

# **Mining diatomaceous earth at Lake Gnangara, Wanneroo**

**Magic Soil Pty Ltd**

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

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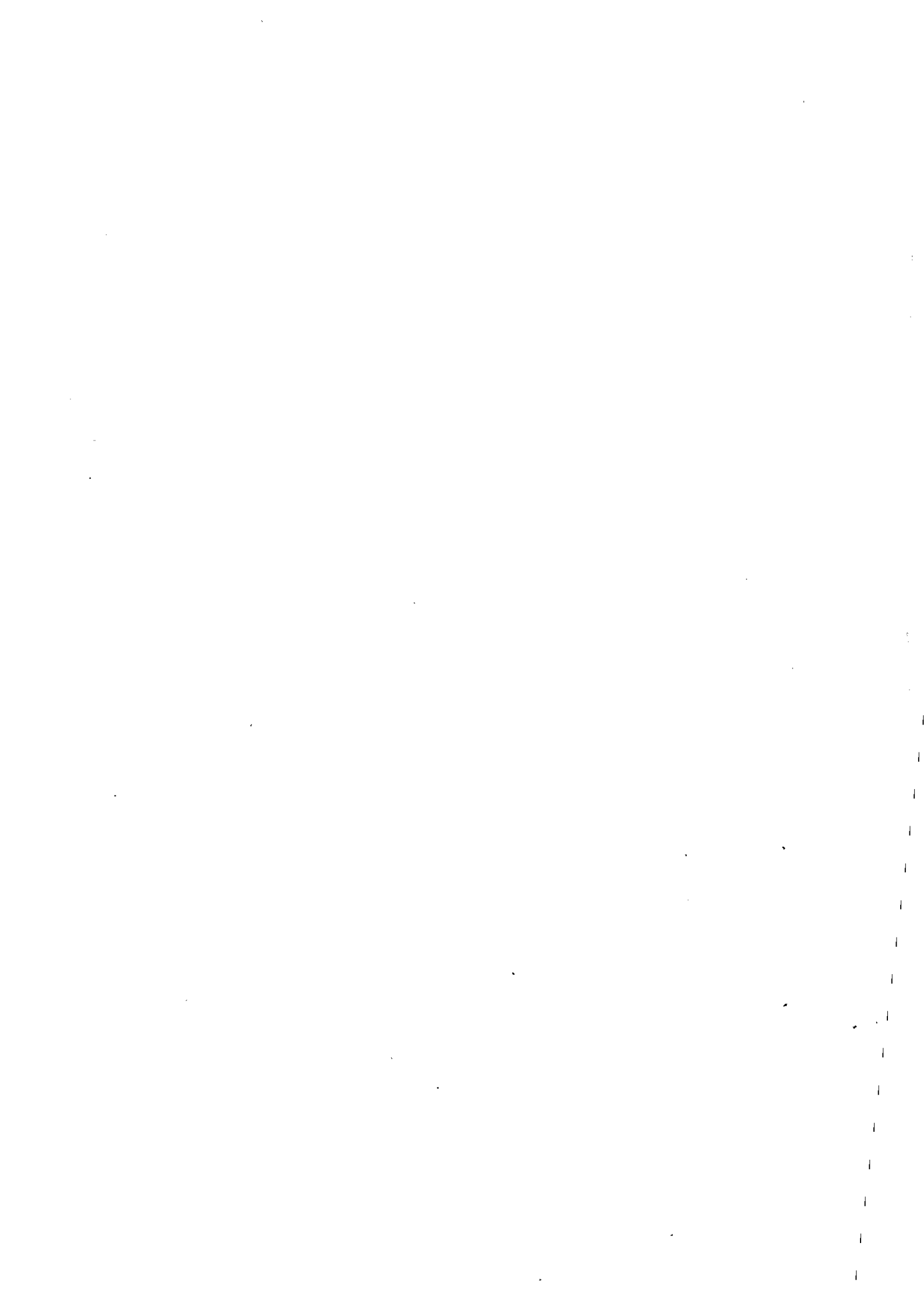
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# Summary and recommendations

Magic Soil Pty Ltd has submitted a Notice of Intent to the Environmental Protection Authority for a proposal to mine diatomaceous earth at Lake Gngangara in the City of Wanneroo. The area comprises three gazetted C Class reserves (numbers 8399, 27278 and 27279) for recreation, vested with the City of Wanneroo, and is part of the System 6 Recommendation M8 relating to the Wanneroo Wetlands Eastern Chain.

The existing environment and the potential impacts from the mining operation have been assessed utilising information provided in the proponent's Notice of Intent, the EPA System 6 Red Book Report, reports prepared by the Wetlands Advisory Committee, 1977, which included a draft plan of management for Lake Gngangara, and EPA Bulletin 266, Notes on Perth's Wetlands, (in press). The most relevant conclusion derived from the latter reports is that deepening the lake to increase the area of permanent water may be environmentally beneficial to the water quality.

The main issues related to Aboriginal concerns, hydrological aspects, ecological considerations, water quality deterioration and the necessity for the mining plan and rehabilitation proposals to conform with the City of Wanneroo's plans for the reserve.

The System 6 recommendation for the lake endorses Wanneroo City Council's Circular Lakes Landscape Enhancement Area Plan which recognises that recreation be a priority use, that the area has mineral potential, that fringing vegetation should be protected from the effects of mining and that the lake should be rehabilitated after mining. The Authority considers that the development of the recreational use of Lake Gngangara will take the pressure off the other lakes in the region and that the proposed mining operation will assist the development of recreational uses.

The Authority's recommendations on the Magic Soil Pty Ltd mining proposal are specific to Lake Gngangara and to the proposal and are not a precedent for other mining proposals in wetlands.

## Recommendation 1

The Environmental Protection Authority has concluded that the proposal, as modified by the environmental impact assessment process involving interaction between the proponent, the Environmental Protection Authority and public and government agencies consulted, is environmentally acceptable.

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

- the ability of the mining operation to conform with the City of Wanneroo's proposed management plan;
- the ecology of the lake;
- the hydrological regime;
- the long term water quality of the lake; and
- Aboriginal concerns.

The Environmental Protection Authority notes that these environmental factors have been addressed and can be adequately controlled by legislative approvals required under the Metropolitan Region Town Planning Scheme Act, the Mining Act and the Aboriginal Heritage Act, conditions imposed by the Wanneroo City Council on the extractive industry licence, environmental management commitments given by the proponent and by the Environmental Protection Authority's recommendations in this report.

Accordingly, the Environmental Protection Authority recommends that the mining lease could be granted and the mining proposal could proceed subject to:

- the appropriate legislative approvals;
- the extractive industry licence conditions;
- the proponent's commitments (Appendix 1); and
- the Environmental Protection Authority's recommendations in this report.

## **Recommendation 2**

**The Environmental Protection Authority recommends that the standard of rehabilitation at the completion of the mining operation be to the satisfaction of the Environmental Protection Authority on advice from the Department of Mines and the City of Wanneroo**

# 1 Background

On 9 June, 1989, the Environmental Protection Authority received a referral from the Department of Mines of a mining lease application (MLA 70/473) by Magic Soil Pty Ltd. The mining lease application is to supersede a prospecting licence application (PLA 70/807) over the same area and is for a proposal to mine diatomaceous earth from the north-western corner of the lake bed (Figure 1).

The referral was held pending clarification of the Government's Policy on Exploration and Mining in Conservation Reserves. It was advertised on 1 July, 1989 and a formal assessment at a level of Notice of Intent was set under Part IV of the Environmental Protection Act, 1986.

An inspection of the area was made in conjunction with a representative of the Department of Mines and a meeting was held with the proponent to discuss the guidelines, again in conjunction with the Department of Mines. The Notice of Intent was submitted on 18 September, 1989.

The report was distributed to relevant advisory bodies, including the Department of Aboriginal Sites, the Water Authority of Western Australia and the City of Wanneroo, and their comments were considered in the assessment.

The Lake Gngangara area comprises three C Class reserves for recreation vested in the City of Wanneroo. The lake is also included in a general EPA Red Book recommendation covering the Wanneroo Wetlands Eastern Chain (System 6, M8). The System 6 recommendation endorses the Wanneroo City Council Circular Lakes Landscape Enhancement Area Plan which recognises that recreation be a priority use, that the area has mineral potential, that fringing vegetation should be protected from the effects of mining and that the lake should be rehabilitated after mining. Clearly, the Authority's recommendation recognised that mining the diatomite sediment was feasible as long as it did not impact upon the fringing vegetation or the recreational uses of the lake. Because the lake is a sensitive wetland environment which is dependent on the groundwater of the area, it was considered appropriate to formally assess the proposal.

The diatomaceous sediment proposed to be mined comprises the remains of microscopic organisms which grow in the lake water, die seasonally and build up on the lake bed. This process has steadily reduced the lake depth. Coupled with natural seasonal lowering of the groundwater due to water use by adjacent pine forests, this has led to much of the lake drying out each year.

Recreational use of the area has decreased because of the lack of a permanent water body of reasonable depth and also the poor water quality of the existing water body. Considering the regional planning objective of focussing recreation at Lake Gngangara it appears the deepening of the lake by mining would increase scope for recreation which would take pressure off the other lakes in the area.

## 2 The proposal

The proponent is seeking a mining lease (application number 70/473) in the north-western corner of the lake encompassing the lake bed as well as a small portion of the shoreline. The mining proposal is to extract diatomaceous earth from the lake bed to a depth not exceeding one metre, which is about the depth of the summer water table.

The objective of the mining proposal is mainly to produce a water retaining soil condition product by mining diatomaceous earth from the lake bed of Lake Gngangara. Other uses of the diatomite following calcining will be investigated, such as a filtration medium and in ceramics manufacturing. It is proposed to access the lake bed via an existing track on the north-west corner of the mining lease and excavate the diatomite using a small back hoe or excavator. No mining is proposed outside the lake bed.

The material will be loaded onto small trucks and taken to a storage yard for treatment into a saleable product. No storage or treatment facilities are proposed on the lease area. Work will only be possible during dry conditions over the summer and autumn and the area will be left in a safe and stable condition for the wet periods of the year. Discussions are proceeding between the proponent and the City of Wanneroo on the time frame for the completion of mining required by the City of Wanneroo to comply with their management and development plans for the area. The current proposal is for mining to proceed over seven years. The timing can be regulated by the City of Wanneroo under their planning approval process.

the adjacent pine forest being thinned and therefore, the long term scenario is for a permanent water body to be established in the north-western corner of the lake.

The Authority understands that the Department of Mines is proposing to incorporate appropriate lease conditions proposed by the Water Authority of Western Australia to allow the monitoring and management of the water level of the lake and surrounding area.

#### **4.1.5 Long term water quality**

It would be expected that a larger, permanent water body than that which currently exists would have better water quality because of the dilution of the dissolved salts and microbiological pollutants. The Environmental Protection Authority understands that controls required by the Water Authority of Western Australia regarding a water quality sampling programme, the licensing of any dewatering activity and on-site refuelling restrictions will be applied as lease conditions placed under the Mining Act on the mining lease.

Also, the proponent has made a commitment to implement a water quality sampling programme and to suspend mining activities if detrimental effects are detected. This relates initially to the existing permanent water body and will relate to the water bodies formed by the mining operation at the appropriate time. Hence, the Environmental Protection Authority's concerns regarding the future water quality and water levels of the lake, which is an important wetlands system, are adequately catered for by the control that the Water Authority of Western Australia and the Local Government Authority have over the proposed mining operations. No further recommendations were considered necessary to address the issue.



## **Appendix 1**

### **Magic Soil Pty Ltd's environmental management commitments**



## **Environmental management commitments**

The Company is committed to:

1. Complying with the provisions of the Aboriginal Heritage Act 1972.
2. Keeping all surface excavations and disturbances in a safe condition.
3. Taking no action which would adversely affect the water table.
4. Preserving the public rights of ingress to and egress from Recreational Reserve 27279, and the mining to be organised in such a manner as not to cause undue interference with the seasonal recreation and use of the lake.
5. Mining of the lake bed being conducted in an orderly and systematic manner.
6. Supplying water samples as dictated by the State Mining Engineer in pre-determined times and places.
7. Keeping all mining equipment and machinery in good operative and non-polluting condition.
8. Not processing mined material on site.
9. Controlling noise levels to conform with regulations of the Noise Abatement Regulations 1974.
10. Suspending mining activities if it is considered by the Director General of Mines to be having a detrimental effect upon the natural water characteristics.
11. Adequately marking or providing signs to ensure that the public is aware of activities, plant, equipment or hazards.
12. Allowing the officers of the Water Authority of WA to construct wells, bores, pipelines and appurtenant works within the boundaries of the lease without claim or compensation.
13. Complying with the rights in the Water and Irrigation Act 1914 as amended.
14. Such further conditions as the Minister for Mines may impose.

