buffer strip of 100m would be maintained between dredging activities and the National Park boundary; and
- that a buffer strip within the National Park , where the Park was contiguous with the mining area would be botanically surveyed before mining commences (this has been completed) and annually thereafter.

These conditions and commitments were made to ensure that there would not be unacceptable impacts on the hydrology of the National Park and apply to the proposed extension to the approved mining area.

Q1.5.9

From vegetation mapping sheet 1. Figure 10.A of the report, locations 4255 and 4258 are not included. From the aerial photograph (Figure 9) it is evident that both these locations contain substantial areas of remnant vegetation which are contiguous with the National Park.

Survey of remnant vegetation areas has been progressive. All areas of remnant vegetation will be surveyed ahead of mining activities and if any areas of conservation significance are found their management will be agreed with the relevant regulatory authorities.

The Company has agreed to maintain a buffer of 100m between its dredging activities and the National Park boundary, although in many areas previous agricultural clearing has occurred right to the National Park boundary.

The agreed final land use plan for the approved mining area included a buffer planting of native vegetation along the southern boundary of the mining area which is adjacent to the National Park. This area of land is owned by the Company.

With respect to the western boundary of the proposed mining extension (also bordering the National Park), it is possible that land access arrangements will be negotiated that do not transfer ownership of the land to the Company. In these situations, final land use plans will be established in consultation with the landowner and the regulatory authorities.

The Company will plant native vegetation in these areas, adjacent to the National Park, in similar proportions to that which existed prior to mining, if the landowner is agreeable.

The Company has agreed to monitor a buffer strip within the National Park where the Park is contiguous with the boundary of the mining area. This commitment applies to the proposed extension.

Q1.5.10

Section 6.9 'Vegetation and Flora' outlines that approximately 30% of the proposed extension area is covered by remnant vegetation. From the information supplied it is likely that for the areas east of Scott River Road, the percentage is much higher. This particularly applies to locations 4255 and 4258 which would have approximately 70% and 40% coverage respectively.

The figure of 30% was provided as an indication of the average remnant vegetation cover over the entire area of the proposed mining extension. This figure was determined by survey and aerial photographs. It is true that some portions have a higher percentage cover and that other portions have a remnant vegetation cover that is considerably less than 30%.

Q1.5.11

Before approval is given to mine south of Strucels Rd it is essential that a vegetation survey and plant inventory be completed; specific proposals to protect

any significant flora found during the survey be completed ; and a rehabilitation program that accommodates the complexities of these lowland communities be trialed and evaluated.

Flora and vegetation surveys will be completed in this area ahead of mining activities. Management of significant flora found during the survey will be agreed with the regulatory authorities as part of the Environmental Management Programme to be submitted for this area. Rehabilitation of these areas will be addressed in the rehabilitation programmes required to be submitted to the Department of Environmental Protection, the first of which is to be submitted within one year of commencing mining operations.

1.6 Spread of Dieback

Q1.6.1

The proponent appears to have written off the whole area as dieback infected. It is believed however that there remains small uninfected pockets which are very important for the honey possums in the area. The strongest possible dieback measures are needed to ensure these pockets remain uninfected.

The dieback status of the mine area and downstream site has been determined on the basis of site assessment, sample collection and stream baiting work carried out in 1991. The results of this work are summarised in Section 1.6.1 of the proposal. A dieback management programme for the site was developed on the basis of these results and in consultation with the Department of Conservation and Land Management. Dieback management will be carried out in accordance with this programme which was approved in December 1994.

The Company commissioned a follow up survey of the approved mining area and parts of the proposed extension in spring/summer 1995, principally to determine whether there were any dieback free pockets of topsoil that could be practically retained during stripping and rehabilitation. The results of this work are currently being reported but initial indications are that there are no dieback free areas of sufficient size to make individual management practical or beneficial. Similar assessments will be made of those areas of the proposed mining extension not yet surveyed. The results of this work will be discussed more fully in the Environmental Management Programmes that will be submitted for the area ahead of mining.

Q1.6.2

The spread of jarrah dieback via contaminated water release to the Scott and Blackwood Rivers is likely to be one of the major legacies of the Beenup mine.

Pre-mining assessment of the Scott National Park adjacent to the approved mining areas was completed in 1991 with the following findings :

> "Most (86%) of the area mapped is already infected, and no more than 14% is dieback-free. The dieback-free areas are all in the more elevated parts of the National Park. The impact of infection varies considerably with the vegetation...This pattern of impact and the extent of infections is common regionally. The extent of the infections shows that they have been present for many years and have been dispersed by the many human activities which have occurred in the past. All drainage lines are infected and the infections have spread uphill into areas not prone to flooding " (Hart, Simpson and Associates, 1991).

Any water release from the project area will be limited to existing drainage lines which are already infected with the dieback disease. The Company disagrees that the spread of jarrah dieback will be a legacy of the mine.

2 POLLUTION ISSUES

Q2.0.1

The issue of pyrite producing an acidic problem has not been given adequate attention. It is understood that acidity problems have occurred following the

exposure of pyrite in the soil profile. Pyrite exposure is considered to be an environmental problem and its occurrence in the extension area appears not to be fully understood. There is a need to ensure that the risks of release of acid waters and the management of pyrite either within the dredge pond, or rehabilitated lands are acceptable.

The Company has identified pyrite in some areas of the site and recognises the importance of managing pyritic material.

A comprehensive pyrite management programme has been developed. This programme was submitted in the Environmental Management Programme for the existing mining area and was approved in December 1994.

Management strategies will include;

- minimising the exposure time of any pyrite to the atmosphere (this is automatically done by the mining method);
- selective materials handling;
- selective management of pyritic material that is required to remain exposed to the atmosphere for longer periods of time;
- avoiding areas of pyrite wherever possible; and
- establishing a monitoring programmes that will provide an early indication of any requirement to modify management practices.

Q2.0.2

Is it true that considerable quantities of lime sand were used to treat acid levels resulting from pyrite exposure in early trials?

Unlike the full scale mining operation the Bulk Sample was a shallow operation. Therefore the opportunity to place all pyritic material below the watertable was not available. Due to the pyrite content of some of the material that was unavoidably returned above the watertable, the Company incorporated limesand with this material to act as a buffer against future oxidation.

The Bulk Sample area will ultimately be remined to the full pond depth of 45m. At this time any pyritic material, including material that may have oxidised will be placed below the watertable.

Q2.0.3

Dust suppression and dieback spread prevention measures may need to be modified due to changes in mining operations which include the release of dredge pond waters.

The proposal does not alter the nature of mining activities, only the area in which they occur. As a result dust suppression measures will not need to be modified. The Company's commitment to control the generation of dust from areas such as topsoil, tailings, concentrate heaps and haul roads applies to the approved mining area and the proposed mining extension.

Areas downstream of the existing and proposed mining areas are dieback infected, as are drainage lines receiving runoff from the project, therefore potential release of dredge pond waters into these drainage lines does not pose additional risk to these areas. The dieback management programme approved for the existing mining area applies to the proposed extension.

Q2.0.4

The extension would bring the mine closer to a number of residences and insufficient and unproven management is offered for noise and dust control. Existing dust control measures have been inadequate. During the removal and stockpiling of topsoil in the trial mining period dust plumes of several kilometres were observed

over the area. The Company's plan to manage this by keeping these operations to non-windy days is impractical in this area.

Noise levels stipulated by the Ministerial Conditions of Project approval will be adhered to by the Company. The Company will continue to develop measures to minimise noise emissions from the site.

A noise monitoring programme will be implemented when the project is commissioned to ensure compliance with the stipulated noise levels. This programme will be continued for a period of three years initially, after which time the Company, in consultation with the relevant regulatory authorities, will review the requirement for further noise monitoring. Monitoring will be carried out at the residence closest to the mining operation at the time.

The Company will conduct further noise assessment studies for the proposed mining extension when the existing project is commissioned (1996). These studies will utilise actual measurements from operations within the approved mining area to determine actual and potential impacts and develop practical and effective sound mitigation measures. The details of these assessments, together with management proposals, if required, will be detailed, in subsequent EMP's.

Topsoil stripping is carried out under dry soil conditions to minimise damage to soil structure and for site accessibility reasons. The Company maintains that avoidance of topsoil stripping under high wind conditions is one effective measure to minimise the generation of dust from these activities. Further measures such as use of dozers instead of scrapers, watering, dust suppressants and wind fences will be trialed and used where necessary.

Q2.0.5

A number of submitters expressed concern about light pollution from the project. How will this issue be managed?

As stated in the approved Environmental Review and Management programme for the original project:

> "Lighting will be done such that the lights will be directed onto the work area. There is no reason to believe that the small amount of spillage into the National Park and to local residences will have any detrimental effect. No direct beaming of light away from operating areas will be necessary or anticipated. If lighting causes direct illumination at neighbours residences, the Company will install appropriate light shields."

Q2.0.6

The use of coal as fuel at the Dry Mill site will produce SO_2 which will add to the inherent acidity problem in run-off water, as well as affect the National Park.

This proposal does not have any impact on the approved operations of the Dry Mill.

Q2.0.7

BHP have failed to monitor noise, light and dust pollution levels on Molloy Island in order to provide a base case for potential claims for loss of amenity.

The Company will implement approved management and monitoring programmes to ensure that it complies with its commitments and the conditions of project approval relating to noise dust and light.

Noise modelling conducted for the approved mining area, established that sound levels at residences affected by the original mining area and dry mill operations would be as indicated below. The closest residence at the time of this modelling was 1.8km from the dredge and 7km from the Dry Mill. The northern shore of Molloy Island is 2 km from the closest point of the optimal mine path and 8 km from the Dry Mill.

Sound Levels at Nearest Residences Predicted by Modelling done for the Original Project (Lewis Environmental Consultants, 1989 p 69).

Monday to Friday 7am to 7pm	<40dB(A) at all residences
Monday to Friday 7pm to 10pm and weekends and public holidays 7am to 10pm	35 - 39dB(A)
Always 10pm to 7am	26dB(A) - 35dB(A)*

*Study noted that the occasional use of earthmoving equipment between these hours would need to be assessed under operating conditions.

The Company will conduct further noise assessment studies for the proposed mining extension when the existing project is commissioned (1996). These studies will utilise actual measurements from operations within the approved mining area to determine actual and potential impacts and develop practical and effective sound mitigation measures. The details of these assessments, together with management proposals, if required, will be detailed, in subsequent EMP's.

If a nearby resident has a concern regarding any aspect of the project, the Company is willing to discuss possible methods of mitigating the effect. This is already taking place.

2.1 Release of Dredge Pond Water

Q2.1.1

Under the current mining schedule when will the release of dredge pond water (if required) become necessary?

Modelling has indicated that the release of pond water may become necessary when the dredge path encounters the areas of steeper topography in the west of the proposed mining extension. The optimal dredge path would encounter this area, in Years 2, 5, 9, 16 and 19 of the operation.

Q2.1.2

Because recombined slimes and sand fractions from the tailings will be returned to the dredge pond, it is likely that slimes will end up in the Scott and Blackwood Rivers when dredge pond water is released.

The sublay technology (recombination of the residual clay and sand fractions through subaqueous placement) removes the requirement for settling dams which were part of the original proposal and would have required the release of supernatant water.

An essential feature of sublay, as opposed to the traditional method of using settling dams is that returned slimes are not allowed to redisperse into the dredge pond water. Underwater bund walls are built between the dredge face, where the water will be turbid, and the rear of the pond, where still water is required for the sublay operations. Released water will be sourced from the rear of the pond.

Q2.1.2

At a time when the Blackwood Catchment Coordinating Group is about to start a programme redressing land and water degradation, it would be wrong to allow BHP to discharge more pollutants into the catchment. Approval for this project should not be granted if any water is to be discharged into the Blackwood Catchment.

This proposal does not seek the right to discharge pollutants into the Blackwood catchment.

The proposal to discharge water from the dredge pond is subject to the water meeting strict quality criteria. These quality criteria will be agreed with the Department of Environmental Protection (in consultation with the Waters and Rivers Commission) and will include at least

pH, TDS, nutrients and turbidity and will be determined on the basis that the agreed parameters are of equal or better quality than receiving rivers. All water released from the site will be monitored at the point of release and the results reported to the regulatory authorities. These reports will be publicly available.

Q2.1.3

The Ministerial Conditions for the original proposal specified no release of discharge for dredge ponds to the Scott National Parks or rivers. The proponent does not present satisfactory evidence for the need to change this condition other than to make mining easier for them. It is also likely that the water would be acidic due to the presence of pyrite. Therefore the proponent should modify their mining technique to accommodate changes in the terrain instead of taking the easy option of water discharge.

From the current mining area to the western edge of the extended orebody the ground level falls from 22m AHD to 6m AHD. In developing the mine extension proposal the Company recognised that this change in topography could be significant and so commissioned a water balance study for the first 20 months of dredging a hypothetical mine path in that area. The results of this modelling are summarised below and indicate that during the last 2.4 months modelled, flows from the pond of up to 1780 m^3 per day could be required to reduce the pond level to ground level.

CALCULATED CHANGES IN DREDGE POND LEVEL AND GROUNDWATER INFLOWS (from Rockwater Consultant Hydrogeologists)

Months After Start of Dredging	Average Ground Level (m AHD)	Dredge Pond Water Level (m AHD)	Water Level Change (m)	Groundwater Inflows (m^3/d)	Surplus Water (m^3/d)
7	20.2	18.3	-1.9	1 120	0
8.7	18.7	13.7	-4.6	2 320	0
10.2	20.1	13.7	0	1 690	0
11.2	20.2	14.4	+0.7	1 030	0
12.2	20.2	15.8	+1.4	320	0
13.2	19.2	16.6	+0.8	90	0
14.2	16.8	16.8	+0.2	40	0
15.2	15.8	15.2	-1.6	450	0
16.4	15.1	13.7	-1.5	650	0
17.6	13.0	12.0	-1.7	920	0
18.8	9.5	9.5	-2.5	1 320	160
20	6.0	6.0	-2.5	1 930	1 780

The results of modelling were based on average seasonal conditions and aquifer parameters. The Company has put forward the request for permission to discharge water in the event that seasonal influences and actual pond level (which will depend on dredging rate, water content of the material dredged and changes in the values of aquifer parameters) make it impractical and unsafe to retain the pond water. It is the Company's preference to minimise the requirement to discharge so that water is retained for the period when the pond turns and proceeds in an easterly up slope direction.

Ultimately there may not be a requirement to discharge water. If there is a requirement it will be isolated and infrequent events not a regular feature of the operation.

The quantity of discharge , based on modelling in one of the steeper areas of the mining area, compared to flows in the Scott and Blackwood Rivers is presented below. Discharge, if required, would be required during the winter months when seasonal factors contribute to the

elevated pond level. Note that the locations in the table below refer to the Water Authority stations where flow records have been obtained. Discharge would not be at these locations but further downstream.

Location	Month	Average Daily Flows 1982 - 1995 (x 1000 m^3)	Discharge as % of Average Daily River Flow
Scott River Brennans Ford	Jun	247	0.72
	Jul	720	0.25
	Aug	874	0.2
	Sep	729	0.24
Blackwood River Hut Pool	Jun	1287	0.14
	Jul	4313	0.04
	Aug	5626	0.03
	Sep	4887	0.04

A comprehensive pyrite management programme has been developed and approved. This programme involves minimising the potential for oxidation and therefore acidification of the pond. The planned monitoring programme is comprehensive and will provide an early indication of any requirement to modify management practices. The Company is not proposing to discharge waters of unacceptable acidity.

Q2.1.4

There is no indication of safeguard that high levels of organic matter in dredge ponds , will not add unacceptably high phosphorous and nitrogen levels to the water table, or worse still through runoff or pumping to the Blackwood or Scott Rivers.

Due to the following factors, organic matter in the dredge pond is expected to be low :

- as the depth of dredging is 45m, any root zones encountered will form only a small proportion of the total profile mined;
- the nutrient content of groundwater that will fill the pond is low; and
- surface waters, including current runoff from agricultural areas will be diverted around the dredge pond.

Surface waters around the project site are currently monitored for nutrients and this will continue. Prior to any discharge of pond water the Company would be required to demonstrate that the water is of acceptable quality. The parameters to be monitored to determine acceptable quality will be agreed with the Department of Environmental Protection (in consultation with the Waters and Rivers Commission) and will include at least pH, TDS, nutrients and turbidity. Acceptable quality will be determined on the basis that the agreed parameters are of equal or better quality than receiving rivers.

All water released from the site will be monitored at the point of release and the results reported to the regulatory authorities. These reports will be publicly available.

Q2.1.5

Any dredge water released should be monitored for other contaminants other than salt and silt (eg dieback, nutrients, quantity)

Prior to any discharge of pond water the Company would be required to demonstrate that the water is of acceptable quality. The parameters to be monitored to determine acceptable quality will be agreed with the Department of Environmental Protection (in consultation with the Waters and Rivers Commission) and will include at least pH, TDS, nutrients and turbidity. Acceptable quality will be determined on the basis that the agreed parameters are of equal or better quality than receiving rivers

The Company will monitor the quantity of water released.

The Company does not believe that monitoring the dredge pond water for dieback is warranted because existing drainage lines, into which dredge pond water would be released, are already infected with the dieback fungus.

Q2.1.6

As well as insuring that the turbidity of discharged water is satisfactory, it is also necessary that the acidity and nutrient levels of discharge water are of acceptable standards.

The Company will monitor these parameters to demonstrate acceptability of water for release.

Q2.1.7

A submitter expressed little faith in the promise that only clean water will be released into the river.

As stated in Section 6.1.2 of the Proposal, if discharge is required then:

> "during periods of discharge, released water would be monitored daily. Monitoring of the receiving river (Blackwood or Scott), additional to that carried out as part of the routine monitoring programme would also be carried out."

The results of such monitoring would be reported to the regulatory authorities and these reports will be publicly available.

2.2 Noise

Q2.2.1

People who retired to this area never expected to be pestered by the noise of a mining operation.

The Company will implement management and monitoring programmes to ensure that it complies with the noise levels stipulated by the Ministerial Conditions of Project Approval and will also endeavour to address the concerns of nearby residents as they arise.

The Company has agreed to measures such as applying to have the pitch of reversing horns reduced and avoiding, wherever possible, disruptive noise at night to minimise noise emissions. The Company will continue to develop measures to minimise noise emissions from the site, and therefore disruption to people in the area

Q2.2.2

During the 1994/95 summer many Molloy Island home owners experienced significant noise pollution in the form of blasting noise, diesel engine and equipment movement noise and reversing horn noise. Given that the proposal brings the mining operation to within 2km of Molloy Island, the anticipated noise levels would be unacceptable to residents.

Activities on the site during summer 1994/95 centred around civil construction works for the project and are not representative of the longer term.

In particular the civil construction activities involved on average 25, and up to 42, pieces of earthmoving equipment. Operations will involve fewer than 20% of this number. Civil construction works involved constructing the Mine Development Storage Area, preparing hardstand areas for construction and dry excavation of the initial dredge path. Main Roads WA were also in the area constructing Scott River Rd at the time with additional earthmoving units. All works were carried out during daylight hours. During this period we received and responded to queries from neighbours in the Scott River area. No queries were received from Molloy Island residents at this time The Company was first made aware of the concerns of Molloy Island residents on 25 November 1995 at a meeting to discuss this proposal. Since that time the Company has made a number of modifications in response to information provided by Molloy Island residents at that meeting.

During the summer of 1994/95, blasting was required to remove ferricrete from the construction and initial mining areas. While this was achieved in accordance with the noise levels stipulated by the Department of Environmental Protection, the company has been investigating alternatives to blasting. To date ripping trials have been very encouraging.

Reversing horns are required under the Mines Act as a safety measure. This noise source will be reduced due to the fewer numbers of equipment required for the ongoing operation. The Company is reviewing strategies to minimise the emissions from reversing horns. One strategy that will be adopted, where suitable and in accordance with the requirements of the Mines Act, will be installation of smart alarms (which respond to the ambient noise level).

Noise modelling conducted as part of the Environmental Review and Management Programme for the approved mining area, established that sound levels at residences affected by the original mining area and dry mill operations would be as indicated below. The closest residence at the time of this modelling was 1.8km from the dredge and 7km from the Dry Mill. The northern shore of Molloy Island is 2 km from the closest point of the optimal mine path and 8 km from the Dry Mill.

Sound Levels at Nearest Residences Predicted by Modelling done for the Original Project (Lewis Environmental Consultants, 1989 p 69).

Monday to Friday 7am to 7pm	<40dB(A) at all residences
Monday to Friday 7pm to 10pm and weekends and public holidays 7am to 10pm	35 - 39dB(A)
Always 10pm to 7am	26dB(A) - 35dB(A)*

*Study noted that the occasional use of earthmoving equipment between these hours would need to be assessed under operating conditions.

A noise monitoring programme will be implemented when the project is commissioned to ensure compliance with the stipulated noise levels. This programme will be continued for a period of three years initially, after which time the Company, in consultation with the relevant regulatory authorities, will review the requirement for further noise monitoring. Monitoring will be carried out at the residence closest to the mining operation at the time.

Q2.2.3

It is doubtful that the proposed minimum sound emissions of 40dBA between 2200 - 0700 hrs would be acceptable to Molloy Islanders and other nearby residents.

The Company will implement management and monitoring programmes to ensure that it complies with the noise levels stipulated by the Ministerial Conditions of project approval and will also endeavour to address the concerns of nearby residents as they arise.

The Company has agreed to measures such as applying to have the pitch of reversing horns reduced and avoiding, wherever possible, disruptive noise at night to minimise noise emissions. The Company will continue to develop measures to minimise noise emissions from the site, and therefore disruption to people in the area

3. IMPACT ON THE SOCIAL SURROUNDINGS

Q3.0.1

The current operations have already increased the early morning and late afternoon traffic from Augusta, through Karridale and up Brockman Highway by trucks and worker vehicles.

The proposed extension to the mining area would not increase traffic levels above those identified in the Environmental Review and Management Programme for the original project.

Current traffic levels are higher than in the longer term because construction of the plant is presently underway requiring the delivery of many components and services to the site. The Company is attempting to minimise the disturbance by requiring that the majority of construction workers travel to the site by bus. Also heavy loads are being split between the Bussell and Vasse Highways. Sues Rd, the agreed haulage route for the project, is currently under construction. When this road is completed it is expected to relieve the Bussell and Brockman Highways of some traffic.

3.1 Noise

Q3.1.1

The proposal brings the mining operation too close to the Molloy Island Community and will destroy the peace and quiet which is presently a feature of the area; a feature which the residents wish to maintain.

The proposed mining operation will potentially bring the dredging operations to within 2 km of Molloy Island. The closest point of the existing approved mining area is approximately 4 km from Molloy Island. Molloy Island would not be closer to the mining operations than the nearest neighbour to the existing mining area.

Noise modelling conducted for the original proposal established that sound levels at the nearest residences would be as indicated below.

Sound Levels at Nearest Residences Predicted by Modelling done for the Original Project (Lewis Environmental Consultants, 1989 p 69).

Monday to Friday 7am to 7pm	<40dB(A) at all residences
Monday to Friday 7pm to 10pm and weekends and public holidays 7am to 10pm	35 - 39dB(A)
Always 10pm to 7am	26dB(A) - 35dB(A)*

*Study noted that the occasional use of earthmoving equipment between these hours would need to be assessed under operating conditions.

A noise monitoring programme will be implemented when the project is commissioned to demonstrate compliance with the stipulated noise levels. This programme will be continued for a period of three years initially, after which time the Company, in consultation with the relevant regulatory authorities, will review the requirement for further noise monitoring. Monitoring will be carried out at the residence closest to the mining operation at the time.

In addition to meeting the stipulated noise levels the Company will endeavour to address the concerns of nearby residents as they arise.

3.2 Molloy Island

Q3.2.1

Under the current mining schedule, in what year do the operators estimate that mining activities will reach its closest point to Molloy Island.

The proximity of mining activities to Molloy Island will vary over the life of the project. They will reach their closest point to the Island in Year 19 .

Under the optimal mine path , other times at which mining activities are in closer proximity to Molloy Island are as follows :

Year of Mining Operations	Distance to Northern Shore of Molloy Is.
5	2.9km
9	2.7km
16	2.7km
19	2.0km

Q3.2.2

The proposed extension of the project will have adverse effects upon the residents of Molloy Island through the following : increasing noise levels (which is occurring already), discharge of silts into the rivers, and the effect on housing prices.

Activities on the site during summer 1994/95 centred around civil construction works for the project and are not representative of the longer term.

In particular the civil construction activities involved on average 25, and up to 42, pieces of earthmoving equipment. Operations will involve fewer than 20% of this number. Civil construction works involved constructing the Mine Development Storage Area, preparing hardstand areas for construction and dry excavation of the initial dredge path. Main Roads WA were also in the area constructing Scott River Rd at the time with additional earthmoving units. All works were carried out during daylight hours. During this period we received and responded to queries from neighbours in the Scott River area. No queries were received from Molloy Island residents at this time The Company was first made aware of the concerns of Molloy Island residents on 25 November 1995 at a meeting to discuss this proposal. Since that time the Company has made a number of modifications in response to information provided by Molloy Island residents at that meeting.

During the summer of 1994/95, blasting was required to remove ferricrete from the construction and initial mining areas. While this was achieved in accordance with the noise levels stipulated by the Department of Environmental Protection, the company has been investigating alternatives to blasting. To date ripping trials have been very encouraging.

Reversing horns are required under the Mines Act as a safety measure. This noise source will be reduced due to the fewer numbers of equipment required for the ongoing operation. The Company is reviewing strategies to minimise the emissions from reversing horns. One strategy that will be adopted, where suitable and in accordance with the requirements of the Mines Act, will be installation of smart alarms (which respond to the ambient noise level).

Noise modelling conducted for the approved mining area, established that sound levels at residences affected by the original mining area and dry mill operations would be as indicated below. The closest residence at the time of this modelling was 1.8km from the dredge and 7km from the Dry Mill. The northern shore of Molloy Island is 2 km from the closest point of the optimal mine path and 8 km from the Dry Mill.

Sound Levels at Nearest Residences Predicted by Modelling done for the Original Project (Lewis Environmental Consultants, 1989 p 69).

Monday to Friday 7am to 7pm	<40dB(A) at all residences
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Always 10pm to 7am	26dB(A) - 35dB(A)*

*Study noted that the occasional use of earthmoving equipment between these hours would need to be assessed under operating conditions.

A noise monitoring programme will be implemented when the project is commissioned to demonstrate compliance with the stipulated noise levels. This programme will be continued for a period of three years initially, after which time the Company, in consultation with the relevant regulatory authorities, will review the requirement for further noise monitoring. Monitoring will be carried out at the residence closest to the mining operation at the time. The Company will also endeavour to address the concerns of nearby residents as they arise.

The Company is not proposing to discharge silt into the rivers. A surface water management and monitoring programme has been developed and approved for the Beenup Project and is designed to: prevent turbid waters leaving site; maintain adequate surface water flow into neighbouring properties; and prevent major long term changes to current drainage patterns.

In addition, as part of this proposal, the Company has made a commitment to ensure that no unacceptably turbid water is released from the dredge pond.

The company is not in a position to comment on trends in housing prices however, it will conduct its operations in accordance with the conditions and commitments of project approval. If a nearby resident has a concern regarding any aspect of the project , the Company is willing to discuss possible methods of mitigating the effect. The Company wishes to establish and maintain a good neighbour attitude during the life of the operation.

It is worth noting that a feature article in the Sunday Times, January 7 1996 said that;

> "Molloy is being discovered in a big way - blocks selling for $30 000 five months ago are now worth $45 000."

4. GENERAL COMMENT

Q4.0.1

There is ample existing approved mining area for the mining operation to commence, and so approval to extend the mining area should not be granted for at least ten years. This would provide a realistic time frame during which all interested parties and independent authorities would be able to better study, monitor and evaluate the working model of the operation and it effects upon the Scott National Park, Scott River , Blackwood River , and Molloy Island community, before the granting of the extension.

Granting of the extension to the approved mining area has been requested to allow the Company to maximise the extraction of the extended orebody using East-Westerly passes.

The most significant advantage of the East-West mine path is that it allows for a greater amount of the total resource to be extracted. The alternative North-South mine path, that mines within the existing approved mining area initially and then accesses the ore to the west at a later date, results in the loss of an additional 26 million tonnes of ore or one year's mining life. This can

be expressed in economic terms as a loss of approximately $ 100 million export revenue. This arises due to operational restrictions associated with the tailings disposal technique that has been developed for the project which can be explained as follows.

A site specific mining philosophy has been developed for the project which utilises a new tailings disposal technique, known as sublay, that allow for process reject material including clay, sand and pyritic material to be placed deep within the working pond behind bund walls which are made from oversize material rejected by the wet processing plant. It is a requirement of this technique that mining does not occur adjacent to sublayed material until it has been allowed to consolidate sufficiently; a process likely to take several years.

The system therefore requires a mine path layout that extracts the orebody in two passes. The first pass traverses the entire orebody but involves leaving unmined areas between each of the parallel mine paths to allow sufficient consolidation time for the material that is sublayed. The second pass is then made to extract this unmined ore.

Within each mine path there are occasions when a pillar of ore must be left to separate freshly tailed areas from the operating mine area. The North-South mine plan requires an extensive pillar to be left. These pillars can never be mined resulting in significant loss of resource. The optimal East-West mine path allows the minimal loss of resource as pillars.

The East West option is also optimal because it involves fewer mine paths, 14 as compared to 27 paths in the North-South option. Factors such as surface activities for mining infrastructure support are more efficient with fewer mine paths. Fewer traverses across the country also make planning for drainage management and rehabilitation simpler. Subsequent disturbance of rehabilitated areas and drainage lines is also reduced with fewer mine paths.

With both mine path options, mining operations will still operate at the same rate. Therefore after 10 years a similar area of disturbance will have occurred. The Company has made a number of commitments to ensure that the environmental impacts associated with its operations are acceptable. Whichever direction the mine path takes, progressive monitoring and evaluation of the performance of the operations will be carried out. At no time does the Company expect that within the approved mining area or the proposed extension will operations be allowed to continue, without appropriate modification, if its commitments to the regulatory authorities and the community are not being met.

Q4.0.2

Any undertakings by the company on the suppression of dieback, water management, fire control , protection of conservation values of the National Park, must be independently monitored and policed.

The final monitoring programme and frequency of monitoring will be agreed with regulatory authorities as part of the Environmental Management Programmes (EMPs) to be submitted in advance of operations. The results of monitoring required by the EMP's will be reported to the statutory authorities and these reports will be publicly available. Scheduled meetings with the regulatory authorities and the Beenup Consultative Group provide avenues for feedback to the Company.

Q4.0.3

What guarantees can BHPTM give that it will not expand the mining operation from a single dredge operation to a multiple dredge operation.

This proposal does not seek to expand the Beenup operation to a multiple dredge operation.

Q4.0.4

The proposed extension of approved mining area would have the effect of giving approval for 120 projected years of mining, based on an ERMP for a projected 20 year mine. Such an extension cannot be justified. Methods and technology may be outdated in 15 years and changes may be seen in public attitude towards mining adjacent to national park and major rivers.

The ERMP was not granted for a specific mine life. The ERMP stated an orebody in excess of 500 million tonnes of ore containing some 20 million tonnes of heavy minerals and a mine life in excess of twenty years. The reference to an orebody in excess of 500 million tonnes was made on the basis that at the time of submitting the ERMP there was some indication that the resource extended beyond that determined by drilling to 1988 but at that time further drilling was limited by land access. As stated in the Proposal exploration since 1988 has increased this resource to some 50 million tonnes of heavy minerals. The proposal does not alter the rate of mining. The proposed extension potentially increases the mine life by 2.5 times, assuming all the ore was able to be accessed and mined efficiently.

The Company has made a number of commitments to ensure that the environmental impacts associated with its operations are acceptable. Monitoring of performance will be progressive and methods continually reviewed and updated in accordance with the results of this monitoring, new technology and changing community attitudes. Operating licences granted for the project are renewed annually or triennially.

Q4.0.5

The company is requesting an extension to the mine in a more sensitive area when trial mining has shown that it lacked a clear knowledge of the geology and hydrology of the area. Examples of this include; the need to pump water from the Scott River when the trial pit did not fill with waters as anticipated; and the extreme acidification of the pond water due to pyrite beds , which required the Company to dump in at least 28 000 tonnes of lime sand.

Since preparation of the Environmental Review and Management Programme for the original project, the site hydrological model has been reviewed and revised. The original model postulated one body of ground water beneath the near surficial groundwater level.

Further investigation has indicated that this simplistic model is not valid as there is a perched unconfined superficial aquifer (Warren Sands) overlying an aquiclude (Strucels Beds and Upper Beenup Beds) overlying a leaky semi-confined to confined aquifer (Lower Beenup Beds).

The dredge pond water level will be controlled by the Lower Beenup Beds aquifer and its seasonal variations and topography and is expected to sit between 3.5 to 5m below ground level (ie the true groundwater level as opposed to the perched, surface water aquifer which sits at or just below ground level). It is not proposed to pump water from the Scott River to supplement the dredge pond.

Experience gained from the Bulk Sample and further testwork on the nature and activity of the pyrite encountered at the Bulk Sample has been used to develop a pyrite management programme for the project. This programme was submitted to and approved by the Department of Environmental Protection in December 1994. Limesand was utilised at the Bulk Sample for incorporation with pyritic material that was placed above the watertable during rehabilitation.

Q4.0.6

The justification for the extended mining area proposal relies largely upon perceived similarity with the original proposal. This justification does not recognise that the significance of potential environmental impacts is changed substantially by the nature of the vegetation communities in the Scott National Park and the greatly increased boundary that the proposal has with the park. Whereas the vegetation adjacent to the original proposal was principally pasture, open forest and woodland, this proposal has an extended boundary with rush and sedge communities. Nor does the proposal adequately address the significance of the remnant vegetation that is contiguous with Scott National Park and occurs south of Strucels Rd, or protection of the type location of the newly discovered rush species, *Loxocarya magna* and *Restio isomorphus*, along Governor Broome Rd.

The original project proposal, which bordered the Scott National Park, Governor Broome Rd and Strucels Rd , was approved on the basis that:

- drawdown at the boundary of neighbouring properties would not exceed 0.5m (seasonal fluctuation in the water table on the approved mining area has been measured at 1.5 - 2.0m);
- a buffer zone of 100m would be maintained between dredging activities and the boundary of the National Park; and
- that a buffer strip within the National Park , where the Park is contiguous with the mining area would be botanically surveyed before mining commences (this has been completed) and annually thereafter.

These conditions and commitments were made to ensure that there would not be unacceptable impacts on the hydrology of the National Park and apply to the proposed extension to the mining area. When mining occurs in the vicinity of Governor Broome Rd (which contains declared rare flora species and rush species of interest), the Camping Reserve to the south of this road and other areas known to support species of interest such as Location 4264, the Company will also undertake botanical monitoring in these areas to determine any impacts of groundwater drawdown. Baseline surveys of the National Park, the Camping Reserve, Governor Broome Rd, Location 4264 and the approved mining area have been completed.

The results of botanical monitoring will be reviewed annually and if deleterious effects are detected, practices will be adopted such as maintaining the watertable at a higher level by pumping when adjacent to these areas.

The nature of the optimal dredge path provides sufficient time for such review. The current optimal mine path develops as follows:

- during the first year of dredging the mine path proceeds in a westerly direction and by the middle of year two, the dredge path is 350 m from the boundary of the National Park. The path then turns to head back in an easterly direction. This approach and turn takes eight months and the length of dredge path that is parallel with, and 350m from, the National Park boundary is 600m;
- the mine path then continues to the east and it is not until approximately Year 5 that it again approaches the National Park. On this and subsequent approaches (Years 9, 16 and 19) to the National Park the dredge path is the agreed 100m from the National Park boundary.

Flora and vegetation surveys will be completed in all areas of remnant vegetation ahead of mining activities (including the area south of Strucels Rd which is contiguous with the National Park). If areas of conservation significance are identified their management will be agreed with the regulatory authorities as part of the subsequent Environmental Management Programmes. Rehabilitation of these areas will be addressed in the rehabilitation programmes required to be submitted to the Department of Environmental Protection, the first of which is to be submitted within one year of commencing mining operations.

5. OTHER ISSUES

Q5.0.1

The Company should be required to develop a fire strategy that includes the protection of the National Park but does not compromise the conservation values of the Park.

The Department of Conservation and Land Management (CALM) is the body vested with the authority to develop and implement fire strategies for the National Park. The Company is willing to develop a cooperative arrangement with CALM in this regard and has already assisted CALM with controlling an unplanned fire in the National Park by providing earthmoving equipment which was available on site.

The Company has an existing working relationship with the local Bush Fires Brigade, Fire Control Officer.

Fire control and prevention on the project site is part of standard occupational health and safety management programmes.

Management plans for fire control and statutory authority responsibilities will be achieved as follows :

- by incorporating the statutory requirements of the WA Mines Department and the West Australian Fire Brigade Board into the design of both the mining plant , and the process plant and infrastructure;
- by ensuring that in addition to the requirement for fire reticulation, hydrants and hoses, fire extinguishers are installed and maintained in all plant and at appropriate locations in buildings;
- the storage of flammable liquids shall be in accordance with the statutory regulations;
- by complying with the provisions of the Bush Fires Act and the local Shire Council with respect to controlled burning and fire breaks;
- by providing suitable equipment for fire fighting within the mining lease;
- by appointment of a nominated safety officer for overall fire control and monitoring and training of operations personnel; and
- by developing appropriate working arrangements with CALM and the local Bush Fires Board for the control of bushfires.

Q5.0.2

The company should take measures to prevent any feral animal population increase due to its activities.

The Company will implement measures as necessary to prevent any feral animal population increase due to its operations.

Q5.0.3

The extensive use of local limesand (from the Boranup Sand Pit - originally intended for agricultural use only) above the usual quantities has resulted in excessive use by large trucks of Bushby Road, Karridale townsite and Brockman Highway (a local and tourist route) and increase visual erosion at the sand pit site.

Limesand was extracted from the Boranup Sand Pit in 1993. This limesand was utilised during rehabilitation of the Bulk Sample for incorporation with pyritic material that had to be placed above the watertable.

Limesand is regularly carted to the Scott River area, along the abovementioned route, for agricultural purposes.

Pyrite management procedures have been developed to reduce the requirement for future use of limesand. These procedures include :

- minimising the exposure time of any pyrite to the atmosphere (this is automatically done by the mining method);
- selective materials handling;
- selective management of pyritic material that is required to remain exposed to the atmosphere for longer periods of time;
- avoiding areas of pyrite wherever possible; and
- establishing a monitoring programme that will provide an early indication of any requirement to modify management practices.

Should management and monitoring identify the requirement for an alkali treatment at any time, limesand is preferred by the Company because it is an effective neutralising material, has natural buffering capacity and is safe to use and handle. There are a number of limesand sources within the Shire.

Q5.0.4

Consultation of BHP with the Molloy Island home owners has been too late and only occurred at the request of the Molloy Island Home Owner's Association. Representatives of the Molloy Island Home Owner's Association should be invited to join the Beenup Consultative Group.

Background notes outlining the proposed mining extension were developed and widely distributed to assist with community consultation. A copy of these notes was provided in Appendix 1 of the Proposal Document.

A copy of these notes was faxed to the Secretary of the Molloy Island Homeowners Association on 16 October accompanied by an offer to meet with the Secretary or other concerned residents. This information was not solicited it was provided as part of the wider consultation programme. The DEP publicly advertised the proposal on 28 October.

Subsequently a request to meet with landholders and residents at Molloy Island was met by the Company. Due to the fact that the Company representatives were unable to meet with the group until several days prior to closure of the public submission period, the Company requested that the Department of Environmental Protection grant the Molloy Island Homeowners Association an extension to the public submission period. An extension of ten days was granted.

A request by the Association to nominate a representative on the Consultative Group has been passed on to the Chairman of the Group for consideration. Initial feedback from the group suggests that this request will be granted.

Q5.0.5

The proposed mining area now shares a large common boundary with CALM managed land. It would be prudent for a CALM representative to sit on the Beenup Consultative Group.

The Company believes that contact with CALM should be made through the normal meetings, and existing avenues for consultation between regulatory bodies and the Company. The consultative group is intended as an avenue for community input. Local Government is represented on the group.

The Company accepts that CALM has considerable interest in its activities and will establish a regular programme of liaison with the Department.

Q5.0.6

Detailed rainfall runoff modelling has not been done, completed or documented. This modelling is considered essential before the impact of discharge of waters to the Blackwood/Scott River systems can be properly assessed.

The requirement to discharge is related to topography across the length of the dredge pond and the behaviour of the groundwater table. Rainfall from areas surrounding the dredge pond and surface runoff from the site is diverted around the dredge pond. As discussed in Q 2.1.3 and summarised in the table below the quantity of water expected to be discharged relative to the flow in the Scott and Blackwood Rivers is very low.

Location	Month	Average Daily Flows 1982 - 1995 (x 1000 m^3)	Discharge as % of Average Daily River Flow
Scott River Brennans Ford	Jun	247	0.72
	Jul	720	0.25
	Aug	874	0.2
	Sep	729	0.24
Blackwood River Hut Pool	Jun	1287	0.14
	Jul	4313	0.04
	Aug	5626	0.03
	Sep	4887	0.04

Rainfall and runoff modelling has been completed for the three major drainage systems that traverse the site. The results of this modelling will be utilised in the design of surface water management structures, including those that divert runoff around the dredge pond.

Q5.0.7

Although the Kings Park Board is mentioned on page 44 and Appendix 1 as an agency that would be involved in restoration and rehabilitation, at this stage there has been no formal contact or proposal for the work to be undertaken. It is important the proponent understand the significant research required to develop and support rehabilitation work in these specious plant communities and the lead times required for this work.

The greater proportion of the land being disturbed by the Company (approximately 70%) is pasture used for grazing cattle and will be restored as such.

Planning for the rehabilitation of remnant vegetation areas will commence in 1996 prior to which time the Company will make arrangements to meet with the Kings Park Board.

Q5.0.8

With regard to the preferred mine path, it is essential that

1. **The greatest opportunity to limit the impacts of mining is given by insuring that the western part of the mining area is mined last.**
2. **Research and restoration trials be commenced as soon as possible to ensure appropriate environmental protection strategies are available when mining of the western area commences.**
3. **And proposed environmental strategies for the western part of the mining are trialed in the less environmentally critical areas.**

The Company will ensure that the impacts of mining are minimised in all areas by implementing agreed management and monitoring programmes and by progressively modifying practices should the results of monitoring suggest that this is warranted.

Granting of the extension to the approved mining area has been requested to allow the Company to maximise the extraction of the extended orebody using East-Westerly passes.

The most significant advantage of the East-West mine path is that it allows for a greater amount of the total resource to be extracted. The alternative North-South mine path, that mines within the existing approved mining area initially and then accesses the ore to the west at a later date, results in the loss of an additional 26 million tonnes of ore or one year's mining life. This can be expressed in economic terms as a loss of approximately $ 100 million export revenue. This arises due to operational restrictions associated with the tailings disposal technique that has been developed for the project which can be explained as follows.

A site specific mining philosophy has been developed for the project which utilises a new tailings disposal technique, known as sublay, that allow for process reject material including clay, sand and pyritic material to be placed deep within the working pond behind bund walls which are made from oversize material rejected by the wet processing plant. It is a requirement of this technique that mining does not occur adjacent to sublayed material until it has been allowed to consolidate sufficiently; a process likely to take several years.

The system therefore requires a mine path layout that extracts the orebody in two passes. The first pass traverses the entire orebody but involves leaving unmined areas between each of the parallel mine paths to allow sufficient consolidation time for the material that is sublayed. The second pass is then made to extract this unmined ore.

Within each mine path there are occasions when a pillar of ore must be left to separate freshly tailed areas from the operating mine area. The North-South mine plan requires an extensive pillar to be left. These pillars can never be mined resulting in significant loss of resource. The optimal East-West mine path allows the minimal loss of resource as pillars.

The East-West option is also optimal because it involves fewer mine paths, 14 as compared to 27 paths in the North-South option. Factors such as surface activities for mining infrastructure support are more efficient with fewer mine paths. Fewer traverses across the country also make planning for drainage management and rehabilitation simpler. Subsequent disturbance of rehabilitated areas and drainage lines is also reduced with fewer mine paths.

With both mine path options, mining operations will still operate at the same rate. Therefore after 10 years a similar area of disturbance will have occurred. The Company has made a number of commitments to ensure that the environmental impacts associated with its operations are acceptable. Whichever direction the mine path takes, progressive monitoring and evaluation of the performance of the operations will be carried out. At no time does the Company expect that within the approved mining area or the proposed extension will operations be allowed to continue, without appropriate modification, if its commitments to the regulatory authorities and the community are not being met.

The nature of the optimal dredge path provides sufficient time for review of activities following the first incursion of the mine path into the western portion of the orebody. The current optimal mine path develops as follows:

- during the first year of dredging the mine path turns in a westerly direction and by the middle of year two, the dredge path is 350 m from the boundary of the National Park. The path then turns to head back in an easterly direction. This approach and turn takes eight months and the length of dredge path that is parallel with, and 350m from, the National Park boundary is 600m;
- the mine path then continues to the east and it is not until approximately Year 5 that it again enters the western portion of the mining area and approaches the National Park. On this and subsequent approaches (Years 9, 16 and 19) to the National Park the dredge path is the agreed 100m from the National Park boundary.

A comprehensive rehabilitation programme will be developed for the project as required by the Ministerial Conditions of the original project approval. The requirement for research and restoration trials will be addressed in this programme. The Company will progress this as soon as possible.

References

BHPTM (1995), Proposal to Extend Mining Area Submitted in Accordance with Section 46 of the EP Act, September 1995.

Lewis Environmental Consultants, (1990) Heavy Minerals Mine Beenup, Environmental Review and Management Programme, prepared for Mineral Deposits Pty Ltd.

Hart, Simpson and Associates, (1991), Beenup Project. Dieback in the Scott National Park, prepared for BHP Utah Minerals International, August 1991.

Rockwater (1994), Results of Numerical Modelling for Water Balance Calculations, prepared for BHP Titanium Minerals Pty Ltd, July 1994.

Appendix 4

List of submitters

State and local government agencies

Department of Minerals and Energy
Department of Conservation and Land Management
National Parks and Nature Conservation Authority
Water Authority of Western Australia
Department of Agriculture
Shire of Augusta-Margaret River

Members of the public

Conservation Council of Western Australia Inc
Leewin Conservation Group
Karridale Electors Association
Molloy Island Home Owners Association
Kings Park & Botanic Garden
G & B Hangartner
Professor S.D. Bradshaw
Ernest P Hodgkin
R and K.M. Chappell
Andre Lebel
L & K Bailey
MH & RM Gurney
Ms Deborah Barber
S E Jolly
Mrs D Sofilas
C R & D M Andersson
Mr Ron Hancey
B.D. & D.M. Bult
Mr Larry Bunker
Mr Michael Hosie
Mr William G Duncan
F.L. Costello
Mr Jeff Brown
Ms B A Thomson
Tony & Marie Goss
Mrs M A McLean
David and Dorelle Coates
Mr Philip Roe
GH & CL Jansen
Mrs Wendy Dorrington
Mr & Mrs Bright
Yvonne & Rob Pittam
P & A Monty de Kerloy
C.W. Ciccarell

Appendix 5

Consolidated list of proponent's commitments

APPENDIX 1
SUMMARY OF CONSOLIDATED ENVIRONMENTAL MANAGEMENT COMMITMENTS

A summary of environmental management commitments was provided in the original ERMP (Lewis Environmental Consultants, p 94) and an updated version was presented in the project EMP (MDPL, 1994 p63). These commitments have been consolidated in the following table, together with new commitments that relate to the proposed extension to the mining area. A comment on the status of the existing commitments has been provided.

Please note that the following formatting has been applied:

the original commitment together with additional commitments made in response to public input on the ERMP are presented in normal text;

updates presented in the EMP 1994 are in italics; and

amendments that have been put forward as part of this proposal are bold.

COMMITMENT			COMMITMENT STATUS
Accommodation for Temporary Workforce	1	BHPTM will provide accommodation facilities on site for single persons and married people will be accommodated in Flinders Bay caravan park during the construction phase of the project.	The Flinders Bay caravan park is being utilised, the commitment for an on site facility has been superseded.
	2	BHPTM will provide accommodation for single people in a temporary facility to be located adjacent to the Augusta Hotel during the construction phase of the project.	It was agreed with the Shire and Community, and approved by the Minister in early 1995, that single persons would be accommodated in Augusta at a facility adjacent to the hotel. This facility is now in operation
Environmental Awareness	3	BHPTM will develop an environmental awareness programme to educate its workforce that all personnel working on the project are required to observe environmental guidelines throughout the life of the project.	Ongoing & applies to proposed extension. Construction education programme in place.
Groundwater	4	BHPTM will design the mining operations to avoid substantial drawdown of the watertable.	Complete & applies to proposed extension. Dredge designed to operate from normal groundwater level.
	5	Dredging activities will always remain at least 100m from the National Park boundary to minimise impacts on the hydrology of the National Park.	Ongoing & applies to proposed extension.
	6	*BHPTM will maintain the approved groundwater monitoring programme which includes baseline data collection, progressive installation and monitoring of bores ahead of the dredging operations and installation of bores at appropriate locations around the dry mill, so as to ensure compliance with the boundary drawdown limits and to ensure that mining and mineral separation activities do not have any adverse effects on the groundwater environment of the area throughout the life and for an agreed time after decommissioning of the project.*	Ongoing & applies to proposed extension.
	7	*Groundwater monitoring bores will be monitored for pH, EC and level on a monthly basis and a more comprehensive suite of parameters including nutrients and metals on a six-monthly basis and results reviewed, to allow operational strategies to be modified where necessary to minimise potential impacts on the environment, during and after the project. The results of monitoring will be reported to the DEP annually.*	Ongoing & applies to proposed extension.

COMMITMENT			COMMITMENT STATUS
Surface Water	8	BHPTM will temporarily divert existing surface drainage channels around the dredge pond and stabilise them with vegetation, at least twelve months prior to their requirement, to manage surface water runoff from the mining area.	Ongoing and applies to proposed extension.
	9	Silt traps will be constructed on major drainage channels , downstream of the mining operation, in advance of dredging activities.	Ongoing and applies to proposed extension.
	10	Where practical, water from the slimes dam will be decanted and returned to the dredge pond. Providing turbidity is at an acceptable level, excess decant water from the slimes dam will be discharged into existing drainage channels (during the winter wet season).	Superseded BHPTM has developed a new process which combines the fines (slimes) and tailings together and disposes of them subaqueously in the pond.
	11	Monitoring of the water quality of the Blackwood and Scott Rivers and major drainage channels leaving the mining area will continue on a regular basis to assist with the development and ongoing monitoring of the surface water management plan.	Baseline data collection and surface water management plan complete. Continued monitoring ongoing.
	12	*BHPTM will develop and implement a surface water management programme to prevent the release of turbid or otherwise unacceptable quality waters from the site; maintain adequate surface flow into neighbouring properties and prevent major long term changes to current drainage patterns during the life of the project.*	Ongoing & applies to proposed extension.
	13	*BHPTM will implement the approved surface water monitoring programme , comprising a number of regional sites and sites strategically located around the mining operations and will provide results to the DEP on an annual basis, to ensure compliance with commitments relating to surface water management.*	Ongoing and applies to proposed extension.
	14	**BHPTM will avoid off site discharge of dredge pond water where possible and ensure that discharge of dredge pond water has no significant adverse effects on the receiving waters. If there is a requirement to discharge water from the dredge pond: BHPTM will monitor quality ahead of the requirement to determine acceptability for discharge; discharge will be via existing water channels to the Scott or Blackwood Rivers; where practicable small earth bunds will be used to avoid the requirement to discharge; during periods of discharge water will be monitored daily; and discharge will be limited to that required to prevent pond overflow.**	New commitment relating to the proposed mining extension.

COMMITMENT			COMMITMENT STATUS
Surface Water (continued)	15	**Approved surface water management and monitoring programmes will be implemented to ensure that only water of acceptable quality is released to the Scott or Blackwood Rivers.**	New commitment relating to proposed mining extension.
	16	**The results of monitoring any discharge from the dredge pond will be reported to the regulatory authorities and these reports will be publicly available.**	New commitment relating to the proposed mining extension.
Fines Management	17	BHPTM will direct fines to settling ponds for drying. A portion of the dried fines will be incorporated into the topsoil destined for pasture areas and the remainder incorporated in the tailings near the surface to effect their disposal during the life of the mine.	Superseded by sublay process. With the sublay process BHPTM retains the flexibility to combine the fines and tailings throughout the returned profile.
Minimisation of Disturbance	18	Clearing will be kept to the minimum required for safe and efficient operations and wherever possible, access roads and easements will follow existing tracks to minimise impacts on native vegetation during the life of the project.	Ongoing & applies to proposed extension.
Timber Salvage	19	BHPTM will remove millable timber ahead of clearing and will maximise the salvage of forest products where practicable.	Ongoing & applies to proposed extension.
Aboriginal Artefacts	20	BHPTM will immediately notify the Department of Aboriginal Sites of the Western Australian Museum of any occurrence of Limestone platforms or if any archaeological material is uncovered during the process of earth moving, to minimise potential disturbance of aboriginal artefacts.	Ongoing & applies to proposed extension.
	21	**BHPTM will liaise with the appropriate authorities to determine the requirement for archaeological assessment, of areas within the proposed mining extension, not previously surveyed. Where further assessment is required this will be carried out, documented and submitted to the DEP in advance of mining operations.**	New commitment relating to proposed mining extension.
Dust Control	22	The generation of dust from areas such as topsoil, tailings, concentrate heaps and haul roads will be controlled as necessary to minimise dust emissions from the mine-site during the life of the project.	Ongoing and applies to proposed extension.
	23	*Dust collection and control systems including coverings on conveyors, transfer points and discharge points, flexible connections between granular materials handling systems; skirtings and dust filters will be installed and maintained at the dry mill to contain dust emissions.*	Ongoing

COMMITMENT			COMMITMENT STATUS
Dust Control (continued)	24	*A dust monitoring programme will be implemented to monitor the effectiveness of dust control measures, when the project is commissioned.* Dust control measures will be modified to rectify any dust control problems identified by monitoring.	Ongoing and applies to proposed extension.
Lighting	25	If lighting causes direct illumination at neighbours residences BHPTM will install appropriate light shields.	Ongoing and applies to proposed extension.
Noise Mitigation	26	If required, to meet the stipulated noise levels, BHPTM will design a series of sound barriers to prevent escape of noise from loading areas.	Ongoing & applies to proposed mining extension.
	27	BHPTM will apply to have the pitch of reversal horns reduced to minimise noise emissions from the site and will avoid, wherever possible, disruptive noise at night during the life of the project.	Ongoing and applies to proposed mining extension.
	28	BHPTM will undertake base line noise monitoring and will continue with periodic monitoring during both the construction and operation phases to ensure compliance with the stipulated noise levels.	Baseline monitoring complete. Periodic monitoring ongoing.
	29	*BHPTM will manage noise emissions from the mine at residential premises surrounding the proposed mine so as not to exceed the levels stipulated in the Ministerial Conditions of approval for the project, nor cause unacceptable noise due to tonal or impulsive components during the life of the project.*	Ongoing and applies to proposed mining extension.
	30	**BHPTM will carry out noise assessment studies for the proposed extension to the mining area and develop mitigation measures as required, and to the satisfaction of the DEP, to meet the stipulated noise conditions. This will be completed, documented and submitted to the DEP prior to mining in these areas.**	New commitment relating to the proposed mining extension.
	31	**BHPTM will implement a noise monitoring programme when the project is commissioned to ensure compliance with the stipulated noise levels at the closest residence to the operations. This programme will be continued for a period of three years and then reviewed in consultation with the DEP.**	New commitment applies to approved mining area and proposed extension.
	32	**In addition to meeting the stipulated noise levels, BHPTM will respond to the concerns of nearby residents as they arise.**	New commitment applies to approved mining area and proposed extension.
Flora, Vegetation and Fauna	33	To protect flora of conservation value, BHPTM will exclude the eastern half of Location 4264 from mining. *A management programme for the area will be developed in consultation with CALM.*	Ongoing

COMMITMENT			COMMITMENT STATUS
Flora, Vegetation and Fauna (continued)	34	BHPTM will undertake flora and fauna monitoring at annual intervals and periodic dieback monitoring, in a buffer strip within the National Park , where the Park is contiguous with the mining area, after the commencement of mining.	Ongoing and applies to proposed mining extension.
	35	Flora and fauna surveys of the eastern and northern sections of the Scott National Park will be completed over the period October 1990 to June 1991 and the results will be made available to the public.	Surveys complete, report in preparation.
	36	The Company will provide some trial nest boxes in areas of native revegetation to determine whether these assist in the return of fauna to rehabilitation sites.	Ongoing
	37	The Company will provide detailed studies of flora and fauna along the proposed transport route, which crosses CALM land, to CALM prior to the route being finalised.	Complete (transferred responsibility to MRD).
	38	**BHPTM will botanically survey all areas of remnant vegetation, ahead of planned mining activities, so that management of areas of conservation significance can be agreed with the relevant regulatory authorities. The results will be submitted to the DEP in advance of mining operations. If required, BHPTM will exclude areas of conservation significance from the mining area.**	New commitment relating to proposed mining extension.
	39	**BHPTM will comply with the requirements of the Wildlife Conservation Act.**	New commitment relates to approved mining area and proposed extension.
	40	**BHPTM will carry out botanical monitoring in areas of conservation significance when they are adjacent to mining activities ie National Park, Camping Reserve, Governor Broome Rd and areas containing declared rare flora, to determine the effects of the allowable drawdown on the vegetation in these areas. If the 0.5m drawdown is found to be detrimental BHPTM will modify its practices to reduce the drawdown.**	New commitment relates to approved mining area and proposed extension.
	41	**BHPTM will assess all areas of significant remnant vegetation, that have not been surveyed previously for fauna, prior to mining. Results and management measures will be submitted to the DEP in advance of mining operations.**	New commitment relating to proposed extension.
	42	**BHPTM will implement measures, as necessary, to prevent any feral animal population increase due to its operations.**	New commitment applies to approved mining area and proposed extension.

COMMITMENT			COMMITMENT STATUS
Rehabilitation	43	Rehabilitation will be carried out as soon as practicable after mining or land disturbance in accordance with the agreed recommendations of the final land use Work Party and the Community Consultative Group.	Ongoing
	44	Detailed rehabilitation plans will be prepared and submitted to the DEP in advance of the commencement of mining operations and these will be available for public inspection.	Superseded by Ministerial Condition 11 of project approval.
	45	BHPTM will liaise with CALM, the Department of Agriculture and research organisations such as the Kings Park Board, as required throughout the life of the project , to ensure the ongoing success and continual improvement of rehabilitation techniques and will cooperate in regeneration trials for Rare and Endangered, Reserve List and other species of flora as appropriate. Members of the public will be kept informed of this programme through the consultative process.	Ongoing and applies to proposed extension.
	46	Topsoil will be removed from the dredge path ahead of mining operations and stored under conditions that will maximise its value in subsequent rehabilitation.	Ongoing & applies to proposed extension.
	47	BHPTM will monitor the progress of rehabilitating areas regularly and will report the results annually to the appropriate regulatory authorities.	Ongoing & applies to proposed extension.
	48	Rehabilitated areas will be contoured to be compatible with surrounding lands.	Ongoing & applies to proposed extension.
	49	*BHPTM will develop a comprehensive rehabilitation plan for the project, to the satisfaction of the regulatory authorities, within one year of the commencement of dredging operations.*	Ongoing & applies to proposed extension.
	50	**Rehabilitation, on land not owned by BHPTM, will be carried out with the input of the landowner and to the satisfaction of the regulatory authorities.**	New commitment relating to rehabilitation of land not owned by the Company.
	51	**BHPTM will plant native vegetation, in areas adjacent to the National Park, in similar proportions to that which occurred prior to mining, if the landowner is agreeable.**	New commitment relating to proposed mining extension. (NB Company has already agreed to plant a buffer against southern boundary of National Park on land that it owns.)

COMMITMENT			COMMITMENT STATUS
Dieback Management	52	To enable a dieback management plan to be developed, to the satisfaction of CALM and the DEP, and incorporated into the mine management plan, a detailed dieback survey will be carried out over the entire mining area and the Eastern and Northern sections of the National Park, before operations commence.	Complete. A dieback management programme has been developed and is detailed in Appendix F of the EMP.
	53	BHPTM will make the results of surveys and the dieback management plan publicly available via the EPA library , the Shire Library and the Company offices.	Complete
	54	Measures to control and contain any dieback in native vegetation areas to be returned after mining, will be studied in the early years of mining, when the rehabilitation will be largely in the form of pastures.	Ongoing, although there are no areas of remnant vegetation within the survey area to date that are completely free of the dieback disease.
	55	To minimise the spread of dieback, vehicles moving from infected to non infected areas will be washed down. Vehicle movements on site will be managed to minimise the requirement for washdown.	Ongoing & applies to proposed mining extension.
	56	Methods for monitoring the presence of the dieback organism in the dredge pond and the drainage channels will be researched. Other parts of the mining area will be monitored for dieback as required, dependent on the results of the dieback survey	Ongoing and applies to proposed mining extension.
	57	*Forest hygiene measures will be implemented to prevent export of the disease from the site to uninfected areas and to protect identified rare flora species within the project area.*	Ongoing & applies to proposed mining extension.
	58	*BHPTM will continue to liaise with CALM in relation to ongoing research that may have application to mine-site dieback management eg the use of phosphonate treatment in the area of declared rare flora that has been excluded from mining.*	Ongoing & applies to proposed extension.
	59	**BHPTM will assess the dieback status of the proposed mining extension and develop management measures to the satisfaction of CALM and the DEP, before mining operations commence. The results of assessment and management measures will be provided to the DEP and will be publicly available.**	New commitment relating to the proposed mining extension.
Environmental Management Programmes	60	A surface water management plan and dieback management plan will be submitted and approved by the EPA. These plans will be available to the public for inspection.	Complete (EMP submitted 1994)

COMMITMENT			COMMITMENT STATUS
Environmental Management Programmes (continued)	61	**Assessment of Locations 4152 (particularly the faunal values of the summer swamp) and 4261 (particularly for declared rare flora) will be carried out, and the results provided to the DEP, in advance of mining operations. If required, BHPTM will exclude these areas from the mining area.**	Proposed new commitment relating to proposed mining extension.
	62	**The project Environmental Management Programme will be progressively updated to incorporate further assessment and management measures relating to noise (commitment 30), vegetation and flora (commitment 38 & 62), dieback (commitment 59), assessment of significant habitats for fauna (commitment 41) and archaeological assessment (commitment 21). Each update of the EMP will be submitted to the DEP in advance of mining operations in any particular area.**	New commitment relating to proposed mining extension.
Monitoring	63	Monitoring of groundwater, surface water , flora and vegetation, rehabilitation and dieback will be undertaken and the results reported as appropriate to the Department of Mines, the Department of Conservation and Land Management and the Department of Environmental Protection. The results of monitoring will be reviewed regularly to allow management programmes to be modified as necessary.	Ongoing and applies to proposed extension.
Visual Amenity	64	To minimise impacts on visual amenity, the dry mill and office will be screened from the road by planting of indigenous trees and shrubs, and site buildings will be clad with green colorbond, during the construction phase of the project.	Complete.
Water Supply	65	BHPTM will obtain the dry mill water requirements from the regional Lesueur formation, will maximise recycling of this water, minimise discharge of excess water and construct a silt trap downstream of the settling dam to minimise the impacts of dry mill water usage on local water resources.	Ongoing (proposed extension has no impact on dry mill operations). Silt trap complete
	66	BHPTM will obtain make-up water for the dredge pond from bores into the Lesueur aquifer, as required.	Ongoing and applies to proposed extension
Waste Disposal	67	Sand and other waste products which are removed from the concentrate at the mineral processing plant will be returned to the minesite for disposal.	Ongoing
	68	BHPTM will dispose of garbage and workshop wastes at an approved disposal area within the Shire.	Ongoing

COMMITMENT			COMMITMENT STATUS
Transport of Mineral Product	69	Mineral product from the dry mill will be transported to Bunbury via the agreed transport route, which will be constructed to comply with the latest Austroad standards and to meet the MRD requirements.	The preferred transport route has been selected and approved. Construction and management of the transport route will be carried out by the Main Roads Department (MRD). This commitment is now the responsibility of the MRD.
	70	The Company is willing to reconsider the use of rail if it should ever become viable and competitive.	Ongoing - road under construction
	71	The Company will meet the costs associated with the haulage of its minerals product by reaching agreement with the Shires on the proportion of upgrading, sealing and maintenance levels for all haulage roads.	Ongoing.
	72	Noise levels at the intersection of Scott River Rd and Brockman Highway will be reduced to acceptable levels if necessary by the use of measures which may include the re-alignment of the road intersection and a noise barrier.	Now responsibility of MRD. Road diversion currently under construction.
	73	The Company will transport mineral product to Bunbury 24 hours per day in three shifts, five days per week. No haulage of mineral product is proposed for Saturday or Sunday.	Ongoing
	74	The Company will prepare and implement a dieback management programme for the mineral transport route to the satisfaction of CALM and the EPA.	Now responsibility of MRD - Complete
	75	The Company will ensure that, during transport, mineral product is securely covered by a tarpaulin to prevent spillage en-route.	Ongoing
Audit of Greenhouse gases	76	The Company will reduce the emissions of greenhouse gases to as low as practical, using measures including the use of on board computers to monitor truck performance and maximise efficiency, investigating a halon free fire protection and prevention system for the site and investigating alternative uses for non-millable timber.	Ongoing
	77	*Purchase, maintenance and disposal of equipment containing CFC gases will be carried out in accordance with the Environmental Protection (Ozone Protection) Policy 1993.*	Ongoing
Employment	78	The proponent will advertise all permanent positions in the local newspaper, in keeping with the policy of employing suitably qualified local residents where possible.	Ongoing

COMMITMENT			COMMITMENT STATUS
Employment (continued)	79	Electrical and mechanical apprenticeships offered by the proponent will be available for suitable local school leavers.	Ongoing
	80	Where competitive with alternative suppliers, local business activities will be supported.	Ongoing
	81	The proponent is an equal opportunity employer.	Ongoing
	82	The Company will provide training programmes for plant operators who have no appropriate experience.	Ongoing
	83	The Company will favour local people when employing its permanent workforce.	Ongoing
	84	The Company will provide an induction programme for its construction and permanent workforce to highlight sensitive environmental and local issues.	Ongoing - construction programme in place.
Tourism	85	The potential for tours of the operation will be investigated in conjunction with the A-MR Tourist Bureau. Any funds generated from the tours will be for the benefit of the Bureau or local charities.	Ongoing
Infrastructure	86	The capital cost of infrastructure for the project will be borne by the proponent, in conjunction with other major users of the infrastructure facilities.	Ongoing
	87	Upon obtaining approval for the project, agreement will be reached with the Shire to ensure that the Shire is not financially disadvantaged by the project. A total funding package will be finalised with the Shire to enable them to cater for the incoming population.	Complete - Augusta - Margaret River Shire Infrastructure Agreement.
Workforce	88	Suitably qualified local residents will be employed where possible. This will provide direct interaction between existing residents and employees new to the area.	Ongoing
	89	The proponent will provide the necessary training for plant operators, rather than rely on obtaining personnel who already have the appropriate work skills.	Ongoing
Accommodation	90	Consultation with the Shire and the Beenup Consultative Group will continue to determine means of minimising the impact of the incoming construction and permanent operational workforce on existing housing.	Ongoing
Social Infrastructure	91	The need for additional social facilities to meet current population growth and the increase in population due to the project will be investigated in conjunction with the Shire Council and the Beenup Consultative Group.	Complete - Infrastructure Agreement in place.

COMMITMENT			COMMITMENT STATUS
Social Infrastructure (continued)	92	It is hoped that the Beenup Consultative Group will play an active role in assisting newcomers to assimilate to their new environment.	Ongoing
	93	BHPTM personnel currently involved in consultation with the community will continue to be involved through the construction phase and into the operational phase, to maintain continuity of the consultative process.	Ongoing
	94	The Company will provide annual updates on anticipated workforce changes to the Education Department prior to the new academic years to enable the Department to undertake informed planning.	Ongoing