Chapter 1

INTRODUCTION

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Abstract

The proposed conservation reserve at Lesueur of 27 493 ha is near Jurien Bay, some 220 km to the north of Perth. It has been recommended for reservation by botanists, the Australian Academy of Science, the Conservation Through Reserves Committee and the Environmental Protection Authority (EPA). These recommendations were endorsed by State Cabinet in 1976 and again in 1983, but the presence of coal deposits at the eastern end of the proposed conservation reserve has prevented reservation to the present day. The National Parks and Nature Conservation Authority recommended in 1989 that the Lesueur Area be declared a national park.

In March 1989 Canning Resources Pty Ltd and The Hill River Power Development Company Pty Ltd submitted a Notice of Intent (NOI) to the EPA which stated that the companies proposed to develop open cut coal mines and a power station within the proposed conservation reserve. The EPA decided that the proposal should be subject to the highest level of evaluation, and required the companies to prepare an Environmental Review and Management Programme (ERMP).

The EPA sought from the Department of Conservation and Land Management (CALM) a detailed evaluation of the nature conservation, landscape and recreation values of the Lesueur Area. This report was published as EPA Bulletin 424 (Burbidge et al. 1990). In May 1990 Canning Resources and The Hill River Power Development Company finalised their ERMP (which was compiled by consultants Dames and Moore) and this was released by the EPA for public comment until July 30, 1990. The CALM Report (EPA Bulletin 424) was released at the same time.

CALM decided to prepare a review of the ERMP for the EPA; this publication constitutes that submission.

The ERMP does not show the full extent of disturbance that will be caused by the proposed project. It gives an area of land that will be disturbed at some stage of the project life of 1 150 ha within the proposed conservation reserve but this does not include the full area of disturbance since it ignores edge effects and other possible damage to vegetation such as from groundwater drawdown and air pollution. In order to assess better the possible impact of the proposed project, CALM developed an impact zone of 1 474.5 ha, which included a 100 m buffer strip around all cleared or flooded areas.

1.1 BACKGROUND

The proposed conservation reserve at Lesueur of 27 493 ha is near Jurien Bay, about 220 km north of Perth.

It has been recommended for reservation for nature conservation by botanists since the 1950s, the Australian Academy of Science in 1962, the Conservation Through Reserves Committee in 1974, the Environmental Protection Authority (EPA) in 1975 and many other persons and groups. The EPA recommendation was endorsed by State Cabinet in 1976 and again in 1983 but has not been implemented. The National Parks and Nature Conservation Authority recommended in 1989 that the Lesueur area be declared a national park.

In March 1989 Canning Resources Pty Ltd and The Hill River Power Development Company Pty Ltd submitted a Notice of Intent (NOI) to the EPA under the relevant provisions of the Environmental Protection Act. The NOI stated that the companies proposed to develop open cut coal mines and a power station to supply power to the State Energy Commission of Western Australia (SECWA). About half the area proposed to be mined and the conceptual location of the power station were within the proposed conservation reserve. The EPA decided that the proposal should be subject to the highest level of evaluation, and required the companies to prepare an Environmental Review and Management Programme (ERMP).

The EPA also sought from the Department of Conservation and Land Management (CALM) a detailed evaluation of the nature conservation, landscape, educational and recreational values of the proposed conservation reserve and "an assessment of any deficiencies in the data which would jeopardise conservation or other values if the data is not available prior to any decisions being taken on the proposal to mine coal and generate power in the area the availability and security elsewhere of values equivalent

to those at Mt Lesueur, if any" (Chairman, EPA *in litt.* to Executive Director, CALM, June 1989).

CALM provided its report to the EPA in August 1989 and it was published as EPA Bulletin 424, January 1990 (Burbidge *et al.* 1990).

In May 1990 Canning Resources and The Hill River Power Development Company finalised their ERMP (which was compiled by consultants Dames and Moore) and this was released by the EPA for public comment until July 30, 1990. The CALM Report (EPA Bulletin 424) was released at the same time.

CALM decided to prepare a new submission to the EPA consisting of

- a review of Bulletin 424 in the light of any new information now available,
- a review of the ERMP,
- its evaluation of the impact of the proposed development on the proposed conservation reserve at Lesueur, and
- its conclusions.

Because of the great public interest in possible environmental impacts of the proposed development, the Executive Director of CALM decided that the submission would be published.

CALM's 1989 report to the EPA (Burbidge *et al.* 1990) provided a detailed account of the background to the proposed conservation reserve, the European exploration of the area, and the geology, landforms, soils, climate, drainage, vegetation, flora and fauna of the proposed park. It then summarised two recent studies that documented inter-relationships between animals and plants in the area. It described the occurrence of dieback disease caused by *Phytophthora cinnamomi* and other *Phytophthora* species in the region and the impact that dieback would have on the Lesueur area if introduced. It went on to describe the landscape, recreational and educational values of the proposed conservation reserve. Finally it assessed the status of current knowledge on the Lesueur area and provided an evaluation of the significance of the proposed conservation reserve on a world, national, State and regional basis.

For readers who do not have access to CALM's 1989 report to the EPA (Burbidge *et al.* 1990) the Executive Summary is reproduced in Appendix 1 at the end of this publication.

A draft of CALM's report to the EPA contained a chapter that provided a preliminary assessment of the impact of the proposed mines and power station on the area. It was decided not to include this chapter in the report in advance of the ERMP, but to provide a more detailed assessment after the ERMP had been released. However, this draft was obtained by a non-Government conservation organization and released to the news media. CALM then made the chapter public. The Abstract of that chapter is reproduced in Appendix 2, but it is superseded by this report.

1.2 INFORMATION ASSESSED

The ERMP provides little information on the vegetation, flora or fauna of the proposed conservation reserve or on the vegetation, flora or fauna of nearby areas. The companies have commissioned studies by consultants on various aspects of these subjects. Many reports by consultants are referred to in the ERMP but are unpublished and were not released with the ERMP. CALM sought and obtained copies of relevant reports from the proponents to enable it properly to assess all available data.

We have not assessed the possible effects of the disposal of blowdown water into the ocean off Jurien. We draw attention to the rich marine ecosystems in this area, including seabirds and sealions, which are at the top of the food chain and could be affected by any contaminates, such as heavy metals, in the water.

1.3 AREA OF IMPACT

Any assessment of the possible impacts of the coal mines and power station requires the delineation of areas of land that would be affected should the proposal proceed. The ERMP includes a number of maps that show the location of the mines and the approximate location of the power station but do not show the total area proposed to be cleared (e.g. Figures 4.3, 4.8, 4.11, 4.12, 4.14). ERMP Figures 5.1 and 7.4 show the full project detail, but these also do not show the full extent of disturbance; indeed the ERMP does not present such data, it only gives figures for "the total area of land that will be be disturbed at some stage of the Project life": 1 150 hectares within the proposed conservation reserve (ERMP p. 6-1 and Table 6.1).

In order to assess better the possible impact of the proposed project, CALM developed a map based on ERMP Figure 7.4 (but with the access road extended to the south as shown in ERMP Figure 5.1) plus a 100 m buffer strip around all cleared or flooded areas (Figure 1.1). A Geographic Information System was used to make calculations of impact, for example, on the different landforms and vegetation types. Calculations of the area disturbed, including the

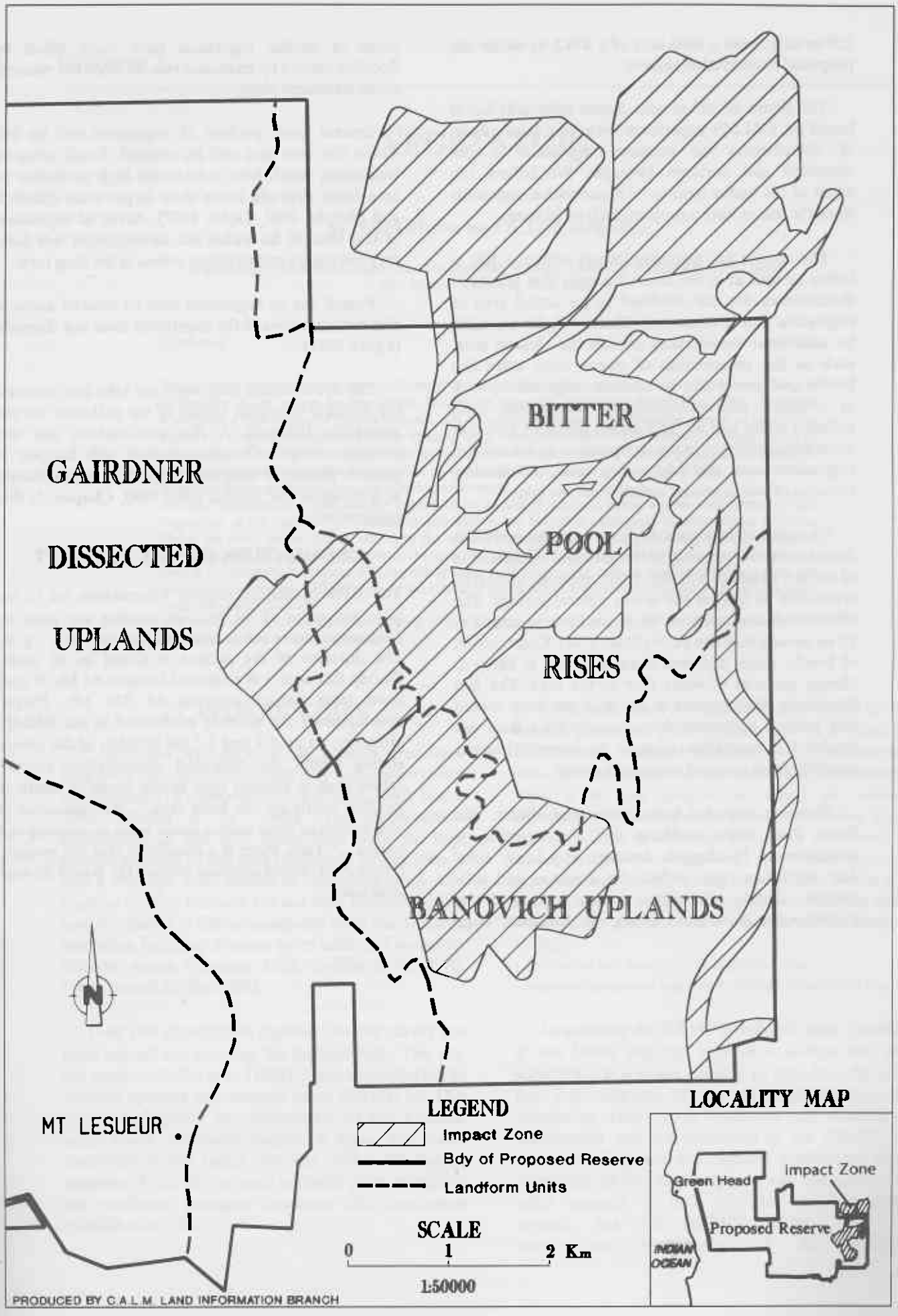

Figure 1.1

Impact zone of Hill River Project ; from ERMP Fig 7.4 with a 100m buffer strip.

100 m strip, gave a total area of 1 474.5 ha within the proposed conservation reserve.

The figure of 100 m was chosen arbitrarily but is based on CALM's experience with long term effects of disturbances on remnant vegetation in the wheatbelt and northern kwongan. We believe the width of the buffer strip to be conservative, especially since the mines have a projected life of 30 years.

The reason for assessing impact within a 100 m buffer as well as in the cleared area is that effects of disturbances are not confined to an actual area of vegetation that is destroyed. There will, for example, be additional disturbances outside the cleared area, such as the construction of power lines, extra fire breaks and gravel pits. In addition, edge effects such as changed micro-meterological conditions, dust, polluted water and air, and added nutrients all cause detrimental changes in the composition and density of vegetation near the edge of a road or clearing. Invasion of weeds occurs mainly from the edge.

Changed hydrological regimes from groundwater drawdowns, de-watering of the pits and modification of surface drainage will also affect adjacent uncleared vegetation as well as the area's natural springs. The effects of drawdown from the pits is likely to extend "... 2-3 km downdip from each pit... " (ERMP p. 5-8). Construction of bunds, dams and over-burden dumps is likely to change patterns of water flow in the area. The fact that many plant species in the area are deep rooted and possess scleromorphic characteristics does not render the vegetation immune to adverse impacts resulting from reduced water availability.

Flooding may also have detrimental effects. The Bitter Pool Rises landform unit, for example, is characterised by sluggish drainage and heavy soils. The vegetation types reflect the drainage and soils pattern, having extensive areas dominated by *Calothamnus quadrifidus* heath. At Eneabba, large areas of similar vegetation have been killed by flooding caused by increased run-off from the mineral sands treatment plant.

Several small pockets of vegetation will be left within the area that will be cleared. Small areas of vegetation, which have a relatively high perimeter to area ratio, degrade faster than larger ones (Ehrlich and Murphy 1987, Taylor 1987). Areas of vegetation of less than 10 ha within the development will have very low nature conservation values in the long term.

Faunal use of vegetation next to cleared areas is also reduced, even if the vegetation does not degrade (Lynch 1987).

The 100 m buffer strip does not take into account the possible extensive effects of air pollution on the vegetation (Chapter 2, this publication) nor the extensive, major disturbances that will happen if dieback disease (*Phytophthora* species) is introduced as a result of the project (Hill 1990, Chapter 5, this publication).

1.4 DURATION OF THE PROJECT

The EPA guidelines require information on "... the scope and timing of the proposal, including any plans for progression to future coal reserves." (ERMP Attachment 1, p. 2). The duration of the project is stated as 30 years. During this time it is proposed to mine 64 Mt of coal from total known reserves of 450 Mt. Future developments are scarcely mentioned in the ERMP. However, on pp 5-1 and 5-2 the location of the power station within the proposed conservation reserve rather than in cleared land to the north or south is justified partly on the basis that "... the construction of mine facilities on either location restrict access to remaining coal reserves ...". Thus, there is a possibility that the project, if approved, would continue beyond the stated 30 year time span.