

**Expansion of Ewington Coal Mine, Ewington II,  
Collie — proposed change to environmental  
conditions**

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**The Griffin Coal Mining Company Pty Limited**

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

**Environmental Protection Authority  
Perth, Western Australia  
Bulletin 764  
December, 1994**

BT 0.

#### 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 16 December 1994.

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## Summary

The Environmental Protection Authority has received a proposal from the Griffin Coal Mining Company Pty Limited (the proponent) for the expansion of the Ewington open cut coal mine. The planned addition (Ewington II) is immediately east of Griffin's previously approved Ewington mine (Ewington I), and approximately five and a half kilometres east of the town of Collie. This expansion was assessed by the EPA as an addition to the existing operation under Section 46 of the Environmental Protection Act.

Seventy per cent of the area involved is State Forest managed by the Department of Conservation and Land Management, with the remainder freehold and owned by Griffin. Mining is proposed over a total area of 495 hectares and would be an open cut operation with continuous dewatering in advance of the mining face.

The key environmental issues identified during the EPA's assessment of the original proposal were the protection of rare fauna, the integrity of the State Forest estate, rehabilitation and dieback disease management, noise, dust, and mine dewatering. The potential impacts for Ewington II are the same as those previously identified for Ewington I, with increased potential for adverse noise and groundwater impacts on residents of the Shotts townsite.

The environmental conditions applied to the original Ewington proposal addressed the development of an Environmental Management Programme, noise limits, dust limit, mine dewatering operation, mine dewatering water disposal, and decommissioning.

The EPA has made recommendations which, if complied with by the proponent, would make the project environmentally acceptable. In relation to noise and groundwater drawdown effects, effective management for compliance should consider cumulative impacts between the Ewington II operation and existing mining projects. The EPA recommends that the original environmental conditions for noise control be modified due to the close proximity of the Ewington II mine site to the township of Shotts. The EPA has also recommended expansion of the existing requirement for an Environmental Management Programme to address cumulative effects arising from the revised location.

<b>Summary of Recommendations</b>	
1	The project would be environmentally acceptable subject to compliance with the conditions recommended in this report, and the proponent's commitments
2	Modification of condition 4 for consistency with noise limits attached to Western Collieries' Premier operation
3	Modification of condition 3 to extend the requirements of the Environmental Management Programme to include the prediction of noise impacts

# 1. Introduction and background

In September 1992 the Griffin Coal Mining Company Pty Limited (Griffin) received approval from the Minister for the Environment to develop an open cut coal mining operation over the Ewington deposit, approximately one and a half kilometres east of the town of Collie (figure 1). This mine is now referred to as Ewington I, and was originally proposed to support Griffin's bid to supply coal to the Collie coal-fired Power Station. Ewington I was assessed by the Environmental Protection Authority (EPA) at the level of Consultative Environmental Review (CER) in 1991 (Griffin 1991; EPA 1992a).

The environmental impacts associated with the Ewington I proposal were identified as:

- impacts on rare fauna;
- rehabilitation and dieback disease management;
- noise and dust impacts; and
- impacts on regional borefields as a result of mine dewatering.

The Ministerial Conditions applied to the original Ewington I proposal, issued in 1992, addressed the management of these impacts. A copy of the Minister's Statement of Conditions for the original proposal is included in Appendix 1.

In response to changes to the power station project, Griffin has chosen to delay the development of Ewington I, and proposes to first develop Ewington II, situated immediately east of the larger Ewington I deposit. The Ewington II proposal will use the infrastructure proposed in the 1991 Consultative Environmental Review (CER) document and features similar environmental issues. The major differences between the Ewington I and II projects, are the changes in location, and the smaller size of the second pit.

The present proposal was referred to the EPA by the Department of Resources Development in August 1994. Under the *Collie Coal (Griffin) Agreement Act, 1979*, Griffin is required to give notice to the Minister for Resources Development of any plans to significantly vary its activities.

This assessment report is required because the new area did not receive environmental approval as part of the 1992 Statement. Therefore, the new area has been considered as a change to the 1992 proposal and, under Section 46 of the Environmental Protection Act, the Minister for the Environment sought EPA advice regarding possible changes to the existing environmental conditions to incorporate the expanded area of operation.

## 2. Summary description of proposal

The Ewington II proposal involves the extraction of coal from the Collie coal basin over an area of 495 hectares. Griffin proposes to develop the Ewington II deposit as an open cut mining operation with continuous dewatering in advance of the coal mining face. It is intended that the mine would eventually operate 24 hours a day for 363 days of the year. The mine is expected to have an operational life in excess of 20 years, depending on future demands for coal.

The infrastructure at the site will include a mine support and administration complex, access and haul roads, a rail spur, power and water reticulation and ancillary facilities. A coal processing plant will also be constructed. These facilities will be located between the Ewington I and II sites and could support both operations.

There will be some time delay between the commencement of mining and the commissioning of the processing facility at the Ewington site. During this period, coal will be transported to the existing Muja Power Station.

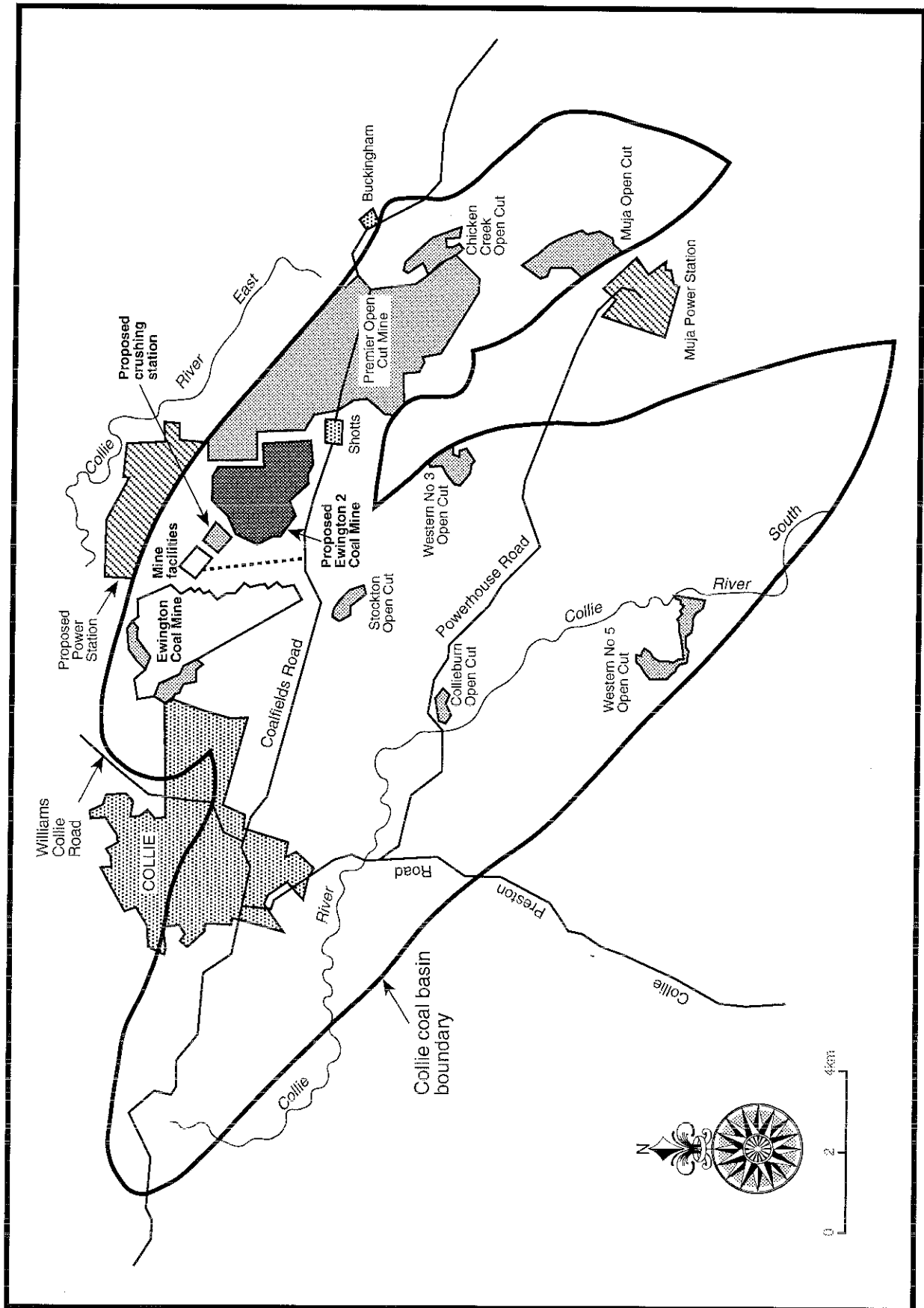


Figure 1: Location of the Ewington 2 coal mine, Collie Basin.

The environmental issues involved with the expanded proposal are identified and discussed in a Notice of Intent (NOI) prepared for the Griffin Coal Mining Company Pty Limited (Griffin 1994). Griffin's 1994 NOI was submitted to the Department of Resources Development as a requirement of the Collie Coal (Griffin) Agreement Act. The proponent has concluded that the potential impacts on vegetation, fauna, drainage, and groundwater quality and quantity are essentially the same as for Ewington I and are intended to be managed in a similar manner.

The proponent has made similar commitments for the environmental management of Ewington II to those made for Ewington I. A consolidated list of all the environmental commitments made by Griffin is included in Appendix 2; the proponent remains bound by all of these commitments.

The EPA has taken this opportunity to review previous conditions in the light of current environmental knowledge, policies, Department of Environmental Protection procedures, and progress of the project, with a view to consolidating the conditions that remain applicable into one comprehensive statement. Conditions that have had substantive changes made are highlighted with an asterisk in section 6. Similarly, the proponent has taken this opportunity to review their environmental commitments. One complete statement of current conditions and commitments facilitates efficient compliance auditing, and reporting of environmental performance by the proponent. It consolidates the environmental obligations of the proponent under Part IV of the Environmental Protection Act.

A schedule of those commitments that the Department of Environmental Protection will regularly audit is also included in section 6.

### **3. Environmental impact assessment process**

The Minister for Resources Development referred Griffin's report to the Minister for the Environment who requested the EPA to report to him under Section 46 of the Environmental Protection Act on the effect of the new proposal on the 1992 Statement of Conditions.

The NOI prepared for Griffin was distributed to the Departments of Minerals and Energy (DME), Conservation and Land Management (CALM), Agriculture (DAg), and Resources Development (DRD), the Water Authority of Western Australia (WAWA), and the Shire of Collie for their comments on the environmental issues involved.

The main environmental issues identified from the review by involved agencies are:

- noise impacts on neighbouring residents;
- impacts from mine dewatering on regional borefields; and
- impacts on residents of Shotts townsite.

#### *Limitation*

This evaluation has been performed using information currently available. The information has been provided by the proponent through preparation of the NOI, by Department of Environmental Protection officers utilising their own expertise and reference material, by utilising expertise and information from other State government agencies, and by contributions from independent consultants and EPA members.

The EPA recognises that further studies and research may affect the conclusions. Accordingly, the EPA considers that if the proposal has not been substantially commenced within five years of the date of this report, then such approval should lapse. After that time, further consideration of the proposal should occur only following a new referral to the EPA.

## **4. Evaluation**

The EPA has reviewed all available information relating to the proposal described in the NOI document. Following consideration and evaluation of this information, as discussed below, the EPA recommends approval of the modified proposal.

### **Recommendation 1**

**The Environmental Protection Authority has concluded that the proposal by The Griffin Coal Mining Company Pty Limited for the expansion of the Ewington Open Cut Coal Mine would be environmentally acceptable subject to the following key points:**

- **implementation of an approved environmental management programme; and**
- **continuation of environmental monitoring.**

**Accordingly, the Environmental Protection Authority recommends that the proposal could proceed subject to:**

- **the Environmental Protection Authority's recommendations in this Assessment Report (Recommended Environmental Conditions are listed in Section 6); and**
- **the proponent's commitments as consolidated in October 1994 (see Appendix 2).**

The EPA's evaluation of the issues which lead to this conclusion are set out below.

The EPA considers that other issues associated with the proposal are adequately addressed in the proponent's NOI and in the Ministerial Conditions and proponent's commitments attached to the approved Ewington proposal, as signed on 3 September 1992.

### **4.1 Noise impacts on neighbouring residents**

#### **4.1.1 Objective**

To ensure that the amenity of neighbouring land users and residents is protected from environmentally significant noise impacts.

#### **4.1.2 Evaluation framework**

##### **Technical information**

Predicted noise impacts as a result of the original Ewington I proposal were greatest for residents of Collie, as the proposed mine pit extended within one and a half kilometres of the eastern part of the town.

Noise modelling undertaken by the proponent for Ewington I determined that in a worst case scenario residents in the eastern part of Collie would experience noise levels of 44 dB(A). This noise level would be generated in an intermittent manner only (Griffin 1991).

The proposed Ewington II mine will be located an additional three kilometres away from Collie. The sources of noise generation, that is mining equipment and methods, will be similar to those for Ewington I.

Noise generated as a result of the proposal occurs through:



- mining activity;
- blasting;
- crushing and processing operations; and
- materials transport.

Of these sources, the crushing and processing facility is the only fixed source of noise generation.

As shown in figure 1, with the development of the Ewington II mine away from Collie, the closest residents are now those in the Shotts townsite. The coal processing plant will be located approximately three and a half kilometres from Shotts, and for the first 5 to 10 years of mining the coal face will be at least one and a half to two kilometres from the town.

Throughout the life of the Ewington II mine, however, operations would become progressively closer to Shotts which is only 700 metres from the south eastern corner of the minesite boundary. Griffin propose to establish a bund around the edge of the mine, to mitigate noise generated within the mining area. A portion of the bund along Coalfields Road will also be vegetated, providing a visual screen for the operation.

Machinery movements associated with the establishment of the bund, and the excavation of the south east corner of the mine, may be significant noise contributors to residents of Shotts. The impact of these activities on residents would be dependent on the duration of the noise event, and existing background levels, which the proponent has yet to determine. The proponent has made a verbal commitment to undertake the construction of the bund during the daytime only.

The Department of Environmental Protection has received some ambient noise monitoring data for the Shotts and South Shotts localities as part of the approval processes for other operations. This summary data is presented below (Western Collieries Ltd 1994), where  $L_{eq}$  provides a guide to the average noise level distribution in the area,  $L_{90}$  is the noise level exceeded 90 per cent of the time (this is interpreted as being the ambient), and  $L_{mn}$  is the minimum noise level recorded over the monitoring period.

**Table 1: Existing noise levels for the Shotts and South Shotts localities**

Locality	Daylight hours			Evening hours
	$L_{eq}$	$L_{90}$	$L_{mn}$	$L_{mn}$
Shotts	40	29	19	17
South Shotts	38	30	22	19

As mining will commence up to two kilometres away from Shotts, the noise impacts associated with the early stages of the proposal may be manageable if they are restricted to daytime hours, between 7am and 7pm [or a 12 hour day shift period] when the allowable noise level under the recommended environmental conditions is greatest. The proponent has made a commitment to undertake noise monitoring and modelling prior to the commencement of mining, and will continue to do so once the mine is operational. This would provide for potential impacts to be determined, and appropriate management strategies to be introduced, prior to mining moving closer to Shotts, when the potential for adverse noise impacts is greater. Modelling should also determine if noise impacts can be managed during night time periods, and should consider noise generated by all four sources listed above.

If ongoing noise level monitoring indicates that vibration, airblast and noise levels generated by blasting are excessive, blasting procedures and technology will be carefully reviewed and refined to reduce these impacts to levels acceptable under EPA licence conditions (Griffin 1994). If management measures cannot be shown to control noise sufficiently, then access to coal reserves closest to Shotts may be restricted.

### *Transport*

There will be a short term (12 to 18 months) increase in coal haulage by public road prior to the commissioning of the coal process plant. Two routes are currently under consideration to allow coal haulage between the proposed Ewington II mine and the Chicken Creek/Muja operations. Both routes will pass Shotts townsite, and the traffic passing through Collie will remain unaltered.

The short term increase of 25 to 30 truck movements per day is not expected to cause a significant impact (Griffin 1994). Griffin has made a commitment that the coal transportation operation will only occur during daytime hours.

### **Comments from key government agencies**

The Shire of Collie requested additional information about the potential impacts arising from noise and vibration effects. The Shire of Collie claimed that Griffin has substantial responsibility to manage impacts on nearby residents (O'Keefe, J. 1994, pers. comm., 18 August). The Shire stated that Griffin should, preferably jointly with Western Collieries Ltd, consult with Shotts residents/property owners in respect of possible effects from their proposed mine. The Shire also requested consultation regarding noise, vibration, and spillover effects on adjacent roads, and the location of the rail spur link, as these are all issues with the potential to adversely impact upon the community in general.

The Department of Resources Development was also concerned about the potential for noise impacts on the Shotts townsite, particularly during the latter stages of the project. DRD considered it necessary that noise levels be predicted for the Shotts townsite as it is closer to the proposed minesite than Collie (Dean, R. 1994, pers. comm., 1 August).

### **4.1.3 Evaluation**

The EPA considers that the management of noise would be a significant issue, particularly as Griffin intend that Ewington II would operate over a 24 hour period for 363 days a year.

#### *Consistency of noise limit conditions*

The requirements for noise management within the Collie coal basin should be consistent for all operators and operations. The noise conditions attached to the nearby Western Collieries' Premier coal mine have previously been amended through a Section 46 assessment (EPA 1992b). The EPA considers that the present assessment is an appropriate time to modify noise limits attached to the Ewington operations. In accordance with the amended conditions for the Premier coal mine, published on 6 April 1992, the noise limits set out in the Ministerial Conditions for Ewington should be altered to read as in section 6 below.

The EPA concludes from the modelling presented by Griffin in the 1991 CER (Griffin 1991) that the noise impacts associated with the Ewington II proposal are manageable for residents of Collie. To date, however, the proponent has not conducted any noise modelling to determine if the noise limits contained in the Minister's Statement are achievable for the closest residents in Shotts townsite. If these limits cannot be achieved through operational procedures, then other management strategies, which could compromise access to some coal, would need to be addressed.

#### *Management of noise impacts on Shotts townsite*

As the Ewington II operation would be considerably closer to the Shotts townsite than Ewington I the proponent should have an appropriate strategy to ensure that impacts on nearby residents can be appropriately managed at the necessary time. The acceptability of noise impacts on residents from both the crusher facility and the mining face should be determined through appropriate noise prediction models. If predicted noise levels cannot comply with the noise limits contained in the Ministerial Statement, the proponent should prepare and implement a management strategy detailing strategies for managing unacceptable noise impacts so that compliance is achieved.

The EPA is satisfied that initial operations at the most north westerly extent of the Ewington II pit could be managed to achieve the noise limits required under the Ministerial Conditions. This is based on: the distance of the crushing facility and mining area from Shotts; the use of bunding to mitigate noise; and the results of earlier noise modelling undertaken by the proponent for the Ewington I proposal (Griffin 1991). As the pit approaches Shotts, however, this degree of certainty reduces.

To date the proponent has not conducted any noise modelling to determine if these limits are achievable for the life of the Ewington II operation. This should be conducted prior to operations commencing, and should be revised throughout the life of the mine to incorporate the results of the ongoing noise monitoring programme. The Department of Environmental Protection has an established auditing programme to determine if the proponent is complying with the statutory requirements of the conditions imposed by the Minister.

#### *Management of cumulative noise impacts from existing operations*

The management of noise impacts is complicated by difficulties in determining the exact source of an impact when there is more than one of the same kind of activity within an area. In these circumstances impacts can not easily be attributed to a particular operator. This would be the case if both Western Collieries and Griffin were operating in the vicinity of Shotts townsite.

The close proximity of the Ewington I and II operations to Western Collieries operations in the Collie coal basin creates the potential for cumulative noise impacts from all operators to adversely affect residents.

Monitoring results collected by Western Collieries and included in Table 1, section 4.1.2, indicate that ambient noise levels recorded for Shotts are presently low. The potential for adverse cumulative noise impacts highlights the necessity for Griffin to conduct pre-construction monitoring of ambient noise levels to enable their contribution to future noise levels to be determined.

The EPA will not accept the future noise of Western Collieries being considered as part of the ambient noise in Griffin's determination of the existing environment. Ambient noise should be taken to be that  $L_{A90}$  noise level that existed prior to the commencement of either operation. As the existing ambient noise levels (prior to operations commencing) have been measured to be less than 35 dB(A), then under the relevant conditions for each company, Griffin, and Western Collieries, individually will have to achieve a night time noise level of:

- 40 dB  $L_{A10,1}$  hour slow and 50 dB  $L_{Amax}$  slow between 2200 hours and 0700 hours on any day when measured on any noise-sensitive premises;

If Griffin achieve the noise limits required under condition 4, then the contribution of noise from the Ewington operations to the total cumulative noise impacts on residents should be manageable.

The environmental conditions attached to Western Collieries' Premier mine site required that impacts on Shotts townsite be managed prior to the commencement of any mining activity. The EPA's assessment of the Premier proposal determined that the proponent could not manage noise and dust impacts on residents of the Shotts townsite. The original Premier proposal included mining to within 600 metres of the nearest residence, with the crusher located approximately 400 metres from the nearest residence. The condition placed on that operation required either modification of the proposal or relocation of residents.

While the EPA recognises that the Premier mine, and importantly, the location of the crusher facility, is significantly closer to Shotts townsite than the Ewington II mine (400 metres for Premier compared with three kilometres for Ewington), it also notes that the Shire of Collie has already received complaints from Shotts residents in response to noise emissions from the Western No. 5 operation. This latter mine is approximately eight and a half kilometres south of Shotts (see figure 1).

The noise complaints already reported by the Shire of Collie from the Western No. 5 operation (O'Keefe, J. 1994, pers. comm.) highlight the widespread nature of noise impacts in the

context of low ambient noise levels. Practices at Ewington will require careful predictive modelling, monitoring, and management to avoid adverse impacts on residents.

The EPA concludes that Griffin has a responsibility to manage its impacts on Shotts, and considers that appropriate management could be achieved through the existing requirements for an Environmental Management Programme [Ministerial condition 3]. Within the EMP the proponent should predict the potential noise impacts associated with each phase of the project, including transportation operations, and detail the management measures required to achieve the noise limits required by condition 4, for the life of the project. The EMP should be prepared to the satisfaction of the Department of Environmental Protection.

### **Recommendation 2**

**The Environmental Protection Authority recommends that noise limits established for Griffin's Ewington operation should be amended to be made consistent with those attached to Western Collieries' Premier operation.**

The recommended noise limits are shown in condition 4 of the Recommended Environmental Conditions contained in section 6.

### **Recommendation 3**

**The Environmental Protection Authority recommends that Griffin should undertake appropriate predictive modelling of noise impacts before mining commences, and for each phase of the proposal as part of the EMP. If unacceptable noise levels are predicted then the EMP should detail appropriate management strategies for amelioration. The EMP should be prepared to the satisfaction of the Department of Environmental Protection.**

## **4.2 Impacts of minesite dewatering on regional borefields**

### **4.2.1 Objective**

To ensure that the mine dewatering operation can be adequately managed to prevent significant environmental impacts on surrounding borefields.

### **4.2.2 Evaluation framework**

#### **Technical information**

##### *Groundwater quantity*

As detailed in the Ministerial Conditions for the Ewington I mine, Griffin is responsible for maintaining private groundwater users' water supplies if they are adversely affected by mine dewatering operations.

The EPA notes that water from the State Electricity Commission of Western Australia's (SECWA's) Shotts borefield, which supplies the Shotts townsite, is also used as a standby supply for the Muja Power Station.

The details of the groundwater dewatering programme proposed for the Ewington II operation are still to be finalised. It is estimated that groundwater abstraction will be approximately 30 ML/day, decreasing to 25 ML/day after two years (Griffin 1994).

The drawdown in the shallow aquifer as a result of the Ewington I operation was estimated to be greatest adjacent to the mine pit, where falls in groundwater of up to three metres were predicted (Griffin 1991). In the eastern part of Collie, groundwater levels were predicted to fall

by approximately 0.1 metres, and in the Shotts townsite, additional drawdown was estimated to be less than 0.1 metres.

Groundwater drawdown over the Shotts borefield as a result of Ewington II can be expected to be greater than that estimated for Ewington I as the centre of the zone of influence is now closer to the town. Predicting the pattern of groundwater drawdown is more complicated than simply transposing the drawdown contours determined previously over the new mine area because the actual groundwater drop will be influenced by the smaller scale of the Ewington II mine when operating in isolation, and by cumulative drawdown if and when both Ewington I and II pits are operating. Previous models can, however, provide an indication of the potential magnitude of drawdown resulting from the expansion.

#### *Cumulative impacts of mining operations on groundwater drawdown*

The combined effects of the Ewington I and II operations and of Western Collieries Ltd Premier mine require consideration. All mining operations surrounding Shotts townsite would dewater the same superficial aquifer. Given the close proximity of these mining activities, it may not be possible to apportion responsibility for groundwater drawdown to a particular party (Tingey, W. 1994, pers. comm., 1 September).

With the close proximity of the Ewington II mine area to that of Ewington I and Premier, dewatering operations may have a cumulative impact on the quantity of groundwater. Additional dewatering proposed for Ewington II is likely to adversely affect the supply of groundwater to other users. Final quantification of the magnitude of this impact is yet to be determined, but, as discussed above, it is anticipated to be between 25 and 30 ML/day. Consequently, the cumulative impacts of groundwater drawdown must be managed. Appropriate management measures would be implemented through the proponent's commitments (see Appendix 2), and the existing Ministerial Conditions, as discussed in section 4.2.3.

#### *Groundwater quality*

Groundwater samples collected from the proposed mine area satisfy the water quality criteria established by the WAWA for discharge to the environment. The Total Dissolved Solids (TDS) value of abstracted groundwater is expected to increase as mining proceeds (Griffin 1994). If the TDS value of mine water exceeds the WAWA licence condition of 550 mg/L, Griffin would have to manage its disposal to comply with that licence requirement.

Griffin has committed to collecting additional information on groundwater quality (Griffin 1994) and, if required, initiating the appropriate treatment to ensure that future discharge complies with the water quality criteria established by the WAWA. Future management options include the use of abstracted groundwater to supply SECWA's demand for cooling water for nearby power stations (Griffin 1994).

### **Comments from key government agencies**

The Water Authority's general concerns with this proposal are the same as for Ewington I, being:

“to protect and manage the water resources of the Coal Basin while supporting the primary purpose of mining and electricity generation as within the Authority policy ‘Collie Coal Basin Water Resources Management Strategy, 1988’” (Tingey, W. 1994, pers. comm., 3 August).

The primary concern of the Water Authority remains the impact of dewatering on the adjacent environment and other landusers, especially users of groundwater for domestic purposes.

In recognition of these concerns, the Ministerial Conditions for Ewington I required the preparation and implementation of a groundwater management plan as part of the EMP.

The Shire of Collie's response to the NOI expressed reservations regarding the discharge of mine water, and the adequacy of monitoring to ensure that all discharge complies with WAWA licence requirements. They were specifically concerned with the disposal of mine water having

a TDS value greater than 550 mg/L. Other issues raised included the need for clarification of the possible spillover effects of surface water discharge and groundwater drawdown on the recreational area at Stockton. The Shire was also concerned that the responsibility for groundwater drawdown would be difficult to establish as there are multiple mining operations proposed (O'Keefe, J. 1994, pers. comm., 18 August).

### **4.2.3 Evaluation**

Advice from the WAWA indicates that impacts on groundwater quality and quantity as a result of the Ewington II operation can be managed within the existing Ministerial Conditions (Tingey, W. 1994, pers. comm., 1 September).

As outlined in the Ministerial Statement for the original Ewington proposal, the EMP required for the proposal should address the management, monitoring, auditing and reporting requirements of impacts arising from the mine dewatering operation (condition 3). The proponent is also required to maintain private groundwater users' water supplies where they become affected by mine dewatering operations (condition 6), and to manage the disposal of water from the mine dewatering operation to the requirements of the WAWA (condition 7).

Conditions 3 and 6 provide scope for the cumulative impacts of Griffin's dewatering with that of other mine operators to be addressed.

The EPA concludes that potential adverse impacts arising from either, or both, of the Ewington operations can be adequately managed within the existing Ministerial Conditions.

## **5. Conclusions**

Following consideration of the 1994 NOI report prepared by the Griffin Coal Mining Company, plus the written and oral advice of the relevant government regulatory agencies and the advice of officers of the Department of Environmental Protection, the EPA considers that the proposal is an extension of the previously approved mining operation. Accordingly, the potential environmental impacts of the proposal are regarded as manageable under the same Ministerial Conditions, with modifications to three of these. In reaching this conclusion, the EPA identified the key issues as:

- noise emissions from mining, processing, and transportation operations;
- potential for dewatering to cause excessive drawdown in groundwater supplies to other residents; and
- management of impacts, specifically on the residents of Shotts townsite.

The EPA concludes that the environmental impacts associated with both the Ewington I and II operations have been adequately identified in documentation provided by the proponent. The EPA considers that the proposed expansion should be managed under the same environmental management programme as has been specified previously, with three modifications to those conditions.

In the next section, the EPA has detailed the recommended changes to the Minister for the Environment's Statement as a result of this assessment. This statement replaces the previous Minister's statement. The conditions that have been substantially modified are highlighted with an asterisk.

## **6. Recommended environmental conditions**

The following Recommended Environmental Conditions would amend the Minister's original Statement (Appendix 1).

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

PROPOSAL: EWINGTON OPEN CUT COAL MINE, COLLIE (501/906)  
CURRENT PROPONENT: THE GRIFFIN COAL MINING COMPANY PTY LIMITED  
CONDITIONS SET ON: 3 SEPTEMBER 1992

The implementation of this proposal 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 proposal, including the mining operations in the Ewington II open-cut mine, the proponent shall fulfil the commitments made in the Consultative Environmental Review (1991) and in the "Notice of Intent for: Ewington II Open-Cut Mine" (July 1994), reported on in Environmental Protection Authority Bulletin 764; provided that the commitments are not inconsistent with the conditions or procedures contained in this statement.

A schedule of environmental management commitments (November 1994) which will be audited by the Department of Environmental Protection 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 is not substantial, on the advice of the Environmental Protection Authority, those changes may be effected.

**3 Environmental Management Programme**

In order to plan for such a large earthmoving operation with large-scale environmental impacts, an Environmental Management Programme is required.

- \*3-1 Prior to the commencement of the mining operation and for each phase of the project, the proponent shall prepare an Environmental Management Programme to plan for and monitor the effects of that phase of the proposal and to provide appropriate management strategies based on the monitoring and modelling results. The Environmental Management Programme shall be consistent with the provisions of Clause 7 of the Collie Coal (Griffin) Agreement Act.

This Programme shall address, but not necessarily be limited to, the management and predictive modelling, monitoring, auditing and reporting requirements of the following issues:

1. rare fauna management;
2. noise, dust and risk impacts on surrounding residents;

3. impacts from the mine dewatering operation;
4. impact on the conservation values and area of the State Forest;
5. dieback disease management; and
6. rehabilitation to an acceptable final land use.

3-2 The proponent shall implement the Environmental Management Programme required by condition 3-1.

#### **4 Noise Limits**

4-1 The proponent shall conduct operations so that noise emissions do not unreasonably impact on the surroundings.

\*4-2 The proponent shall ensure that noise emissions do not exceed:

- 40 dB  $L_{A10,1 \text{ hour}}$  slow and 50 dB  $L_{A\text{max}}$  slow between 2200 hours and 0700 hours on any day when measured on any noise-sensitive premises;
- 45 dB  $L_{A10,1 \text{ hour}}$  slow and 55 dB  $L_{A\text{max}}$  slow between 1900 hours and 2200 hours on any day, and between 0700 hours and 1900 hours on Sundays and gazetted public holidays, when measured on any noise-sensitive premises;
- 50 dB  $L_{A10,1 \text{ hour}}$  slow and 70 dB  $L_{A\text{max}}$  slow between 0700 hours and 1900 hours on Monday to Saturday inclusive, when measured on any noise-sensitive premises; and
- 65 dB  $L_A$  slow when measured at or near the boundary of premises that are not noise-sensitive premises (other industries);

where such emissions would result in the noise level present at the affected premises exceeding the ambient noise level present at any time by more than 5 dB  $L_A$  slow.

4-3 The proponent shall ensure that noise emissions from those activities which are of concern to occupiers of noise-sensitive premises do not exhibit tones, amplitude and frequency modulation, and impulsiveness of a nature which increases the intrusiveness of the noise.

4-4 The proponent shall conduct noise surveys and assessments in consultation with the Department of Environmental Protection.

#### **5 Dust Limit**

The dust generated by the proposal should be kept within environmentally acceptable limits. Long term dust levels will be determined under Part V of the Environmental Protection Act.

5-1 The proponent shall not cause short term dust levels at residential premises surrounding the mine to exceed 1000 micrograms per cubic metre ( $\mu\text{g}/\text{m}^3$ ), measured continuously over 15 minutes.

#### **6 Mine Dewatering Operation**

The proponent is responsible for maintaining private groundwater users' water supplies affected by mine dewatering operations.

6-1 The proponent shall prepare a water supply plan, as part of the Environmental Management Plan (required by condition 3), which describes measures to ensure adequate domestic and stock water supplies for any existing private users of the groundwater resource affected by the dewatering operation, to the requirements of the Minister for the Environment on advice of the Department of Environmental Protection and the Water Authority of Western Australia.



6-2 The proponent shall implement the plan required by condition 6-1 to the requirements of the Department of Environmental Protection on advice of the Water Authority of Western Australia.

**7 Mine Dewatering Water Disposal**

The proponent is responsible for managing the disposal of the water from mine dewatering activities.

7-1 The proponent shall utilise and/or dispose of any water occurring in or collecting on the Mining Lease (including water pumped or drawn from mines) in accordance with a water management plan which will deal with the supply of water to power stations and other utilities and the disposal of water in an acceptable manner. The development of this plan, which will be consistent with the provisions of relevant State Agreement Acts, is the responsibility of the Water Authority of Western Australia.

**8 Decommissioning**

8-1 The proponent shall achieve the satisfactory decommissioning of the project, removal of the plant and installations and rehabilitation of the site and its environs.

8-2 At least six months prior to decommissioning, the proponent shall prepare a decommissioning and final rehabilitation plan to achieve the objectives of condition 8-1.

8-3 The proponent shall implement the plan required by condition 8-2.

**9 Proponent**

The ministerial conditions legally apply to the nominated proponent.

9-1 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.

**10 Time Limit on Approval**

The environmental approval for the proposal is limited.

10-1 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 the statement of 3 September 1992 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.)

**11 Compliance Auditing**

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

11-1 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.

- 11-2 The proponent shall subsequently implement the Audit Programme required by condition 11-1.

### **Procedure**

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 government agency.

If the Department of Environmental Protection, 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.

### **Note:**

The reporting requirements for these conditions may be effected through the reporting requirements of the State Agreement Act, subject to meeting the timing requirements of the conditions.

## **Schedule of Environmental Management Commitments to be audited by the Department of Environmental Protection**

### RARE FLORA

- Griffin will conduct a rare flora study for the location and mapping of rare and vulnerable plant populations.
- Where feasible, rare plants which would be removed as part of the mining operations will be transplanted into rehabilitated areas, used as a source of seed for rehabilitation purposes or used as nursery stock.

### DIEBACK

- A detailed dieback hazard map of the minesite will be produced and regularly updated.

### WEEDS

- Weeds that become established will be controlled by regular site inspection and, where necessary, eradication programmes.

### FIRE

- A fire management plan will be developed in conjunction with CALM, the Bush Fires Board and the local Bushfire Brigades.

### REHABILITATION

- Rehabilitation to local native species will be undertaken progressively throughout the life of the mine.

### FERAL ANIMALS

- The introduction of potential feral species will be prevented by the banning of all pets from the project area.
- Feral fauna will be monitored on a regular basis and appropriate control programmes implemented where necessary, in consultation with the Agriculture Protection Board Pest Control Division and CALM.

### SURFACE WATER

- A surface water management plan will be developed, prior to the commencement of mining, in consultation with the appropriate authorities.

## GROUND WATER

- Mine water will be managed to meet effluent discharge quality criteria consistent with achieving the water quality objectives defined in the Water Resources Management Strategy for the Collie Coal Basin.
- Monitoring of the various effluent streams will be undertaken in accordance with the programme developed in the management programme and results reported to the appropriate authorities.

## NOISE

- Further noise modelling studies will be conducted during detailed mine planning to confirm the potential degree of impact, particularly with regard to potential adverse noise impacts under certain atmospheric conditions.
- A noise monitoring programme will be implemented under a range of operational and meteorological conditions. If monitoring identifies any significant adverse impact on nearby residents, remedial action will be taken to reduce noise emissions. Such action will involve application of engineering expertise to specific problem areas.

## DUST

- A comprehensive dust monitoring programme will be implemented, so that any problems may be readily identified and rectified.

## PUBLIC CONSULTATION

- Griffin's staff will be available to respond to queries and problems raised by the local community. Every effort will be made to resolve any issues which may arise and records will be kept of all enquiries and complaints to facilitate this.

## **7. References**

1. The Griffin Coal Mining Company Pty Limited, 1994. *Notice of Intent for: Ewington II Open-Cut Mine*. Prepared by Halpern Glick Maunsell.
2. The Griffin Coal Mining Company Pty Limited, 1991. *Ewington Open-Cut Mine Consultative Environmental Review*. Prepared by Halpern Glick Maunsell.
3. Environmental Protection Authority, 1992a. *Ewington Open Cut Coal Mine, Collie*. Bulletin 612, March 1992. Environmental Protection Authority, Perth.
4. Environmental Protection Authority, 1992b. *Premier coal mine expansion, Collie*. Bulletin 666, December 1992. Environmental Protection Authority, Perth.
5. Western Collieries Ltd, 1994. *Premier Mine Development Environmental Management Programme, Development Stage*. WCL Internal Report Number 193.

## **Appendix 1**

**Statement of Conditions of Approval, 3 September 1992**



WESTERN AUSTRALIA  
MINISTER FOR THE ENVIRONMENT

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

EWINGTON OPEN CUT COAL MINE, COLLIE (501)

THE GRIFFIN COAL MINING COMPANY PTY LTD

This proposal may be implemented subject to the following 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 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 in the assessment of this proposal and published as Appendix 1 in Environmental Protection Authority Bulletin 612. (A copy of the consolidated list of 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 is not substantial, on the advice of the Environmental Protection Authority, those changes may be effected.

**3 Environmental Management Programme**

In order to plan for such a large earthmoving operation with large-scale environmental impacts, an Environmental Management Programme is required. This Programme could be progressively developed to address the environmental issues associated with the various stages or activities of the project. The programme should be submitted and approved prior to the commencement of those activities.

- 3-1 Prior to the commencement of each stage or activity of the project, the proponent shall prepare an Environmental Management Programme to plan for and monitor the effects of that stage of the project and to provide appropriate management strategies based on the monitoring results. The Environmental Management Programme shall be consistent with the provisions of Clause 7 of the Collie Coal (Griffin) Agreement Act.

Published on

- 4 SEP 1992

This Programme shall address, but not necessarily be limited to, the management, monitoring, auditing and reporting requirements of the following issues:

1. rare fauna management;
2. noise, dust and risk impacts on surrounding residents;
3. impacts from the mine dewatering operation;
4. impact on the conservation values and area of the State Forest;
5. dieback disease management; and
6. rehabilitation to an acceptable final land use.

3-2 The proponent shall implement the Environmental Management Programme required by condition 3-1.

#### **4 Noise Limits**

The noise generated by the coal mining operation should be kept within environmentally acceptable levels.

4-1 The proponent shall ensure that the noise emissions from the Ewington project do not cause or contribute to noise levels in excess of:

- 40 dB(A) between 10.00 pm and 7.00 am;
- 45 dB(A) between 7.00 pm and 10.00 pm on any day, and between 7.00 am and 7.00 pm on Saturday, Sunday and any gazetted public holiday; and
- 50 dB(A) between 7.00 am and 7.00 pm Monday to Friday inclusive, but excluding gazetted public holidays;

as measured at the nearest affected noise-sensitive premises.

Where the combined level of the noise emissions from this proposal and the normal ambient noise exceeds the levels specified above, this condition will be considered to be contravened only when the noise emissions from the proposal are determined to be dominant and significantly influencing the measured noise levels.

4-2 The proponent shall ensure that noise emissions from the proposal do not include tonal or impulsive components or other characteristics which make the noise more annoying than it would be in their absence.

4-3 The proponent shall conduct noise surveys and assessments in consultation with the Environmental Protection Authority.

#### **5 Dust Limit**

The dust generated by the proposal should be kept within environmentally acceptable limits. Long term dust levels will be determined under Part V of the Environmental Protection Act.

5-1 The proponent shall not cause short term dust levels at residential premises surrounding the mine to exceed 1000 microgrammes per cubic metre ( $\mu\text{g}/\text{m}^3$ ), measured continuously over 15 minutes.

#### **6 Mine Dewatering Operation**

The proponent is responsible for maintaining private groundwater users' water supplies affected by mine dewatering operations.

- 6-1 The proponent shall prepare a water supply plan, as part of the Environmental Management Plan (required by condition 3), which describes measures to ensure adequate domestic and stock water supplies for any existing private users of the groundwater resource affected by the dewatering operation, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority and the Water Authority of Western Australia.
- 6-2 The proponent shall implement the plan required by condition 6-1 to the requirements of the Environmental Protection Authority on advice of the Water Authority of Western Australia.
- 7 Mine Dewatering Water Disposal**  
The proponent is responsible for managing the disposal of the water from mine dewatering activities.
- 7-1 The proponent shall utilise and/or dispose of any water occurring in or collecting on the Mining Lease (including water pumped or drawn from mines) in accordance with a water management plan which will deal with the supply of water to power stations and other utilities and the disposal of water in an acceptable manner. The development of this plan, which will be consistent with the provisions of relevant State Agreement Acts, is the responsibility of the Water Authority of Western Australia.
- 8 Decommissioning**  
The satisfactory decommissioning of the project and removal of the plant and installations is the responsibility of the proponent.
- 8-1 At least six months prior to decommissioning, the proponent shall prepare a decommissioning plan.
- 8-2 The proponent shall implement the plan required by condition 8-1.
- 9 Proponent**  
The ministerial conditions legally apply to the nominated proponent.
- 9-1 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.
- 10 Time Limit on Approval**  
The environmental approval for the proposal is limited.
- 10-1 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).

## 11 Compliance Auditing

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

- 11-1 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.



Bob Pearce, MLA  
MINISTER FOR THE ENVIRONMENT

3 SEP 1992

#### NOTE:

The reporting requirements for these conditions may be effected through the reporting requirements of the State Agreement Act, subject to meeting the timing requirements of the conditions.



## **Appendix 2**

**Environmental Management Commitments, consolidated November  
1994**

The following commitments are those made by Griffin for both the Ewington I and II operations.

Griffin undertakes to fulfil the following commitments in accordance with the applicable State laws and regulations and with standards and procedures agreed with the State.

### CONSTRUCTION

- Access to the mine construction site will be strictly controlled, and all vehicles will be subject to strict dieback hygiene control. A construction phase dieback management programme will be prepared, in consultation with CALM, prior to the commencement of construction.
- Site clearing during construction will only be undertaken in accordance with prior approvals obtained from the Water Authority. A generally applicable minimum disturbance policy will be implemented.
- All employees will be instructed on the environmental policy of Griffin before commencing work on-site.
- Cemented laterite will be sourced from the area to be mined. If there is a shortfall in suitable material, Griffin will import suitable road making material. Griffin gives assurance that this shortfall will not be sourced from State Forest excepting that from existing gravel pits located in State Forest.

### VEGETATION

- Vegetation clearing ahead of mining will be restricted to the minimum required for safe working practices. No clearing of any bushland will be permitted without prior approval from the Water Authority.
- Griffin will conduct a flora study for the location and mapping of rare and vulnerable plant populations. Research into the propagation characteristics of these species will be undertaken to investigate the incorporation of such species into the rehabilitation programme.
- Any rare plants within proposed mining areas will only be removed after Ministerial approval.
- Where feasible, rare plants which would be removed as part of the mining operations will be transplanted into rehabilitated areas, used as a source of seed for rehabilitation purposes or used as nursery stock.

### DIEBACK

- An operational phase dieback management plan will be developed in consultation with CALM prior to the commencement of mining.
- A detailed dieback hazard map of the minesite will be produced and regularly updated.
- Griffin will identify dieback infected areas before topsoil stripping and stockpile the infected soil separately. It will be replaced low in the reconstructed landscape.
- As part of the management programme the following control measures will be taken:
  - A washdown area for dieback hygiene purposes will be established before commencement of works. Its location and design will be determined in consultation with CALM.

- All heavy machinery to be introduced for site work will be washed down.
- The work areas will be monitored for dieback disease, and if it is found, assistance and advice on the most appropriate procedures will be obtained from CALM.
- Regular surveys will be undertaken to assess the effectiveness of the control measures.

### WEEDS

- The introduction of weed seeds will be minimised by the rigorous dieback disease hygiene procedures.
- Weeds that become established will be controlled by regular site inspection and, where necessary, eradication programmes.

### DUST

- Dust will be managed to the satisfaction of the EPA by:
  - the use of water sprays on stockpiles,
  - the watering of haul roads in dry conditions,
  - the early and progressive implementation of rehabilitation.
- A comprehensive dust monitoring programme will be implemented, so that any problems may be readily identified and rectified.
- The dust monitoring programme will include rotation of a static dust sampler (dust deposit gauge) between two locations, one on the downwind boundary of the minesite, the second a few kilometres upwind of the minesite. A second dust sampler will be rotated between selected residences nearest to and downwind of the minesite. Samples will be collected quarterly from all locations. If dust levels become significantly elevated above baseline levels, action will be taken to control the source.

### FIRE

- Fire control will be implemented by:
  - the education of all personnel in fire prevention requirements,
  - the provision of trained fire-fighting crews at all times,
  - the maintenance of firebreaks around and within the minesite area.
- Fire control working arrangements will be developed in conjunction with CALM, the Bush Fires Board and the local Bushfire Brigades.
- Following construction of the roading network, if fire risk is significantly greater than the existing situation, Griffin will discuss implementation of appropriate fire control measures with CALM.
- Griffin undertakes to ensure that no waste coal will be left uncovered. All material with the potential to ignite will be buried deeply in the overburden dumps. At the completion of mining, the exposed coal face will be covered with overburden.

### NATIVE FAUNA

- Griffin will undertake discussions with CALM with regard to further survey and monitoring for rare and endangered fauna in the Ewington area.

- Griffin recognises the status of *I. obesulus* and will undertake discussions with CALM to determine further measures to protect it from local extinction.
- Griffin will undertake further consultation and/or survey to ascertain the presence of *M. eugenii*.
- If *D. geoffroii*, *P. calura* or *M. fasciatus* are found to be present in the Ewington area during further surveys, Griffin will undertake discussion with CALM to determine suitable management for these species.
- Native fauna will be protected or managed by the following actions:
  - minimisation of vegetation disturbance,
  - prohibition of firearms and pets on the minesite,
  - discussions with CALM on appropriate measures.
- Griffin currently incorporates habitat reconstruction criteria into ongoing rehabilitation at its existing mining operations in the Collie Basin. This practice will be continued and further refined for rehabilitation following mining at Ewington.

#### FERAL ANIMALS

- The introduction of potential feral species will be prevented by the banning of all pets from the project area.
- Feral fauna will be monitored on a regular basis and appropriate control programmes implemented where necessary, in consultation with the Agriculture Protection Board Pest Control Division.

#### LANDFORM

- Final pit design will ensure that the highwall is left at a stable angle, as determined in conjunction with the Department of Minerals and Energy.
- In contouring the final void, Griffin will take into consideration guidelines prescribed by the Department of Minerals and Energy publication "Guidelines on Safety Bund Walls Around Abandoned Open Pits, January 1991".
- Overburden dumping will be conducted in accordance with the overburden management programme developed prior to the commencement of mining. Overburden will be selectively dumped so that overburden materials likely to inhibit successful rehabilitation are buried at depth.
- The visual impact of mining will be minimised by:
  - designing overburden dumps so that wherever possible they are no higher than the natural topographic high points,
  - progressive rehabilitation,
  - screening from view where appropriate and practical.

#### SURFACE WATER

- A surface water management programme will be developed, prior to the commencement of mining, in consultation with the appropriate authorities.
- Prior to the commencement of mining activities in any area, drainage structures will be constructed to control water movement and divert runoff from undisturbed areas around the proposed mining area.

- Runoff management and drainage will be undertaken so that uncontaminated runoff from outside mining areas does not impinge on the operations. Contaminated water will be retained within the operational area and only discharged to the natural environment after treatment to a suitable quality.
- All waste oil and lubricants from workshops and servicing facilities will be collected and either recycled or taken off-site for disposal or resale.
- Griffin will monitor the surface water supplies of riparian users to the northwest of the Ewington I mine which would possibly be at risk of reduced surface water flows.

In the event of surface water supply to riparian users being adversely affected, investigation will be conducted to determine the appropriate action to ameliorate the problem. If there is no feasible alternative, Griffin will arrange with affected individuals to supplement their surface water supply to fulfil required needs.

Griffin would only consider itself liable to supplement surface water supplies of users if water usage from the affected source does not increase over the lifetime of the mine and the reduced supply can not be attributable to seasonal effects.

### GROUNDWATER

- Griffin will commission a bore survey of all bores within the calculated 0.5m drawdown contour for the shallow aquifer and selected private bores within the 0.1m drawdown contour prior to the commencement of dewatering. Griffin will then undertake to monitor selected bores as part of the overall mine dewatering monitoring programme.

If the groundwater monitoring programme indicates that dewatering is adversely affecting the supply of water from private bores, Griffin will investigate options to ameliorate the drawdown by modification to the dewatering programme. If this is not feasible, Griffin will arrange with private bore owners to supplement their groundwater supply to fulfil required needs, providing usage has not significantly increased.

- Mine water will be managed to meet effluent discharge quality criteria consistent with achieving the water quality objectives defined in the Water Resources Management Strategy for the Collie Coal Basin.
- If the EPA and WAWA recommend that SECWA takes additional groundwater from Griffin's Ewington minesite, then Griffin will undertake negotiations with SECWA with regard to making dewatering waters available to Muja Power Station via the existing pipeline.
- Monitoring of the various effluent streams will be undertaken in accordance with the programme developed in the management programme and results reported to the appropriate authorities.
- Griffin will undertake discussions with CALM to determine the need for monitoring for groundwater drawdown effects on the forest ecosystem and appropriate monitoring and management programmes.

### NOISE AND VIBRATION

- Further noise modelling studies will be conducted during detailed mine planning to confirm the potential degree of impact, particularly with regard to potential adverse noise impacts under certain atmospheric conditions.
- General mine noise will be managed by specifying noise emission limits on all mining equipment purchased.

- Noise monitoring will be undertaken in accordance with a noise monitoring management programme, and will take place under a range of operational and meteorological conditions. If monitoring identifies any significant adverse impact on nearby residents, remedial action will be taken.
- Blasting noise and vibration will comply with the appropriate licence standards issued by the EPA and will be controlled by:
  - ensuring that explosion gases are essentially devoid of energy by the time they emerge into the atmosphere,
  - firing blasts when there is a low probability of an atmospheric inversion being present,
  - firing blasts during daylight hours,
  - using firing delays and detailed blast hole loading design.
- Regular monitoring will be undertaken to develop a blast prediction model.
- Griffin will undertake discussion with CALM and other users of the Collie airstrip to develop an internal management plan for the operation of the Collie airstrip with respect to blasting on the Ewington minesite.
- If damage to property does occur due to blasting on the Ewington minesite, applications for compensation will be considered on a case-by-case basis.

## REHABILITATION

- A rehabilitation management programme will be prepared prior to the commencement of mining.
- Griffin will strip topsoil in two parts from cleared areas to be mined. The details of this procedure will be outlined in the rehabilitation management plan.
- Rehabilitation trials will be undertaken.
- Rehabilitation to local native species will be undertaken progressively throughout the life of the mine.
- Species selected for rehabilitation will meet the following criteria:
  - species which occur naturally in the development area,
  - species which are known to be able to readily establish themselves will be favoured,
  - species which have proved suitable for rehabilitation purposes in the Collie Basin will be favoured.
- Seedlings will be obtained from a certified disease-free nursery which will raise native seedlings from locally collected seed. Introduced seed will be obtained from commercial seed suppliers.
- Rehabilitation monitoring will be undertaken in accordance with the management programme to the satisfaction of CALM and the Department of Minerals and Energy through the Collie Coal Mines Rehabilitation Committee.
- Griffin will liaise with the appropriate authorities to develop completion criteria.

### PUBLIC CONSULTATION

- Griffin's staff will be available to respond to queries and problems raised by the local community. Every effort will be made to resolve any issues which may arise and records will be kept of all enquiries and complaints to facilitate this.

### REPORTING

- Griffin will report to the appropriate Government authorities regarding environmental management matters in accordance with the requirements of the Collie Coal (Griffin) Agreement Act, 1979.
- Griffin will submit an annual report to the Water Authority on the performance of the groundwater systems and the impact on other land uses.

### ADDITIONAL PROPOSALS

- Additional proposals under Clause 10 of the Collie Coal (Griffin) Agreement Act will be submitted as necessary.

### ABORIGINAL HERITAGE

- An Aboriginal sites survey will be conducted of the minesite prior to any site disturbance occurring.