



Ass # 901

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State # 379

WESTERN AUSTRALIA

MINISTER FOR THE ENVIRONMENT

STATEMENT TO AMEND CONDITIONS APPLYING TO PROPOSALS  
(PURSUANT TO THE PROVISIONS OF SECTION 46 OF THE  
ENVIRONMENTAL PROTECTION ACT 1986)

PROJECT: BODDINGTON GOLD MINE (901)

PROPOSALS: ENHANCEMENT OF FACILITIES (156)  
EXPANSION OF FACILITIES - STAGE 2 (182)  
MINING AND PROCESSING OF  
SUPERGENE/BASEMENT ORES (238 / 238-1)  
DEVELOPMENT OF EASTERN ANOMALIES (700)

CURRENT PROPONENT: WORSLEY ALUMINA PTY LTD

CONDITIONS SET ON: 15 FEBRUARY 1988  
8 DECEMBER 1988  
22 NOVEMBER 1989  
21 JANUARY 1993

CONDITIONS AMENDED ON: 8 JUNE 1990

The implementation of these proposals is now subject to the following conditions which replace all previous conditions:

**1 Proponent Commitments**

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

- 1-1 In implementing the proposals, including the modifications to the rehabilitation strategy described in the proponent's documentation of 1994 as reported on in Environmental Protection Authority Bulletin 766, the Enhancement of Facilities as reported on in Environmental Protection Authority Bulletin 313, the Expansion of Facilities - Stage 2 as reported on in Environmental Protection Authority Bulletin 361, the Mining and Processing of Supergene/Basement Ores as reported on in Environmental Protection Authority Bulletins 408 and 430, and the Development of Eastern Anomalies as reported on in Environmental Protection Authority Bulletin 661; the proponent shall fulfil the commitments made during the assessments, in documentation of 1994 in connection with modifications to the rehabilitation strategy, and the revised list of commitments of November 1994 (published in Environmental Protection Authority Bulletin 766 as Appendix 3, a copy of which is attached); provided that the commitments are not inconsistent with the conditions or procedures contained in this statement.

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## **2 Implementation**

Changes to the proposals 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 proposals 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 proposals. 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 Hotham River**

Diversion of water from the Hotham River may have an adverse impact on the Hotham/Murray River system as well as on downstream users.

- 3-1 The proponent shall only pump water from the Hotham River when the river flow is in excess of 342 kilolitres per hour as measured at Marradong River bridge gauging station.
- 3-2 When pumping from the Hotham River, the proponent shall not cause the remaining river flow to be reduced below the level of 342 kilolitres per hour as measured at Marradong River bridge gauging station.

Note: Water is extracted from the Hotham River in accordance with licence conditions set by the Water Authority of Western Australia under the provisions of the Rights in Water and Irrigation Act 1914.

## **4 Development of Lakes in the Mine Pits**

Detailed plans for the development and management of lakes are required.

- 4-1 At least 12 months prior to decommissioning the mine pits, the proponent shall prepare an Environmental Management Programme for the inclusion of lakes as final landform features within the mine pit areas, to the requirements of the Department of Environmental Protection on advice of the Water Authority of Western Australia, the Department of Minerals and Energy and the Department of Conservation and Land Management.

This Programme shall include, but not be limited to, the following:

- (1) lake design, including:
  - (a) the proposed connection to Thirty-Four Mile Brook;
  - (b) the partial return of mine waste as backfill to mine pits where required for the necessary creation of shallow water areas or islands for wildlife use;
  - (c) inflow and outflow options for the management of water quality and quantity in the lakes and Thirty-Four Mile Brook, including options for isolating the lakes; and
  - (d) slopes and proposed vegetation types, including wetland plant species;
- (2) target minimum, maximum and optimum water levels in the lakes based on stream flow in Thirty-Four Mile Brook, groundwater flow and run-off from surrounding areas;

- (3) water quality criteria to ensure the maintenance of appropriate water quality in the lakes and Thirty-Four Mile Brook;
- (4) predicted groundwater and surface water hydrological responses and impacts on long term salinity in the lakes and Thirty-Four Mile Brook; and
- (5) the development of a comprehensive monitoring, management and reporting programme.

4-2 The proponent shall implement the Environmental Management Programme required by condition 4-1 to the requirements of the Department of Environmental Protection on advice of the Water Authority of Western Australia, the Department of Minerals and Energy and the Department of Conservation and Land Management.

## **5 Rehabilitation**

In addition to waste stockpiles, mine pits and residue disposal areas, other project areas will need to be properly rehabilitated.

5-1 The proponent shall rehabilitate the Boddington Gold Mine site and environs and remove associated infrastructure, to the requirements of the Department of Environmental Protection and the State Mining Engineer with advice from other agencies, as appropriate.

## **6 Discharge Waters**

A water management programme referred to in the proponent's documentation of 1994 for the residue disposal areas and the D1 Dam is important to ensure that the proponent controls metal levels in run-off waters. Following commitments made by the proponent, other relevant water quality parameters will also be managed. (See, for example, commitments nos 15 and 21 attached).

6-1 The proponent shall ensure that waters discharged to the Hotham River from the residue disposal areas and the D1 Dam permit the maintenance of the existing beneficial uses and the existing ecosystems of the River.

6-2 The proponent shall ensure that waters discharged to the Thirty-Four Mile Brook from the residue disposal areas and the D1 Dam permit the maintenance of the identified beneficial uses and the existing ecosystems of the Brook.

6-3 At least six months prior to discharge of waters from the residue disposal areas or the D1 Dam, the proponent shall demonstrate in a report to the Department of Environmental Protection how the discharges will be managed to meet conditions 6-1 and 6-2, to the requirements of the Department of Environmental Protection on advice of the Water Authority of Western Australia.

This report shall address, but not be limited to, the following:

- (1) provision of further detail on the water management programme, referred to in the proponent's documentation of 1994, for the residue disposal areas and the D1 Dam;
- (2) further characterisation of the receiving environments of the Hotham River and Thirty-Four Mile Brook; and
- (3) determination of the likely effectiveness of the water management programme in meeting the objectives of conditions 6-1 and 6-2.

6-4 In the event that matters addressed in the report required by condition 6-3 demonstrate the need for variation of the water management programme referred to in the proponent's documentation of 1994, the proponent shall modify the water management programme to the requirements of the Department of Environmental Protection on advice of the Water Authority of Western Australia.

6-5 The proponent shall implement the modified water management programme arising from condition 6-4.

## **7 Decommissioning**

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

7-1 At least twelve months prior to decommissioning, the proponent shall prepare a decommissioning and rehabilitation plan, including development of a 'walk away' solution for the site, to the requirements of the Department of Environmental Protection and the State Mining Engineer.

Note: A 'walk-away' solution means that the site shall either no longer require management at the time the proponent ceases mining operations, or if further management is deemed necessary, the proponent shall make adequate provision so that the required management is undertaken with no liability to the State. This could be in the form of an environmental bond such as those routinely held against mining rehabilitation success by the Department of Minerals and Energy.

7-2 The proponent shall implement the plan required by condition 7-1 to the requirements of the Department of Environmental Protection and the State Mining Engineer.

## **8 Proponent**

These conditions legally apply to the nominated proponent.

8-1 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.

## **9 Compliance Auditing**

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

9-1 The proponent, in consultation with the Department of Environmental Protection, shall prepare an Audit Programme, which includes requirements for the preparation of periodic Compliance Reports.

9-2 The proponent shall subsequently implement the Audit Programme required by condition 9-1.

## **Procedure**

- 1 The Department of Environmental Protection 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 public authority.
- 2 If the Department of Environmental Protection, other public authority 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.

Kevin Minson MLA  
MINISTER FOR THE ENVIRONMENT

25 JAN 1995

### **Note**

The proponent should apply for a Works Approval under the provisions of Part V of the Environmental Protection Act.

# **Proponent's Environmental Management Commitments**

**November 1994**

## **BODDINGTON GOLD MINE (901)**

**(PREVIOUS ASSESSMENT NOS. 156, 182, 238, 238-1 & 700)**

**WORSLEY ALUMINA PTY LTD**

**The proponent has made the following environmental management commitments:**

1. Clearing for project activities will be kept to a minimum, consistent with safe operating practices.
2. Topsoil from areas cleared for project activities will be salvaged for use in decommissioning and other rehabilitation programmes.
3. Environmentally - sensitive construction and operational practices, including stringent forest hygiene measures, will be employed throughout the project area.
4. The State will continue to be compensated for clearing of State Forest under terms of the Alumina Refinery (Worsley) Agreement Act, 1973.
5. Alternative access from private land around the downstream Water Supply Reservoir to State Forest to the west of the project area will be maintained for local bush fire brigades and CALM.
6. Biological monitoring programmes, based on information provided to the State in the draft report on baseline biological investigations, will be developed in consultation with the State. Results of these monitoring programmes will be reported to the State and changes to management and procedures developed as necessary with the State.
7. A quantified assessment of likely impacts of project clearing on streamflow and quality of Thirty Four Mile Brook has been carried out with the Water Authority of Western Australia (see Appendix B of the April 1987 Environmental Management Programme). In consultation with the EPA and the Water Authority, surface and groundwater monitoring programmes will be developed and implemented to facilitate progressive planning and management of project activities, particularly mining and residue storage, to minimise adverse hydrological and hydrogeological effects.
8. If unacceptable quality is detected in groundwater monitoring bores around the Residue Disposal Area, the remedial actions described in Section 8.3.3 of the April 1987 Environmental Management Programme will be evaluated as part of the development of a response to such a situation.
9. Material from residue and reclaim pipeline leaks/breakages will be contained at low points along the residue pipeline route and transported to the Residue Disposal Area. If spills are not fully contained, WAPL will carry out clean-up and rehabilitation of affected areas in consultation with the State.
10. In the unlikely event of a dam failure, including the overtopping of the Process Water Pond, the Joint Venturers will assume responsibility for clean-up and rehabilitation to the satisfaction of the State.
11. All waste and spilt materials in the Metallurgical Treatment Plant area will be contained within the process operation for reuse, or disposed of as appropriate.
12. Caustic soda used in the Metallurgical Treatment Plant will have a mean mercury content of less than 100ug/L with a maximum value of 1,000ug/L.
13. Stormwater runoff from the cleared area of the Plant Site will flow into the Process Water Pond, which has been lined with clay and plastic to minimise leakage. The pond will have sufficient capacity to accommodate rainfall runoff from a one in one hundred year storm event.

14. Drainage will be installed around mine pits, haulroads, and stockpiles; water (other than acidic mine drainage) from these will either be used for dust suppression, or will drain via silt traps into natural watercourses.
15. The objective of the management of runoff from the mining operations will be to minimise the potential spread of forest disease and to reduce the long-term salinity and turbidity impact on Thirty Four Mile Brook.
16. Shallow mine pits will be contoured to slopes generally consistent with natural landforms.
17. Deeper pits will be rehabilitated if, at the time of completion of mining the weathered profile, no decision to mine bedrock has been made. Should a decision to mine bedrock to be [sic] made, detailed plans will be submitted to the State for approval.
18. Final rehabilitation will ensure that runoff will drain to natural watercourses or into the deeper pits.
19. Life-of-project land use plans will be prepared and submitted to the State on an annual basis.
20. The State will be provided with brief annual and comprehensive triennial environmental management reports as part of existing arrangements for the Worsley Alumina Project.
21. Prior to the commencement of rehabilitation BGM will develop detailed prescriptions for the residue areas which will be aimed at stabilising the residue surface, providing a sustainable vegetation system, and optimise [sic] the quality of any future runoff from those areas.
22. As a temporary measure following decommissioning, D1 Dam will be used to capture and control saline runoff from the BGM Residue Disposal Areas, which will be diverted to the Hotham River. This diversion of water will not cause an increase of more than 10% in the salinity of Hotham River at any time. Other than salinity this discharge will not exceed statutory guidelines for water used for livestock watering.
23. Unless authorised by the State, residue area runoff water which is released from D1 Dam into Thirty-Four Mile Brook will not exceed 3000 mg/l Total Dissolved Solids. This discharge will not exceed statutory guidelines for recreational waters.
24. During the initial period of lake filling following rehabilitation, BGM will endeavour to manage water flows so as to minimise drought stress in riparian vegetation in Thirty-Four Mile Brook.
25. When the quality of residue area runoff meets the criteria for discharge to Thirty-Four Mile Brook, BGM will continue to monitor and manage further runoff until sufficient data are available to demonstrate to the satisfaction of the State that (notwithstanding seasonal effects) the quality of this runoff has stabilised or is continuing to improve below those criteria. Final rehabilitation of D1 dam will not commence until this has been demonstrated.
26. BGM will include in the final landform lakes in the Pit G and Pit B areas, which will be linked to Thirty-Four Mile Brook. Detailed plans will be developed in consultation with and to the satisfaction of the State showing lake design, inflow and outflow structures, slopes, and proposed vegetation types, prior to final rehabilitation commencing. Measures to maximise the area of shallows in the lakes will be investigated and



implemented where practicable. The design will include predicted hydrological responses and impacts on long-term salinity in 34 Mile Brook.

27. Detailed rehabilitation prescriptions for the mining area will be developed with the primary objectives of stabilising surfaces, minimising erosion, minimising risk of saline groundwater seepage, and providing a sustainable vegetation system. Local provenance native species will be used where possible, although other species may be used where they provide advantages in meeting the primary objectives.
28. In the event of mine dewatering being necessary, BGM will ensure that the salinities of water bodies and water courses receiving discharges do not exceed 5,000mg/l TDS as a result of those discharges; and will monitor and report impacts of such release on downstream vegetation, and adjust procedures as appropriate.
29. BGM will continue to monitor surface and groundwater in the area, as part of the regional programme established in the early 1980's, and report findings to the State.
30. BGM will develop rehabilitation strategies and prescriptions in consultation with the State, and monitor and report on the success of rehabilitation.