Chapter 6

LANDSCAPE, NATURE-BASED RECREATION AND TOURISM VALUES

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Abstract

Should the coal mines and power station project proceed, the natural character and scenic beauty of what are some of the most attractive landscapes within the northern kwongan will be severely degraded. The most scenic parts of the proposed conservation reserve at Lesueur would not be mined. However, there will be a significant impact on visual resource values if the mine goes ahead, as the area that will be mined is a supporting landscape and an important foreground to the eastern flank of the Gairdner Range. The viewsheds east and northeast from the Gairdner Range would also be affected and the coal-fired power station, with its 200 metre high stack, would be visible from a considerable distance, from both within and outside the reserve.

The project would also significantly impact on those recreationists, tourists and residents who value the relatively pristine natural environment of the Lesueur area which presently exists. In particular, outdoor recreation activities such as bushwalking, nature study and sightseeing which are dependent on the region's natural values would suffer the most.

The proponent's ERMP fails to adequately address these issues and does not provide sufficient information on which to arrive at informed conclusions. The ERMP also fails to identify important 'non-use' values associated with the region's unspoilt character.

6.1 INTRODUCTION

As part of the Environmental Review and Management Program (ERMP) and Draft Environmental Impact Statement for the Hill River Project, the project proponents were directed by the EPA to address a number of key issues including:

- impact on "landscape and recreation values" (ERMP Attachment 1, p. 3) and
- impact on resources necessary for farming, fishing, tourism, beekeeping and other livelihoods.

The proponents were also directed by the EPA to broadly define the commitments which would be made to protect the environment (i.e. impact mitigation) should this project receive government approval.

The proponents' assessment of these two particular issues and the subsequent conclusions reached in the ERMP raise a number of concerns, the major ones which can be summarised as follows:

1. The ERMP fails to identify and/or evaluate the full range of potential impacts that this project is likely to have on landscape values, and on nature-based recreation and tourism. In particular, the ERMP does not adequately address how and to what extent the project would impact upon visitors to the region's inland parks/reserves, including the proposed conservation reserve at Lesueur.
2. The assessment techniques employed by the project consultants to evaluate these key issues have not generated sufficient information on which to reach soundly based conclusions.

These and associated concerns are briefly discussed in the remainder of this chapter.

6.2 LANDSCAPE VALUES

6.21 Impact assessment brief

The proposed project represents a mining and industrial development of State as well as regional significance. Projects of this magnitude and duration can result in major, and in some instances irreversible, impacts which extend far beyond the confines of the project area. Such is the case with this project and its predicted impact on the region's visual resources.

The nature and significance of the impact that this project could have on the scenic resources of the

Lesueur area was clearly recognised by the EPA when it instructed the project proponents as follows:

> "Particular attention should be addressed to the landscape values, in a local and regional context, in a way which allows the pre-project values to be compared with those after completion" (ERMP Attachment 1, p. 6).

As discussed later in this chapter, the project's potential impact on the scenic values of the region is, according to the proponent's own data, also of major concern to local residents and visitors.

6.22 Study methodology

The issue of landscape impact has been addressed in some detail in the ERMP. Project consultants were employed to conduct a viewscape assessment of the proposed mine site and power station. In general terms, this assessment attempts to establish where and to what extent the mine's overburden dumps and power station stack will be visible from the four major public roads which surround the study area. A number of other view points including some within Badgingarra and Drover's Cave National Parks are also assessed and the results presented in Appendix D of the ERMP.

While the viewscape assessment provides useful information on which to assess potential visual impacts, it is deficient in two significant aspects:

1. The viewscape study as described does not constitute a thorough assessment of visual impact. While the study methodology provides a quite detailed statement on what project elements will be visible from major travel routes and other selected vantage points; it give no firm indication as to the nature and relative significance of the landscape values (i.e. visual quality values) which would be affected by this project. Consequently the study fails to establish or measure "pre-project" landscape values in other than superficial terms and does not fully comply with the EPA directive.

2. The study does not attempt to assess how and to what extent the project would visually impact on recreationists/tourists visiting the Lesueur area. This omission is acknowledged in the consultant's report when they state:

   > "It should be noted that this viewscape assessment is intended to determine the degree of visual intrusion of the project on the general public. That is, it examines the impact likely to be experienced by people using local roads and living in towns in the region. It does not address the project impacts for people who deliberately visit the site or who purposefully gain access to locations from which they can oversee the project" (ERMP Appendix D, p. D1).

Given the regional importance of the scenic resource values of the proposed conservation reserve at Lesueur (as documented by Schmidt 1990a), this is a significant omission.

In simple terms, the viewscape assessment fails to adequately describe the nature, importance or full extent of scenic values which will be affected should this project proceed. Nor does the ERMP adequately address how these impacts will be mitigated.

6.23 Review of impact assessment results

To properly evaluate the potential visual impacts of this project, it is essential that the character and significance of existing landscape values for both the study area as a whole as well as the project area are first established. Such an inventory and evaluation was completed by CALM and is reported by Schmidt (1990a).

As described in EPA Bulletin 424 (Burbidge *et al.* 1990), the study area contains two distinctive landscape character types (a landscape character type is a broad-scale area of common distinguishing visual characteristics as identified by landform, vegetation, waterform and land use patterns). The first of these, the Northern Kwongan Landscape Character Type, covers all of the project site as well as the bulk of the study area including Mt Lesueur and the other nearby peaks, slopes and drainages of the Gairdner Range. The coastal or seaward portion of the study area consists of a separate Coastal Landscape Character Type. A brief description of each of these types is presented in Tables 6.1 and 6.2.

In terms of regional significance, the landscape encompassed by the project site and the area surrounding Mt Lesueur is of major importance. To quote Schmidt (1990a):

> "The Gairdner Ranger, which includes Mt Lesueur, Mt Michaud and Mt Peron, contains some of the highest and most scenically attractive landforms within the Northern Kwongan Landscape Character Type. The first two of these peaks, with their distinctive tableland or mesa shapes, are visible on the skyline up to 15km away from various vantage points along the Jurien and Coorow-Green Head Roads and the Brand Highway. Only the Morseby Range north and east of Geraldton contains topography of comparable scenic appeal.
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> West of the Gairdner Range and Peron Fault, the Lesueur Area extends seawards across a broad, relatively flat sandplain to the coast. Here a line of outer reefs and small islands and an extensive chain of salt lakes which parallel the coastline provide added visual interest to an otherwise unspectacular seascape" (EPA Bulletin 424 p. 101).

and:

> "Immediately east of the escarpment, the landscape dramatically unfolds, revealing numerous hills, valleys and breakaways to the east and north. These are the Lesueur and Gairdner Dissected Uplands, the central core of the Gairdner Range and a landscape of High Scenic Quality. Further to the east and north, portions of the Banovich Uplands and Bitter Pool Rises as well as other more distant landforms, some up to 25km away, are clearly visible. To the west, views of the coastline and Indian Ocean complete this superlative panorama" (EPA Bulletin 424 p. 103).

and:

"Once on top of the escarpment, one can look down upon a large basin partially enclosed by the steep eastern flanks of Mt Peron, Mt Michaud and Mt Lesueur and by the Lesueur Fault further east. Cockleshell Gully, which arises on the eastern side of the Range, passes through this depression. The basin floor is in fact quite undulating, consisting of a maze of low hills, ridges, breakaways and shallow valleys. Some of the steeper slopes and breakaways have exposed outcrops of sandstone and extensive pockets and bands of eucalypt woodland scattered across the heath-covered slopes and valleys.

From the eastern edge of the Range, the distinctive tabletop forms of Mt Lesueur and Mt Michaud are particularly prominent, while Mt Peron dominates the northwestern skyline. One is afforded a spectacular enframed ocean view across the dissected uplands, where Cockleshell Gully cuts through the Peron Slopes.

This is, in summary, an area of high scenic appeal owing to the diversity of landforms and vegetation associations and the textual and colour patterns associated with these. In virtually every direction, one is confronted by an everchanging landscape of steep breakaways, low hills and gullies with sculptural eucalypt woodlands set amongst the heath-covered ranges" (EPA Bulletin 424 p. 103).

The project area itself is situated east of the Lesueur Fault in the Banovich Uplands and Bitter Pool Rises, a zone of Moderate Scenic Quality. The most scenic portions of the Gairdner Range landscape, the Lesueur and Gairdner Dissected Uplands, would be largely spared from mining. There will, however, be a significant impact on the visual resource values of the Lesueur area should the proposed mining operations and power station development proceed. These include:

1. Impairment of adjoining landscape values. The Banovich Uplands and Bitter Pool Rises are a supporting landscape and important foreground to the eastern flank of the Gairdner Range, a zone of High Scenic Quality. Any mining activity or development in this zone would have a major impact on the visual integrity of the adjoining landscape, irrespective of its ultimate vesting and use. In addition, the possible introduction of dieback, and the devastating impact this could have on many plant species and associations (see *Phytophthora* and Other Fungal Plant Diseases, Chapter 5) and hence landscape values, also is of concern.

2. Impact on major viewsheds and vistas. The areas proposed for mining such as the coal seam situated under the ridge south of the headwaters of Cockleshell Gully would be visible from numerous vantage points within the Lesueur and Gairdner Uplands. In particular, the viewsheds east from Mt Michaud, east and northeast from Mount Peron and from the eastern edge of the Gairdner Range would be significantly affected. The coal-fired power station, with its 200 metre high stack, would also be visible from a considerable distance, from both within and outside the reserve. The extent of such visual impacts can be accurately projected and mapped using computer-generated digital terrain models. Had such techniques been employed they would have enabled a much more comprehensive and detailed landscape impact assessment to have been made.

The results of the proponent's own viewscape assessment, incomplete as they are, are indicative of just how visually intrusive this project would be. As summarised in Table 1 of Appendix D of the ERMP (ERMP p. D6), it has been calculated that the mine overburden dumps would be visible for approximately 6% of the total distance from the four public roads which surround the project area. This is a significant finding given that many of the view transects analysed were in excess of 10km from the site and some over 20 km distant.

It is accepted that these overburden dumps, with their mesa/benched landforms, will be less conspicuous when viewed from more distant vantage points. From foreground (0 to 0.5 km) or middleground (0.5 to 6.5 km) observer positions however, the dumps will become increasingly evident due to form, line, colour and textural contrasts with adjoining undisturbed areas. The fore- and middleground zones in particular are critical in terms of visual impact assessment and management, as it is these zones in which form, textural and colour contrasts become visually dominant. In time such contrasts would be partially mitigated providing site rehabilitation efforts prove successful.

The same cannot be said of the power station complex, however. A 200 metre high cylindrical stack is a dominant element in any landscape, irrespective of the scale of the surrounding landforms. According to the ERMP viewscape assessment, the stack would be visible from 15% of the total distance of the four public roads surveyed, including sections of the Brand Highway over 20km distant (ERMP Appendix D, p. D6). The consultants have interpreted this result in a positive light by stating that:

"topographic high points will obscure the stack from the four major roads for about 85% of the transect distance" (ERMP Appendix D, p. D6).

While this figure is not disputed, the conclusion which is drawn can be interpreted in quite a different way. This same viewscape assessment indicates that Mt Lesueur itself is visible from 7.7% of the four road transects. In other words, the stack of the power station would, when compared with Mt Lesueur, be visible for nearly twice the length of the four roads assessed. This is a remarkable finding and indicative of just how visually intrusive the stack would be, given that Mt Lesueur is one of the most prominent landforms within the study area. Apart from sheer size, the stack's geometric shape when viewed as a skyline element set amongst a backdrop of broad undulating hills and ridges would serve to further

Table 6.1

Northern Kwongan Landscape Character Type

Scenic Quality	Landform	Vegetation	Waterform	Land Use
GENERAL DESCRIPTION	*Broad, flat to undulating sandplain ranging in elevation from 30-250 metres (highest in the eastern section) with pronounced escarpments and low ranges (up to 300 metres); some areas of exposed limestone and sandstone outcropping.	*Coastal heathlands and scattered banksia/eucalypt woodland; extensive agricultural pastoral clearing throughout much of the type.	*Numerous small streams and intermittent creeks; some larger streams and rivers which drain from east to west across the coastal plain; numerous wetland areas, primarily in the southern portion of the type.	*Combination of reserves and vacant Crown land supporting native vegetation with extensive freehold land supporting grazing and grain growing.
HIGH	*High rounded hills with steep slopes, mesa topped ranges and escarpments to 300 metres in elevation with sharp breakaways. *Steep sided gorges and strongly dissected valleys.	*Areas of high plant diversity (structural and/or species richness) which display distinctive textural and colour patterns. *Pockets or bands of vegetation which become focal points due to relative height, position in landscape, isolation or colour contrast.	*Larger wetlands, river pools and other permanent water features. *Steep sided gorges or valleys associated with major river drainages.	*Large expanses free of human disturbance or developments such as roads/firebreaks and where edge contrasts are not evident. *Spot developments which are in harmony with naturally established forms, lines, colours and textures.
MODERATE	*Gently undulating plains and rounded hills similar in gradient to surrounding landforms and which are not visually distinctive or prominent.	*Some structural and seasonal colour patterns evident in vegetation, but lacking in uniqueness or distinction relative to surrounding vegetation. *Gradual transition between heathland and woodland communities.	*Seasonal wetlands, intermittent streams and creeklines.	*Pastoral/agricultural landscapes in which clearings, firebreaks, roads and other human imposed developments borrow significantly from natural patterns; some discordant visual impacts apparent.
LOW	*Expansive plains with little or no dissection and with limited topographic features of specific visual interest.	*Extensive areas/vistas of similar vegetation cover with little or no structural diversity or colour/texture changes.	*Waterforms absent.	*Developments in which the form, line, colour and texture of introduced elements contrast markedly with natural features.

Table 6.2

Coastal Landscape Character Type

Scenic Quality	Landform	Vegetation	Waterform	Land Use
GENERAL DESCRIPTION	*Coastal Landforms include extensive sand beaches, dunes (both consolidated and mobile), offshore reefs, stacks and islands, high cliffs, headlands and coastal gorges.	*Range of vegetation communities including dune grasses, coastal heathlands, woodlands and mangrove thickets.	*Indian Ocean, numerous streams and rivers, extensive embayments and tidal estuaries.	*Several urban centres and numerous smaller coastal towns; some squatter settlements and scattered shacks; various recreation access points, some with developed areas and facilities.
HIGH	*Cliffs and headlands. *All islands, stacks, offshore sandbars and reefs. *Rock features, caves, faultlines, obviously banded sedimentary rocks. *Irregular coastline edges often emphasised by distinctive rock outcropping bays, inlets, and sand deposition patterns. *Primary dunes which display areas of active weathering, steep slopes and/or sandblown edges.	*Windshaped, gnarled or dwarfed vegetation unusual in form, colour or texture. *Single tree, shrubs or patches of vegetation which become focal points due to isolation or position in relation to rocks or water. *Strongly defined patterns of woodland, dune vegetation Melaleuca scrub, mangrove thickets and/or barren rock.	*All estuaries, inlets, lakes and swamps. *Unusual ocean shoreline motion as eddies due to islands, reefs, surf zones and shoreline configuration.	*Long stretches of coastal landscape free of human development and disturbance. *Spot developments which are in harmony with naturally existing forms, lines, colours and textures.
MODERATE	*Expanses of beach of uniform width and colour without rock outcroppings or local features. *Regular coast edges without bays, inlets, promotories, stacks or cliffs.	*Predominantly heath or beach grasses with some variation in colour, texture or pattern. *Some contrast caused by different colours.	*Uniform ocean shoreline and motion characteristics with little diversity.	*Coastal areas in which human-imposed developments/ disturbances borrow significantly from natural landscape patterns; some discordant visual impacts apparent.
LOW	*Expanses of uniform (indistinctly dissected) landform.	*Extensive areas of similar vegetation such as heath or beach grass, with very limited variation in colour or texture.	*Water, where present rates no lower than moderate in this LCT.	*Highly developed or disturbed areas with little or no vegetation cover. *Townsite, housing, harbour and other developments in which form line, colour and texture of introduced elements contrast markedly with natural features.

focus public attention on the project site. From many vista points and travel routes, the stack would become the dominant visual feature. This is one impact that cannot be readily mitigated, irrespective of what colour the stack is painted.

Apart from these more obvious visual impacts, there are other project elements which would also have a detrimental effect on the landscape values of the study area. These range from localised visual impacts associated with the construction of access and haul roads, sedimentation ponds and pipelines to the far more extensive visual impact of routing a 330kv powerline through the northern kwongan to link up with the power station. This latter development is of serious concern, as it has the potential to visually mar a much greater area, regardless where it is sited.

In conclusion, it is clear that the proposed mining operations and power station would impact significantly upon the visual quality of the proposed conservation reserve at Lesueur and the study area as a whole. The natural character and scenic beauty of what are some of the most attractive landscapes within the northern kwongan would be severely degraded should this project proceed. As a result, those recreational activities and human experiences that are dependent on the quality and integrity of the visual environment would suffer significantly. Landscape rehabilitation efforts, however well planned and executed, will not be able to restore the integrity and scenic beauty of this area once disturbed. Such impacts can not be dismissed lightly.

6.3 NATURE BASED RECREATION AND TOURISM VALUES

6.31 Background

The ERMP includes an assessment of the various social and economic impacts likely to occur should this project proceed. A total of eight separate issues are evaluated, including the effects the proposed coal mine and coal-fired power station would have on tourism and recreation in the surrounding region. As outlined in Section 6.7 of the Socio-Economic Impact Study (ERMP Appendix A, p. 52), an attempt is made to address the following recreation and tourism concerns: "

- What is the extent of tourism visitation to and recreation use of the coastal townships in the study area?
- What are the degrees of local and non-local use?
- What is the economic value of tourism to the study area?
- What are the tourism and recreation attributes of the study area?
- What are the potential effects, positive or negative, upon the tourism industry and recreational opportunities within the study area as a consequence of the proposed development?"

Due to a paucity of data on tourism in the region, the project consultants have carried out their own resident and visitor surveys in the coastal townships of Cervantes, Jurien, Greenhead and Leeman. The information generated from these two surveys, which is summarised and discussed in Appendix A of the ERMP, is augmented by Australian Bureau of Statistics data and information provided by the former State Planning Commission, W.A. Tourism Commission, local government authorities and other agencies.

6.32 Study methodology

Standard assessment methods (e.g. written questionnaire) were employed in an effort to acquire the information needed to address the five tourism and recreation issues listed for consideration. Although the visitor survey instrument itself appears to be well designed, its application and the data generated from this survey are inadequate for meaningful impact assessment, particularly in predicting how the project would affect nature-based forms of recreation and tourism in the study area. The major shortcomings of the data base and tourism and recreation impact assessment are briefly outlined.

6.33 Analysis of assessment results

The recreation survey (as distinct from the resident survey) was conducted over a three day period in March 1989. The result is a data base consisting of 255 questionnaire returns which have been collated and analysed. A survey of such limited size and duration would typically be regarded as a pilot study, to be followed up by a much more comprehensive study over an extended period of time.

Yet the results from this single "snapshot" of recreationists and tourists are used not only as the primary source of information for describing existing visitor use patterns and preferences, but also as the basis for speculating on how the project could impact on future tourism and recreation activity in the region. Clearly the information provided by this one-off survey is an inadequate basis on which to identify, evaluate and mitigate future impacts.

Apart from the limited data set, the recreation survey focuses primarily on visitors to the coastal strip (Cervantes, Jurien, Greenhead and Leeman), which is admittedly the zone of greatest recreation and tourist activity. However, it appears that no attempt has been made to survey visitors within the boundaries of the proposed conservation reserve at Lesueur. Nor has any information on recreation use and preferences been sought about visitors to other nearby northern kwongan reserves such as Nambung National Park,

despite the fact such data are available. Consequently, the survey results are biased towards coastal forms of recreational use, as contrasted with nature-based activities such as nature study and bushwalking which occur in these inland reserves.

The survey is also biased in the sense that it was conducted during a time of year (early March) when the inland landscapes are generally regarded as being least attractive. Had the survey been extended to cover the spring months when many heathland species are in flower and the landscape is a mosaic of colours, it is almost certain survey respondents would have placed even greater emphasis on those activities and attractions associated with nature-based recreation further inland. Consequently, the ERMP may significantly "undervalue" the importance which the Lesueur area, and other nearby kwongan reserves such as Alexander Morrison, Badgingarra and Drovers Cave National Parks, have in terms of regional tourism.

It is therefore particularly significant that, despite the locational and seasonal biases associated with the survey, a substantial percentage of respondents placed a high level of importance on the region's natural values. For instance, three of the environmental values (scenic landscapes, native flora and native wildlife) one would typically associate with national parks and nature reserves were ranked in the top seven attributes of the study area (ERMP Appendix A Table 7.21). Similarly a significant percentage of residents indicated factors such as unspoiled environment (83% of residents surveyed) and scenery (75%) were important in contributing to their satisfaction with their living environment (ERMP Appendix A, Table 7.16).

The importance of the natural environment to regional tourism and recreation within the study area is further highlighted by the recreation participation rates obtained from the visitor survey and reported in Table 7.17 of Appendix A of the ERMP. Of the 24 recreational activities listed, three (viewing scenery, bushwalking and nature study) of the top 12 activities typically occur within natural settings (i.e. free of human disturbance) while a further three (picnicking, driving for pleasure and camping) are commonly associated with the natural environment. This response is significant given that the survey was only conducted at the four coastal townsites as previously mentioned.

The ERMP briefly acknowledges the importance of the natural environment to recreation and tourism when it concludes:

> "The results of the survey of recreation users indicates (sic) that recreation and tourism within the study area is (sic) generally characterised by coastal-related recreation in groups, although inland features such as the national parks and wildflowers contribute to the leisure experience" (ERMP Appendix A, p. 3).

and

> "The 'low-key' natural attributes of the study area are the principal qualities that attract visitors. There is an apparent lack of support from existing recreation visitors for development in the area that might significantly change the current recreational setting" (ERMP Appendix A p. 3).

Clearly the natural values of the region in general and the natural landscapes protected within the existing system of kwongan parks and reserves are, by the proponents' consultant's own admission, very important tourism and recreational attractions. Yet, the ERMP fails to address or reconcile how the proposed project will impact on nature-based recreation in general and visitors to the Lesueur area in particular.

The impact assessment focuses almost exclusively on the projected changes to future tourism and recreation along the coast and ignores the inland areas. This is a major omission given that the mine site and power station would be situated partially within the boundaries of an area proposed as a future conservation reserve and within clear view of much of the surrounding countryside including Drover's Cave National Park (refer to Landscape Section). In conclusion, it is stretching the imagination to accept that a mining project of this nature and magnitude, with its associated overburden dumps, coal stockpiles, haul roads, sedimentation and evaporation ponds, pipe and SEC transmission lines would not contribute a significant change to the "recreation setting" of this area, to adopt the proponents' terminology.

Furthermore, the ERMP fails to adequately recognise the economic significance resulting from nature-based recreation and tourism in the study area. Nor does this document address how and to what extent the project will financially impact on the region's tourist economy, despite purporting to do so. This aspect is not subject to any detailed analysis, but rather is dismissed by the statements, that:

> "Although it is difficult to establish any direct relationship between the regional value of tourism and the proposed development it is possible that the inland presence of the coal mine and power station may have some negative affect upon those who enjoy what the region has to offer between the coast and the Brand Highway.

> "It is concluded that the implementation of the Hill River Project may change the nature of tourism in the region and the profile of the visitor. Whilst this may be of no economic disadvantage, possibly being an economic stimulus, the proponents are conscious of the significance of tourism to the region and the need to encourage planning strategies that recognise its role" (ERMP Appendix A, p. 9).

In other words, the proponents are in effect asking the Western Australian public and the local communities of Cervantes, Jurien, Greenhead and Leeman to trust that the project will not have a

deleterious effect on nature conservation values within the study area and on the local tourist economy dependent on these values. There is a large element of "blind faith" in this approach to impact assessment which is unacceptable for a project of this magnitude and importance.

While it is acknowledged that there are no comprehensive studies as to the value of recreation and tourism in this region, CALM has prepared an economic analysis for nearby Nambung National Park. As reported by Schmidt (1990b), this Park has experienced a substantial increase in visitation over the last 3-4 years which in turn has generated several million dollars of additional expenditure by tourists. While this economic analysis is by no means complete, it is indicative of the magnitude of the economic benefits associated with nature based tourism in Western Australia's national parks and forest areas.

Existing limited access to the Lesueur area except via four wheel drive puts a physical limitation on the current recreational use of the area. There is likely to be significant "latent" demand, as evidenced by the high recreational value generated by nearby Nambung National Park. This demand would be released through improved access.

Natural areas, such as Lesueur, also hold significant "non-use" values for the community at large. These values are often identified in the literature as "Option Value", "Existence Value" and "Bequest Value". The idea is that natural areas hold values for people who may never physically visit them. For example an individual may wish to maintain the option of visiting an area in the future, they may value simply knowing that the area exists, or they may value knowing that the area remains unspoilt for future generations. Given the restraint caused by poor vehicular access on recreation use values of the Lesueur area, it is possible that these "non-use" values may in fact be more significant. Non-use values are not unquantifiable as is often stated. A technique called "Contingent Valuation" is widely used to measure such values in the USA in cost-benefit analysis (Mitchell and Carson 1989). Failure to identify the "non-use" values of the Lesueur area or make any effort to quantify them is a major deficiency of the ERMP.

6.34 Other project impacts

In addition to the physical and visual impacts on nature-based recreation and the unknown economic effects on tourism within the region, there are two other important impacts this project would have on inland reserves. The first of these is the added visitor pressure on other natural areas that would inevitably accompany such a major increase in regional population resulting from the project.

The socio-economic impact study has logically predicted that if the project proceeds, then the local communities of Cervantes, Jurien, Greenhead and Leeman will experience a substantial increase in population. This in turn would place considerable demands on the local authorities and other government agencies for the delivery and management of additional facilities and services. The social impact study attempts to summarise the nature and extent of these changes in the context of a Planning Balance Sheet.

This assessment is very general and incomplete as it only considers impacts on recreation services and facilities in the four coastal communities rather than on the study area as a whole. Consequently, changes to visitor use patterns and pressures in the Region's national parks are ignored. Visitation to the northern kwongan national parks will unquestionably increase should the project proceed. One could similarly predict that visitation to the Lesueur area would also escalate dramatically, partially due to the publicity the area has received.

There is nothing inherently wrong about increased public use of our State's national park system, providing it is accompanied by appropriate management, in the form of access, sensitively located and well-designed facilities, adequate visitor information and increased staffing. All too often, natural areas and attractions suffer from over promotion and public use and abuse before such controls and facilities can be put in place, thereby resulting in environmental degradation and loss of conservation and amenity values. Such impacts are already occurring in the Lesueur area and are likely to accelerate without proper management input. Owing to the importance of this area in terms of nature conservation, it is essential that the likely impacts of increased public use are clearly identified and addressed irrespective of whether the project proceeds. It is therefore a serious omission of the ERMP that such impacts are not even mentioned, let alone assessed. Again this document ignores the potential impacts this project would have on nature-based tourism and recreation inland from the coast.

The ERMP also fails to identify or address the indirect impacts that the development and operation of an open cut coal mine and power plant would have on visitors to the Lesueur area in the future. Apart from the visual impact (refer to Landscape Section), the most obvious of these would be the emission of noise and dust from the project site and its effect on visitor use and enjoyment. The ERMP goes to some length to predict and model the extent of the study area which would be affected by these factors. As a result, it concludes that the coastal townships would not be adversely affected. However, no such

assessment is made as to how noise and dust emissions would impact on visitors to the proposed conservation reserve at Lesueur.

Quite clearly, the noise and dust emanating from a major open cut mining operation as well as the background noise and night-time lighting associated with the power plant would lead to a significant reduction in the level of visitor enjoyment and satisfaction. The development and operation of this project immediately adjacent to a relatively pristine natural environment is incompatible with activities such as bushwalking, nature study, camping and picnicking, yet the ERMP completely ignores this issue.

In conclusion, the ERMP fails to consider or address how the project proposal will impact on nature-based recreation and tourism in the study area. On the basis of the information provided, many of these impacts will be significant and not easily mitigated.