

Mineral Sands Mine, Gingin

Iluka Resources Limited

**Report and recommendations
of the Environmental Protection Authority**

**Environmental Protection Authority
Perth, Western Australia
Bulletin 1146
September, 2004**

Environmental Impact Assessment Process Timelines

Date	Progress stages	Time (weeks)
15 Jul	EPS document received by EPA	0
4 Aug	Advice received by EPA	3
3 Sep	EPA report to the Minister for the Environment	4

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1. Introduction

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for the Environment on the environmental factors relevant to a proposal by Iluka Resources Limited to mine mineral sands at a location near the intersection of Brand Highway and Dewar Road, approximately 2.5 kilometres north-west of Gingin.

The EPA was advised of the proposal in January 2004. Based on the information provided, the EPA considered that while the proposal had the potential to have an effect on the environment, the proposal could be readily managed to meet the EPA's environmental objectives. Consequently, it was notified in *The West Australian* newspaper on 29 March 2004 that, subject to preparation of a suitable Environmental Protection Statement (EPS) document, the EPA intended to set the level of assessment at EPS.

The proponent has prepared the EPS which accompanies this report (Iluka, 2004). The EPA considers that the proposal described can be managed in an acceptable manner subject to certain conditions and the proponent's commitments being legally binding.

The EPA therefore has determined, under Section 40 (1) of the *Environmental Protection Act 1986*, that the level of assessment for the proposal is EPS, and this report provides the EPA's advice and recommendations in accordance with Section 44 (1).

2. The proposal

The proposal is described in detail in Section 3 of the proponent's EPS document (Iluka, 2004). The proposal involves the mining of mineral sands on Part Swan Location 128, 354 & 508, Lot 2; Part Swan Location 128 & 340, Lot 3; Part Swan Location 128, 354, 355, 506, Lot 9; Swan Location 506; Portion of each of Swan Locations 354 & 508, Lot 1 and Part Swan Location 511 & 536, Lot 7 (Figure 1). All these properties are Minerals-to-Owner titles and therefore are not mining tenements under the management of the Department of Industry and Resources (DoIR). The key components of the proposal are:

- open-cut mining to an approximate depth of 28 metres;
- in-pit feed hopper;
- feed conveyors;
- centrally located screen plant;
- 250 tonnes per hour concentrator;
- heavy mineral concentrate stockpiles;
- process water dam;
- return water dam;
- solar drying dams;
- site office, crib room and ablution block;
- potable water storage;
- weighbridge;
- monazite unloading facility;
- workshop and tool shed;
- parking area;
- mine access roads; and
- earthmoving contractors' area (parking and workshop).

Significant features of the proposal are:

- progressive mining and rehabilitation of the site;
- temporary diversion of the North and South streams around mining operations;
- supply of process water from superficial groundwater and pit dewatering and the Yarragadee aquifer; and
- 24 hour per day, seven days per week operation.

The key characteristics of the proposal are shown in Table 1:

Table 1 Key Proposal Characteristics

Element	Quantities / Description
Life of Mine (mine production)	Less than 4 years (continual operation)
Size of Orebody	75 hectares
Area of disturbance	227 hectares
Major Components open-cut mining (approximate depth of 28 metres); in-pit feed hopper; feed conveyors; centrally located screen plant; 250 tonnes per hour concentrator; heavy mineral concentrate stockpiles; process water dam; return water dam; solar drying dams; site office, crib room and ablution block; potable water storage; weighbridge; monazite unloading facility; workshop and tool shed; parking area; mine access roads; earthmoving contractors' area (parking and workshop).	See Figures 1 and 2 for details.
Ore mining rate (maximum)	2.8 million tonnes per year
Overburden mining rate (maximum)	3.65 million tonnes per year
Hours of Operation	24 hours per day, 7 days per week
Water Supply Source Maximum Annual Requirement Source Maximum Annual Requirement	Yarragadee Aquifer 1,500 Megalitres per year Superficial Aquifer 1,000 Megalitres per year
Fuel storage capacity	50,000 litres
Annual fuel usage	3,300,000 litres per year
Heavy mineral concentrate transport (maximum)	12 return trucks per week.

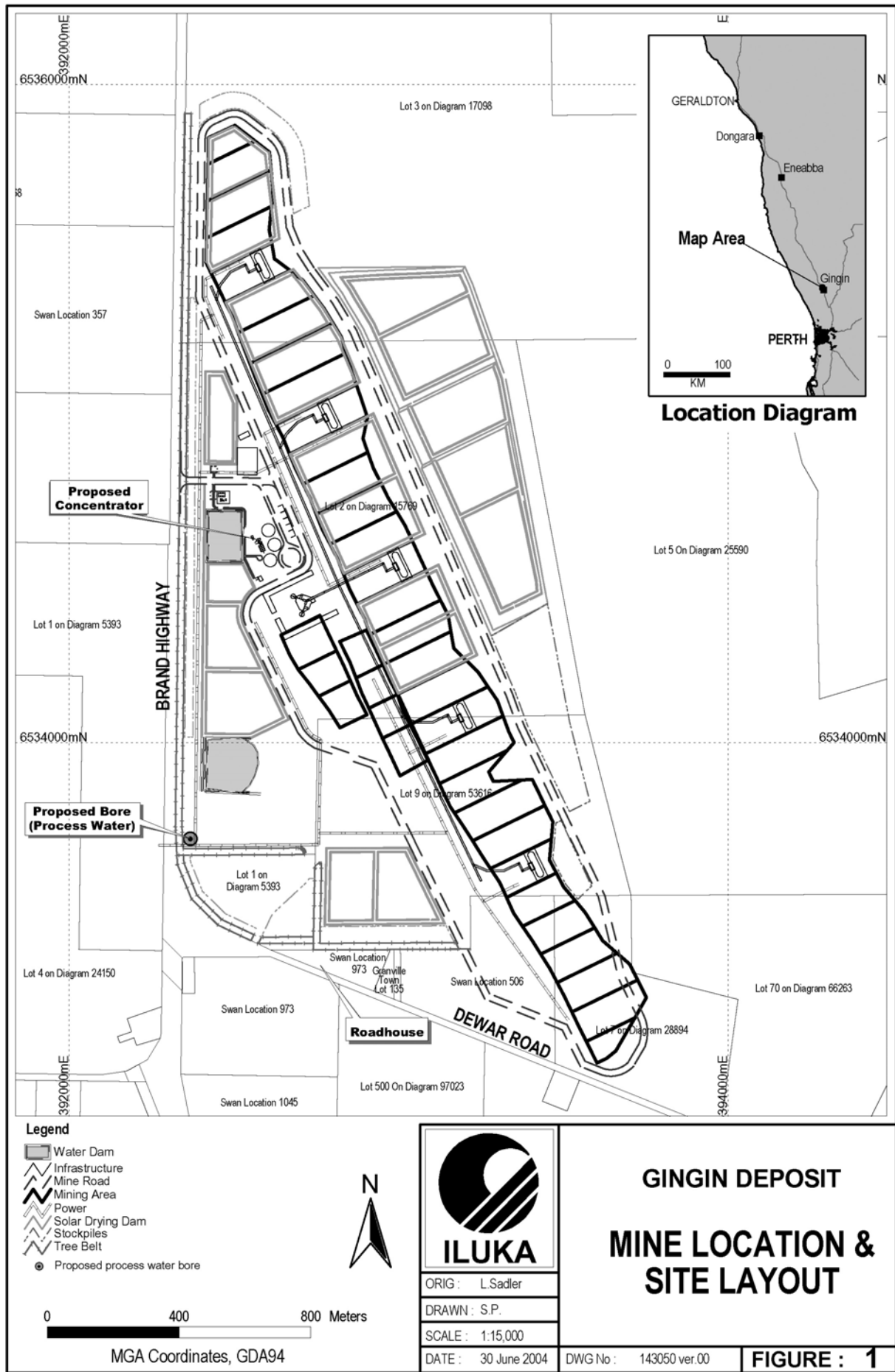


Figure 1: Mine Location and Layout

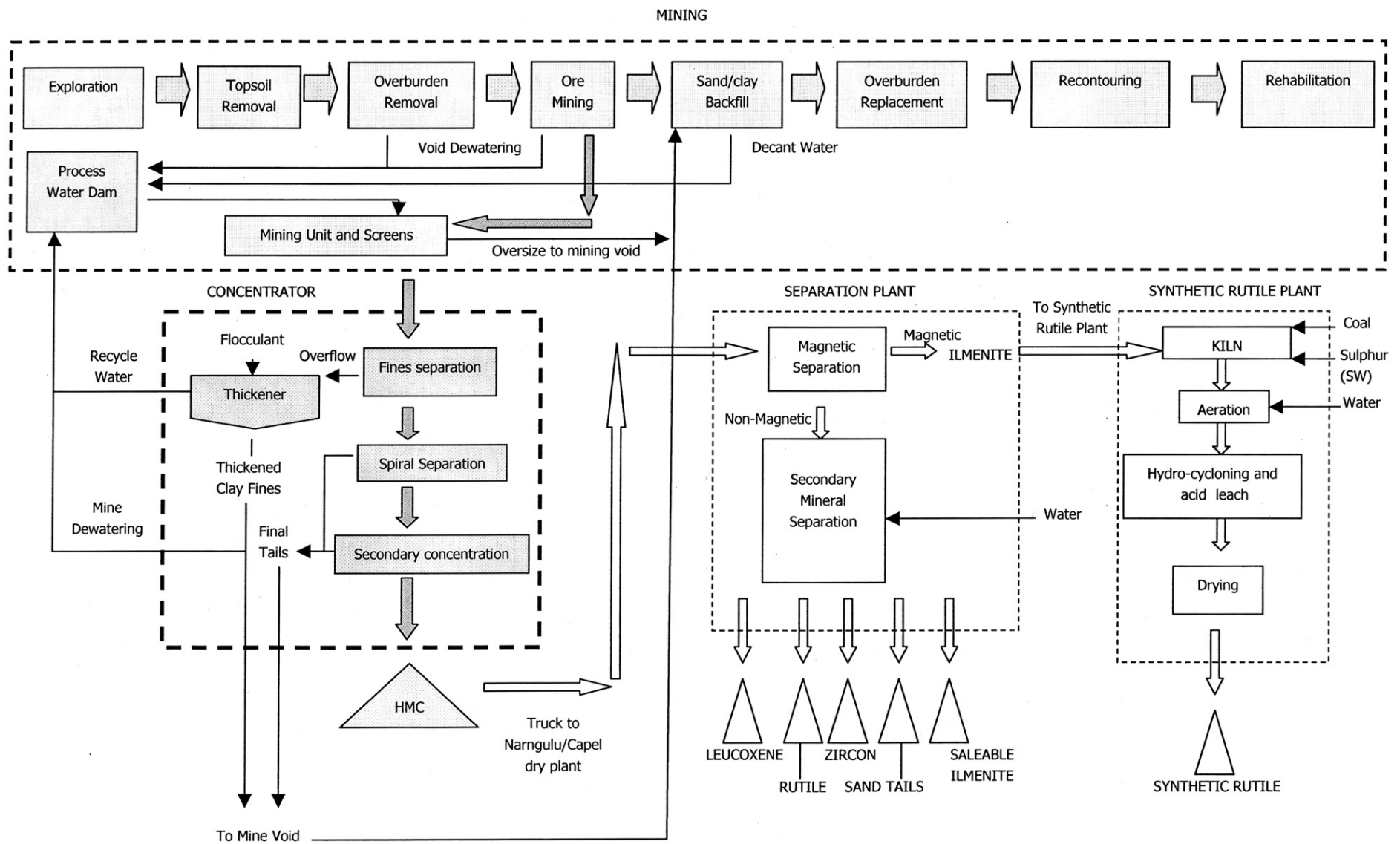


Figure 2: Process Diagram

3. Consultation

During the preparation of the EPS, the proponent has consulted with government agencies, community groups, industry groups and members of the public, particularly landowners adjacent to the site. Consultation was undertaken by distribution of information and meetings with stakeholders. The organisations consulted, the comments received and the proponent's responses are included in Section 4 of the EPS (Iluka, 2004). The proponent will continue to liaise with stakeholders during implementation of the proposal.

Key issues that were raised related to:

- the potential for draw-down of groundwater to affect local landholders;
- the potential for mining to impact on salinity;
- visual impacts and rehabilitation
- dust
- noise

4. Relevant environmental factors

The summary of all of the environmental factors and their management is outlined in Table A (Executive Summary) and Section 5 of the EPS (pages 43-69, Iluka 2004).

In the EPA's opinion the following are the environmental factors relevant to the proposal:

- a) flora and fauna / wetlands;
- b) surface and groundwater;
- c) radiation;
- d) noise;
- e) dust;
- f) waste disposal;
- g) light spill
- h) Aboriginal Heritage; and
- i) rehabilitation.

Of these factors the EPA considers that flora and fauna / wetlands, and surface and groundwater require assessment.

The EPA considers that the remaining factors can be adequately managed through the proponent's environmental management plans, the implementation of which have been given as commitments. The proponent's consolidated commitments for noise, dust, waste disposal, light overspill and radiation management have been included in Appendix 2 as commitments 1 to 5.

4-1 Flora and Fauna / Wetlands

Description

Although the proposal is situated predominantly on farmland, it will lead to the unavoidable loss of two resource enhancement category wetlands. The current condition of the wetlands vegetation is poor due to stock access, which has caused loss of the understorey. The vegetation has been classified as belonging to vegetation associations and complexes of which less than 30% remains.

The total amount of native vegetation to be cleared on the site is 8.1 hectares, according to Department of Agriculture classification. Other vegetation on the property is scattered paddock trees and an area of grass-trees. The grass-trees will be salvaged and offered for transplanting.

Due to the poor condition of the vegetation, the fauna habitat is degraded and disjunct and the vegetation on the site does not provide a linkage between the plateau and the coastal plain.

Assessment

The EPA's objective for flora and fauna is to maintain the abundance, species diversity, geographic distribution and productivity of vegetation communities. For wetlands the objective is to maintain the integrity, functions and environmental values of wetlands.

The EPA notes that the proposal will require clearing of two resource enhancement category wetlands and diversion of the North and South streams during the four year period of mining, and that the proponent intends to re-establish the streams and wetlands following mining.

On advice from the Department of Environment (DoE), the EPA notes, that if the current land use continues, there will be further degradation of the existing wetland vegetation.

If the proposal is approved, the proponent will create replacement wetlands to a higher vegetation biodiversity condition level. In addition, the proponent will fence and rehabilitate a further one kilometre of stream line and will develop a revegetation scheme to support catchment land-care and watercourse improvement programs. On balance, the EPA considers that these measures will provide an overall environmental benefit.

In view of the above, it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for this factor, provided that Condition No.6 is applied to the proposal, which requires the proponent to prepare, prior to ground disturbing activity, an Integrated Mining and Rehabilitation Plan which includes:

- a Vegetation and Fauna Management plan which includes arrangements for reconstruction of the wetlands using native vegetation to a higher biodiversity condition, improvement of the vegetation biodiversity condition of stream areas up to 1 kilometre upstream, fencing of these areas, and provisions for supporting local land-care and watercourse improvement programs;
- a Soil Management Plan;
- a Stormwater and Drainage Management Plan;
- a Groundwater Management Plan; and

- a Decommissioning/Closure Plan.

As the proposal relates to Minerals-to-Owner titles and not to Mining Leases managed by the DoIR, the application of a Performance Bond is not possible under the *Mining Act 1978*. Consequently, Condition No.7 has been included which provides for a Performance Bond as security for performance of Condition No.6.

4.2 Surface and groundwater

Description

Mining on the site will alter the flow of:

- superficial groundwater, through pit dewatering of up to 1000 Megalitres/year;
- deep groundwater, through use of water drawn from the Yarragadee aquifer of up to 1500 Megalitres/year;
- surface water, through temporary diversion of streamlines; and
- surface drainage through diversion around the pit.

These measures may impact local bore users, farm dams and downstream vegetation.

Assessment

The EPA's objective for this factor is to ensure that alterations to ground and surface water flows do not adversely impact on beneficial or environmental uses of the water and that the integrity, functions and environmental values of watercourses are maintained.

The proposal has the potential to have significant impacts on both the surface water hydrology and the groundwater resources of the area.

The EPA notes that the proponent has consulted with landowners potentially affected by draw-down of groundwater and that the proponent has agreed to provide make-up water from the Yarragadee aquifer, should any impact on their uses be found.

The EPA also notes that it is anticipated that groundwater levels and flows will be restored within four-five years after the conclusion of mining; that streamlines will be restored to their original courses immediately after mining of the streamline area is completed; and that ground levels will be re-instated as close as possible to original levels.

The EPA has been advised that the proponent will require licences from the Department of Environment (DoE) for groundwater abstraction for both dewatering and process water, and a permit for disturbing the stream banks.

It is the EPA's opinion, on advice from the DoE, that the objectives for this factor can be met provided that the proposal is subject to close management and monitoring. In addition to the DoE licencing and permitting, the EPA recommends that implementation of the proposal should be subject a condition (Condition No.6) which requires the proponent to prepare, prior to ground disturbing activity, an Integrated Mining and Rehabilitation Plan which includes a:

- Vegetation and Fauna Management Plan;
- Soil Management Plan which includes, among other things, arrangements for handling acidic soils if present, planning of post mining soil structure and effects of rehabilitation of the North and South Streams;

- Stormwater and Drainage Management Plan which includes details of erosion control measures, arrangements for prevention of surface water contamination, arrangements for monitoring of water impacts on the downstream areas of the North and South streams, a contingency plan for stabilisation of downstream bed and banks if subject to erosion, and details of measures to be taken if water quality and sedimentation levels adversely impact on the downstream environment;
- Groundwater Management Plan which includes arrangements for monitoring of aquifer draw-down and recovery, and a contingency plan for replacement of landowner groundwater requirements in the case of adverse impact; and
- Decommissioning/Closure Plan.

5. Conclusions

Section 44 of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment on the environmental factors relevant to the proposal and on the conditions and procedures to which the proposal should be subject, if implemented. In addition, the EPA may make recommendations as it sees fit.

The EPA concludes that the factor of flora and fauna /wetlands can be managed to meet the EPA's objective to maintain the abundance, species diversity, geographic distribution and productivity of vegetation communities and to maintain the integrity, functions and environmental values of wetlands, provided Condition No.6 and No.7 is applied to the proposal. Condition No.6 requires the proponent to prepare and implement an Integrated Mining and Rehabilitation Plan that includes, among other things, a Vegetation and Fauna Management Plan. Condition No.7, requires the proponent to provide a performance bond in relation to the performance of Condition No.6.

The EPA concludes that the factor of surface and groundwater can be managed to meet the EPA's objectives to ensure that alterations to ground and surface water flows do not adversely impact on beneficial or environmental uses of the water and that the integrity, functions and environmental values of watercourses are maintained, provided that Condition No.6 is applied to the proposal. Condition No.6 requires the proponent to prepare and implement an Integrated Mining and Rehabilitation Plan that includes, among other things, a Soil Management Plan, Stormwater and Drainage Management Plan and a Groundwater Management Plan.

6. Recommendations

The EPA considers that the proponent has demonstrated, in the EPS document, that the proposal can be managed in an environmentally acceptable manner and provides the following recommendations to the Minister for the Environment:

1. That the Minister notes that the proposal being assessed is for a Mineral Sands Mine near Gingin.

2. That the Minister considers the report on the relevant environmental factors as set out in Sections 4.
3. That the Minister notes that the EPA has concluded that it is unlikely that the EPA's objectives would be compromised, provided there is satisfactory implementation by the proponent of the recommended conditions and proponent commitments as set out in Appendix 2, including Condition 6 which requires development and implementation of an Integrated Mining and Rehabilitation Plan and Condition 7 which requires establishment of a rehabilitation performance bond.
4. That the Minister imposes the conditions and procedures recommended in Appendix 2 of this report.

Appendix 1

Reference

Iluka Resources. 2004. *Gingin Mineral Sands Project Environmental Protection Statement*,
July 2004 . Perth, WA

Appendix 2

Recommended Environmental Conditions and Proponent's Commitments

RECOMMENDED CONDITIONS AND PROCEDURES

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

MINERAL SANDS MINE, APPROXIMATELY 2.5 KILOMETRES NORTH-WEST
OF GINGIN

Proposal: The construction in the Gingin area and operation of an approximately 2.8 million tonnes per annum mineral sands mine and concentrator plant, and subsequent rehabilitation of the site, as documented in schedule 1 of this statement.

Proponent: Iluka Resources Limited

Proponent Address: Level 23, 140 St George's Terrace, PERTH WA 6000

Assessment Number: 1536

Report of the Environmental Protection Authority: Bulletin 1146

The proposal referred to above may be implemented by the proponent subject to the following conditions and procedures:

1 Implementation

1-1 The proponent shall implement the proposal as documented in schedule 1 of this statement subject to the conditions of this statement.

2 Proponent Commitments

2-1 The proponent shall implement the environmental management commitments documented in schedule 2 of this statement.

3 Proponent Nomination and Contact Details

3-1 The proponent for the time being nominated by the Minister for the Environment under section 38(6) or (7) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal until such time as the Minister for the Environment has exercised the Minister's power under section 38(7) of the Act to revoke the nomination of that proponent and nominate another person as the proponent for the proposal.

3-2 If the proponent wishes to relinquish the nomination, the proponent shall apply for the transfer of proponent and provide a letter with a copy of this statement

endorsed by the proposed replacement proponent that the proposal will be carried out in accordance with this statement. Contact details and appropriate documentation on the capability of the proposed replacement proponent to carry out the proposal shall also be provided.

- 3-3 The nominated proponent shall notify the Department of Environment of any change of contact name and address within 60 days of such change.

4 Commencement and Time Limit of Approval

- 4-1 The proponent shall substantially commence the proposal within five years of the date of this statement or the approval granted in this statement shall lapse and be void.

Note: The Minister for the Environment will determine any dispute as to whether the proposal has been substantially commenced.

- 4-2 The proponent shall make application for any extension of approval for the substantial commencement of the proposal beyond five years from the date of this statement to the Minister for the Environment, prior to the expiration of the five-year period referred to in condition 4-1.

The application shall demonstrate that:

1. the environmental factors of the proposal have not changed significantly;
2. new, significant, environmental issues have not arisen; and
3. all relevant government authorities have been consulted.

Note: The Minister for the Environment may consider the grant of an extension of the time limit of approval not exceeding five years for the substantial commencement of the proposal.

5 Compliance Audit and Performance Review

- 5-1 The proponent shall prepare an audit program and submit compliance reports to the Department of Environment which address:

1. the status of implementation of the proposal as defined in schedule 1 of this statement;
2. evidence of compliance with the conditions and commitments; and
3. the performance of the environmental management plans and programs.

Note: Under sections 48(1) and 47(2) of the *Environmental Protection Act 1986*, the Chief Executive Officer of the Department of Environment is empowered to monitor the compliance of the proponent with the statement and should directly receive the compliance documentation, including environmental management

plans, related to the conditions, procedures and commitments contained in this statement.

- 5-2 The proponent shall submit a performance review report every five years after the start of operations, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority, which addresses:
1. the major environmental issues associated with the project; the targets for those issues; the methodologies used to achieve these; and the key indicators of environmental performance measured against those targets;
 2. the level of progress in the achievement of sound environmental performance, including industry benchmarking, and the use of best available technology where practicable;
 3. significant improvements gained in environmental management, including the use of external peer reviews;
 4. stakeholder and community consultation about environmental performance and the outcomes of that consultation, including a report of any on-going concerns being expressed; and
 5. the proposed environmental targets over the next five years, including improvements in technology and management processes.

- 5-3 The proponent may submit a report prepared by an auditor approved by the Department of Environment under the “Compliance Auditor Accreditation Scheme” to the Chief Executive Office of the Department of Environment on each condition/commitment of this statement which requires the preparation of a management plan, programme, strategy or system, stating that the requirements of each condition/commitment have been fulfilled within the timeframe stated within each condition/commitment.

6 Integrated Mining and Rehabilitation Plan

- 6-1 Prior to ground disturbing activity, the proponent shall develop an Integrated Mining and Rehabilitation Plan to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

The objective of this plan is to ensure that mining impacts on the environment are minimised and the success of rehabilitation is maximised, by integrating environmental planning with the mine plan.

The Plan shall include:

- 1) Vegetation and Fauna Management Plan that addresses, the following:
 1. a baseline vegetation study;
 2. minimisation of impacts on native vegetation;
 3. delineation of areas of vegetation to be retained or cleared;

4. retention of topsoil for rehabilitation;
 5. strategy for removal and reconstruction of the north and south streams and central wetland which addresses re-establishment of soil structure, stabilisation of banks and revegetation;
 6. fauna habitat restoration;
 7. development of specific rehabilitation performance criteria for reconstruction of the central wetland and diverted streams and improvement of one kilometre upstream of the North Stream, including rehabilitation of these areas with more diverse native vegetation than existed pre-mining; fencing of these areas; and rehabilitation of the remaining areas to productive pasture;
 8. inspection of tailings dams for trapped animals;
 9. weed management;
 10. dieback management;
 11. a monitoring program to determine rehabilitation success;
 12. consideration of the effect of the rehabilitation of the north and south streams on the hydrology of the site; and
 13. support of local land-care and watercourse improvement programs.
- 2) Soil Management Plan that addresses the following:
1. delineation of highly acidic soils;
 2. operational handling of the soils during mining and rehabilitation;
 3. treatment of acidic soils; and
 4. details of post-mining soil structure.
- 3) Stormwater and Drainage Management Plan that addresses the following:
1. erosion control measures;
 2. prevention of water contamination;
 3. monitoring of diverted/drainage water impacts on the off-site North and South streams, including a contingency plan for stabilisation of the downstream bed and banks; and
 4. mitigation measures to be taken if water quality and sedimentation levels are adversely impacting on the down-stream environment during mining;
- 5) Groundwater Management Plan to ensure that environmental and social provisions of groundwater are maintained. This plan shall include arrangements for at least six monthly monitoring of aquifer draw-down and recovery, and a contingency plan for replacement of landowner groundwater requirements in the case of adverse groundwater impacts; and
- 6) Decommissioning and Closure Plan for the mining areas, final voids and other mine infrastructure which includes:
1. removal of equipment and infrastructure;
 2. identification and remediation of contaminated areas,
 3. rehabilitation of all disturbed areas to a standard suitable for the agreed new land use(s).

- 6-2 The proponent shall implement the Integrated Mining and Rehabilitation Plan required by condition 6-1 until such time as the Minister for the Environment determines, on advice of the Environmental Protection Authority, that the proponent's rehabilitation responsibilities have been fulfilled.
- 6-3 The proponent shall make the Integrated Mining and Rehabilitation Plan required by condition 6-1 publicly available, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

7 Rehabilitation Performance Bond

- 7-1 As security for the due and punctual observance and performance by the proponent of the requirements of condition 6-2 to be observed, conformed and complied with, the proponent shall lodge with the Chief Executive Officer of the Department of Environment on demand prior to ground-disturbing activity, an irrevocable Performance Bond as nominated and approved by the Chief Executive Officer in his sole unfettered discretion to a cash value and in a form acceptable to the Chief Executive Officer ("the Security") which Security at the date hereof being \$2,400,000.
- 7-2 The Chief Executive Officer may review the Security required by condition 7-1 at any time or times and if, on such review, the Chief Executive Officer considers that a security has ceased to be acceptable to the Chief Executive Officer, then the Chief Executive Officer may, with the approval of the Minister for the Environment, require the proponent to furnish replacement or additional security for performance by the proponent of its obligations under condition 7-1.
- 7-3 The proponent shall within 14 days after written request by the Chief Executive Officer furnish replacement or additional security in such sum as the Chief Executive Officer shall nominate, in a form and upon terms and conditions approved by the Chief Executive Officer, which approval shall not be unreasonably withheld. On receipt of approved replacement security the Chief Executive Officer shall release and discharge the original security.

Procedures

- 1 Where a condition states "to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority", the Environmental Protection Authority will provide that advice to the Department of Environment for the preparation of written notice to the proponent.
- 2 The Environmental Protection Authority may seek advice from other agencies or organisations, as required, in order to provide its advice to the Department of Environment.
- 3 Where a condition lists advisory bodies, it is expected that the proponent will obtain the advice of those listed as part of its compliance reporting to the Department of Environment.

Notes

- 1 The Minister for the Environment will determine any dispute between the proponent and the Environmental Protection Authority or the Department of Environment over the fulfilment of the requirements of the conditions.
- 2 The proponent is required to apply for a Works Approval, Licence and Registration for this project under the provisions of Part V of the *Environmental Protection Act 1986*.
- 3 Within this statement, to “have in place” means to “prepare, implement and maintain for the duration of the proposal”.

Schedule 1

The Proposal (Assessment No. 1536)

The project is located approximately 2.5 kilometres northwest of the Gingin townsite, to the east of the Brand Highway and north of Dewar Road (Figure 1).

The proposal area consists of Part Swan Locations 128, 354 & 508, Lot 2; Part Swan Locations 128 & 340, Lot 3; Part Swan Locations 128, 354, 355, 506, Lot 9 owned by Iluka Resources Limited and Swan Location 506, Portion of each of Swan Locations 354 and 508, Lot 1; and Part Swan Locations 511 & 536, Lot 7 for which Iluka has a landowner agreement to mine.

All the lots are Minerals-to-Owner, being pre-1899 land grants.

The Project comprises:

- open-cut mining to an approximate depth of 28 metres;
- in-pit feed hopper;
- feed conveyors;
- centrally located screen plant;
- 250 tonnes per hour concentrator;
- heavy mineral concentrate stockpiles;
- process water dam;
- return water dam;
- solar drying dams;
- site office, crib room and ablution block;
- potable water storage;
- weighbridge;
- monazite unloading facility;
- workshop and tool shed;
- parking area;
- mine access roads; and
- earthmoving contractors' area (parking and workshop).

Significant features of the proposal are:

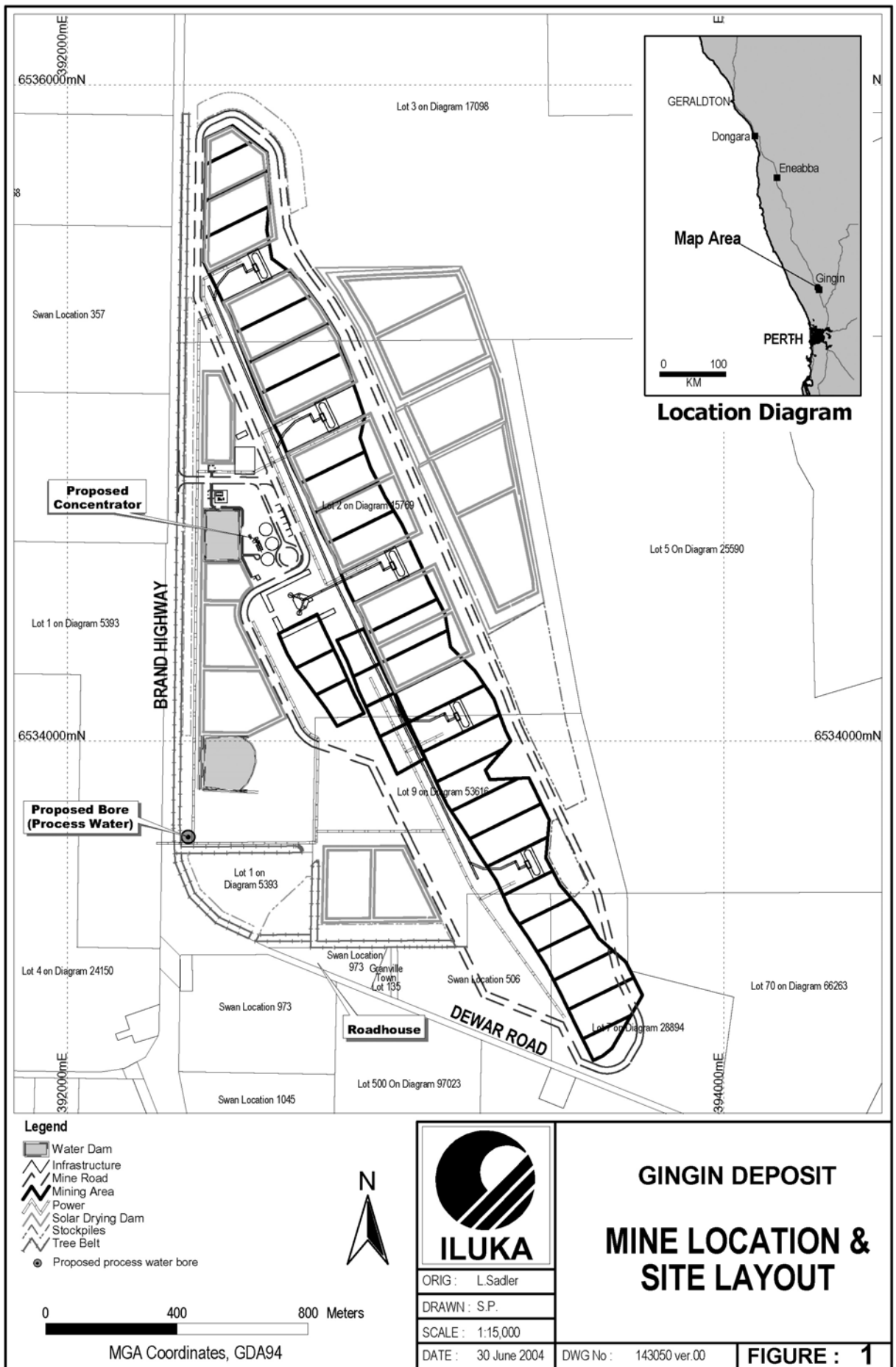
- progressive mining and rehabilitation of the site;
- temporary diversion of the North and South Streams around mining operations;
- supply of process water from superficial groundwater and pit dewatering and the Yarragadee aquifer; and
- 24 hour per day, seven days per week operation.

The key proposal characteristics are shown in Table 1 below.

Table 1 – Key Proposal Characteristics

Element	Quantities / Description
Life of Mine (mine production)	Expected less than 4 years (continual operation)
Area of Orebody	80 hectares
Area of disturbance	280 hectares
Major Components open-cut mining to an approximate depth of 28 metres; in-pit feed hopper; feed conveyors; centrally located screen plant; 250 tonnes per hour concentrator; heavy mineral concentrate stockpiles; process water dam; return water dam; solar drying dams; site office, crib room and ablution block; potable water storage; weighbridge; monazite unloading facility; workshop and tool shed; parking area; mine access roads; and earthmoving contractors' area (parking and workshop).	See Figures 1 and 2 for details.
Ore mining rate (maximum)	2.8 million tonnes per year
Overburden mining rate (maximum)	3.65 million tonnes per year
Hours of Operation	24 hours per day, 7 days per week
Water Supply Source Maximum Annual Requirement Source Maximum Annual Requirement	Yarragadee Aquifer 1,500 Megalitres per year Superficial Aquifer 1,000 Megalitres per year
Fuel storage capacity	50,000 litres
Annual fuel usage	3,300,000 litres per year

Figures (attached)



Location Diagram

- Legend**
- Water Dam
 - Infrastructure
 - Mine Road
 - Mining Area
 - Power
 - Solar Drying Dam
 - Stockpiles
 - Tree Belt
 - Proposed process water bore



0 400 800 Meters

MGA Coordinates, GDA94



ORIG : L.Sadler
DRAWN : S.P.
SCALE : 1:15,000
DATE : 30 June 2004

GINGIN DEPOSIT
MINE LOCATION & SITE LAYOUT

DWG No : 143050 ver.00

FIGURE : 1

Figure 1: Mine location and site layout

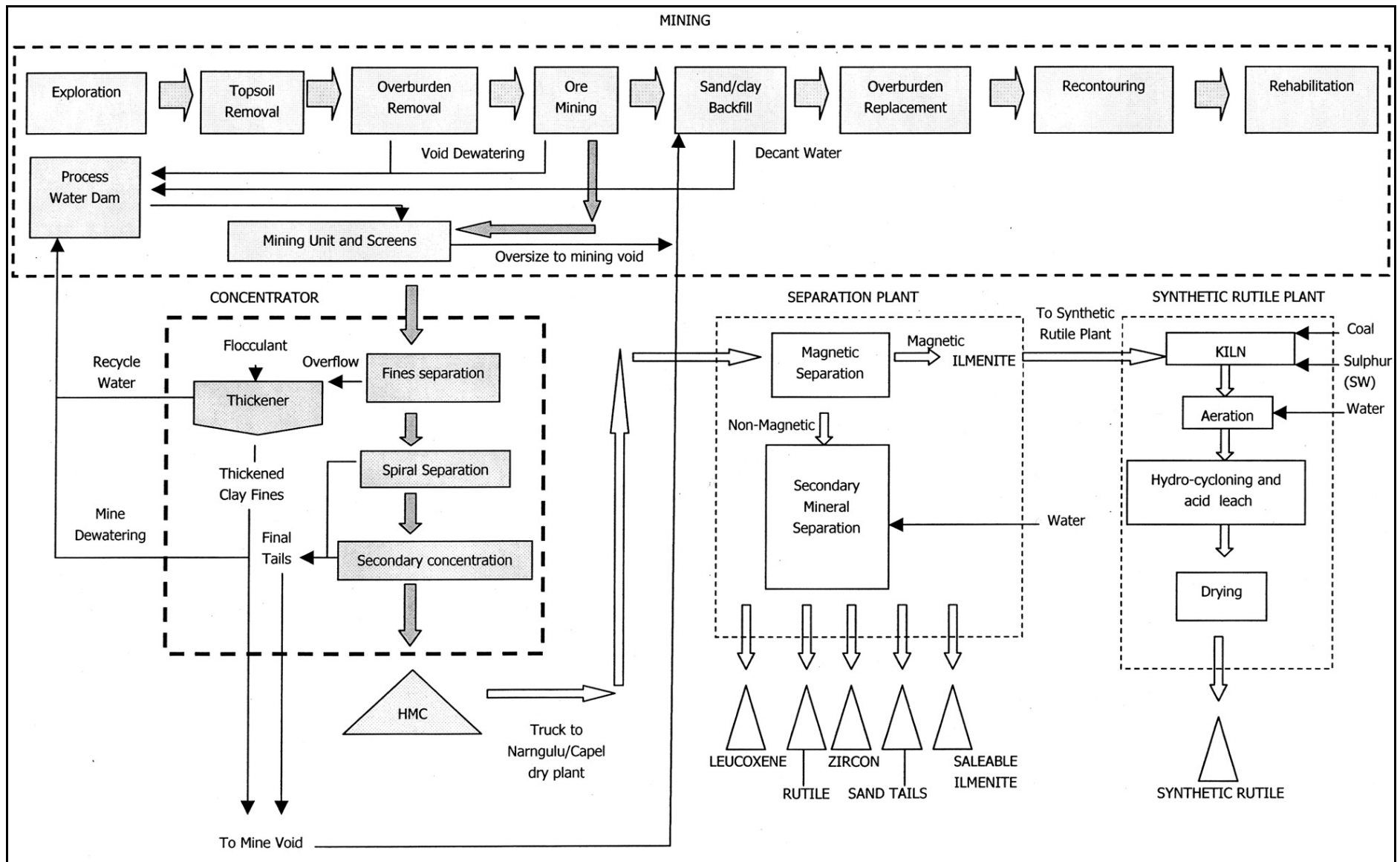


Figure 2: Process diagram

Proponent's Environmental Management Commitments

September 2004

MINERAL SANDS MINE, GINGIN

(Assessment No. 1536)

Iluka Resources Limited

2	Noise	To comply with the requirements of the <i>Environmental Protection (Noise) Regulations 1997</i>	<p>1) Prepare and make publicly available a Noise Management Plan which includes:</p> <ol style="list-style-type: none"> 1. monitoring at the nearest sensitive receptor locations; 2. noise controls to be incorporated in the engineering design; 3. operational controls to achieve compliance; and 4. community consultation and complaint response. <p>2) Implement the Noise Management Plan.</p>	<p>Prior to ground disturbing activity</p> <p>During construction and operation</p>	DoE (Noise Section)
3	Waste	To minimise potential contamination of the receiving environment.	<p>1) Prepare and make publicly available a Waste Management Plan that includes storage, segregation and disposal of waste streams and maximises recycling and re-use of wastes.</p> <p>2) Implement the Waste Management Plan</p>	<p>Prior to construction</p> <p>During construction and operation</p>	Shire of Gingin
4	Light	To minimise the impacts of light spill on neighbouring residences and adjacent roads	<p>1) Prepare a Light Management Plan that addresses:</p> <ol style="list-style-type: none"> 1. placement of lighting; 2. design of lighting <p>2) Implement the Light Management Plan.</p>	<p>Prior to construction</p> <p>During construction and operation</p>	Shire of Gingin
5	Radiation	To minimise radiation impacts	<p>1) Prepare and make publicly available a Radiation Management Plan that includes:</p> <ol style="list-style-type: none"> 1. monitoring of background radiation levels before and after mining; 2. procedures for mining, stockpiling, transport and disposal; and 3. procedures to ensure that post mining radiation levels do not exceed the pre-mining levels. <p>2) Implement the Radiation Management Plan.</p>	<p>Prior to ground disturbing activity</p> <p>During construction and operation</p>	<p>Department of Industry and Resources</p> <p>Radiological Council</p>