Proposed gold mine in 'C' Class Nature Reserve 18584 (Rutherford's Reward), Westonia

Rutherford Resources Pty Ltd

Report and recommendations
of the Environmental Protection Authority

Environmental Protection Authority
Perth, Western Australia
Bulletin 712
October 1993

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 11 November 1993.

Environmental Impact Assessment (EIA) Process Timelines in weeks

Date	EIA commences from receipt of full details of proposal by proponent	Time (weeks)
12 July 1993	Proponent Document Released for Public Comment	4
9 August 1993	Public Comment Period Closed	
21 August 1993	Issues Raised During Public Comment Period Summarised by EPA and Forwarded to the Proponent	3
2 September 1993	Proponent response to the issues raised received	0
28 October 1993	EPA reported to the Minister for the Environment	8

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Summary and recommendations

Rutherford Resources Pty Ltd proposes to develop a gold deposit in 'C' Class Nature Reserve No 18584 near Westonia, halfway between Southern Cross and Merredin in the eastern wheatbelt (Figure 1). The reserve has important conservation value due to the small area of land set aside for nature conservation in the wheatbelt. Mining is a potentially acceptable land use in 'C' Class Nature reserves under Government Policy if a proposal is considered to be environmentally acceptable.

The proposal involves the mining of a shallow deposit of lateritic gold-bearing ore, with the gold extraction occurring on site via a heap leach operation using saline ground water. Approximately 6 hectares (ha) would be disturbed by the proposal and the site would be rehabilitated on completion of mining using native vegetation.

Upon referral to the Environmental Protection Authority a Consultative Environmental Review (CER) level of assessment was set to evaluate particularly the impact of the temporary removal of native vegetation on the land directly affected by the proposal.

The CER was available for a four week public submission period which closed on 9 August 1993. Seven submissions on the proposal were received from members of the public, and State Government agencies. The following specific issues were raised:

- conservation values of wheatbelt conservation reserves (eg retention of remnant vegetation);
- flora and fauna;
- operational management (possible impacts resulting from spillage of saline bore water);and
- rehabilitation.

A detailed list of issues raised in submissions and the proponent's response to them is contained in Appendix 2 of this report.

Following public review, the proponent made an additional commitment to ensure that land with equivalent (or higher) conservation value can be procured and be added to the conservation estate in the wheatbelt. The Authority believes that this additional commitment adequately balances the environmental risks and uncertainties associated with the proposal and goes some considerable way to satisfying the intent of the NPNCA position on mining in nature reserves insofar as it will result in a net addition to the conservation estate.

Following consideration of the Consultative Environmental Review, submissions from the public and Government agencies and the proponent's response to them, the Authority considers that the environmental issues related to the proposal are manageable and has concluded that the proposal is environmentally acceptable. Accordingly, the Authority has made the following recommendations:

Recommendation 1

The Environmental Protection Authority has concluded that the proposed gold mine in 'C' Class Nature Reserve 18584 (Rutherford's Reward), as described in the Consultative Environmental Review, is environmentally acceptable.

In reaching this conclusion, the Environmental Protection Authority identified the main environmental issues as:

- **conservation values of wheatbelt conservation reserves (eg retention of remnant vegetation);**
- **flora and fauna;**

- **operational management (possible impacts resulting from spillage of saline bore water); and**
- **rehabilitation.**

Accordingly, the Environmental Protection Authority recommends that the proposal could proceed subject to the proponent's environmental commitments listed in Appendix 1 and the following recommendation. (Recommended Environmental Conditions are listed in Section 7)

Recommendation 2

In order to minimise disturbance of remnant vegetation and avoid compromising the conservation values elsewhere in Reserve 18584, the Environmental Protection Authority recommends that the proponent prepares an Environmental Management Program developed in consultation with the Department of Conservation and Land Management and the Department of Minerals and Energy.

The program should include consideration of, but not necessarily be limited to:

- **operational procedures (eg area demarcation, topsoil management, saline water management, overburden/waste management and dieback hygiene);**
- **completion criteria details for determination of rehabilitation standards; and**
- **brief progress reports which will outline the environmental management procedures undertaken up to the completion of site preparation (Stage 1) and up to the completion of mining and processing (Stage 2).** (see Recommended Environmental Conditions 3-1, 3-2 and 3-3)

1. Introduction

Rutherford Resources Pty Ltd proposes to develop a gold deposit in 'C' Class Nature Reserve No 18584 near Westonia, halfway between Southern Cross and Merredin in the eastern wheatbelt (Figure 1). The reserve is vested in the National Parks and Nature Conservation Authority and is managed by the Department of Conservation and Land Management. It is part of a larger reserve system connected variously by road reserves, railway reserves, and freehold bushland. The flora and fauna within the reserve system have important remnant conservation value because of the extensive land clearing in the region and the small area of land set aside for conservation.

The proposal was referred to the Environmental Protection Authority by the Department of Minerals and Energy of Western Australia because of its potential impact on the conservation estate. The Authority decided to assess the proposal at the level of Consultative Environmental Review (CER) because of the small scale of operation and the history of disturbance at the site. Mining is a potentially acceptable land use in 'C' Class Nature reserves under Government Policy if a proposal is considered to be environmentally acceptable.

2. The proposal

The proposal has three stages including: site preparation; excavation and processing; and decommissioning and rehabilitation.

Site preparation (Stage 1) would involve the removal by bulldozer of 6.1 hectares (ha) of the existing vegetation in an oval shape measuring 300 metres north-south and 225 metres east-west, and storage of the debris around the perimeter of the site. The top 100 mm of topsoil would be stockpiled to provide the seed source and substrate for the rehabilitation program to follow, about two years after the commencement of mining.

Stage 2 would involve the mining and on-site extraction of approximately 230,000 tonnes of lateritic, gold-bearing ore located in the top six metres of the ground profile.

A hole approximately 2 metres deep and covering an area of 7000 m^2 would be excavated and lined with plastic to form a vat for the heap leaching operation, into which the mined ore would be placed for treatment. A solution of cyanide and saline water would be applied to the ore using drip emitters to leach the gold. The solution would then pass through the ore under gravity, and be collected in two sumps. Drain coils and geotextile fabric would also be installed beneath the ore to enable drainage and collection of the solution.

The leachate would then be pumped to the on-site extraction plant. The gold would be extracted from the leachate by conventional electrolytic deposition onto steel wool. The residual solution is then recycled to the vat. Approximately 50 tons of cyanide would be used over the life of the project which would be approximately three years. A small dam with a capacity of 2,000 m^3 would be constructed to hold the water used in the leaching operation.

The decommissioning and rehabilitation program (Stage 3) would involve the removal of the processing plant and associated systems from the site. The cyanide solution would be chemically broken down using peroxide to form harmless products. Residual cyanide solution is flushed from the processed ore using fresh water applied through the drip emitters. A deep trench would be dug at the lowest point under the heap to direct the neutralised solution into the ground water, which is saline in the area.

The mine site would be re-contoured to blend with adjacent natural gradients, using the stockpiled topsoil and organic matter. The punctured plastic sheet, drainage coils and geotextile fabric would be buried.

Seed collected prior to and during the mining operation would be sown to complement the seedstock present in the soil. No watering or fertilisers would be used in the regeneration program.

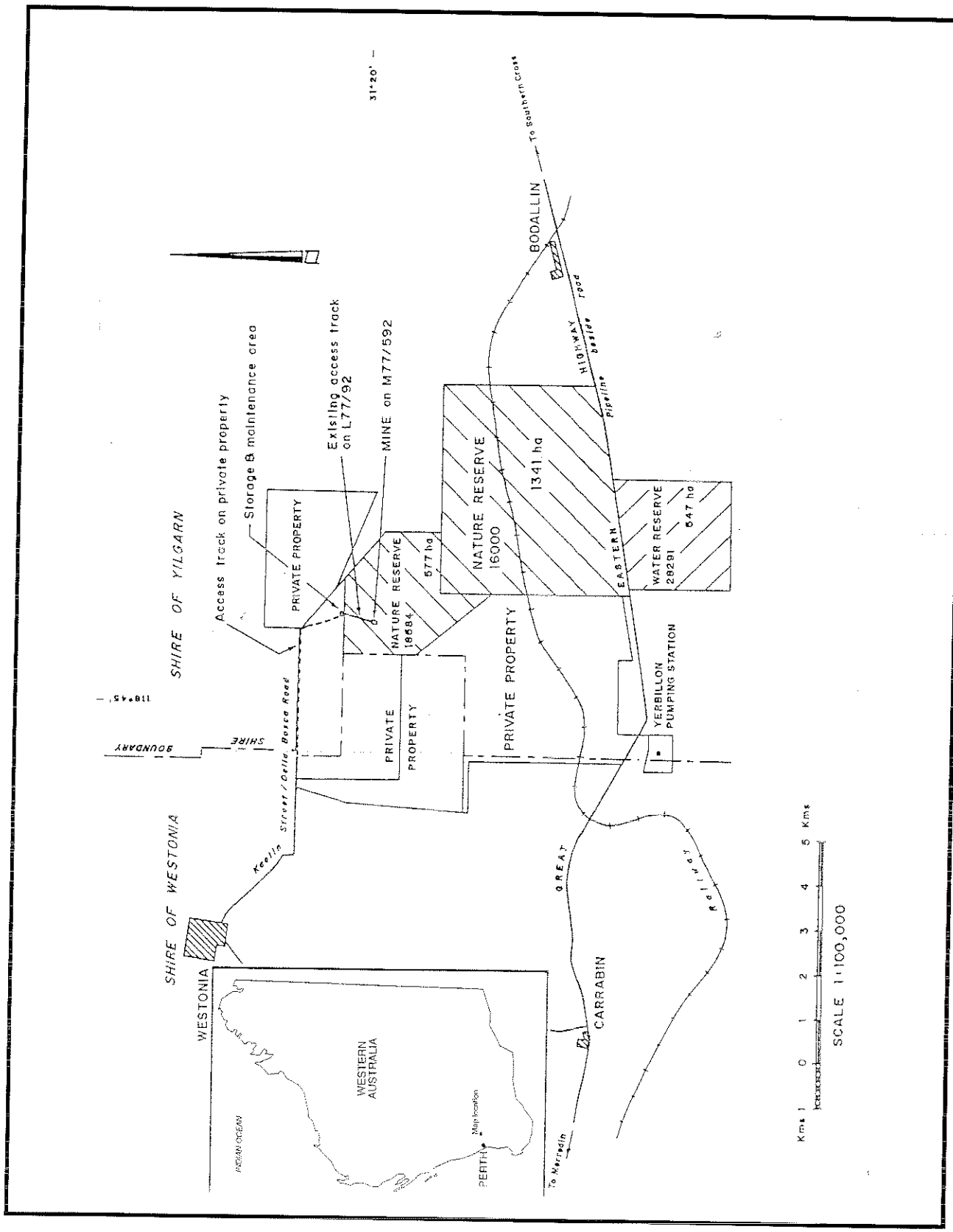


Figure 1. Location of proposed gold mine and surrounding land use

This would favour the establishment of self-sustaining native vegetation at the site. The regeneration would be monitored to determine the need for remedial action. Hand planting of advanced seedlings would be considered in the event of inadequate plant regeneration. Measures to control rabbits and weeds would be employed if necessary.

The rehabilitation program would be regarded as complete when there is a good cover of self-sustaining native plants of sufficient density and diversity to eventually result in a reasonable approximation of the original vegetation.

3. The existing environment

Reserve 18584 has an area of 577 ha and forms part of a larger native reserve system comprising 4000 ha. The Reserve has a history of exploitative land uses. It was gazetted in 1901 and by 1924 had been partially cleared to provide timber for the Yerbillon pipeline pumping station on the Perth to Kalgoorlie pipeline. It was also used by local farmers for grazing livestock until the 1950s. Mineral explorers have also bulldozed grid lines and conducted exploration drilling within it. Despite these disturbances the conservation values of the area were retained. In view of the paucity of wheatbelt native vegetation, loss of biodiversity and land degradation from large scale clearing for agriculture, the area was secured as a nature reserve as a more appropriate purpose. In 1979 the area was made a 'C' Class Nature Reserve for the purposes of Conservation of Flora and Fauna.

3.1 Soils and topography

The soils and topography in the region are closely related. The typical pattern is of flat sandplains on the more elevated areas and loamy or clayey soils in the valleys. The valleys are very wide and low, and the total relief is usually very small and may not be apparent on the ground. Coarse yellow or pale brown sand with some surface gravel is found on the more elevated ground near the minesite. The soil grades to a red-brown loamy or clayey soil, sometimes with surface gravel.

The mine site occupies a "greenstone" belt of rocks. The gold-bearing ore, which is developed from the greenstones, is a red pisolitic gravel lying just below the surface, with little or no covering of topsoil.

3.2 Flora

The vegetation within the reserve system has not been studied in detail but has been categorised into five units. They include: remnant mallees over sandplain, sandplain thicket, woodland/thicket transition mosaic, woodland and drainage line.

The vegetation on the mine site is woodland, dominated by Salmon Gum (*Eucalyptus salmonophloia*), Red Morrel (*E. Longicornis*) and Gimlet (*E. salubris*) trees largely regenerated from coppiced stems following the heavy timber-cutting in the 1920s. There are approximately thirty mature trees on the site which provide habitat opportunities for fauna. There is a variable shrub stratum with no dominant species, but commonly including *Acacia resinomarginea*, *A. erinacea*, and *Exocarpos aphyllus*. The vegetation in this woodland is intact and in good condition with few weeds in the understorey.

3.3 Fauna

There is little known about the vertebrate and invertebrate fauna in the reserve, and the proponent did not conduct a detailed survey because of the small size of the proposal. However a detailed list of mammal, reptile and bird species that could occur on the site was presented in the CER. Several species of snakes (pythons), birds (Peregrine Falcon and Carnaby's Black Cockatoo), and one mammal (the Chuditch) are identified as possibly present and of conservation interest.

Observations of the birdlife made during a visit to the site in August 1993 suggested that there was a rich and diverse fauna within the reserve. Exotic pests such as rabbits and foxes are known to be present.

4. Public review

The CER was released for public review from 12 June 1993 to 9 August 1993. A total of eight written submissions were received, with three from local land owners and the remainder from State and local government bodies. These were: the National Parks and Nature Conservation Authority (NPNCA), the Department of Conservation and Land Management (CALM), the Department of Minerals and Energy of Western Australia (DOME), Yilgarn Shire Council, and the Shire of Westonia. The land owners were Messrs: Sherlock and Blyth; Della Bosca; and Pentonilo.

From the matters raised during the public review period the Authority has identified six key issues. They include:

- concern about mining in nature conservation reserves in the wheatbelt and the attendant potential loss and degradation of conservation values;
- lack of information on flora and fauna within the reserve system in the wheatbelt, and uncertainties regarding the impact of the clearing on locally rare and endangered species;
- economic and logistic implications to CALM of the proposal;
- potential for further mining activities in the reserve and the cumulative impacts on conservation values within the reserve;
- possible impacts on native vegetation resulting from the spillage of the saline bore water used in the leaching process; and
- rehabilitation.

The submissions by NPNCA and CALM, and the proponent's response are included in Appendix 2.

5. Environmental impact assessment

5.1 Basis for assessment

The National Parks and Nature Conservation Authority has advised the Authority of its opposition to the proposal on the basis that "there is very little land set aside for conservation in the wheatbelt and existing reserves must be given very high priority for protection". This advice is consistent with NPNCA's general position on mining in National Parks and Nature Reserves, a copy of which is presented in Appendix 3.

CALM provided detailed comment on its concerns and confirmed the fact that native vegetation is poorly represented in the conservation estate in the wheatbelt.

It is a requirement under the Environmental Protection Act (1986) for the Authority to assess each proposal on its merits. In conducting this assessment the Authority concluded that the major impact of the proposal was the temporary loss of the vegetation and animal habitat on the mine site.

The Authority recognises that this impact is restricted to a very small area of land which represents less than two percent of this reserve and less than 0.2 percent of the total reserve system. Physical disturbance is a common phenomenon in this type of ecosystem and most species have evolved adaptive strategies to cope. For example fire is a frequent visitor in woodlands and many species require the removal of the overstorey and physical disturbance to enable seed germination.

5.2 Risks and uncertainties

Notwithstanding the above, the Authority acknowledges that there are risks and uncertainties associated with proposals which involve attempts to re-establish vegetation on soil substrates that have been physically and chemically modified. These risks are relatively higher in areas where native vegetation is poorly represented in the conservation estate, due to the possibility that rare plants may be permanently lost or that the rehabilitation program is unsuccessful.

The absence of detailed information on the composition and structure of the vegetation throughout the reserve system makes it impossible to determine precisely the relative importance of the plant species on the mine site. It is also possible that there are rare and endangered flora on the site because the detailed vegetation survey was not undertaken in spring when many plant species, such as annuals, can be collected and more readily identified.

With respect to the rehabilitation program, the proponent has not brought to the Authority's attention any previous attempts to regenerate the full suite of woodland vegetation using soil seed stock in the wheatbelt. Growth rates of overstorey species are likely to be slow (as demonstrated by the small size of the 70 year old regeneration on site) and it could take over one hundred years for trees to develop hollows and other characteristics that are necessary habitat for some birds and animals.

Whilst the Authority believes it unlikely that important flora and animal habitat will be lost from the reserve system as a result of the proposal, due to the relatively small area of disturbance, it considers that it would be reasonable to require the proponent to offset the risks in a tangible way.

5.3 Offsetting the risks

A meeting between the proponent and representatives of CALM, DOME, and the Environmental Protection Authority was held on 13 October 1993 to discuss the proposal. At this meeting the proponent made an additional commitment to enable the procurement of land with equivalent (or higher) conservation value to be added to the conservation estate in the wheatbelt where necessary and to support resource survey and management activities (see Appendix 1 - Environmental Condition 17).

The Authority believes that this additional commitment adequately balances the environmental risks and uncertainties associated with the proposal and goes some considerable way to satisfying the intent of the NPNCA position on mining in nature reserves insofar as it will result in a net addition to the conservation estate.

5.4 Completion criteria

Concern was expressed in submissions about the absence of detailed baseline criteria for the site restoration and vegetation rehabilitation programs. Concern was also expressed on the potential impact of saline water on native vegetation in the event of bore failure or leakage of the vat.

Baseline criteria are required for soil pH and electrical conductivity in the first 200 mm of the root zone, and to determine what is meant by "good regeneration". DOME has also advised that perforation of the vat liner should not be undertaken until flushing has shown that the cyanide levels have become negligible and salinity (total dissolved solids) levels reduced to less than 3000 mg/l.

The potential for damage to native vegetation in the vicinity of the mine site must be considered. A pump or pipe malfunction, or seepage from the vat could result in widespread plant deaths as well as retarding the rehabilitation program. A strategy to protect native vegetation and other environmental values from the adverse impacts of spillages of the saline water is required.

The Authority notes that a substantial bond is placed on the proponent by the Department of Minerals and Energy to ensure appropriate environmental management and rehabilitation occurs. It is recommended therefore, that DOME takes responsibility for resolving the above issues as part of its administrative procedures and that the criteria be set prior to the completion of site-clearing operations.

5.5 Extension to mining

There is a possibility that the mining operation could identify an economic resource of gold below the maximum depth specified in the CER, or beyond the geographic boundaries of the proposal. This possibility is of concern to the Department of Conservation and Land Management as further mining may extend the life of the proposal or have unacceptable impacts on the environment.

In accordance with the Environmental Protection Act 1986, any changes to the existing proposal or new proposals to mine on the site must be referred to the Authority. Any environmental approvals granted for this project would be relevant only to the project as described during the assessment process. The proponent is aware of this requirement.

5.6 Monitoring and reporting

A staged progress report on current environmental management practices is required, so that the operation can be effectively managed for minimum environmental impacts. The Authority recommends that the proponent prepares a brief progress report at the completion of site preparation (Stage 1). A completion report detailing decommissioning and rehabilitation would be a routine requirement six months before completion of mining operations.

6. Conclusion and recommendations

Following consideration of the CER, submissions and the proponent's response to them, the Environmental Protection Authority believes that the potential environmental impacts of the proposal are manageable.

In reaching this conclusion the Authority recognised the importance of the nature conservation reserve system in the wheatbelt, the risks associated with the proposal, and the effect of the mine on the integrity of the reserve system. However these impacts will be temporary, confined to a small area and unlikely to result in the permanent loss of important flora and fauna species. The Authority also considers that the additional commitment by the proponent to provide sufficient funds for the purchase of land with conservation values in the wheatbelt adequately offsets the risks and uncertainties that are associated with the proposal.

Recommendation 1

The Environmental Protection Authority has concluded that the proposed gold mine in 'C' Class Nature Reserve 18584 (Rutherford's Reward), as described in the Consultative Environmental Review, is environmentally acceptable.

In reaching this conclusion, the Environmental Protection Authority identified the main environmental issues as:

- **conservation values of wheatbelt conservation reserves (eg retention of remnant vegetation);**
- **flora and fauna;**

- **operational management (possible impacts resulting from spillage of saline bore water); and**
- **rehabilitation.**

Accordingly, the Environmental Protection Authority recommends that the proposal could proceed subject to the proponent's environmental commitments listed in Appendix 1 and the following recommendation. (Recommended Environmental Conditions are listed in Section 7)

Recommendation 2

In order to minimise disturbance of remnant vegetation and avoid compromising the conservation values elsewhere in Reserve 18584, the Environmental Protection Authority recommends that the proponent prepares an Environmental Management Program developed in consultation with the Department of Conservation and Land Management and the Department of Minerals and Energy.

The program should include consideration of, but not necessarily be limited to:

- **operational procedures (eg area demarcation, topsoil management, saline water management, overburden/waste management and dieback hygiene);**
- **completion criteria details for determination of rehabilitation standards; and**
- **brief progress reports which will outline the environmental management procedures undertaken up to the completion of site preparation (Stage 1) and up to the completion of mining and processing (Stage 2).** (see Recommended Environmental Conditions 3-1, 3-2 and 3-3)

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:

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, the proponent shall fulfil the commitments (which are not inconsistent with the conditions or procedures contained in this statement) made in the Consultative Environmental Review and in response to issues raised following public submissions. These commitments are consolidated in Environmental Protection Authority Bulletin 712 as Appendix 1. (A copy of the commitments 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. 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 Remnant vegetation and conservation values

3-1 The proponent shall minimise disturbance of remnant vegetation and avoid compromising the conservation values elsewhere in Reserve 18584.

4 Environmental Management Program

4-1 Prior to completion of site preparation (Stage 1), the proponent shall prepare an Environmental Management Program developed in consultation with the Department of Conservation and Land Management and the Department of Minerals and Energy to achieve the requirements of condition 3.

This program shall include consideration of, but not necessarily be limited to:

i operational procedures (eg area demarcation, topsoil management, overburden/waste management and hygiene);

ii completion criteria for determination of rehabilitation standards; and

iii brief progress reports which will outline the environmental management procedures undertaken up to the completion of site preparation (Stage 1) and up to the completion of mining and processing (Stage 2).

4-2 The proponent shall implement the Environmental Management Program required by condition 4-1.

5 Decommissioning

The satisfactory decommissioning of the project, removal of the equipment and installations and rehabilitation of the site and its environs is the responsibility of the proponent.

5-1 At least six months prior to decommissioning, the proponent shall prepare a final decommissioning and rehabilitation plan.

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

6 Proponent

These conditions legally apply to the nominated proponent.

6-1 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.

7 Time Limit on Approval

The environmental approval for the proposal is limited.

7-1 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.)

8 Compliance Auditing

In order to ensure that environmental conditions and commitments are met, an audit system is required.

8-1 The proponent shall prepare periodic "Progress and Compliance Reports", to help verify the environmental performance of this project, in consultation with the Environmental Protection Authority.

Procedure

The Environmental Protection Authority is responsible for verifying compliance with the conditions contained in this statement, with the exception of conditions stating that the proponent shall meet the requirements of either the Minister for the Environment or any other government agency.

If the Environmental Protection Authority, other government agency or proponent is in dispute concerning compliance with the conditions contained in this statement, that dispute will be determined by the Minister for the Environment.

Appendix 1

Proponent's list of environmental management commitments

SUMMARY OF COMMITMENTS MADE IN THE CONSULTATIVE ENVIRONMENTAL REVIEW OR SUBSEQUENTLY

The proponent has made the following commitments. With each commitment the responsibility for carrying out the work and the definition of completion are given.

Number/
CER Section. Commitment.

1. 5.2 The operation will be designed to disturb the smallest possible area of the Nature Reserve, and as many facilities and activities as possible will be located outside the Nature Reserve.

   Responsibility for action: proponent.

   Regulatory authority: integral part of the design of the project.

2. 5.2 Before and during clearing, seed of as many species as possible with long-lived seed will be collected from the site, and all vegetation and topsoil will be conserved.

   Responsibility for action: proponent.

   Regulatory authority: CALM.

3. 5.2 Cyanide and caustic soda will be transported and handled in accordance with established regulations.

   Responsibility for action: proponent.

   Regulatory authority: Department of Minerals and Energy.

4. 5.3 The existing access track will be used rather than the precise path of L77/92 to avoid the need to knock down trees and widen the track unnecessarily, and existing tracks will be used within the Nature Reserve with minimal upgrading.

   Responsibility for action: proponent.

   Regulatory authority: CALM.

5. 5.3 Any pipes carrying salt water will be inspected routinely to detect leaks which might damage vegetation.

   Responsibility for action: proponent.

   Regulatory authority: Department of Minerals and Energy.

6. 5.3 The main fuel storage will be outside the Nature Reserve.

   Responsibility for action: proponent.

   Regulatory authority: Department of Minerals and Energy.

7. 5.3 Rubbish disposal will be outside the Nature Reserve.

   Responsibility for action: proponent.

   Regulatory authority: Department of Minerals and Energy.

8. 5.4 The process water will be treated and flushed out of the heap by leaching with fresh water.

   Responsibility for action: proponent.

   Regulatory authority: Department of Minerals and Energy.

9. 5.4 The land will be returned to slopes compatible with the original topography, and all topsoil and vegetation will be returned.

   Responsibility for action: proponent.

   Regulatory authority: CALM.

10. 5.4Seed collected from before mining and subsequently from adjacent areas will be applied, and hand planting of seedlings will be used if necessary.

    Responsibility for action: proponent.

    Regulatory authority: CALM.

11. 5.4The regenerating vegetation will be monitored and remedial actions taken as required.

    Responsibility for action: proponent.

    Regulatory authority: CALM.

12. 5.4A quantitative study of the vegetation will be carried out, once approval to mine has been obtained, to determine completion criteria for rehabilitation in consultation with CALM.

    Responsibility for action: proponent.

    Regulatory authority: CALM.

13. 5.4Rehabilitation will extend to the existing access track, and all pre-existing drill holes on the Nature Reserve will be capped and buried, and all pre-existing drill lines on the Nature Reserve will be blocked.

    Responsibility for action: proponent.

    Regulatory authority: CALM.

14. 7. The site will be rehabilitated to the original vegetation in accordance with pre-determined success criteria.

Responsibility for action: proponent.

Regulatory authority: CALM.

15. 7. The land clearing will be carried out in summer when Carnaby's Black-Cockatoo is not breeding to ensure that there is no direct impact on the population.

Responsibility for action: proponent.

Regulatory authority: CALM.

16. 7. The introduction of weeds and dieback will be controlled by cleaning vehicles and restricting the entry of most vehicles to the Nature Reserve.

Responsibility for action: proponent.

Regulatory authority: CALM.

17. The proponent will pay to CALM the amount of $15,000 one month after the commencement of production, such monies to be used by CALM to increase the conservation estate in the Shire of Westonia or for other appropriate activities.

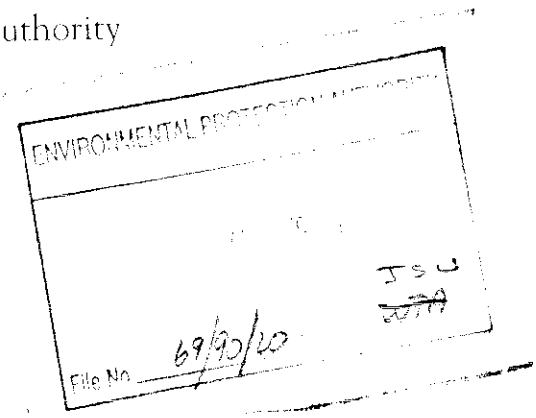
Responsibility for action: CALM to initiate.

Regulatory authority: CALM.

Appendix 2

Submissions of the National Parks and Nature Conservation Authority and the Department of Conservation and Land Management

National Parks and
Nature Conservation Authority



Chairman
Environmental Protection Authority
Westralia Square
141 St Georges Terrace
PERTH WA 6000

ATTENTION: Mr W Tacey

Dear Sir

CER FOR GOLD MINING IN "C" CLASS NATURE RESERVE 18584, WESTONIA

The Consultative Environmental Review for a gold mine in Class "C" nature reserve (18584) vested in this Authority has been referred to us for comment.

We discussed the CER at the most recent meeting of the Authority, and were also briefed on it by staff of the Department of Conservation and Land Management (CALM). We understand that CALM has provided a detailed review to you and as we concur with the Department we do not attempt to provide similar detail here. There are, however, a few general points which we wish to make.

Firstly, the mine is proposed for a wheatbelt nature reserve. The Authority has always held the view that, because so little of the wheatbelt area has been set aside for conservation of flora and fauna, the little that has been set aside must be given a very high priority for protection. For this reason we have consistently opposed activities such as mining in wheatbelt reserves; as the land is vested in us for conservation, we feel that it would be very remiss of us not to adopt this position. It is our view that if the mine was to proceed then a piece of reserved land would be alienated to develop what appears to be a small mine of little economic significance.

Finally we consider that should mining be approved, appropriate funds should be provided to adequately service the management costs incurred by CALM officers, to provide security so as to ensure an appropriate level of rehabilitation at the end of mining, and to allow for the possibility of purchase of land to be added to the reserve system in this poorly conserved area.

Yours sincerely

68817 INFO

Professor A J McComb
CHAIRMAN

N:\PNCA\LETTERS\NPNCA304

25-8-93

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All correspondence to be addressed to Department of Conservation and Land Management
P O BOX 104 Como 6152

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

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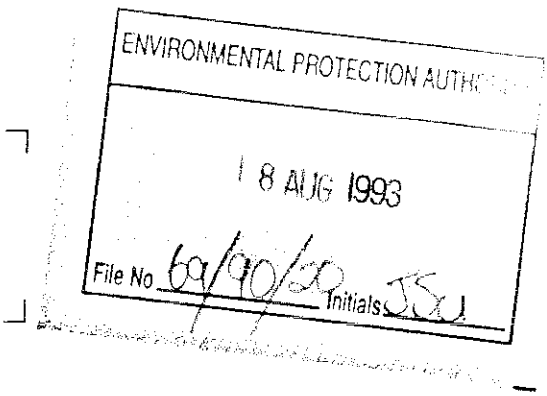
Please address all correspondence to Executive Director, P.O. Box 104, COMO W.A. 6152

Your Ref: N Caporn
Our Ref: 334 0388
Enquiries:
Phone:

Chairman
Environmental Protection Authority
141 St Georges Terrace
PERTH WA 6000

Attention: Mr W Tacey



CER - GOLD MINE IN "C" CLASS NATURE RESERVE 18584

Introduction:

Rutherford Resources Pty Ltd are proposing to mine gold from part of Nature Reserve No. "C" 18584. This reserve lies about half way between Southern Cross and Merredin. The relevant CER was prepared by Hart, Simpson and Associates Pty Ltd.

The proposal is for a mine with gold extraction on site using a heap leach operation involving brackish water. The proposal will affect some 6 hectares of the nature reserve.

Reserve No. "C" 18584 is part of about 4,000 hectares of nature reserves connected variously by road reserves, railway reserves, and freehold bushland. Within this block cleared roadways and other facilities form barriers to the movement of some fauna. Given the broadscale clearing and high natural biodiversity of the wheatbelt, this is a highly significant area of contiguous bushland from the viewpoint of nature conservation.

Specific Issues Concerning the CER:

Comments concerning the CER are given below. Page numbers cited are those of the CER.

Page 4 - Existing Environment:

The document refers to the area being "cleared". This is incorrect, the timber was felled and the area subsequently regenerated.

Page 5 - Soils and Topography:

If gold is extracted by the heap leach option as proposed, then baseline criteria for soils, including pH and electrical conductivity values (which provide a measure of soil salinity), are required. These data are essential to define final rehabilitation standards following heap leaching.

Page 6 - Vegetation and Flora:

During a recent inspection of the proposed mine site by CALM staff, five species of flora were recorded which are not listed in the relevant vegetation unit of the CER. These species were *Acacia acuminata*, *A. ?merralii*, *Eucalyptus loxophleba*, *E. sheathiana* and *Melaleuca lateriflora*. While some of these species are not common on the mine site, *E. sheathiana* was well represented in the western part of the proposed mining area.

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Furthermore, no information has been supplied on the method of plant identification (eg: whether or not all specimens were confirmed by comparison with WA Herbarium specimens) or by whom they were identified. Also, despite several early requests by CALM that the vegetation and flora work be undertaken during spring when many plant species, such as annuals, can be collected and more readily identified, the site was surveyed during April.

Taken together, these points raise questions concerning the thoroughness of the flora survey and the reliability of conclusions concerning the presence or absence of DRF and Priority species.

Finally, the methodology used to describe the vegetation has not been explained. This makes interpretation of the work difficult, particularly at a regional level.

The proponents should be required to undertake and report on a spring flora and vegetation survey.

Page 11 - Local and Regional Context:

The proponent has not adequately addressed the local and regional significance of the vegetation and flora of the proposed mine area. In particular, the following should have been better addressed:

* how well the specific associations to be affected by the proposal are represented within the reserve and within the surrounding area (say within 15 km);

* how well the woodlands affected by mining are represented in conservation areas within the surrounding area;

* to what degree the surrounding area has been affected by land clearing and other disturbances.

Furthermore, given:

* that much of the surrounding landscape has been cleared and the remaining bushland is highly fragmented;

* as the consultant points out, little information is available on the local flora;

* the area in question - again as the consultant indicates - lies within an area transitional between the Avon and Coolgardie Botanical Districts; and

* most areas of remnant vegetation on greenstone soils are subject to exploration and mining leases;

it is difficult to agree with the consultants' confidence that "it is unlikely that any species are restricted to these small areas of the common soils and landforms seen here". Furthermore, the above points affect how the conservation value of vegetation on the mine site should be viewed.

Page 12 - Fauna:

While the scale of the proposed mine does not in itself warrant a major fauna survey, the cumulative effects of mining and exploration (the latter including uncapped bore holes, although not as a result of work by Rutherford Resources) cannot be viewed as insignificant, particularly if further exploration occurs as seems likely. Given also the paucity of data on the smaller vertebrates of the wheatbelt in general and this area in particular, this issue is one which CALM considers must be addressed.

At this time there is no ready resolution of this issue, however, a mechanism should be developed which ensures that those contributing to cumulative impacts contribute to the costs of the type of fauna survey which will provide a much more informed basis for deciding impacts of mining and exploration.

Page 15 - Conservation Values:

As will be clear from comments given above, the conservation values at risk have not been fully described by the consultant. Furthermore, the long-term effects of repeated and cumulative impacts are not adequately considered. While the latter may seem outside the scope of individual CER's such as this, CALM considers that those contributing to cumulative impacts should bear the cost of assessing them and proposing ameliorative steps.

Page 16 - 5.1 - Geology:

The statement in paragraph 1 that the structure "appears to be barren of economic gold values between the surface laterite layer and 25m depth" is unclear. Is this referring to the zone between 2-6m and 25m depth? What are the values below 25m referred to on page 27 as "deep mineralisation at 74m vertically" and is there potential for deeper mining? Any mining proposed below the laterite layer must be subject to separate approval as it would digress from the mining plans currently under consideration for approval.

5.2 - Mining and Processing - Figure 3:

This section is not clearly expressed. There is difficulty in relating the text to the diagram. The clearing area indicated in figure 3 would need to be clearly defined in the field prior to any commencement.

Will the heap leach pad incorporate a sand liner? What is the bulking factor for lateritic ores?

Page 18: With what will the process water dam be lined?

5.3 - Infrastructure - Page 22:

Experience has shown that environmental impact from saline process water pipes can be severe. Any pipes carrying saline water through the nature reserve must be bunded to control water escape into the surrounding vegetation. This will involve additional clearing. There should be no joints in the pipe between source and destination, and pipes must be protected from accidental impact.

Page 23: The Water Authority of WA allocation of 17,500m^3 of fresh water should be used in place of the 12,000m^3 of saline bore water. The proponent should supply relative costs if they wish to argue otherwise.

Power and Fuel Supply: The fuel supply bund should be lined.

5.4 - Decommissioning and Rehabilitation:

Completion criteria need to be established for the proposal to flush the salts from the vats. These criteria should reflect baseline pH and salinity levels agreed to by CALM. How does the proponent propose to monitor this process?

Page 27 - Figure 4 - Mine Plan in Section:

Final surface contours are required for approval.

Page 28 - Baseline Data:

Offsite (undisturbed) reference areas need to be established as well as onsite ones. Offsite monitoring must be in the spring. Completion criteria and rehabilitation will need to be to the satisfaction of the Executive Director of CALM and the Director General of Mines as stipulated in standard mining lease conditions.

It is CALM's experience that small mining operations often lack the skills and experience for high quality environmental management, and experience extreme difficulty in meeting the level of performance expected and accordingly place considerable demands on CALM personnel. Given the short duration of the operation , the value of the reserve and the potential for things to go wrong quickly, quarterly reports will be required instead of the usual annual reports. Additionally the costs of routine monitoring must not be borne by CALM and must be borne by the proponent. CALM envisages at least 4 person days per quarter will be required to monitor this project.

7. - Environmental Impacts and Management:

Page 33: The option of treating offsite, a preferred option environmentally, requires more consideration. Treating offsite would result in the area of disturbance being minimized and avoid the question of saline contamination. The proponents state that widening of the track would be required for offsite treatment. CALM does not believe that widening of the track is justified.

Page 36 - 3rd Paragraph - Hygiene: Vehicles should be clean upon entering the reserve and protocols need to be agreed. Mandatory washdown at the entrance to the reserve would be the best approach. Washdown facilities must be to a standard approved by CALM.

8. Commitments - Pages 38-40:

1.5.2 This is a vague commitment. Areas of disturbance are to be as per submitted plans, as agreed by CALM and DOME and as marked on the ground.

2.5.2 A licence will need to be issued for seed collection.

5.5.3 Pipes carrying saline water are to be bunded with no joints between the bore and the mine and are to be protected from damage. Compensation should be paid for clearing and any subsequent damage by saline water.

9.5.4 Final landform - what is meant by "slopes compatible with the original topography". A specific maximum slope criterion agreed to by CALM is required.

12.5.4 Completion criteria must be approved by CALM.

13.5.4 All pre-existing drill lines should be ripped where this is considered appropriate, uncapped holes filled in and all rubbish and sample bags removed.

Conclusion:

CALM's position on mining in wheatbelt nature reserves reflects that of the National Parks and Nature Conservation Authority (NPNCA), the body in which the reserve is vested. Mining is opposed, due to the extent of clearing that has occurred and the poor representation of natural vegetation in the conservation estate in this region.

In particular, small scale operations which often lack the financial resources and skills and which contribute minimally to economic values should not be approved in valuable conservation reserves.

If mining were to be approved, appropriate compensation conditions should be applied to the mining lease via Ministerial conditions. Previous compensation arrangements have barely covered additional management costs imposed on CALM. It is recommended that a trust account be established and the proponent pay compensation at the rate of 5% of gross revenue. Funds should be available for land purchase and conservation works. Based on past experience, CALM cannot rely on the assurances of an unproven operator to achieve high quality site restoration following heap leach mining. The proponent has failed to indicate successful examples of rehabilitation and in view of this CALM must adopt the conservative position that

site values will be damaged until demonstrated otherwise. The proponent must meet all additional management costs imposed on CALM.

There has been no attempt to explore opportunities to redress the loss to the conservation estate such as land additions, except to refer to the potential for the site to rehabilitate and recover lost values in the long term. Despite specific reference in the guidelines and in discussions, the proponents failed to consider addition of land to the conservation estate. CALM believes that if private land is available, then some of the return from mining must be directed towards improving the conservation reserve system in the wheatbelt.

Prior to any mining being approved, an environmental management program is required for approval by CALM and DOME. The plan must address in detail all agreed operational procedures, including but not limited to area demarcation, topsoil management, overburden/waste management, hygiene, rehabilitation and monitoring.

Syd Shea
EXECUTIVE DIRECTOR

16 August 1993

PROPONENTS REPLY TO QUESTIONS RAISED DURING THE PUBLIC REVIEW PROCESS

Submissions requiring a reply were made by the Department of Conservation and Land Management and the National Parks and Nature Conservation Authority.

CALM.

Page 4 - Existing Environment.

The document refers to the area being "cleared". This is in incorrect, the timber was felled and the area subsequently regenerated.

Reply: Incorrect. The CER stated, "By 1925 it had been cleared of useful timber and was left to regenerate" which is correct and unambiguous.

Page 5 - Soils and Topography.

If gold is extracted by the heap leach option as proposed, then baseline criteria for soils, including pH and electrical conductivity values (which provide a measure of soil salinity), are required. These data are essential to define final rehabilitation standards following heap leaching.

Reply: Agreed. Removal of the salty water is an essential part of the rehabilitation and measuring this has been described as part of the operation on (page 26). The results to date suggest no problem with natural soil parameters.

Page 6 - Vegetation and Flora.

During a recent inspection of the proposed mine site by CALM staff, five species of flora were recorded which were not listed in the relevant vegetation unit of the CER. These species were Acacia acuminata, A. ?merralii, Eucalyptus loxophleba, E. sheathiana and Melaleuca lateriflora. While some of these species are not common on the mine site, E. sheathiana was well represented in the western part of the proposed mining area.

Furthermore, no information has been supplied on the method of plant identification (eg: whether or not all specimens were confirmed by comparison with W.A. Herbarium specimens) or by whom they were identified. Also, despite several early requests by CALM that the vegetation and flora work be undertaken during spring when many plant species, such as annuals, can be collected and more readily identified, the site was surveyed during April.

Reply: Acacia merrallii has been recently revised and is recorded correctly in the CER with the new manuscript name of Acacia acoma. Acacia merrallii does not occur in this area. Eucalyptus loxophleba and Eucalyptus sheathiana are listed in the flora, but may not have been recorded in all units because they are common and of little interest. Acacia acuminata and Melaleuca lateriflora are common local species which are easily confused with similar species. Without seeing a specimen it is difficult to know whether they occur or were confused with other species listed correctly in the CER. The entire flora of the vegetation units off the mine site was not studied because these units will not be affected. Further study of any site is likely produce new species, but sufficient work was carried out on the area to be disturbed to establish that there were no rare species on the mine site.

The suggestion that the flora and vegetation work was not carried out competently is rejected. Two full-time experienced botanists were involved in the work.

The survey was carried out in autumn because that is when the project happened to commence. This has not prevented an adequate survey, and the proponent has always intended to carry out more work to define rehabilitation criteria (page 28-9).

Page 11 - Local and Regional Context.

The proponent has not adequately addressed the local and regional significance of the vegetation and flora of the proposed mine area. In particular, the following should have been better addressed:

* how well the specific associations to be affected by the proposal are represented within the reserve and within the surrounding area (say within 15km);

* how well the woodlands affected by mining are represented in conservation areas within the surrounding area;

* to what degree the surrounding area has been affected by land clearing and other disturbances.

Furthermore, given:

* that much of the surrounding landscape has been cleared and the remaining bushland is highly fragmented;

* as the consultant points out, little information is available on the local flora;

* the area in question - again as the consultant indicates - lies within an area transitional between the Avon and Coolgardie Botanical Districts; and

* most areas of remnant vegetation on greenstone soils are subject to exploration and mining leases;

it is difficult to agree with the consultants' confidence that "it is unlikely that any species are restricted to these small areas of the common soils and landforms seen here". Furthermore, the above points affect how the conservation value of vegetation on the mine should be viewed.

Reply: The comments have been misinterpreted. The small areas refer to the mine area itself, and it is unlikely that any species are restricted to such a small area. The landform and vegetation of the mine site are part of a characteristic unit, and the species found there are typically common and widespread. Certainly all vegetation has been excessively cleared within the region, and for this reason the CER states (page 15) that the mine site "has a high conservation value because it is in a Nature Reserve in an area which has been largely cleared..." and (page 33) that rehabilitation is fundamental to the project because "The possible loss of part of the conservation estate is identified as the most important possible long term impact".

Page 12 - Fauna.

While the scale of the proposed mine does not in itself warrant a major fauna survey, the cumulative effects of mining and exploration (the latter including uncapped bore holes, although not as a result of work by Rutherford Resources) cannot be viewed as insignificant, particularly if further exploration occurs as seems likely. Given also the paucity of data on the smaller vertebrates of the wheatbelt in general and this area in particular, this issue is one which CALM considers must be addressed.

At this time there is no ready resolution of this issue, however, a mechanism should be developed which ensures that those contributing to cumulative impacts contribute to the costs of the type of fauna survey which will provide a much more informed basis for deciding impacts of mining and exploration.

Reply: Agreed. The proponent would consider this if an appropriate system was developed, but this is not an action that the proponent can initiate.

Proponents often make a significant contribution to regional knowledge through their environmental surveys. Both the W.A. Museum and the W.A. Herbarium contain numerous specimens collected by proponents or their consultants, and their reports are often useful sources of information.

Page 15 - Conservation Values.

As will be clear from comments given above, the conservation values at risk have not been fully described by the consultant. Furthermore, the long-term effects of repeated and cumulative impacts are not adequately considered. While the latter may seem outside the scope of individual CER's such as this, CALM considers that those contributing to cumulative impacts should bear the cost of assessing them and proposing ameliorative steps.

Reply: Incorrect. The proponent has identified and understands the conservation values at risk, as quoted above, and has proposed actions to protect them by limiting the disturbance or restoring them through rehabilitation.

Long term and cumulative impacts are due to a variety of causes including excessive clearing and fragmentation, past grazing, illegal activities, feral animals, weeds, fire, disease, and exploration and mining. Most of these are not amenable to a simple user pays principle except through community action and general taxation. The proponent will make a contribution (page 29) by capping all previous holes and blocking all previous exploration lines in the Nature Reserve. These were caused by exploration when such practices were considered acceptable.

Page 16 - Geology.

The statement in paragraph 1 that the structure "appears to be barren of economic gold values between the surface laterite layer and 25m depth" is unclear. Is this referring to the zone between 2-6m and 25m depth? What are the values below 25m referred to on page 27 as "deep mineralisation at 47m vertically" and is there potential for deeper mining? Any mining proposed below the laterite layer must be subject to separate approval as it would digress from the mining plans currently under consideration for approval.

Reply: There is some gold deeper down but as stated (page 26) this "would not justify a future open pit at this site" and no proposal has been made to mine this gold.

5.2 - Mining and Processing, and Figure 3.

This section is not clearly expressed. There is difficulty in relating the text to the diagram. The clearing are indicated in figure 3 would need to be clearly defined in the field prior to any commencement.

Reply: Nobody else has had any trouble understanding the text or Figure. The mine area was marked in the field before CALM inspected the site, and CALM were informed of this.

Will the heap leach pad incorporate a sand liner? What is the bulking factor for lateritic ores?

Reply: There will not be a sand liner as the natural clay is perfectly suitable. The bulking factor of the laterite is 1.25 after wetting, which is a typical figure.

Page 18: With what will the process water dam be lined?

Reply: The dam will be lined with plastic.

5.3 - Infrastructure.

Experience has shown that environmental impact from saline process water pipes can be severe. Any pipes carrying saline water through the nature reserve must be bunded to control water escape into the surrounding. This will involve additional clearing. There should be no joints in the pipe between the source and destination, and pipes must be protected from accidental impact.

Reply: The proponent is well aware of the affect of salt water on vegetation. The preferred site for the bore (page 22) is right next to the mine so that there will effectively be no pipe line. If a pipe line is required it will be managed as suggested.

Page 23: The Water Authority of WA allocation of 17,000m^3 of fresh water should be used in place of the 12,000m^3 of saline bore water. The proponent should supply relative costs if they wish to argue otherwise.

Reply: There is an enormous cost difference of approximately $40,000 capital investment and $1.20/$m^3$ for consumption, giving a total extra cost of an additional $85,000. If saline water can be obtained from adjacent to the mine there is only a small environmental risk which is not comparable to this cost. There is also some environmental cost in laying the 6km pipe line from the WAWA source, and in inspecting and maintaining it.

Power and Fuel Supply: The fuel supply bund should be lined.

Reply: Agreed.

5.4 - Decommissioning and Rehabilitation.

Completion criteria need to be established for the proposal to flush the salts from the vats. These criteria should reflect baseline pH and salinity levels agreed to by CALM. How does the proponent propose to monitor this process?

Reply: Agreed. The heap is very thin, and it can be monitored simply by hand auguring sampling holes in it.

Page 27 - Figure 4 - Mine Plan in Section: Final surface contours are required for approval.

Reply: Agreed. Detailed contours have not been prepared because it is always difficult to account for all materials and bulking before the mining takes place.

Page 28 - Baseline Data: Offsite (undisturbed) reference areas need to be established as well as onsite ones. Offsite monitoring must be in spring. Completion criteria and rehabilitation will need to be to the satisfaction of the Executive Director of CALM and the Director General of Mines as stipulated in standard mining lease condition.

Reply: It is not necessary to monitor off site areas as these can be monitored at any time if any problem is perceived. No off site problems are anticipated. The main comparison is between the before and after vegetation. It has already been agreed (page 29) that criteria need to be developed with CALM.

It is CALM's experience that small mining operations often lack the skills and experience for high quality environmental management, and experience extreme difficulty in meeting the level of performance expected and accordingly place considerable demands on CALM personnel. Given the short duration of the operation, the value of the reserve and the potential for things to go wrong quickly, quarterly reports will be required instead of the usual annual reports. Additionally the costs of routine monitoring must not be borne by CALM and must be borne by the proponent. CALM envisages at least 4 person days per quarter will be required to monitor this project.

Reply: The proponent does not intend to place any demands on CALM except for normal regulatory activities, and fully intends to carry out all routine monitoring. Quarterly reports seem to be excessive given that the entire vegetation will have been removed within the first few weeks and most subsequent activities will consist of earthmoving within a defined area or gold processing by solution application. The estimate of four days per quarter for monitoring is unclear as to whether it refers to the proponent or CALM. Either way it appears to be excessive given that there will be little to monitor except water usage and general site management once the initial clearing has taken place. This could be done in a few hours. Most monitoring will be carried out automatically as part of the normal daily site management by the operator.

7. - Environmental Impacts and Management.

Page 33: The option of treating offsite, a preferred option environmentally, requires more consideration. Treating offsite would result in the area of disturbance being minimized and avoid the question of saline contamination. The proponents state that widening of the track would be required for offsite treatment. CALM does not believe that widening of the track is justified.

Reply: Treating off-site cannot be assumed to be a preferred option environmentally. It was examined and rejected on environmental grounds. The statement that the track does not need to be widened to accommodate heavy haulage of 230,000 tonnes of ore out (and presumably back in) is absurd. The present track is literally a single lane bulldozed drill line which has not been developed in any way. Major works including widening, sheeting and drainage would be required to develop this into only a single lane haul road with no provision for passing or breakdown recovery. A single lane haul road would cause a large increase in operating costs because the machinery could not be used efficiently.

Page 36 - 3rd Paragraph - Hygiene: Vehicles should be cleaned upon entering the reserve and protocols need to be agreed. Mandatory washdown at the entrance to the reserve would be the best approach. Washdown facilities must be to a standard approved by CALM.

Reply: This has already been accepted (page 36).

8. - Commitments.

1.5.2 This is a vague commitment. Areas of disturbance are to be as per submitted plans, as agreed by CALM and DOME and as marked on the ground.

Reply: This is not a vague commitment but an essential part of the project design. The CER states (page 34) "Limiting the impact by minimising the area of disturbance and by carrying out good rehabilitation are seen as the most important environmental management actions required". The area to be cleared is defined by the gold, and has already been marked on the ground. The proponent has an economic incentive to minimise the clearing because of the rehabilitation bonds required and the cost of rehabilitation.

2.5.2 A licence will need to be issued for seed collection.

Reply: Agreed.

5.5.3 Pipes carrying saline water are to be bunded with no joints between the bore and the mine and are to be protected from damage. Compensation should be paid for clearing and any subsequent damage by saline water.

Reply: No additional clearing is expected, as discussed above. It is assumed that any compensation applies to all disturbed areas.

9.5.4 Final landform - what is meant by "slopes compatible with the original topography". A specific minimum slope criterion agreed to by CALM is required.

Reply: Agreed, but there is more to the final topography than just a maximum slope. The topography has to be compatible with the surrounding land and drainage. As described in the CER (page 26) this is not seen as difficult or expensive because the deposit is very shallow, all of the ore will have remained within the pit, and the deepest part of the pit will have been filled by the heap. There proposed mine has no waste rock dumps, no deep holes, and no tailings dams.

12.5.4 Completion criteria must be approved by CALM.

Reply: This has already been agreed in the CER (page 29).

13.5.4 All pre-existing drill lines should be ripped where this is considered appropriate, and uncapped holes filled in and all rubbish and sample bags removed.

Reply: Ripping is not seen as an appropriate action because the vegetation is already regenerating, but would be considered. Removing rubbish is assumed to be part of the capping of the holes, which has already been agreed (page 29).

CALM Conclusion.

CALM's position on mining in wheatbelt nature reserves reflects that of the National Parks and Nature Conservation Authority (NPNCA), the body in which the reserve is vested. Mining is opposed, due to the extent of clearing that has occurred and the poor representation of natural vegetation in the conservation estate in this region.

In particular, small operations which often lack the financial resources and skills and which contribute minimally to economic values should not be approved in valuable conservation reserves.

NPNCA

We understand that CALM has provided a detailed review...and as we concur with the Department we do not attempt to provide similar detail here. There are, however, a few general points which we wish to make.

Firstly, the mine is proposed for a wheatbelt nature reserve. The Authority has always held the view that, because so little of the wheatbelt area has been set aside for conservation of flora and fauna, the little that has been set aside must be given a very high priority for protection. For this reason we have consistently opposed activities such as mining in wheatbelt reserves; as the land is vested in us for conservation, we feel that it would be very remiss of us not to adopt this position. It is out view that if the mine was to proceed then a piece of reserved land would be alienated to develop what appears to be a small mine of little economic significance.

Finally, we consider that should mining be approved, appropriate funds should be provided to adequately service the management costs incurred by CALM officers, to provide security so as to ensure an appropriate level of rehabilitation at the end of mining, and to allow for the possible purchase of land to be added to the reserve system in this poorly conserved area.

Reply: The proponent agrees that the Nature Reserve has a high conservation value because of the degree of clearing that has taken place in the region, and has proposed an appropriate environmental management programme in response.

The proponent disagrees that the impact of the proposed mining of 6ha will destroy or significantly degrade the conservation estate in the long term.

The statements that the proposed mine will "contribute minimally to economic values" and is "a small mine of little economic significance" are not objective. The gross revenue from the project would be of the order of $3,000,000, most of which will be spent on labour, materials, contracting and government charges. A cut of this size in the budget of CALM would not be considered "minimal" or "little". It must be emphasised that gold is an export commodity and earns money for Australia, but the costs of the project are spent locally in an area which is in need of income.

It is government policy that mining can be approved in C-Class reserves subject to appropriate conditions.

CALM.

If mining were to be approved, appropriate compensation conditions should be applied to the mining lease via Ministerial conditions. Previous compensation arrangements have barely covered additional management costs imposed on CALM. It is recommended that a trust account be established and the proponent pay compensation at the rate of 5% of gross revenue. Funds should be available for land purchase and conservation works. Based on past experience, CALM cannot rely on the assurances of an unproven operator to achieve high quality site restoration following heap leach mining. The proponent has failed to indicate successful examples of rehabilitation and in view of this CALM must adopt the conservative position that site values will be damaged until demonstrated otherwise. The proponent must meet all additional management costs imposed on CALM.

Reply: If previous compensation arrangements have "barely covered additional management costs imposed on CALM" then there is no problem. CALM is a public service agency which is funded by the taxpayers to carry out public functions, and is not meant to make a profit. The recommendation of 5% of gross revenue is excessive for any project. This would amount to a massive increase in taxation and would remove most of the profit incentive. This is a matter for government industry policy, and cannot be decided by the proponent or CALM.

If there have been problems with completion of rehabilitation these should be addressed by an appropriate response such as existing rehabilitation bonds and conditions. It is difficult to find examples of local successful rehabilitation because good rehabilitation is a recent requirement in mining and other activities. In general where sufficient planning, time and resources have been applied, good rehabilitation has resulted, as can be seen in the Awards for Environmental Excellence programme in the mining industry. It is not clear what additional management costs will be imposed on CALM, but the proponent accepts the user pays principle.

There has been no attempt to explore opportunities to redress the loss to the conservation estate such as land additions, except to refer to the potential for the site to rehabilitate and recover lost values in the long term. Despite specific reference in the guidelines and in discussions, the proponents failed to consider addition of land to the conservation estate. CALM believes that if private land is available, then some of the return from mining must be directed towards improving the conservation reserve system in the wheatbelt.

Reply: The proponent examined the possibility of adding land to the conservation estate but has not been able to find any suitable areas. The only option was to buy an entire farm, which is not compatible with the scale of this small project. For this reason it was not discussed in the CER. The proponent would consider an appropriate contribution to some other option if this became available.

Prior to any mining being approved, an environmental management programme is required for approval by CALM and DOME. The plan must address in detail all agreed operational procedures, including but not limited to area demarcation, topsoil management, overburden/waste management, hygiene, rehabilitation and monitoring

Reply: All of these have been agreed in the CER, and a detailed document such as an EMP may be an appropriate mechanism.

Appendix 3

National Parks and Nature Conservation Authority position on mining in National Parks and Nature Reserves

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NPNCA POSITION ON MINING IN NATIONAL PARKS AND NATURE RESERVES

The National Parks and Nature Conservation Authority is opposed to mining in nature reserves and national parks, because mining is not compatible with the purposes for which such lands are vested in the Authority. This position is consistent with nationally and internationally accepted definitions of these areas.

The Authority has decided that the way we can best achieve our mandate to protect the conservation estate is to acknowledge the Government's prerogative to determine policy in this area, and to -

1. be involved in the process of reviewing applications for exploration, prospecting and mining;

2. identify the most important biological values and natural landscape features of the conservation estate, and seek to protect them from any detrimental impact;

3. recommend appropriate conditions and restrictions so as to minimise detrimental environmental impacts on other areas in the conservation estate.

The Authority therefore scrutinises each application to mine or explore in national parks and nature reserves, and either recommends 'no mining' [if the impact cannot be acceptably minimised] or the imposition of detailed constraints to ensure that, as far as is practicable, little permanent damage to the estate occurs. It is the Authority's view that rehabilitation should not be regarded as a replacement for the pre-existing conservation values.

Approvals for development mining are subject to EPA assessment and either Parliamentary approval or Ministerial agreement. The role of the NPNCA is to advise the Minister for the Environment on such proposals.

The Authority is mindful that mining should not be recommended unless it can be demonstrated that its value to the State clearly justifies the negation of the fundamental principle that National Park and Nature Reserve values should be conserved.

The Authority is likely to recommend against a proposal to mine unless:

a. there is strategic need for the mineral; or

b. the mineral resource is rare, is of high value, and its exploitation would be of significant material benefit to the State; or

c. the mineral resource is not available on other tenures of land, preferably those areas from which the native vegetation has been cleared.