

NM2002 IMPACT ASSESSMENT

IMPACT ASSESSMENT REPORT

Paul Lochner

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of Master of Philosophy in Environmental Science**

Department of Environmental and Geographical Sciences

University of Cape Town

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EXECUTIVE SUMMARY

1.1 PURPOSE OF THIS REPORT

The purpose of this report is to:

- assess the biophysical and socio-economic impacts of closure of De Beers Namaqualand Mines (DBNM)
- provide preliminary suggestions for mitigation measures

1.2 BACKGROUND AND SCOPE OF THE ASSESSMENT

DBNM anticipate that they will close in approximately 10 years time. By the year 2002, all diamond deposits which are currently economically viable to mine on a large-scale would have been exploited. Closure is anticipated to have a significant impact on DBNM employees, their households, and towns where the households of employees live. Furthermore, closure is anticipated to have a significant impact on the Namaqualand economy.

Therefore, DBNM commissioned the EEU to undertake an assessment of the impacts resulting from mine closure, to ascertain the effects on their employers and their affected households and communities.

Through discussions with DBNM the scope for this assessment was established:

- Briefly to describe the current biophysical, social and economic environments in Namaqualand and identify different trends in the region.
- To assess in detail the socio-economic impacts resulting from the closure of DBNM.

In addition, this report considers the impacts on the biophysical environment resulting from the closure of DBNM, because the socio-economic well-being of employees from rural areas of Namaqualand and Transkei is intrinsically linked to changes in the biophysical environment. Lastly, this report also contains preliminary suggestions for mitigating the impacts of closure.

1.3 APPROACH TO THE ASSESSMENT

The approach to the assessment is underpinned by the guidelines and recommended procedures for Integrated Environmental Management (IEM). The approach is broadly divided into four steps:

- (a) Initial development of the scope and approach of the assessment in 1991 was undertaken by the EEU.
- (b) Further scoping and the collection of information for the impact assessment was undertaken by a team of 8 researchers from January 1992 to April 1992. The results are contained in the Baseline Information Report (EEU, April 1992).
- (c) The assessment of major impacts was based upon information in the Baseline Information Report. This step was performed individually by members of the assessment team, resulting in this individual assessment report produced in June 1992.
- (d) The EEU will then compile a single report to send to DBNM based on the individual assessment report.

1.4 MAJOR IMPACTS DUE TO THE CLOSURE OF DBNM

1.4.1 Major impacts on the biophysical environment

- The rehabilitation of mining areas would have a positive impact on the biophysical condition of the 13% of DBNM property used for mining.
- A negligible change would be experienced on the 87% of DBNM land used for conservation and farming. De Beers Consolidated Mines (DBCM) intend to continue with sustainable farming and conservation on this land.
- The declaration of a National Park from the Groen River to the Spoeg River (5% of DBNM property) would have a positive impact on conservation and tourism in Namaqualand.
- When retrenched, members of the Transkei and Namaqualand Groups may return to farming. (62% of the Transkei Group and 28% of the Namaqualand Group own stock.) This would impact negatively on the already overgrazed and overstocked land in the Rural Coloured Areas (RCAs) and the Herschel District in the Transkei.

1.4.2 Major impacts on the economic environment

- Closure of DBNM will result in a 32% drop in the turnover of Namaqualand, from R1,7 billion to R1,2 billion (Namaqualand RSC, 1991).
- Springbok would experience the largest magnitude of loss due to DBNM closure, of all the towns in Namaqualand besides the DBNM mining towns.
- Springbok would experience a loss of turnover. This would be approximately 12% of total turnover due to loss of business with DBNM company, and a further 2% due to business with DBNM employees.
- The greatest impacts which would be experienced by business sectors in Springbok are:
 - the turnover of the mining sector would drop by 27% (R32 million) due to loss of direct business with DBNM company
 - the turnover of the construction sector would drop by 14% (R5,1 million) due to loss of direct business with DBNM company
 - the turnover of the clothing/furniture sector would drop by 8% (R2,1 million) due to loss of direct business with DBNM company and a further 20% (R5,2 million) due to loss of business with DBNM employees.

1.4.3 Major impacts on the social environment

The impacts on DBNM employees are assessed in the framework on the following pages. The employees are divided into 3 groups:

- The **Namaqualand Group**, who live in Namaqualand and who usually return home to their families every weekend or second weekend (mostly coloured employees).
- The **Mine Group**, who receive permanent accommodation in houses or single quarters in the DBNM mining towns of Kleinsee and Koingnaas (mostly white employees).
- The **Transkei Group**, who are recruited from the Herschel District in the Transkei and whose families live in Transkei (black employees).

(The reader is now referred to Table 1 on the following pages.)

Table 1. Summary of Major Impacts on Employees of DBNM on closure in 2002.

Impact	Namaqualand Group	Mine Group	Transkei Group
Loss of income			
Number of employees affected	1865	535	700
Average monthly income lost	R1250	R3000	R1250
Number of dependants in household	3	2	7
Extent of direct impact on households in Namaqualand and Herschel	10% of households in Namaqualand affected	1,3% of households in Namaqualand affected	2% of households in Herschel affected
Percentage of households with additional sources of income independent of DBNM	31%	6%	15% (but additional income less than R300 per month)
Concerns of employees directly related to loss of income	Inability to afford education of their children who may have to leave school.		Inability to afford education of their children who may have to leave school.
Unemployment and re-employment			
Influential factors	86% would seek re-employment Impact of unemployment would be worsened by: - low level of education - high unemployment in the RCAs	87% would seek re-employment Impact of unemployment would be mitigated by: - highest level of education - 18% to 21% eligible for transfers within De Beers	Only 35% would seek re-employment Impact of unemployment would be worsened by: - lowest level of education - advanced age (61% over 55 years in 2002) - negligible work or farming opportunities in Herschel

Table 1. Summary of Major Impacts on Employees of DBNM on closure in 2002.

Impact	Namaqualand Group	Mine Group	Transkei Group
<p>Pension packages</p> <p>Pensionable age 60 years</p>	<p>11% of present employees eligible for full pension in 2002.</p>	<p>6% of present employees eligible for full pension in 2002.</p>	<p>30% of present employees eligible for full pension in 2002; would receive 50% of present salary.</p> <p>A further 31% of employees would be between 55 and 60 years of age.</p>
<p>Retrenchment payouts</p>	<p>On closure, employees not eligible for full pension benefits would receive retrenchment package of four months salary and a payout of their contribution to the pension fund.</p>		
<p>Loss of DBNM benefits</p>	<ul style="list-style-type: none"> - loss of subsidised groceries - loss of medical aid 	<ul style="list-style-type: none"> - loss of subsidised accommodation - loss of medical aid - loss of financial assistance for education of dependants 	<ul style="list-style-type: none"> - loss of subsidised groceries (do not receive medical aid or assistance with education of dependants)
<p>Impacts on socio-cultural structure of communities</p>	<p><i>Namaqualand</i> communities of Komaggas and Steinkopf anticipate increase in migrant labour following the closure of DBNM. This would result in young, educated people leaving the region.</p>		
<p>Increase in social pathology</p>	<p>In the <i>Namaqualand</i> and <i>Herschel</i> communities increased poverty linked to mine closure could manifest itself in higher occurrences of crime, school drop-outs, alcoholism, teenage pregnancies, and moral degeneration.</p>		
<p>Decline in physical infrastructure and social services</p>	<ul style="list-style-type: none"> - Schools in <i>Namaqualand</i> would lose assistance received from DBNM for equipment and facilities. - Towns in <i>Namaqualand</i> where DBNM employees live would lose assistance received from DBNM. - Pupil attendance at schools in <i>Namaqualand</i> could drop due to parents leaving the region or children being forced into wage labour. This could result in schools closing and teachers being retrenched. 		

Based on information in the framework, the Namaqualand, Mine and Transkei Groups are ranked according to significance of the impact experienced by each group:

- the Namaqualand Group would experience the greatest impact.
- the Transkei Group would experience the second greatest impact.
- the Mine Group would experience the least impact.

1.5 PRELIMINARY SUGGESTIONS FOR MITIGATION MEASURES

The following mitigation measures are preliminary suggestions and require further investigation.

1.5.1 Mitigation measures aimed at DBNM employees

- reduce the rate of production and prolong the life of the mine (change from a 46 hour working week to a 40 hour working week)
- reduce the age for full pension benefits from 60 years to 55 years of age
- for the Transkei workers, include the time of compulsory "leave" between contracts in their length of pensionable service
- transfer employees to other De Beers operations (18% to 21% of the Mine Group are eligible for transfer)
- phase the retrenchment of employees from DBNM with their re-employment at the Anglo American heavy mineral sands mine at Brand se Baai
- motivate for financial assistance from the De Beers Chairman's Fund and Chairman's Fund Educational Trust to:
 - develop education and health facilities in towns in Namaqualand which are home towns of DBNM employees
 - Improve infrastructure in the villages of employees in the Herschel District (e.g. through improving water supply, developing woodlots, supply of wood fuel, extension of electricity grids, and supporting health services)
- establish an employee fund to assist with projects in Namaqualand and Herschel, and to

assist retrenched employees directly as follows:

- to assist employees in developing small business activities (e.g. small-scale mining in the RCAs, inter-tidal diamond mining, and marketing of stock products from the RCAs.)
- provide financial support to DBNM employees who, after closure, are not able to afford the education of their children

1.5.2 Mitigation measures relating to DBNM property

- continue with the rehabilitation of mining areas, following Le Roux and Odendaal's (1991) recommendations for rehabilitation as closely as possible
- remain committed and work towards the establishment of a National Park between the Groen River and the Spoeg River
- increase the amount of employment offered on De Beers West Coast Farm through a diversification of farming and associated secondary activities

1.5.3 Mitigation measures for Namaqualand and the Herschel District

To mitigate the impact of closure on businesses with links with DBNM, DBNM should implement the following two mitigation measures:

- maintain good communication on the process of closure with all businesses with whom DBNM do business
- endeavour to plan a gradual closure of the mine to minimise the economic "shock" on businesses which have links with DBNM.

It is suggested that DBNM investigate the present status and operations of the Regional Development Programme and provide support and assistance where possible. This programme was initiated in July 1989 for the coordination of development in Namaqualand. It should investigate and assist in providing agricultural services, appropriate secondary industry and developing tourism.

This concludes the mitigation measures. DBNM's primary focus should be on mitigation measures for employees.

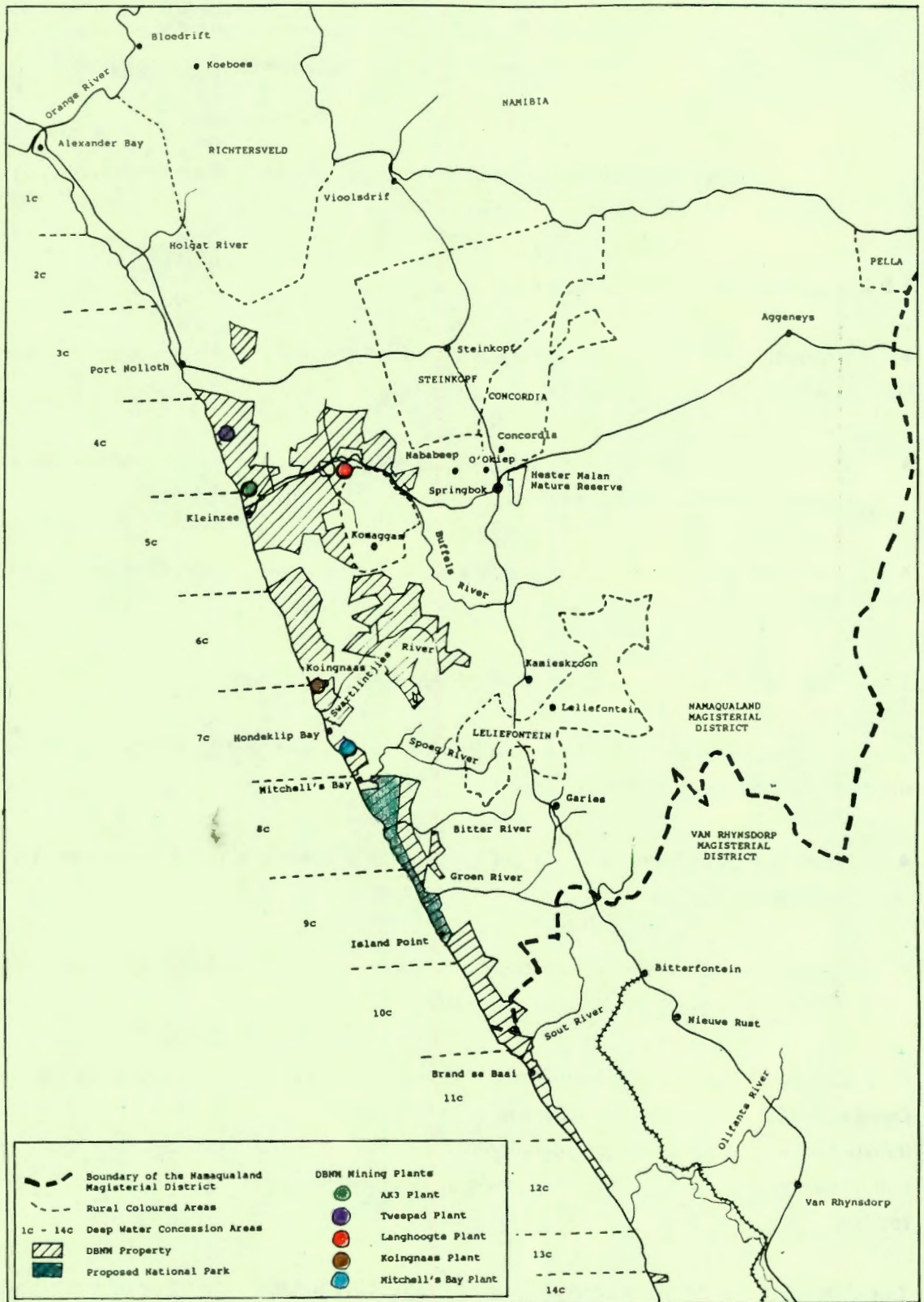


Figure 1. The Namaqualand Magisterial District

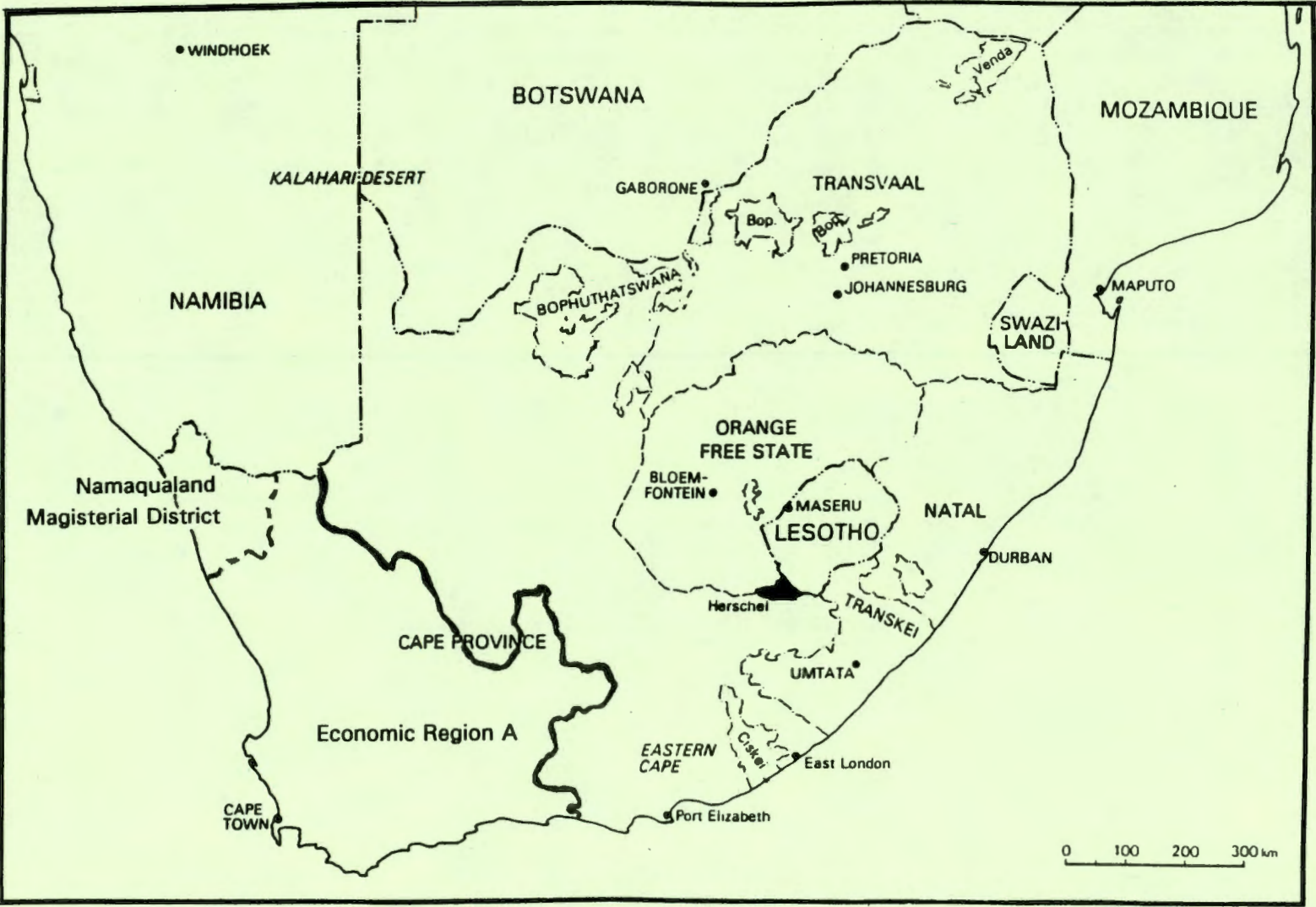


Figure 2. Location of Namaqualand, Region A and Herschel in South Africa

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- Professor Fuggle for his support of the course, thereby allowing us to enter the dynamic and highly relevant field of environmental management.

LIST OF ABBREVIATIONS

The following abbreviations are used regularly in this report:

TABLE 1

BIR Baseline Information Report

DBCM De Beers Consolidated Mines

DBNM De Beers Namaqualand Mines

EEU Environmental Evaluation Unit

NM2002 Namaqualand Mines 2002 - This is the title given to the impact assessment.

NM2005 Closure was initially projected for the year 2005 and earlier reports refer to NM2005.

RCA Rural Coloured Areas

RSC Regional Services Council

TABLE 2

Chapter 1

INTRODUCTION

Chapter 1

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1. INTRODUCTION

1.1 BACKGROUND TO THIS REPORT

This report is the outcome of an assessment commissioned by De Beers Namaqualand Mines (DBNM) and undertaken by the Environmental Evaluation Unit (EEU). DBNM management anticipate that the mine will close in 2002, and involved the EEU to assist in the preliminary stages of developing a plan for mine closure.

The assessment has been divided into four stages:

1. Discussions between DBNM and the EEU in 1990/1991, which led to the initial development of the scope and approach of the assessment.
2. The formation of an assessment team consisting of 8 researchers. The researchers were second year Master's students in the Department of Environmental and Geographical Science and worked under the supervision of the EEU. Data was collected on the historical, social and economic characteristics of Namaqualand, project actions associated with the closure of DBNM, and on social and economic aspects of mine closure. This data, along with the methods used in the social and economic surveys, is contained in the Baseline Information Report (BIR) (April 1992). The purpose of the BIR was to present data, but not to analyse it. Analysis and assessment are carried out in the third stage.
3. The researchers individually analysed and assessed the data. Their results were written up in individual assessment reports, which were completed by 26 June 1992. (This report was produced at the end of this stage).
4. The EEU will then compile a single report to be sent to DBNM towards the end of 1992, using the reports generated in stage 3.

The assessment has the additional purpose of fulfilling the academic requirements for obtaining a Master of Philosophy in Environmental Science, through the completion of a six month Integrated Environmental Management Project (EGS502W). The Masters project requires the completion of stages 2 and 3 listed above.

1.2 THE TERMS OF REFERENCE FOR THIS REPORT

The terms of reference for the assessment were obtained from DBNM as well as from the coordinator of the EGS502W course.

The terms of reference from DBNM were obtained primarily from two sources. Firstly, the report produced for DBNM by the EEU in May 1991, which contained the EEU's proposed scope and approach for the assessment. This report has been discussed with and commented upon by DBNM. Secondly, discussions with DBNM in February 1992, where the scope and approach for the assessment were revised. DBNM proposed that the assessment should:

- Briefly describe the current biophysical, social and economic environments of Namaqualand and identify changes and trends in the region. (This requirement is satisfied by the Baseline Information Report).
- Identify the socio-economic impacts due to the closure of DBNM.

The second of DBNM's requirements for the assessment is dealt with in this report. In addition, this report considers the impacts on the biophysical environment resulting from the closure of DBNM. Impacts on the biophysical environment were considered by the author to be intrinsically linked with the socio-economic well-being of employees from the rural areas of Namaqualand and Transkei.

Further terms of reference for stage 3 of the assessment were provided by Mr R.C. Hill (coordinator of the EGS502W course). They require the compilation of a report written for the purpose of academic evaluation by examiners. It should therefore be rigorous in developing the logic of arguments, without compromising the primary focus on the findings of the project.

The following two paragraphs quote more specific requirements for this report, which were contained in Mr Hill's terms of reference:

In terms of content, the individual reports should:

- demonstrate an adequate grasp of principles, methods and techniques for analysing, evaluating and presenting information, appropriate to the project in question
- satisfy general and specific requirements for good assessment reports
- include a concise executive summary, in which it is permissible to repeat information presented in the baseline report.

In terms of layout, the individual reports should:

- demonstrate an ability to deal with problems of an interdisciplinary nature
 - demonstrate resourcefulness in the analysis of data, power of critical assessment and alertness to the significance of results
 - comprise a logical and coherent account of the project
- display diligence and care in the presentation of the report, with due attention to style and layout (including grammar, spelling, freedom from typographical errors) and the execution of maps and diagrams.

1.3 PURPOSE AND SCOPE OF THIS PROJECT

The assessment and preparation of this report were carried out following the procedures and guidelines recommended in the process of Integrated Environmental Management (IEM). The purpose of IEM is to ensure that a broad range of environmental impacts are considered throughout the planning and management of a project. The compliance of this assessment with the recommendations for IEM and social assessments are discussed in chapter 2.

Having recognised that the closure of Namaqualand Mines will have a significant impact on the biophysical, economic and social environment, DBNM commissioned this study during the initial stages of planning and assessing a procedure for mine closure. The purpose of this report is to provide inputs into this stage of developing the procedure for mine closure. The report focuses primarily on the physical, economic and social impacts of closure, as well as providing preliminary suggestions for mitigating the negative impacts of closure. Recommendations are made for subsequent studies, which should be implemented as part of the ongoing process of addressing the socio-economic impacts of the closure of DBNM.

1.4 ASSUMPTIONS AND LIMITATIONS

The assessment upon which this report is based was subject to the following assumptions and limitations:

- Information for the assessment was obtained primarily from the BIR and a limit was placed on pursuing further information.
- Time and financial constraints did not allow for feedback from DBNM, the affected

communities and the other Interested and Affected parties (I&APs) on the contents of the BIR. Therefore the accuracy of the information in the BIR could not be checked.

Constraints of confidentiality were placed on certain information obtained from DBNM, which limited broader consultation and feedback to the I&APs.

- While avoiding straight repetition of information from the BIR, this report is written under the assumption that it may be read independently from the BIR. Therefore the following definitions and terminology from the baseline report are included.

1.5 DEFINITIONS AND TERMINOLOGY

The following definitions and terminology require brief explanation.

The employee survey divided the DBNM employees into 3 groups:

- **Namaqualand Group:** those who live in Namaqualand, but who either do not qualify for company housing or do not choose to accept it. Most of this group live in the towns of Kleinsee and Koingnaas during the week, but return to their home every weekend or every second weekend. Komaggas residents are an exception to this as many commute on a daily basis.
- **Mine Group:** those who have permanent accommodation in Kleinsee or Koingnaas, either in a house or single quarters accommodation.
- **Transkei Group:** those workers recruited from the Herschel District in the Transkei and whose families live in this area.

The geographical position of the Herschel District is shown in Figure 2. This figure also indicates the extent of Economic Region A, which covers the whole of the Western Cape. This is not to be confused with the Namaqualand region, defined by the boundary of the Namaqualand Magisterial District and shown in Figure 1.

1.6 STRUCTURE OF THIS REPORT

The report begins in Chapter 2, which outlines the theoretical underpinnings and the procedural approach for the NM2002 assessment. References are made to the IEM procedure and to the

approach for social assessment recommended by Taylor *et al* (1990). Chapter 3 provides a synthesis of background information from the BIR, which gives rise to the analysis and assessment of the major biophysical, social and economic impacts on Namaqualand and the Herschel Districts resulting from closure. Chapter 3 also contains the details of different closure procedures for the mine, and assesses the impacts of each. Chapter 4 begins with a summary of recent and current development strategies and projects in Namaqualand, and identifies two major issues which must be considered when generating mitigation measures. Thereafter, the suggested mitigation measures are collated and listed. Lastly, the findings of the report are summarised in the conclusions and recommendations contained in chapter 5.

Chapter 2

THEORETICAL AND PROCEDURAL APPROACH

Chapter 2

THEORETICAL AND PROCEDURAL APPROACH

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2. THEORETICAL AND PROCEDURAL APPROACH

2.1 INTRODUCTION

This chapter outlines the theoretical underpinnings and the procedural approach followed in undertaking the NM2002 impact assessment. The compliance of this impact assessment with recommended procedures is assessed in order to assist in the advancement of concepts and procedures for social impact assessment in similar contexts. A wide range of theoretical sources have been consulted. Of primary importance is the IEM process (EEU, March 1992) and the social assessment approach recommended by Taylor *et al* (1990). IEM provides overall guidelines for the environmental evaluation and management of a proposal and follows a number of stages from initiation to completion. Within the different stages of the EIA process, which overlap with those in IEM, Taylor *et al* have developed an iterative, issue-oriented approach specifically for social assessment. Lastly, within each step of the approach a number of different techniques are recommended. Motivation is provided for the particular techniques chosen for this assessment.

2.2 THE IEM PROCEDURE

The IEM procedure is extracted from IEM: Recommended Procedures and Guidelines (EEU, March 1992) and shown in Figure 2.1. The route followed by this project is highlighted in blue. To date (the end of June 1992), the NM2002 assessment has fallen within the first stage of *Planning and Assessing the Proposal*. This stage includes the following requirements.

(a) Develop proposal

The incorporation of the following recommended steps while developing a proposal will facilitate better planning and the streamlining of the decision-making process. The recommended steps are:

- notify interested and affected parties
- establish policy, legal and administrative requirements
- establish purpose for the proposal
- consult authorities and interested and affected parties
- consider IEM guidelines
- identify alternatives and issues

Stage 1:
Plan and
Assess
Proposal

Stage 2:
Decision

Stage 3:
Implementa-
tion

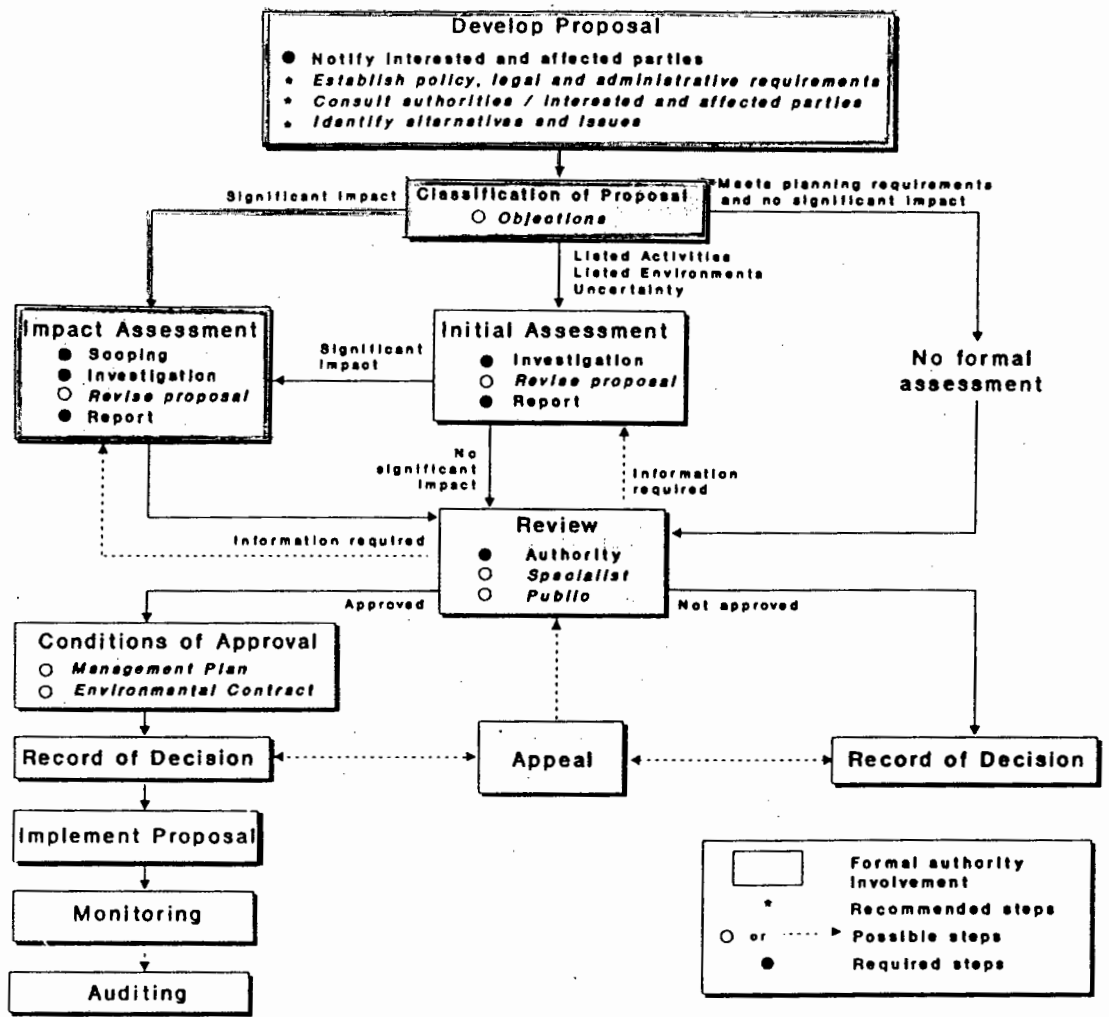


Figure 2.1 The IEM Procedure

(Source: EEU, March 1992)

-
- identify mitigatory options and management plan options

These steps provide an initial consideration of the entire project.

(b) Classification of proposal

A proposal is classified according to the significance of the impacts. The proposal then follows the *Impact Assessment*, *Initial Assessment* or *No Formal Assessment* route. The NM2002 study is following the impact assessment route.

(c) The impact assessment

There are four principal components of an impact assessment:

- **Scoping** aims to focus the impact assessment so that only significant issues and reasonable alternatives are considered. This is achieved through:
 - involvement of the interested and affected parties
 - a participative approach
 - identification and selection of alternatives
 - identification of significant issues
 - identification of appropriate mitigation measures
 - development of specific guidelines for the impact assessment
 - an initial scoping document
 - the opportunity to object to and revise the scoping procedure
- The **investigation** is guided by the scoping procedure and provides sufficient information to assist in decision-making.
- The opportunity to **revise the proposal**.
- The **impact assessment report**.

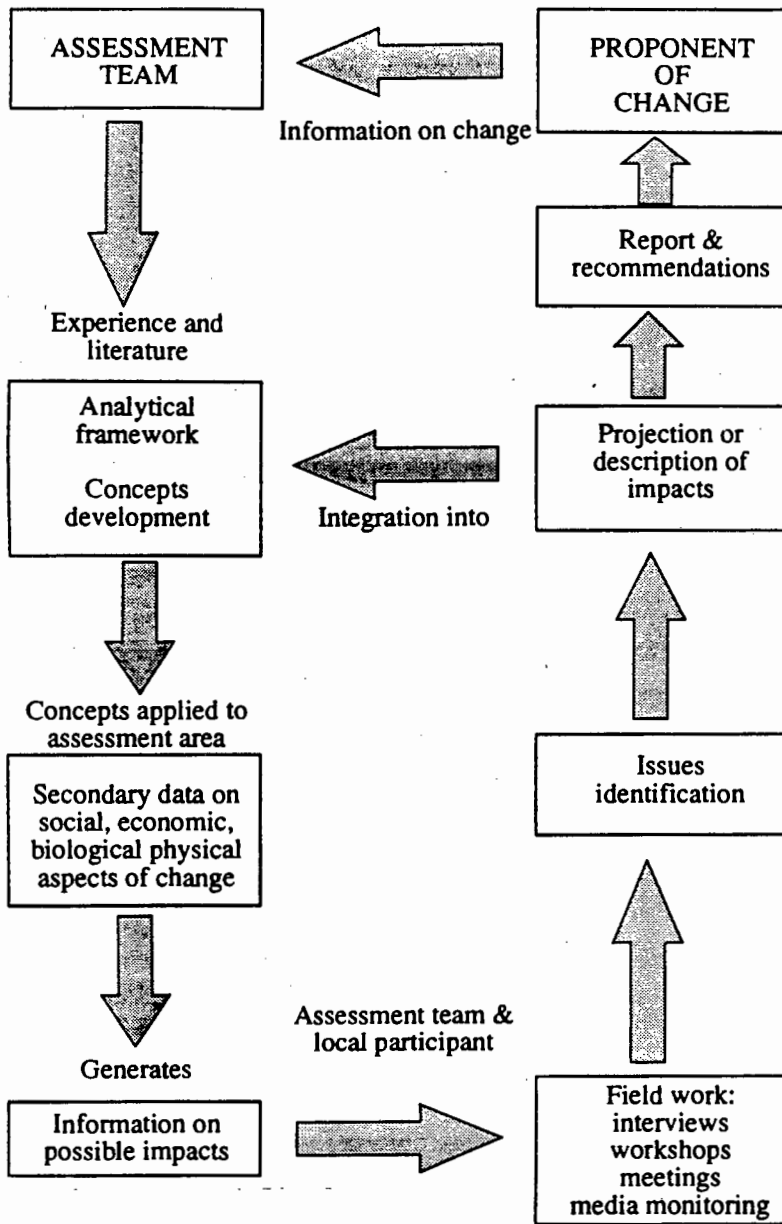


Figure 2.2 An Analytical Approach for Social Assessment

(Source: Taylor *et al*, 1990)

2.3 AN ANALYTICAL APPROACH

The need for social impact assessment to be issue-oriented requires an analytical approach for the identification and assessment of significant issues (Taylor *et al*, 1990). This approach may be implemented within each stage of the overall IEM process outlined above, and is iterative, adaptive and flexible in nature. The steps in the approach are shown in Figure 2.2 and discussed below.

- (a) The proponent initiates the proposal
- (b) An assessment team is appointed. The approach is most effective when implemented by an assessment team. A team is better able to overcome time constraints and contains a wider range of experience, skills and viewpoints than a single consultant.
- (c) An analytical framework is developed. This is a set of guiding concepts. Initially this is developed from the theoretical background and experience of the team, from information on the proposal, and from literature on the impacts of such changes in similar settings elsewhere. As further information becomes available, for example, from fieldtrips, the analytic framework is adapted.
- (d) Secondary data is collected. Application of the concepts from the analytical framework to the study area results in the collection of secondary data on social, biophysical and economic aspects of the proposal and the study area. Secondary data is both quantitative (e.g. census statistics) and qualitative (e.g. historical information). It is collected as early as possible in the study.
- (e) Information on possible impacts is generated from the secondary data. This is a preliminary projection of impacts and provides a focus for the subsequent fieldwork.
- (f) Fieldwork is an integral part of the proposed approach. It is important to establish authentic field contacts to provide access to the communities or groups. A number of methods are recommended at this stage: networking, interviews, workshops, meetings, media, and monitoring. Due to time and cost constraints, formal surveys should be focused and only used when large information gaps exist.
- (g) Important issues are identified from the secondary data and the fieldwork.
- (h) Impacts are projected and described. This step may lead to adaptations in the analytical framework.

- (i) The report and recommendations are then passed onto the proponents for review and discussion.

Having reviewed the overall process provided by IEM and the social assessment approach recommended by Taylor *et al*, the following section provides a description of the process of the NM2002 project.

2.4 THE NM2002 PROCESS

In the following section the NM2002 process is described with reference to the IEM process and the analytical approach recommended by Taylor *et al*. A flow diagram of the NM2002 process is shown in Figure 2.3.

(a) Proposal development

The proposal was initiated in 1991, following discussions with DBNM on the formulation of draft policies and plans for guiding the decommissioning and the rehabilitation of their mine. The study was initiated in the early stages of developing a plan for mine closure, as recommended by the IEM guidelines.

At this early stage, discussion on mine closure was treated confidentially in order to avoid a drop in morale and productivity due to the uncertainty and conflicts that may have arisen. The confidentiality surrounding mine closure prevented the notification of the interested and affected parties, a step required by the IEM procedure during the proposal development stage.

In a report produced in May 1991, the EEU proposed draft policies on vegetation rehabilitation and mine closure, together with their approach to the assessment. This in accordance with the IEM recommendation that company policies relating to the proposal be established in the proposal development stage. Scoping procedures contained in this early report include the identification of specific foci for the assessment, such as land use scenarios for DBNM property, social consequences of closure, a policy for mine closure and guidelines for the rehabilitation of mined areas.

(b) Classification of the proposal

Although no government authority was consulted on the classification of the proposal, its

magnitude and significance were recognised by the EEU and DBNM. It was decided that a full impact assessment was necessary.

The NM2002 proposal then entered the *impact assessment* stage. IEM requires four principle steps in the impact assessment stage: scoping; investigation; revision of proposal; and the production of a report. The approach followed by the EEU assessment team in the *impact assessment* stage is discussed with reference to the IEM procedure and analytical approach recommended by Taylor *et al.*

(c) Formation of an EEU assessment team

The team was formed at the beginning of January 1992, under the leadership of Dr John Raimondo and was disbanded at the end of June 1992. The formation of an assessment team resulted in the benefits mentioned in the *analytic approach*. The team contained a wide range of skills with which to address the diverse requirements of the assessment. These skills include human psychology, industrial psychology, anthropology, journalism, zoology, marine biology and mechanical and civil engineering. All the members of the team had also completed the year of coursework which is part of the degree of Master of Philosophy in Environmental and Geographical Science at the University of Cape Town.

(d) Information gathering and the preliminary generation of impacts and mitigation measures

Information gathering and the preliminary generation of impacts and mitigation measures were carried out simultaneously. The interaction and feedback between the two activities was beneficial to both activities.

Information was gathered from secondary sources (e.g. academic literature, reports) as well as from primary sources (e.g. interviews in Cape Town). The visual gathering technique was used to generate ideas on impacts and possible mitigation measures.

During this stage further consideration was given to the scope, approach and content of the entire project.

Information on closure was distributed to interested and affected parties, inviting their response. Up until this stage confidentiality had prevented contact with the interested and affected parties. Therefore it was important for the assessment team to contact the interested and affected parties

as early as possible in the impact assessment stage. This is essential aspect of IEM and the approach of Taylor *et al.*

During stage (d) emphasis was placed on gathering information for a planning impact assessment, with extensive information being collected on alternative land uses and future political scenarios for South Africa. However in stage (f) the scope of the project was reduced from a planning assessment to a social impact assessment. A considerable amount of information collected during stage (d) was no longer relevant. This might have been avoided by improved communication with DBNM during this stage as the assessment team could then have had a clearer understanding of DBNM's current intentions for the assessment.

(e) The "Draft background information document on planning options"

This report outlined the proposed approach and scope for the assessment, identified information gaps and includes a preliminary identification of the significant impacts, so as to focus the subsequent fieldwork. Following the May 1991 EEU Report to DBNM, this report served as a second scoping document.

(f) Field trip

The field trip provided contact with the client and interested and affected parties in Namaqualand. The first activity on the field trip was the presentation to DBNM management of the report produced in stage (e), which contained the proposed approach and scope of the assessment. The ensuing discussion with DBNM management led to a change in focus from a broad planning assessment to a socio-economic impact assessment. Minimal emphasis was to be placed on land use alternatives and mitigation measures, and it was decided that the generation of future political scenarios for South Africa was well beyond the envisaged scope for this assessment.

Information was obtained from meetings with representatives of DBNM personnel, administration, farming, geology and engineering and further meetings with management. Early in the field trip a meeting was held with members of the National Union of Mine-workers, which included discussion on the approach for the employee survey.

The employee survey was conducted for a random sample of 5% of DBNM employees and was implemented using interviewee-administered questionnaires. Members of the National Union of Mine-workers acted as facilitators for interviews with employees from the Namaqualand and Transkei Groups.

Information on the impacts of the closure on the businesses in the Namaqualand was obtained through a meeting with members of the Namaqualand RSC and through an interviewee-administered questionnaire amongst businesses in Springbok, Steinkopf and Komaggas.

The above methods collected both quantitative and qualitative data from primary and secondary sources in Namaqualand, as recommended by Taylor *et al.* During the field trip the EEU strongly encouraged an open, participative approach, which is essential in social assessment.

(g) Collation of information from the field trip, further collection of information and a second field trip

With the change in focus from a planning assessment to a social impact assessment, further collection of information was necessary, particularly for the economic impact assessment. Information on input-output analysis and export base models was obtained from literature sources and interviews with staff in the UCT Economics Department. The data for input-output analysis was collected from the Central Statistical Services. Ideally, this further collection of economic information should have preceded the field trip and the implementation of the economic survey.

The questionnaire survey amongst businesses was not completed on the field trip, and was afterwards continued telephonically from Cape Town. A second field trip was undertaken to conduct community meetings in Komaggas and Steinkopf.

(h) The baseline information report (BIR)

This report was produced in April 1992, and describes the methods and results of the social and economic surveys. It was used by the assessment team in preparing their individual impact assessment reports and 30 copies were sent to DBNM management to serve as a "progress report". A review of the BIR by interested and affected parties would have assisted in ascertaining its accuracy and omissions. However, the confidentiality of information and sensitivity around mine closure resulted in DBNM deciding not to distribute the report beyond management. The assessment team intend that the single impact assessment report produced by the EEU (step (j)) would be reviewed and possibly edited by DBNM, before being distributed to the interested and affected parties for their information and response.

(i) Individual impact assessments and reports

The individual reports contain an assessment of the socio-economic impacts of closure, as well as preliminary suggestions for mitigation measures. This step is to be completed by 26 June 1992.

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(j) EEU draft impact assessment report

The EEU are to evaluate and collate the contents of the individual assessment reports and produce a single impact assessment report.

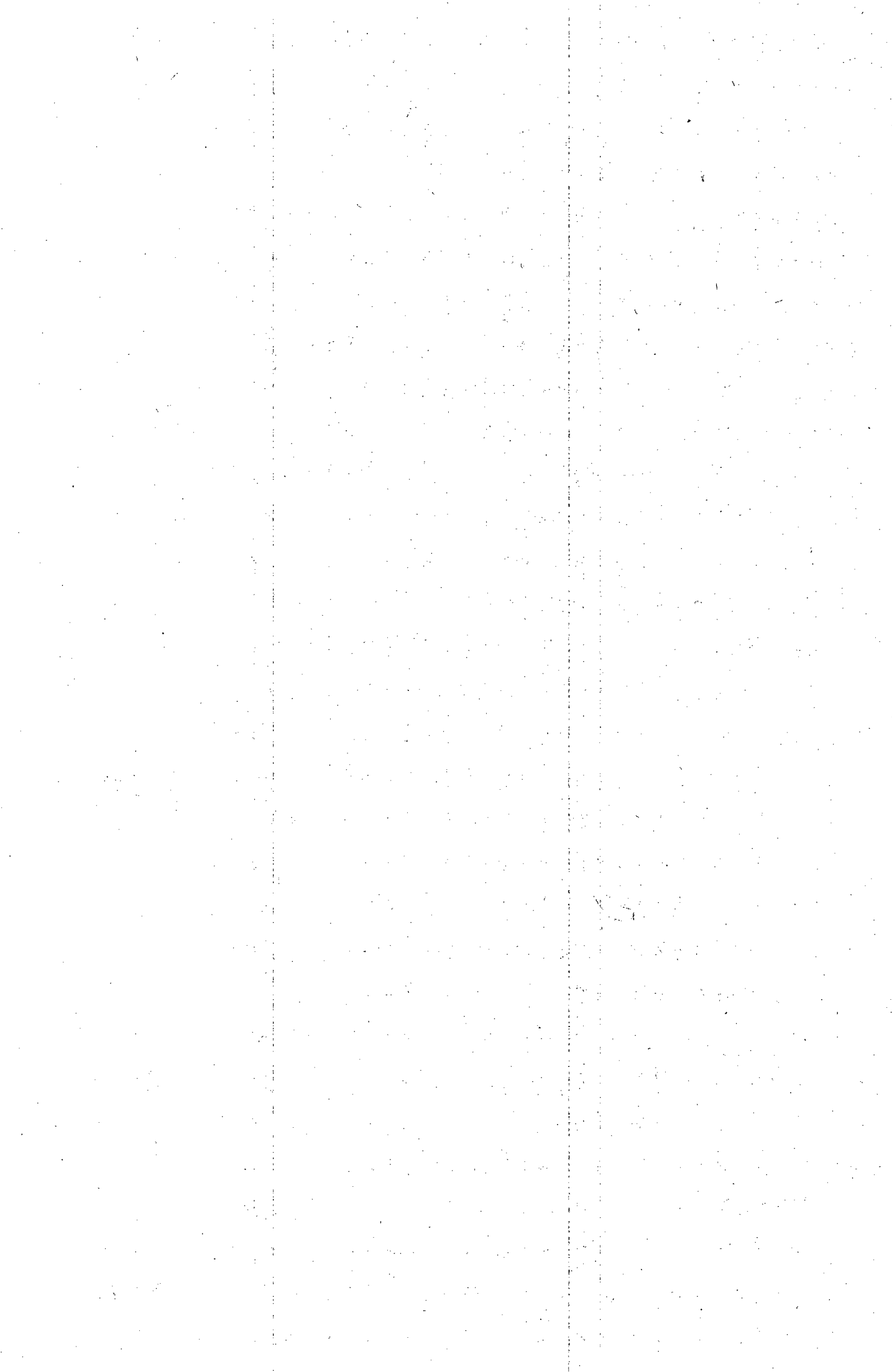
(k) Feedback to DBNM and interested and affected parties

The EEU report is to be sent to DBNM for review before being distributed to the interested and affected parties for comments. The assessment team intend that the EEU conduct further community meetings to receive feedback on the report.

(l) The final assessment report

The assessment team intend that the final assessment report incorporates the responses of DBNM and the communities.

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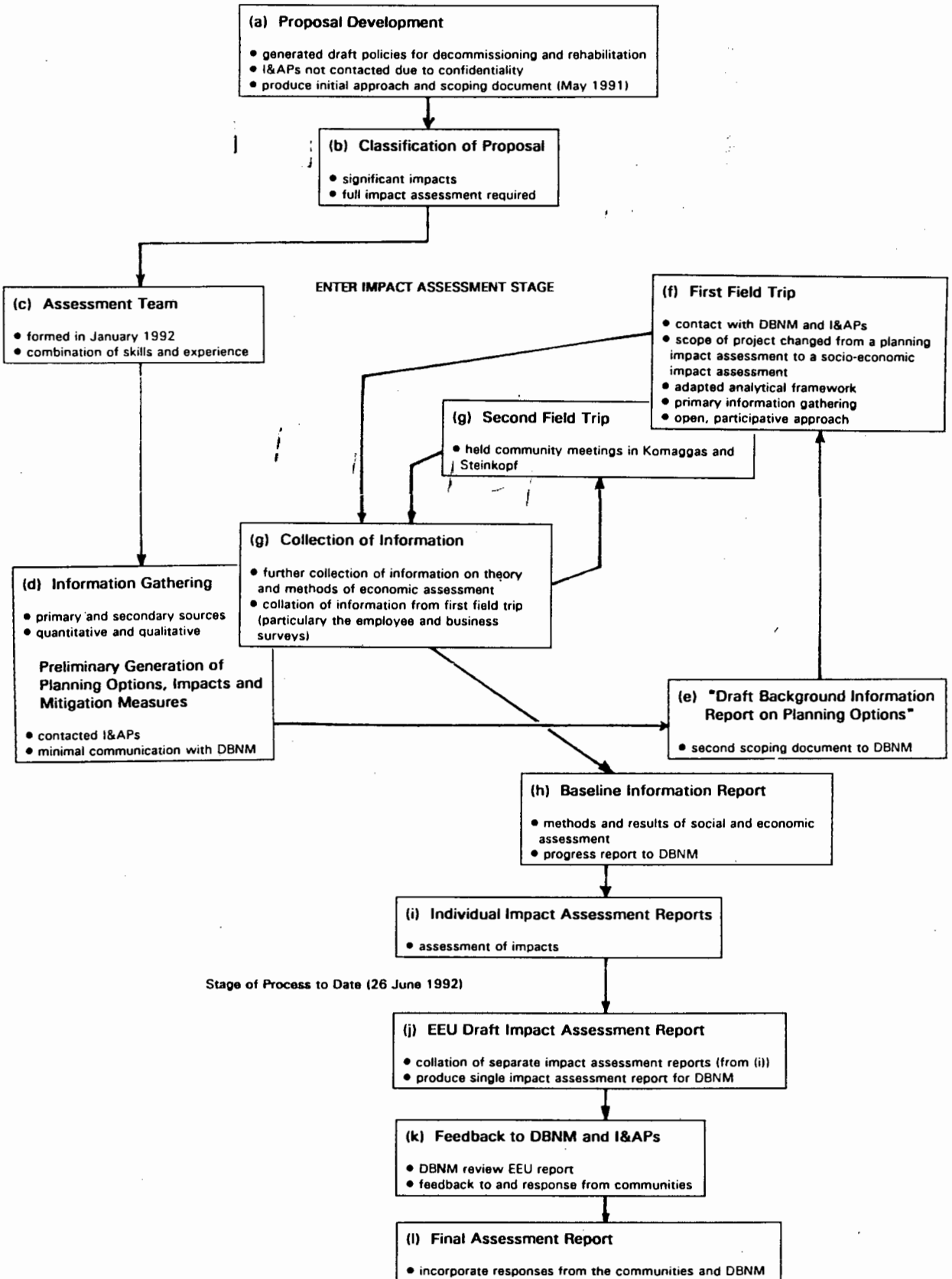


Figure 2.3 The NM2002 Process

Chapter 3

MAJOR IMPACTS

Chapter 3

MAJOR IMPACTS

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3. MAJOR IMPACTS

3.1 INTRODUCTION AND APPROACH

The major impacts resulting from closure are grouped under three broad components of the environment:

- the biophysical environment
- the economic environment
- the social environment

Links are also drawn between the impacts on the above three components of the environment. A number of major impacts are identified for each of these three components of the environment. In approaching each of these impacts, a two-step approach has been followed:

- (a) Firstly, to **synthesize the background information** from the BIR. Since the BIR was structured according to the different methods used for collecting data, information on common impacts is collated under common headings.
- (b) Secondly, to **analyse and assess** major impacts from the synthesized background information.

Preliminary suggestions for mitigation measures follow the identification of the major impacts and are contained in chapter 4.

The major impacts are identified and assessed in terms of the following three assessment components:

- **magnitude:** the quantification of size / scale / extent of an impact.
- **importance:** a judgement which considers the effect or influence of an impact on the well-being of an individual. This impact may be insignificant at a broader community scale.
- **significance:** a subjective judgement, which considers the influence or effect of an impact

on some aspect of human well-being of a group of people¹.

Although the assessment has not been formally structured using these three assessment components, they have been used in where appropriate.

3.2 MAJOR IMPACTS ON THE BIOPHYSICAL ENVIRONMENT

This section discusses the major impacts of closure on the biophysical environment of DBNM's property, the Rural Coloured Areas (RCAs) and the Herschel District in Transkei.

The issue of who owns, manages and uses the DBNM land following closure will influence the impact on the biophysical environment of DBNM property and the RCAs. Discussion of this issue is placed under *Farming and Conservation* in the first section on the impacts of closure on DBNM property.

3.2.1 Impact of closure on the biophysical environment of DBNM's property

Impacts on the biophysical environment of DBNM's property depend on present and proposed landuses. Of the 370 000 hectares of land owned by DBNM, 46 000 hectares (13%) has been zoned for mining. Of this 46 000 hectares, not all has been or will be disturbed by mining activities. The remaining 87% of DBNM property is currently used for farming and conservation. DBCM's present policy for the DBNM property is to maintain ownership of the land after closure and to continue with farming and conservation activities.

The impact assessment is, therefore structured for each of these zones as follows:

- land use for mining
- land use for farming and conservation
- the proposed National Park from the Groen River to the Spoeg River

¹ This definition is extracted from IEM: Recommended Procedures and Guidelines, March 1992: p12.

(i) Land used for mining**(a) Synthesis of Background Information**

On closure it is required, in terms of the Minerals Act 50 of 1991, that the land be rehabilitated. For this purpose a rehabilitation programme is necessary. Furthermore, all buildings or structures erected in connection with mining operations must be demolished, unless the landowner wishes differently. Since DBNM own the land on which they mine, they have the legal authority to determine the extent to which they remove mining infrastructure.

DBNM management recognise rehabilitation as being important for the following reasons:

- to restore disturbed areas to conditions suitable for farming,
- to ensure that the area that has been mined is safe, by filling in holes and trenches,
- to begin the restoration of the natural aesthetic beauty of the area, and
- to satisfy the requirements of the Minerals Act in order to obtain a certificate of closure.

The current rehabilitation programme is supported by DBNM management and based primarily on a report on the natural recovery of overburden dumps by Le Roux and Odendaal (1991). DBNM's rehabilitation programme is managed by the Mining Areas Rehabilitation Committee (MARC) and involves the flattening of mine dumps and steep slopes and the filling in of trenches. Earth-moving costs for rehabilitation have been budgeted for and a rehabilitation fund has been proposed.

The importance of rehabilitating land used for mining was recorded in the employee survey. Amongst DBNM employees, 80% of respondents recorded that they believe it important to rehabilitate mined areas. The Namaqualand Group had the highest response in favour of rehabilitation (88%), with particular emphasis being placed on conserving the natural environment and ensuring that it is suitable for grazing. The response of the Namaqualand Group reflects a strong desire that the land be returned to the members of the RCAs. The participants in the community meetings in Komaggas and Steinkopf were adamant that the land was once theirs and should be given back to them.

(b) Analysis and Assessment

Considering that the rehabilitation of the mining areas is supported by DBNM management and required by the Minerals Act, it is anticipated that rehabilitation will continue. Closure will therefore

have a positive impact on the biophysical condition of the mining land as it will be rehabilitated to a condition suitable for stock or game farming.

The use of buildings and infrastructure following closure depends on the economic activities taking place on the land. Possible ways of utilising buildings and infrastructure are mentioned in the mitigation measures below. However, it is beyond the scope of this assessment to investigate the requirements of different economic activities and the extent to which they could utilise the existing buildings and infrastructure.

(ii) Land use for Farming and Conservation

(a) *Synthesis of background information*

Presently 276 000 hectares of DBNM land is used for farming and a further 24 000 hectares for conservation. On DBNM land the stocking rates and condition of the veld indicate that it is being responsibly managed and farmed in a sustainable manner. DBNM's present policy is to rehabilitate the mined areas and to continue with farming and conservation activities after closure. The DBNM Estates Manager, Mr Floors Brand (pers. comm.), has proposed that, after closure, the farms be kept by De Beers Consolidated Mines, but fall under a proposed De Beers West Coast Farming Company.

(b) *Analysis and assessment*

The impact of closure on the biophysical condition of the 87% of land used for farming and conservation depends upon who owns the land after closure and whether good stock management is practised. Two options have emerged from the BIR: either that DBNM keep ownership of the land and use it themselves, or that the land is given back to the people in the rural reserves of Namaqualand.

If DBNM maintain ownership of the land and continue to farm in their present well-managed, sustainable manner, then there will be negligible changes in the impacts on the biophysical environment. DBNM stock at 65% of grazing capacity. During the lambing season stock numbers increase and stocking reaches approximately 100% of grazing capacity (Brand, pers. comm.).

The second option is that land be given to the RCAs for farming. Considering that Komaggas is presently overstocked by 94% and Steinkopf by 1043%², it is probable that stock from these areas would be moved onto what is presently DBNM land. The influx of stock from Steinkopf and

² This extraordinarily high percentage is partially due to the provision of fodder.

Komaggas would bring temporary relief to these areas and improved grazing for stock. However, it could eventually lead to the overstocking and degradation of what is presently DBNM land, if adequate grazing management is not practised.

In conclusion, the second option satisfies the strong desires of the members of the RCAs to be given the DBNM land. Unless sustainable stock management is practised, the result will be overstocking and a negative impact on the biophysical environment. Furthermore, the second option could lead to some reduction in stock in the RCAs and improvement in the condition of the land.

A solution needs to be investigated that satisfies the interests of DBNM and the members of the RCAs. DBNM want to maintain access to future possible mineral wealth and the members of the RCAs want the land back for historical and cultural reasons. To some extent these interests could be met by DBNM maintaining access to mineral rights while allowing the members of the RCAs to farm on the land. Farming practices would have to follow guidelines for sustainable stock farming.

Presently, 54 people are permanent employees on DBNM farms, plus an additional 17 contract labourers. It is anticipated that the future West Coast Farming Company would provide ongoing employment for approximately 100 people. Therefore increased farming activities on DBNM property could provide additional employment for approximately 30 to 50 farmers. Farming after closure will only be economically viable if farm employees, from management to herders, are prepared to accept lower salaries than presently received from DBNM, as present salaries for farm employees are subsidised by DBNM's mining activities. The farming company would also explore the opportunity for limpet, kelp and seaweed collection.

(iii) The Proposed National Park

(a) *Synthesis of background information*

A coastal strip of land from the Groen river to the Spoeg river and covering 20 000 hectares has been proposed for a National Park. This area was chosen for a number of reasons:

- its relatively pristine condition,
- the high conservation value of the Groen River and Spoeg River estuaries, and
- the high conservation value of the West Coast Strandveld biome.

DBNM management are strongly in favour of establishing a National Park in this area, and have

adapted their mining plans accordingly.

(b) Analysis and assessment

At present the major obstacle to the establishment of the National Park are the plans proposed by the Garies Municipality for a holiday resort at the mouth of the Groen River. The racist motivations³ which appear to underlie this proposal, and its ecological impact, are contrary to the National Parks Board's vision for the reserve. Negotiations are presently underway between the National Parks Board and the Garies Municipality, with less sensitive land south of Island Point being offered as an alternative site for the resort development. DBNM may be in a strong position to influence the negotiations as they could refuse access to the proposed resort across their land.

3.2.2 Impact of closure on the biophysical environment of the RCAs and the Herschel district

(a) Synthesis of Background Information

The biophysical environment of the RCAs and the Herschel District is subject to overgrazing, inappropriate agriculture and accompanying erosion. All of the RCAs are overstocked, by between 13% (Northern Richtersveld) and 1043% (Steinkopf). As mentioned above, the gross overstocking of Steinkopf may be due to the external supply of fodder. However, even if this figure is ignored, the overstocking in the RCAs is still at 38%. Results from the social survey indicate that 28% of the "Namaqualand" Group own stock in the RCAs.

In the Herschel District grazing land is in increasingly short supply. The deep ploughing of shallow soils for dryland cultivation is a major factor contributing to soil degradation throughout the District. Indications are that the land is not suited to agriculture, and well managed livestock production should rather be practised. Results from the social survey report that 62% of the Transkei employees own cattle, mostly in the region of Sterkspruit.

(b) Analysis and Assessment

With closure, it is anticipated that employees who own livestock may return to their home areas and practice farming. The impact of increased farming pressure on the biophysical environment of the RCAs and the Herschel District must be considered.

³ Discussions with I&APs indicated that the Garies Municipality may intend to establish a resort primarily for white holiday makers.

The Namaqualand Group only have time available on weekends for stock farming and fall within Emmett's category of "peripheral" farmers (Emmett, 1987). These farmers earn wage labour but keep stock for security⁴. With the closure of DBNM, these people may return to stock farming, placing increased grazing pressure on the already overgrazed vegetation of the RCAs. Unless stocking rates and grazing practices are well-managed and sustainable, the degradation of the biophysical environment of the RCAs will continue. Training, which is participatory and "bottom up" in its approach, is required on sustainable stock management.

Considering that 62% of the Transkei employees own cattle, and that their advanced age will make it difficult for them to find alternative employment, it is anticipated that many may return to cattle farming in the Herschel District. The increased pressure on the limited grazing land will have an adverse impact on the quality of the biophysical environment.

Lastly, attempts at dryland agriculture in both Namaqualand and the Herschel District have attributed to increased soil erosion. The retrenched employees have little agricultural experience, will have time on their hands and be in need of food. This may prompt them to make further attempts at agriculture, causing further degradation of the biophysical environment.

3.3 MAJOR IMPACTS ON THE ECONOMIC ENVIRONMENT

3.3.1 Introduction

The impacts on the economic environment are considered at different scales. Firstly, economic impacts are considered at the broad scale of Region A, the other regions in South Africa and internationally. (The extent of Region A is shown in Figure 2). Thereafter, the focus is on impacts in Namaqualand, where impacts on the RSC and businesses are assessed, followed by a more in-depth assessment for the towns of Springbok, Komaggas and Steinkopf. The following definitions and conventions are used in the BIR and are continued in this chapter:

- (a) Values in the input-output analysis are at 1985 prices.
- (b) The economic survey divided businesses in Springbok into 10 sectors. (Abbreviated terms used for some of the sectors are shown in brackets.)
 1. Engineering/mining ("mining")

⁴ The importance of stock is that they provide the security of assured access to communal support and reciprocity. Their productive and commercial importance are minimal and of lesser importance (Sharp, 1984).

2.	Hardware/Construction ("construction")
3.	Transport ("transport")
4.	General suppliers ("suppliers")
5.	Stationery/office equipment ("office")
6.	Clothing/furniture ("household")
7.	Accommodation
8.	Financial
9.	Professional
10.	Miscellaneous (e.g. hair dressers, cafeterias etc.)

(c) The economic survey draws a distinction between monetary and business links with DBNM. *Monetary links with DBNM* measure the magnitude of the monetary value of all business links with DBNM. *Business links with DBNM* measure the number of businesses with links with DBNM, irrespective of the monetary value of the business links. This is an indication of the significance of DBNM's closure for different business sectors.

3.3.2 Economic Impact in Region A, other regions and Internationally

This section uses an input-output analysis to assess the financial losses experienced by sectors within Region A, other regions in South Africa and internationally. An input-output analysis divides the regional economy into sectors and estimates the impact of a change in one sector upon other sectors. This provides an indication of the multiplier effect from one sector to another. An input-output analysis estimated the impact of a change in the diamond sector of Region A, due to the closure of DBNM, on the other sectors. This analysis is of limited use for the Namaqualand region as it can only be applied at the far broader scale of Region A. Nonetheless, it is useful to assess the following:

- the losses experienced by sectors in Region A, the rest of South Africa and internationally, due the closure of DBNM
- the origin of inputs into the Region A diamond sector
- discrepancies arising between information from the input-output tables and other economic sources.

Input-output tables are available for 1985 and 1995 closure. Since 1995 is closer to the predicted time of closure, values are analysed for 1995 closure only.

(a) Synthesis of background information

The sectors which would experience the largest loss in total output were DBNM to close in 1995 are shown below in Table 3.3. The purpose of this table is, firstly, to assess the magnitude of the monetary losses due to closure. Secondly, the percentage shown in the table indicates the significance of the loss for that sector. This percentage is the drop in that sector as a percentage of the total for that sector, either in South Africa or Region A.

TABLE 3.1 THE LOSS EXPERIENCED BY INPUT SECTORS OF THE REGION A DIAMOND SECTOR

Sector	Loss in Region A (R millions, %)	Total loss in SA (R millions, %)
Machinery	0,51 3,5%	14,70 3,9%
Services ⁵	9,20 6,8%	63,70 3,6%
Iron/steel	(negligible)	1,37 1,3%
Elec/water/gas	1,36 1,4%	10,01 0,7%
Rubber	0,27 1,9%	2,01 0,9%
Furniture	0,09 1,9%	(negligible)
Total for all sectors	14,48 0,6%	115,93 0,3%

In order to analyse where the loss in demand would be experienced, the geographical origins of the inputs for the sectors are used. Table 3.2 indicates the proportions of inputs received from Region A, other regions in South Africa and internationally.

TABLE 3.2 ORIGINS OF INPUTS INTO THE REGION A DIAMOND SECTOR

	Region A (%)	Other Regions (%)	Internationally (%)
Average for all sectors	13	78	9

⁵ Services consist of legal services, accounting, auditing, data processing, advertising, engineering and architectural consulting and other business services.

(b) *Analysis and assessment*

Table 3.2 shows that if DBNM were to close in 1995 the **total annual loss** of economic activity would be R115,9 million. This excludes the drop in remuneration, profits taken and net indirect tax. If these were included the total loss would be R142,2 million per annum. These losses would be distributed between the geographical regions in the proportions shown in Table 3.2, with 78% of the loss occurring in other regions.

Combining the assessment criteria of magnitude and significance indicates that the **services sector** would experience the greatest loss. The input of the services sector into the Region A diamond sector will decrease by R9 million in Region A, and by R55 million in the rest of South Africa. This results in a total loss in the South African services sector of R64 million, 55% of the entire loss of R145 million anticipated due to the closure of DBNM. Furthermore, in Region A, the services sector would experience the most significant loss (6,8%). In the rest of South Africa the percentage loss in the services sector is 3,6%, the second highest percentage loss.

A number of discrepancies have arisen between figures from the input-output tables and those from other economic sources. Figures from the input-output tables indicate that 13% of the drop in inputs would be experienced in region A. Whereas, the list of purchases made by DBNM Mine Stores indicates that 76% of DBNM purchases are from Region A.

Possible reasons for this discrepancy are considered below. Firstly, the purchases by mine stores may not reflect the total purchases made by DBNM. Purchases of large machinery and expensive equipment may be paid by DBCM Head Office in Kimberley. Other DBNM purchases may also go through Kimberley. The losses associated with these purchases would then be "inter-regional". Businesses such as accounting and data processing in the "service" sector may also be administered and paid through Kimberley. Furthermore, purchases from national suppliers through their local branches are recorded by DBNM as local purchases. However, the supplier may record this a sale from head office, which would be outside Namaqualand and possibly outside Region A. (For example, purchases from Shell discussed in 3.3.4.(i)(b)).

3.3.3 Economic Impact on the Namaqualand RSC

This section considers the economic impact of the closure of DBNM on the Namaqualand RSC. The impact is assessed in terms of the reduction in fees received from DBNM, and the percentage that this constitutes of the total fees received by the RSC and the total budget of the RSC.

(a) Synthesis of background information

Fees paid to the Namaqualand Regional Services Council (RSC) are divided into four sectors: farming; mines; management boards; and towns. Of the R2,49 million received from these sectors in 1991, R1,44 million (58%) was received from the mines. Within the mining sector, DBNM paid R736 000 (30%). The RSC's budget for 1991 was approximately R12 million, of which R9 million was provided by revenue generated in the region and a further R3 million was raised from other sources including loans. These figures are shown in Table 3.3 below.

TABLE 3.3 FEES PAID TO THE RSC (1991)

Payments to the RSC	Fees (Rands)	% of fees	% of total budget (R12m)
Total fees paid	2 486 504	100	21
Fees paid by mines	1 444 989	58	12
Fees paid by DBNM	735 673	30	6

(b) Analysis and assessment

The RSC relies heavily on the mining sector for income from fees. The closure of DBNM would therefore result in the RSC losing approximately 30% of its annual fees (see Table 3.3). This loss amounts to 6% of the annual budget of the RSC and will result in tighter financial constraints being placed on the RSC. Furthermore, since the RSC receives 58% of its fees from mining, the closure of other major mines in Namaqualand would have a serious impact on income generated through fees.

3.3.4 Economic Impact on Businesses in Namaqualand

The distinction is made between the links with "DBNM company" and links with "DBNM employees", together referred to as "DBNM". In order to assess the economic impact of the closure of DBNM on businesses in Namaqualand, it is necessary to distinguish between *monetary* and *business links* with DBNM.

Monetary links are the monetary *value* of businesses with DBNM, expressed either as an amount in Rands (*magnitude*) or as a percentage of total turnover (*relative magnitude*). *Business links* with DBNM reflect the number of businesses which do business with DBNM, irrespective of the monetary value of business. This gives a measure of the *distribution* of the impact of DBNM closure

amongst different businesses.

In the economic survey of businesses in Namaqualand, it was assumed that the towns whose economies are based on mining operations other than DBNM will be relatively unaffected by DBNM's closure. Therefore Alexander Bay, Aggeneys and Nababeep were scoped out of the survey as they house Alexkor, Black Mountain Mineral Company and O'Kiep Copper Company respectively. The economic survey focused on the remaining towns in Namaqualand. In the discussion below, the category "rest of Namaqualand" refers to these towns, but excluding Springbok. The category includes Port Nolloth, Garies, Kamieskroon, Kommaggas, Steinkopf and other smaller towns.

Economic impacts are divided into monetary links with DBNM and business links with DBNM. Under each of these headings, the economic impacts of closure are considered at three spatial scales:

- the whole Namaqualand
- towns in Namaqualand
- different business sectors in Springbok.

(i) Loss of monetary links with DBNM

(a) Synthesis of background information

Information on the monetary links of businesses with DBNM was obtained from the Namaqualand RSC, DBNM Mine Stores, and the economic survey of businesses in Namaqualand.

The following figures (Namaqualand RSC, 1991) provide a broad overview of the magnitude of the Namaqualand regional economy and the importance of the mining sector and DBNM in the regional economy:

- The total turnover of Namaqualand is R1 655 million
- The turnover of mining companies is R963 million (58% of Namaqualand turnover).
- The turnover of DBNM is R530 million (55% of mining companies and 32% of the turnover of Namaqualand).

RSC figures for turnover of all towns in Namaqualand (1991) show Kleinzee to have the largest turnover (R537 million), followed by Springbok (R468 million). These towns dominate the turnover of Namaqualand, accounting for 32% and 28% respectively of the total turnover.

The following two tables summarise important data from the economic study, which is used in the assessment of the major economic impacts on towns in Namaqualand and business sectors in Springbok. In Table 3.4, data in the first four columns is from the economic survey, and is compared with data from the RSC and DBNM Mine Stores.

TABLE 3.4 MONETARY LINKS WITH DBNM: TOWNS IN NAMAQUALAND (1991)(Amounts in millions of Rands)

Place	Total turnover (R)	Turnover with DBNM company (R)	Turnover with DBNM employees (R)	Turnover with DBNM company & employees: (R)	(as a % of turnover)	Turnover (figures from RSC)	Purchases by DBNM Mine Stores (R)
Springbok	479,65	55,95	19,53	75,30	16	468,25	20,3
Rest of Nam.	139,61	16,53	14,33	30,86	22	/	22,5
Komaggas	2,58	0	0,93	0,93	36	1,66	
Steinkopf	7,02	0	2,82	2,82	40	6,95	
Namaqualand	619,26	72,48	33,68	106,16	17	/	

Data in Table 3.5 is entirely from the economic survey, and shows business with DBNM company and employees as a percentage of the total turnover for that sector.

TABLE 3.5 MONETARY LINKS WITH DBNM: SECTORS IN SPRINGBOK (1991)

Sector in Springbok	total turnover (R millions)	with company (R millions, %)	with employees (R millions, %)	with both (R millions, %)
Mining	114,76	31,53 27%	0,54 0%	32,07 28%
Construction	37,25	5,14 14%	0,60 2%	5,74 15%
Transport	101,90	6,86 7%	5,12 5%	11,98 12%
General Suppliers	170,45	10,08 6%	6,65 4%	16,73 10%
Office equipment	1,43	0,27 19%	0 0%	0,27 19%
Clothing/furniture	26,53	2,07 8%	5,23 20%	7,30 28%
Professionals	4,94	0 0%	0,65 13%	0,65 13%
Accommodation	12,88	0 0%	0,26 2%	0,26 2%
Miscellaneous	9,52	0 0%	0,30 3%	0,30 3%
TOTAL	479,69	55,95	19,33	75,28

(b) Analysis and assessment

There is a discrepancy between data obtained from different sources. The list of purchases obtained from DBNM Mine Stores recorded purchases in Springbok as R20 million per annum,

whereas the economic survey estimates purchases from DBNM company as R56 million, and from DBNM employees as R19 million.

In Table 3.4 it must be noted that, of the R22,5 million of purchases from Port Nolloth, R22 million are payments to Shell Oil. Although DBNM make the payment in Port Nolloth, the purchase is essentially through Shell in Cape Town. Shell is one example of the many mining-oriented businesses in Namaqualand which are branches of national businesses. This phenomenon was also observed amongst businesses in Springbok and is reflected in the high proportions of turnover leaving the region for businesses in the mining, construction, transport and general supplier sectors. Many businesses in Springbok are only a through station for goods from a national supplier.

The whole of Namaqualand

DBNM constitutes 32% of turnover in Namaqualand and closure of DBNM will lead to a major decline in business in Namaqualand (section 3.3.4(i)(a)). However, 59% of DBNM purchases are directly from outside Namaqualand. Therefore, of DBNM's contribution of 32% of the Namaqualand turnover, only approximately 19% (59% of 32%) is contributed into the Namaqualand economy. This figure of 19% correlates closely with the 17% reported by businesses in Namaqualand for their percentage turnover with DBNM (Table 3.4). Furthermore, over 50% of the turnover of businesses in Namaqualand leaves the region. In the engineering / mining sector in Springbok, this is as high as 68%.

Springbok

Businesses in Springbok service the needs of the mining industry, which dominates the Namaqualand economy. Since DBNM constitutes 55% of the turnover of mining, its closure will have a large impact on Springbok. The economic survey established that 12% of Springbok's turnover is business with DBNM company (Table 3.4), which will be lost following the closure of DBNM. A further 4% of Springbok's turnover is from purchases by DBNM employees. These purchases are expected to decline following closure as retrenched employees experience a drop in income and struggle to find re-employment (see section 3.4.2). Therefore indications are that the closure of DBNM will result in a loss in business in Springbok of between 12% and 16%.

Towns in Namaqualand other than Springbok

Besides Springbok and Kleinsee, the other Namaqualand towns with turnovers greater than R100 million all contain major mineral companies: Aggeneys has Black Mountain Mineral Company; Alexander Bay has Alexkor; and Nababeep has O'kiep Copper Company. The impact of DBNM closure on these towns is expected to be negligible.

In towns in the "rest of Namaqualand" category, 22% of business is with DBNM: 12% with the company and 10% with employees. Employees purchasing from these towns are largely from the Namaqualand group, and, for reasons cited above, will experience a decrease in purchasing power following closure. Therefore indications are that the closure of DBNM will result in a loss in business in these towns of between 12% and 22%.

Komaggas and Steinkopf

Purchases by DBNM employees account for 36% of the turnover of Komaggas and 40% of the turnover of Steinkopf. For reasons mentioned above, employees from these towns will experience a decline in purchasing power, and business could decline by up to approximately 40%.

Sectors in Springbok

Sectors in Springbok where business with DBNM, company or employees is greater or equal to 15% of turnover have been highlighted as major impacts (Table 3.5). The following extrapolations for the decline in business in the different sectors are based on direct business with DBNM (company and employees), and do not include multiplier effects.

Mining: In this sector 98% of business is with DBNM company and only 2% with employees. When DBNM close this sector will lose R32 million, the largest magnitude of business with DBNM company of all sectors. This is 27% of the turnover of the sector and the highest percentage of turnover with DBNM for all sectors.

Construction: In this sector 90% of business is with DBNM company. Closure will result in a R5,1 million loss of business with DBNM company, and a decline in the present R0,6 million with employees. This amounts to an anticipated 14% to 15% loss in business in the construction sector.

Transport: Closure will result in a loss in turnover of R6,9 million (7%) from business with DBNM, and an additional decline in the present R5,1 million (5%) of business with employees. This results in an anticipated 7% to 12% loss in business in the transport sector.

General suppliers: Closure will result in a R10 million loss of business with DBNM company, and a decline in the present R6,7 million of business with employees. This is the highest amount spent by employees amongst all sectors. A 6% to 10% loss in business in this sector is anticipated.

Office equipment: Although the magnitude of the loss in business with DBNM relative to the turnover of Springbok is small (R0,27 million), this is a significant impact for this sector as 19% of business in this sector will be lost.

Clothing/Furniture: Closure will result in a loss of R2,1 million (8%) presently spent by DBNM, and a decline in the present R5,2 million (20%) spent by DBNM employees. The 20% of business with employees is the highest for all sectors. On closure, this sector is anticipated to decline by between 8% and 28%.

Professionals: Professionals have no business with DBNM company, but R0,65 million (13%) of their business is with DBNM employees. Therefore a decline of up to 13% is anticipated in this sector.

Accommodation: The sample size in this sector was too small for meaningful extrapolation.

Miscellaneous: This sector has no business with DBNM company and only 3% of business with DBNM employees. Based on direct purchases, this sector will be the least affected.

(ii) Loss of business links with DBNM

Business links with DBNM reflect the number of businesses which do business with DBNM, irrespective of the monetary value of the business. This gives an indication of the distribution of the impact of DBNM's closure on different towns and sectors.

(a) Synthesis of background information

Table 3.6 (over page) contains a summary and collation of information on the links of businesses in Namaqualand with DBNM company, DBNM employees, and both company and employees. Towns or sectors with where 50% or more businesses have links with DBNM are highlighted.

(b) Analysis and assessment

Towns in Namaqualand: 93% of businesses in Springbok do business with DBNM. Due to the high number of DBNM employees in Komaggas and Steinkopf, 100% of businesses in these towns have links with DBNM employees.

Sectors in Springbok: Business links with DBNM are widely distributed amongst sectors in Springbok. In six of the nine sectors, over 90% of businesses have links with DBNM. It is noticeable that the mining, construction and office equipment sectors have a high percentage of businesses with links with DBNM, while the general suppliers, clothing / furniture, professionals and miscellaneous sectors have of a high percentage of businesses with links with DBNM employees.

TABLE 3.6 PERCENTAGE OF BUSINESSES WITH LINKS TO DBNM

Place	DBNM company (%)	Employees (%)	Both (%)	Neither (%)
Springbok	25	52	16	7
Komaggas	0	100	0	0
Steinkopf	0	100	0	0
Rest of Nam	7	54	13	26
Sectors in Springbok				
Mining	85	0	15	0
Construction	50	0	37	13
Transport	22	26	48	4
General Suppliers	22	50	21	7
Office	100	0	0	0
Cloth/furniture	0	93	7	0
Professionals	0	100	0	0
Accommodation	50	50	0	0
Miscellaneous	0	86	0	14

3.4 MAJOR IMPACTS ON THE SOCIAL ENVIRONMENT

Those impacts which directly affect people are discussed as social impacts. Therefore they also include the economic impacts on people resulting from the closure of DBNM. Discussion in section 2.3 on "Economic Impacts of Mine Closure" was from the perspective of impacts on businesses.

Many of the headings and categories used in this section are consistent with those used in the BIR. This assists the reader in following the flow from the results of the BIR to the assessment in this report, as well as allowing the reader to refer back to the baseline report. In the following analysis it is assumed that the stratified random sample of 5% of the total of DBNM employees provides adequate representation of the entire population of DBNM workers, as the sample was stratified according to income levels.

Discussion expands from focusing on employees and their households to a broader community focus in Namaqualand and Herschel, and takes place under the following headings:

- Loss of income
- Re-employment
- Pension and retrenchment packages
- Loss of DBNM benefits
- Changes in the socio-cultural structure of communities
- Increase in social pathology
- Decline in infrastructural services and facilities

3.4.1 Loss of Income

(a) *Synthesis of background information*

Information on the loss of income of the Namaqualand, Mine and Transkei employee groups has been extracted from the BIR and is summarised in Tables 3.7 and 3.8 below. In the tables below the term "dominant groupings" indicates a range in which there was an observable grouping of results in the tables in the BIR. Table 3.7 focuses on the direct impact of loss of income on employees, and Table 3.8 provides information for assessing this impact on households of employees.

TABLE 3.7 BACKGROUND INFORMATION FOR THE IMPACT OF THE LOSS OF INCOME ON DBNM EMPLOYEES

Description of Information	Namaqualand	Mine	Transkei
Total number of employees per group (1)	1865	535	700 (2)
Patterson bands: range (3)	A1 to C3	A1 to E1	A1 to B4
Patterson bands: dominant groupings (the range of bands to incorporate \geq 85% of employees)	91% falling in bands A1 to B3	85% falling in bands B1 to C4	89% falling in bands A1 to B3
Income per month: range	R500 to R4000	R501 to > R4000	R501 to R2500
Income per month: dominant groupings (the range in Rands to incorporate > 90% of employees)	Narrow range. 92% of employees receive from R501 to R2000.	23% of employees receive > R4000. Income for 95% of employees evenly spread from R1000 to >R4000.	Narrow range. 96% of employ- ees receive from R501 to R2000.

The following notes pertain to Table 3.7:

- (1) In calculating the total number of employees per group, it is assumed that the employee groups of Namaqualand, Mine and Transkei correspond approximately with coloured, white and black population groupings.
- (2) The number of workers in the Transkei Group includes those who were on leave at the time of the survey.
- (3) Patterson Bands are a means whereby DBNM grade their employees from no decision making powers (A band) to executive powers (F band). These gradings are used to calculate criteria such as income and housing benefits.

TABLE 3.8 BACKGROUND INFORMATION FOR THE IMPACT OF THE LOSS OF INCOME ON THE HOUSEHOLDS OF DBNM EMPLOYEES

Description of Information	Namaqualand	Mine	Transkei
Number in household (including respondent) (1)	4,7	3,2	8,7
Number of dependents (i.e. non-earning household members) (2)	2,8	1,9	7,3
Sources of household income:			
- respondent only	42%	38%	77%
- one other	35%	54%	15%
- two/three others	23%) 58%	8%) 62%	8%) 23%
Additional monthly income: range	0 to > R3001	0 to > R3001	0 to R300
Additional monthly income: dominant groupings (i.e. where the response rate was > 5%)	28% did not know the amount received. 10% received R1 to R300. 8% received R601 to R900.	31% receive > R3001	77% receive no other income. 15% did not know the amount received.
Percentage of households with			
- only the respondent	73%	44%	100%
- more than one member working for DBNM	27%	56%	0%
Money sent home: dominant grouping	N/A	N/A	42% send home more than R700/month

The following notes pertain to Table 3.8:

- (1) The number in the household was taken to be the sum of all people living under the "home" roof as well as children directly dependent on the respondent, but not living with the respondent. Children at boarding schools were also included.
- (2) The number of dependents was determined to be all those people in the household who did not earn an income or pension.

(b) Analysis and assessment

The information from the tables is assessed below. Using the average size of each household, the number of household members (including the respondent) in households containing DBNM employees is calculated. Retrenchment of the 1865 employees from the Namaqualand Group will directly affect 6400 household members, 10,7% of the Namaqualand population. (Preliminary results of the 1991 Census place the Namaqualand population at 60 084, showing little increase from 59 526 in 1985).

In addition, the retrenchment of 535 members of the Mine Group will directly affect 750 household members, a further 1,3% of the Namaqualand population. Excluding the migrant workers, the closure of DBNM will directly affect the households of 12% of the Namaqualand population.

Retrenchment of the 700 Transkei workers will lead to 6100 household members being directly affected. This is approximately 2% of the population of the Herschel District.

Although 58% of the households of the Namaqualand Group receive additional income, this must be considered against the finding that 27% of the Namaqualand Group have more than one person in a household working for DBNM. Therefore, 31% (58% - 27%) of the households of the Namaqualand Group have an additional source of income which is independent of DBNM. This is the highest percentage of independent income, but still leaves the Namaqualand Group vulnerable.

The above logic can also be applied to the **Mine Group**, with even worse consequences. Of the 62% of households with additional income, 56% have other members working for DBNM. Therefore, only 6% of the households of this group have income independent of DBNM, and in this regard are vulnerable to loss of income due to closure. This situation is due to the mine policy of favouring the employment of spouses of employees on the mine.

Amongst the Transkei respondents, 77% were the only source of income in their households. Furthermore, the additional income received by 15% of Transkei employees was in the range 0 to R300 per month. This makes the Transkei employees and their households particularly vulnerable. (It must be noted that the number of responses at this level of analysis is low, and makes the

statistical validity of the results uncertain. The results serve as indicators of possible impact rather than conclusive measures of impact.)

The analysis of money sent home is only applicable to the Transkei Group, as the other two groups generally live at home or return home regularly. All the respondents of the Transkei Group sent money home every month, with the highest proportion (42%) sending home in excess of R700 per month.

Loss of income will affect the ability of families to meet their basic needs of food, clothing and housing. In the employee survey and the community meetings, the Transkei and Namaqualand Groups also expressed concern that they might not be able to afford the education of their children, following the closure.

From the above information and assessment, average households for the three groups have been extracted:

The average Namaqualand worker earns between R1000 and R1500 per month, and is employed in the A1 to B3 Patterson bands. He/she has 5 family members in their household with 3 dependents. One other person in the household provides additional income, earning an average of approximately R900 per month. There is a 47% chance that this person also works for DBNM.

The average mine employee earns from R1000 to well in excess of R4000 per month, with an average of approximately R3000. He/she has 3 to 4 family members and 1 to 2 dependents. One other person in the household provides an additional source of income, also in the region of R3000 per month. There is a 90% chance that this other person also works for DBNM.

The average Transkei worker earns between R1000 and R1500 per month, and is employed in the A2 to B3 Patterson bands. He has 9 members in his household, with 7 dependents. He is the only source of wage income in his household, and currently sends home approximately R700 per month.

3.4.2 Re-employment

(a) Synthesis of background information

The most important concerns identified in the employee survey are the issues of unemployment in Namaqualand and the loss of work and salary. The impact of the loss of work and salary has been discussed above and is closely linked to the opportunity for employees to find re-employment. This

in turn is dependent upon existing problems of unemployment in Namaqualand, the Herschel District and the rest of South Africa.

Information on the age and level of education of employees, their intention to find re-employment and current levels of unemployment is summarised in Table 3.9.

TABLE 3.9 INFORMATION RELATING TO RE-EMPLOYMENT

Background information	Namaqualand Group	Mine Group	Transkei Group
Age profile for 1992: range	18 to 60 years	18 to 60 years	36 to 60 years
Age profile for 1992: dominant groupings of employees in particular age bands	68% from 18 to 35 years of age. (Note: 35% in 18 to 25 age band.)	77% from 26 to 45 years of age.	100% from 36 to 60 years of age.
Age profile for employees in the year 2002	68% from 28 to 45 years of age. 17% > 55 years of age.	77% from 36 to 55 years of age. 11% > 55 years of age.	62% > 55 years of age. 38% between 45 and 55 years of age.
Level of education: range	Sub A to > Std 10	Std 6 to > Std 10	from no education up to Std 8
Level of education: dominant groupings	72% have Std 8 or less (of which, 40% have Std 6 to 8)	67% have Std 9 to beyond Std 10	81% have Std 5 or less
If retrenched, would employees seek alternative employment?	Yes = 86% No = 14%	Yes = 87% No = 13%	Yes = 35% No = 65%
Where will employees seek alternative employment?	Namaqualand = 30%, Don't know = 27%, Cape Town = 16%		
Levels of unemployment (1992)	In the Steinkopf Rural Area, 46% of the men and 80% of the women over 16 years of age do not work. The following percentage of unemployed coloured people, over 16 years of age, who are actively seeking work are (Emmett, 1987):		
	Steinkopf RCA	Namaqualand	Western Cape
	Men: 21%	11%	9%
	Women: 18%	18	11%
Do employees expect it to be difficult to find re-employment?	Yes = 72% No = 13%	Yes = 54% No = 31%	Yes = 89% No = 4%
Employees owning stock	28%	3%	81%

The age profiles of employees for the year 2002 are extrapolated from current figures. This

assumes that current employees will remain with DBNM and that no new employees will be taken on. Except for the Transkei Group, this is an unrealistic assumption. The age profiles are used to gain an indication of the age distribution of senior employees.

(b) Analysis and assessment

The issues of unemployment and re-employment are different for the three groups of employees, and are therefore discussed separately for each group. Unless otherwise mentioned, age profiles and economic levels are 1992 figures.

Impacts on the Namaqualand Group

This group has the youngest workers on the mine: 35% are between 18 and 25 years of age and 68% are below 36 years of age. In 2002, only 11% would have passed the age of 60 and be eligible for a pension (Figure 3.1).

Therefore, at the projected time of closure approximately 70% of the Namaqualand Group will be in the midst of their working years, and the majority (86%) anticipate seeking employment elsewhere. Being unemployed at this age will be a major impact, as they will be:

- (i) beyond the age at which tertiary or other training takes place,
- (ii) carrying the financial responsibility of a family including the education of their children,
- (iii) unwilling to move in search of employment as they may be settled in Namaqualand with a house, and
- (iv) not yet old enough to qualify for pension.

In his study of Steinkopf, Emmett (1987) identified an association between education and work status. Of the adults between 21 and 64 years of age, 83% of those with Std 9 and higher were working. The percentage dropped for those with Std 6 to Std 8, where only 51% found work. And for those with Std 1 to Std 5, only 41% found work. Considering that 72% of the Namaqualand Group have Std 8 or less, it can be anticipated that they will struggle to find employment.

The thirty percent of respondents who reported that they would seek alternative employment in Namaqualand would be battling against unemployment rates which are higher for "coloured" people in Namaqualand than in the Western Cape (Table 3.10). The high unemployment rates in Steinkopf will impact severely on the approximately 20% of the Namaqualand Group from Steinkopf.

TABLE 3.10 COMPARATIVE PERCENTAGES OF MALE AND FEMALE POPULATIONS OF 15 TO 64 YEARS OF AGE WHO ARE UNEMPLOYED

	Steinkopf	Namaqualand		Western Cape	
		Coloured	White	Coloured	White
Males	21%	11%	0,6%	9%	2%
Females	18%	18%	0,6%	11%	3%

(Source: Emmett, 1987)

The bulk of income received in the RCAs is from mining employment. Emmett (1987) reported that 81% of all income earned in Steinkopf was from mine wages, with pensions and grants accounting for a further 11%, and farming providing a mere 2,7% of income. Farming therefore offers limited financial hope for the 28% of the Namaqualand Group who own stock, and who may be envisaging a return to farming to replace lost mine wages.

The interaction of the above constraints will result in the Namaqualand Group struggling to find re-employment following closure. This places constraints on the future of dependants of these employees.

Impacts on the Mine Group

77% of this group are presently between 25 and 46 years of age and will be in their middle ages in 2002. Only 6% will be over 60 years of age and be eligible for a pension.

Amongst the Mine Group, the impact of being retrenched will be softened by a number of factors:

- Higher levels of education: 67% have from Std 9 to beyond std 10.
- Greater geographical mobility due to higher levels of education and because members generally are less socially and culturally tied to Namaqualand.
- Certain posts in the higher C Patterson band and D and E bands are eligible for transfers within DBCM, which only includes members of the Mine Group. Since approximately 3% to 3,5% of DBNM employees are eligible for transfer, this implies that approximately 18% to 21% of the Mine Group could be offered transfers to other mines.

Members of the Mine Group recognise their greater ease in finding re-employment, and the percentage employees who expect difficulties in finding re-employment was lowest for this group (54%).

Impacts on the Transkei Group

The distinct age profile of the Transkei Group has both positive and negative consequences. Present employment policies indicate that the current employees from the Transkei will continue to work for DBNM until closure, with no new Transkei workers being employed. Therefore, at the time of closure, 30% of the group will be over 60 years of age and qualify for pension. These employees are unlikely to seek re-employment elsewhere.

For closure in 2002, 70% of the Transkei employees would be between 45 and 60 years of age. For the following reasons, their opportunities for securing alternative income or employment would be limited:

- 81% of the workers from Herschel have Std 5 educational levels or less
- although 81% of this group own stock, stock farming in Herschel offers negligible commercial return
- crop production offers even less financial return
- the manufacturing industry in Herschel is extremely small.

These severe constraints were recognised by the members of this group, of whom 89% reported that they would struggle to find re-employment.

3.4.3 Pension and Retrenchment Packages

(a) Synthesis of background information

Limited information is currently available on the nature of retrenchment and pension packages for employees in the case of mine closure. These packages are currently under negotiation, and the recommendations of this report should contribute to the negotiations.

(b) Analysis and assessment

The current age profiles of employees, are presented in section 3.4.2, are also relevant to this discussion of pension packages. The projected age profiles for 2002 are based on the assumption that current employees will remain with DBNM and no further employees will be taken on. Current employment policies indicate that this assumption is realistic for the Transkei Group, but not for the Namaqualand and Mine Groups.

The table below summarises the percentage of employees in the senior age bands for the year 2002.

TABLE 3.11 PERCENTAGE OF EMPLOYEES IN SENIOR AGE BANDS FOR EACH GROUP

Age Band	Namaqualand	Mine	Transkei
51-55	9%	18%	19%
56-60	6%	5%	31%
61-65	8%	3%	15%
66-70	3%	3%	15%
TOTAL	26%	29%	80%

13/10/2002

If the pensionable age were to remain at 60 years, then in 2002, 11% of Namaqualand, 6% of Mine and 30% of Transkei employees would be eligible for full pension. Furthermore, 31% of Transkei employees would be from 56 to 60 years of age. As discussed in section 3.4.2, they would experience extreme difficulty in finding re-employment. It is therefore suggested that the rules of the pension fund be altered to reduce the pensionable age to 55 years. The provision of full pension benefits to a further 31% of the Transkei employees will assist in mitigating the impacts of closure.⁶

In the employee survey the, Transkei Group expressed dissatisfaction with the reduction in their length of pensionable service. Transkei employees are contracted for 6 months and then have to take one month "leave". Thereafter they begin a new 6 month contract with DBNM. These compulsory months of "leave" between contracts are not included in the length of pensionable service to De Beers, and reduce their pension by approximately 15% (i.e. 2 months out of 14). Given the close relationship between Apartheid and the system of migrant labour and DBCM's rejection of Apartheid, it is suggested that DBNM include these months between contracts in the length of pensionable service.

Lastly, the impact of the drop in income from full salary to pension or retrenchment payouts are assessed. Monthly pension for eligible employees is calculated as follows:

12/10/2002

12/10/2002 Monthly pension = 0,02 x monthly salary x pensionable service.

12/10/2002

⁶ It remains to be clarified whether early retirement (at 55 years of age) would result in a reduction in the contribution paid by DBNM towards the pension of employees.

Information is lacking on the length of pensionable service for the three employee groups. Based on interviews conducted by the author, the following average length of service is assumed: 5 years for Namaqualand Group, 10 years for the Mine Group and 15 years for the Transkei Group. Special consideration is given to the Transkei Group, as this group has the highest percentage of employees eligible for pension in 2002. On retirement in 2002, a Transkei worker currently earning R1250 per month, with 25 years of service, would receive a pension of R625 per month. (Values are based on 1992 averages). The worker will experience the financial impact of a 50% drop in his monthly income.

On closure, employees not eligible for full pension will receive a retrenchment package. This consists of 4 months salary paid in a lump sum and the payout of the amount which the employee contributed to the pension fund. Retrenchment payouts for an average employee from each group are shown in the table below.

TABLE 3.12 RETRENCHMENT PAYOUTS FOR EACH GROUP

Group	Monthly salary	Length of service (in 2002)	Retrenchment payout
Namaqualand	R1250	15 years	R16 875
Mine	R3000	20 years	R54 000
Transkei	R1250	25 years	R28 125

These payouts of between one and two years of salary will provide temporary financial security for retrenched employees.

The following sections focus on the broader impacts of closure on the home communities of DBNM employees.

3.4.4 Loss of DBNM Benefits

(a) *Synthesis of background information*

The loss of DBNM benefits was identified as an important impact in the employee survey and the community meetings. In the survey, concerns about the loss of DBNM benefits accounted for 12%

of all responses and was the issue with the third highest response rate. The benefits which employees are concerned about losing are discussed below.

1906

Subsidised accommodation

1907

Family housing is provided for employees from the C4 band upwards and single quarters is provided from the C1 band upwards. This effectively excludes employees from the Transkei and Namaqualand Groups.

Building loans

1908

Building loans of R10 000, at 3% to 4% interest, are available for employees not living in Koingnaas or Kleinzee, including the Transkei employees. Members of the Namaqualand Group are making use of this benefit and are currently paying back the loans.

Subsidised groceries

The cost of groceries in the mine towns is subsidised by DBNM, who pay the transport costs from Cape Town.

Loss of medical facilities

All employees, except the migrant workers from the Transkei, receive medical aid benefits. Dependants of the employees are included in the medical aid scheme, which allows for free treatment (medical and dental) at the mine hospital and 60% subsidisation of medical bills incurred elsewhere. On retirement, pensioners continue to have access to medical aid benefits. When employees retire early, they do not receive any repayments for their contributions to the medical aid scheme and they don't get the benefits.

1909

Educational assistance for schooling and university

DBNM offer subsidies for the dependants of certain employees. The school fees for children attending the primary schools in the Kleinzee are subsidised. Certain high school expenses are subsidised for those employees eligible for family housing in Kleinzee or Koingnaas, which effectively excludes members of the Namaqualand and Transkei Groups. This subsidy includes transport to the boarding school and the boarding fees. It does not include the school fees.

- DBNM provides funding for a scholarship scheme aimed at the S. A. Van Wyk School in Springbok.
- Eight standard 8 pupils with exceptional results in mathematics and science are funded (1991).

They then go forward to the Anglo Bursary Scheme. In 1991 university bursaries were awarded to two dependants of DBNM employees.

High schools in Steinkopf, Concordia and Springbok that are fed by the primary schools in Koingnaas and Kleinzee are reported to receive financial assistance from DBNM. The DBNM memorandums on community needs in Namaqualand identify a wide range of requests and needs for schools in the rural reserves of Namaqualand. However, the memorandums do not contain details of assistance that has been provided to these schools.

Adult education

DBNM offer career guidance and evening tutoring for all employees, with courses being run according to demand. Skills training is also available for employees, who are nominated by their supervisor. R5 million was budgeted for this purpose from mid 1991 to mid 1992.

Sporting and recreational facilities

The sporting and recreational facilities at the mining town are available to all DBNM employees who join the respective clubs.

(b) Analysis and assessment

The loss of benefits due to the closure of DBNM are assessed separately for the Namaqualand, Mine and Transkei Groups. The assessment is based on background information contained in the previous section.

Impacts on the Namaqualand Group

- Members of the Namaqualand Group make use of the building loan of R10 000. The high percentage (64%) of this group that do not own houses is linked to their young age (68% between 18 and 25 years of age). This results in them staying in houses belonging to their parents. The loss of this benefit will reduce housing assistance available to people in Namaqualand, but be of limited significance.
- On closure, some employees may not have completely paid back their building loans. DBNM may expect employees to continue paying back their loans. For employees struggling to find re-employment, the repayment of loans would be a significant financial impact.
- The Namaqualand Group would lose the benefit of the subsidised groceries in the DBNM

towns. Groceries would have to be purchased from the small traders in the rural reserves. Prices would increase due to the inclusion of transportation service costs between Cape Town and the rural reserves.

- Medical aid benefits for the employees would be lost. Access to medical facilities would become more difficult, the cost would increase and the quality of medical care would decline because of the scarcity of medical facilities in the rural areas.

- The children of the Namaqualand Group do not benefit from the subsidised primary schooling in the mining towns because they live in the towns in Namaqualand. Individuals also do not qualify for subsidies offered for high school education, although dependants of Namaqualand employees benefit through assistance provided by DBNM to the schools in Namaqualand. If DBNM were to cease providing these benefits, following closure, there would be a severe impact, as it would affect the ability of this group to afford education for their children. (The broader impact on education in the community is very important, and is discussed in 3.4.7).

- The loss of opportunity for adult education and skills training offered by DBNM will be particularly significant for this group, whose average level of education is standard 6.

- Sporting and recreational facilities in the towns where employees in the Namaqualand Group live, will be lost to the current employees. This will be a significant impact as the facilities in the hometowns of the Namaqualand employees are greatly inferior.

Impacts on the Mine Group

- The Mine Group will lose the benefits of subsidised accommodation. This will be a significant impact as 72% of this group do not own houses and will have to seek alternative accommodation. However, some of the Mine Group may be able to afford a house, if they have saved money because they have not been paying off a bond.

- Retrenched employees will lose medical aid benefit unless they are transferred within DBCM (see section 3.4.3). Members of this group who are unable to find employment after closure may not be able to afford medical aid cover.

- The Mine Group benefits extensively from assistance in school fees, transport costs and a limited number of scholarships and university bursaries. On closure, these benefits would be lost. The loss of these benefits in 10 years time could be more significant because of the rapidly increasing school fees in South Africa.

- A wide range of subsidised sporting and recreational facilities are used extensively by members of the Mine Group. The loss of these benefits is considered insignificant as the group will probably seek re-employment in areas where adequate facilities will be available.

Impacts on the Transkei Group

- The loss of the hostel accommodation will not be a major impact, as 100% of the members of this group own a house. However, the loss of subsidised water, electricity, meals and basic groceries will be a major impact.
- The Transkei Group do not receive medical aid benefits, and will therefore not experience any direct loss. However, they will lose the high quality, easily accessible medical services at Kleinzee and Koingnaas. Following closure, members of this group may be in need of accessible and affordable medical facilities because of the manual nature of their work and their advanced age (average age of fifty-seven).
- No educational assistance for the dependants of the Transkei employees was documented in the baseline information report. The major impact on the education of dependants is that the parents may not be able to afford the cost of education, if they do not find other work.
- The educational level of 81% of the Transkei Group is below standard 6. Therefore, the loss of the opportunity for further education and skills training while working for DBNM is significant. However, it must be borne in mind that when closure occurs in 2002, the chances of this group finding re-employment will be severely limited because of their advanced age.

3.4.5 Changes in the Socio-cultural Structure of Communities

This section assesses the impacts of socio-cultural changes in Namaqualand and Herschel arising from the closure of DBNM.

Members of the Namaqualand Group expect an overall decline in the quality of life in their communities, on closure of DBNM. Participants in the community meetings in Komaggas and Steinkopf felt that levels of migrant labour would increase following the closure of DBNM. Conditions would be further exacerbated by the possible closure of other mines in Namaqualand. The younger, educated people would be unable to find employment in Namaqualand and would leave. The older people would be left behind in the RCAs and would take up positions of leadership. This trend has been observed by Emmett (1987) in Steinkopf, where it led to a further rift between the younger members of the RCAs and the older, conservative leadership.

In the meeting with women's groups in Komaggas, most women doubted whether wives and families would leave Komaggas to join their men if the men found work elsewhere. The reasons are that most women have no qualifications and little work experience and are thus even less likely than men to find employment. Moreover, few women would want to leave all they had built up over the years. The women fear that separation of men from their families would slowly tear the social fabric of the community.

In the Herschel District the closure of DBNM could lead to increased poverty. Increased poverty is often associated with a higher occurrence of venereal disease, AIDs, teenage pregnancies, psychological disorders and high birth rates. A second major social impact in Herschel would be the withdrawal of pupils from schools, as households might not be able to afford education. At closure, 75% of employees would have 1 to 3 children in junior school. Some families would have as many as 8 children in junior school. These children might be forced to abandon their schooling, either because their parents could not afford the cost, or to find employment and in order to support their family. Lund (1992) anticipates that as the opportunities for wage labour declines, these youngsters's chances of finding employment would drop, and they could soon find themselves in urban poverty.

3.4.6 Increase in Social Pathologies

Participants in the community meetings in Namaqualand felt that large-scale unemployment would lead to an increase in social pathology. Unemployment would give rise to anxiety about meeting physical needs, such as food. Emotional stress would also arise from family separation and the feelings of frustration, boredom and powerlessness associated with unemployment. These stresses could lead to increased crime rates, religious and moral degeneration and an increase in alcoholism.

3.4.7 Decline in Infrastructural Services and Facilities in the Namaqualand RCAs

A decline in physical infrastructure and social services is expected following the closure of DBNM.

The decline would be due to:

- less money available amongst members of the community
- less money paid to the RSC in the form of fees
- the possible reduction of assistance from DBNM.

The decline in services would manifest in the following ways:

- Teachers at the community meeting in Steinkopf stated that mine closure was likely to have a negative effect on education in Steinkopf. Pupil attendance would drop as a result of unemployed parents being unable to support children at school. In addition, parents leaving Steinkopf in search of employment would take their children with them, which would reduce the number of pupils in the schools. The drop in pupil numbers in the Namaqualand schools would affect teachers. If pupil numbers drop sufficiently, some schools could close altogether. This would result in teachers being retrenched and an increase in illiteracy in Namaqualand.

Pupils leaving Namaqualand, however, could benefit from better education in larger centres such as Cape Town.

- Schools in Namaqualand would be affected by the loss of benefits currently received from DBNM. DBNM have assisted with providing sports and educational equipment, developing sports fields and facilities, and have made food donations to schools.
- A wide range of infrastructural services in Namaqualand would decline. Firstly, the Namaqualand communities would lose the infrastructural assistance which DBNM has provided in the past. For example, DBNM has assisted with the development of waste disposal sites, septic tanks and small-scale water pipelines. Secondly, due to the loss of income, members of the Namaqualand towns will have extremely limited ability to finance these projects themselves. The decline in fees (DBNM contributes 30%) paid to the Namaqualand RSC would reduce their ability to address infrastructural needs in Namaqualand (Namaqualand RSC Annual Report, 1991).
- The cost of supplying fresh water to Kleinsee via the pipeline from the Orange River could increase. DBNM's mining operations use sea water only and fresh water is used mainly for drinking and household activities. One third of the fresh water is obtained from boreholes in the Buffels River bed and two thirds is supplied by the Orange River pipeline. Depending on the utilisation of Kleinsee after closure, the volume of fresh water consumption might decline. The present cost of water in Kleinsee (which, at R2,50/kilolitre is already fivefold that of Cape Town) might have to be increased to cover maintenance costs.
- Similar reasoning can be applied to the cost of telephone and electricity services to Kleinsee and Koingnaas. The decrease in consumption due to the closure of the mine might result in the supply costs to the DBNM towns being increased in order to cover maintenance costs. The increase in supply costs for electricity may be felt more broadly than the DBNM towns, as DBNM is the largest consumer of electricity in Namaqualand. 87% of DBNM's electricity

consumption is for mining purposes alone. Therefore the closure of the mine will result in a major drop in consumption. The power line to Port Nolloth branches off from the line to Kleinzee and Koingnaas. Therefore the decrease in consumption due the closure of DBNM might increase electricity supply costs to towns in Namaqualand, particularly to Port Nolloth.

- The reasons stated at the beginning of section 3.4.7 would result in a decline in medical and health services in the rural areas of Transkei and Namaqualand.
- Religious institutions will be affected. With the departure of people from the area, numbers in churches will decline. This may be exacerbated by general moral degeneration and the exit of youth from the church.

3.5 IMPACTS ASSOCIATED WITH DIFFERENT PROCEDURES FOR MINE CLOSURE

3.5.1 Introduction

This section reviews the technical considerations and major impacts associated with different closure procedures. Brief descriptions of alternative closure procedures have been obtained from DBNM, but further technical information would be required for a detailed assessment of the feasibility of these alternatives. This section assesses the closure procedures in terms of their impact on the biophysical, economic and social environments.

DBNM consists of three mining complexes (see Figure 1 in Executive Summary):

- Buffels Inland Complex (Langhoogte plant)
- Buffels Marine Complex (AK3 and Tweepad plants)
- Koingnaas Complex (Koingnaas and Mitchell's Bay plants)

The following approaches for closing these complexes have been suggested by DBNM:

- To gradually reduce the rate of production of mining,
- To rapidly reduce the rate of production of mining, at a planned time in the future.
- To close the three complexes simultaneously on the same date or over the same time period,
- To close the three complexes in a phased manner.

(These approaches are illustrated in the figures on the following pages).

The above approaches to closure are subject to a number of technical considerations, three of which are listed below:

- The Buffels Inland and Koingnaas Complexes are dependent upon the Buffels Marine Complex. This requires that, for phased closure, the Buffels Marine Complex be last to close.
- The size of the remaining deposits at each of the complexes is different. This makes simultaneous closure difficult.
- The processing plants at the three complexes must be run at or above capacity in order to cover overhead expenses. This makes gradual closure difficult.

An estimation of the impacts of closure for each of the three complexes are obtained from considering the number of employees at each complex. The Buffels Marine Complex contains 70% of DBNM employees, the Koingnaas Complex contains 28% and the Buffels Inland Complex contains only 2% of employees. Due to the dominance of the Buffels Marine Complex, the difference in impact between phased closure and simultaneous closure is reduced. The impacts of closure are therefore discussed under the headings of rapid closure or gradual closure.

3.5.2 The Impacts of Rapid Closure

Rapid closure is technically the easiest option for closure. It has the advantage of the processing plants being run at full capacity until closure. The over-riding impact from this closure procedure will be the mass retrenchment of a large number of employees at one time.

The RCAs and the Herschel District would experience the rapid return of a large number of retrenched employees. Some of these employees might turn to agriculture, leading to an impact on the biophysical environment as the land would be further degraded in these areas.

Impacts on the economic environment would include a sudden drop in business for businesses with a high proportion of business with DBNM company or DBNM employees. These businesses would face the difficulty of adapting to this sudden economic "shock".

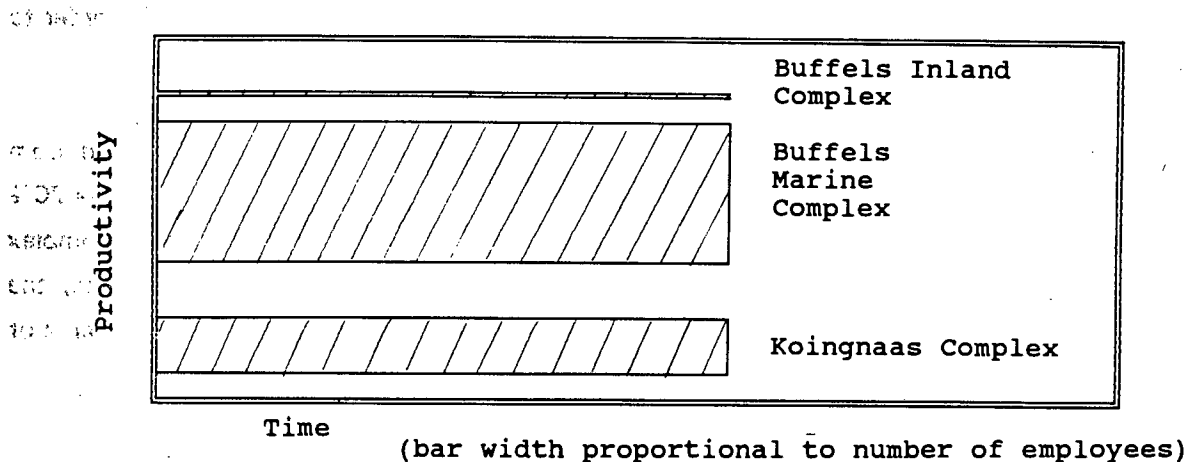
Impacts on the social environment would include a rapid increase in demand for employment opportunities, against a background of high unemployment in the RCAs and the rest of Namaqualand. Development projects aimed at providing employment to these workers would have to accommodate a rapid rather than a gradual release of employees. In addition, the rapid increase in demand for transfers within DBCM could be more difficult to accommodate.

Rapid closure of the three complexes could either be carried out simultaneously, or in a phased manner. These options are illustrated in the bar graphs below.⁷

(a) *Simultaneous rapid closure*

This closure procedure would result in the magnification of the negative impacts associated with rapid closure.

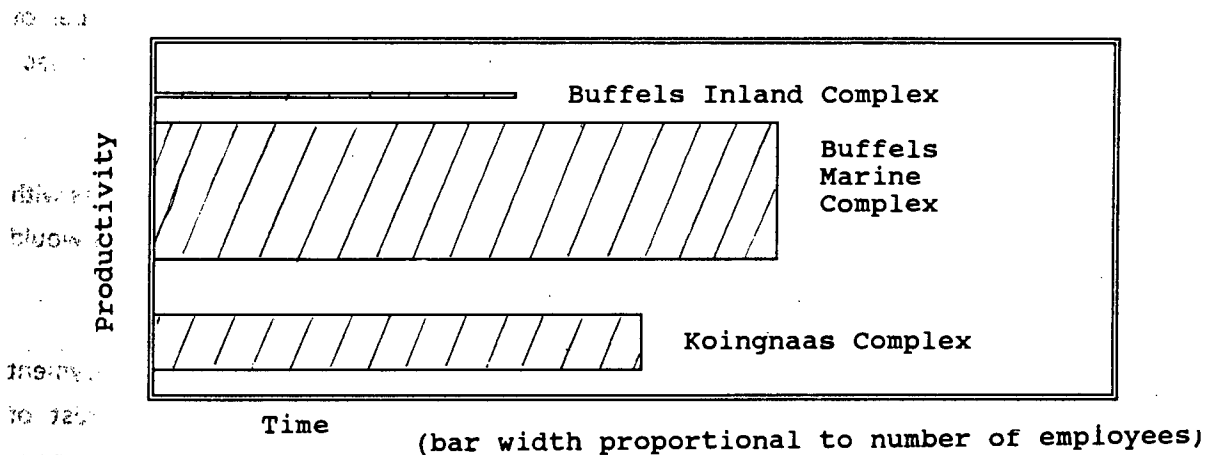
Figure 3.1 Simultaneous rapid closure



(b) *Phased rapid closure*

This closure procedure would provide some reduction in the negative impacts associated with rapid closure.

Figure 3.2 Phased rapid closure



⁷ In the bar graphs it is assumed that the productivity of the different complexes is proportional to the number of employees at each.

3.5.3 The Impacts of Gradual Closure

Impacts would be reduced by the employees being retrenched gradually. The main difficulty associated with gradual closure is that the overheads of the plants must be carried by a progressively smaller production.

The impacts on the physical environment could be readily managed than for rapid closure. A gradual increase in agriculture in the RCA's and Herschel District would allow time for development agencies to incorporate employees in agricultural projects and education programmes.

The economic impacts would be experienced more gradually. This would assist businesses in adapting to the loss of business with DBNM.

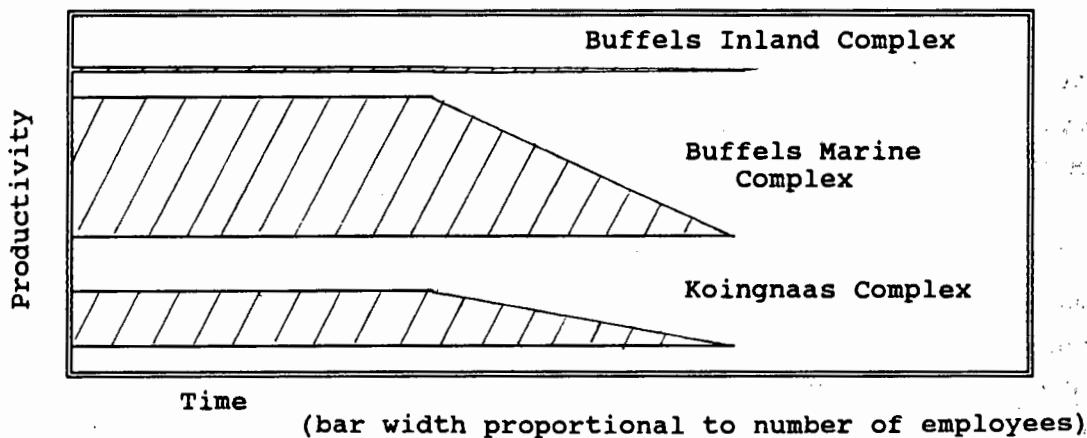
The social impacts would be experienced more gradually. Communities would have more time to adjust. Gradual closure would assist development agencies who could gradually phase retrenched workers into development projects. Gradual closure would also assist with transfers within DBCM.

Gradual closure of the three complexes could either be carried out simultaneously, or in a phased manner. These options are illustrated in the bar graphs below.

(a) *Simultaneous gradual closure*

This closure procedure would result in a reduction in the negative impacts associated with rapid closure. If the period of closure was the same as for phased gradual closure, then the rate of closure would be equal for both procedures.

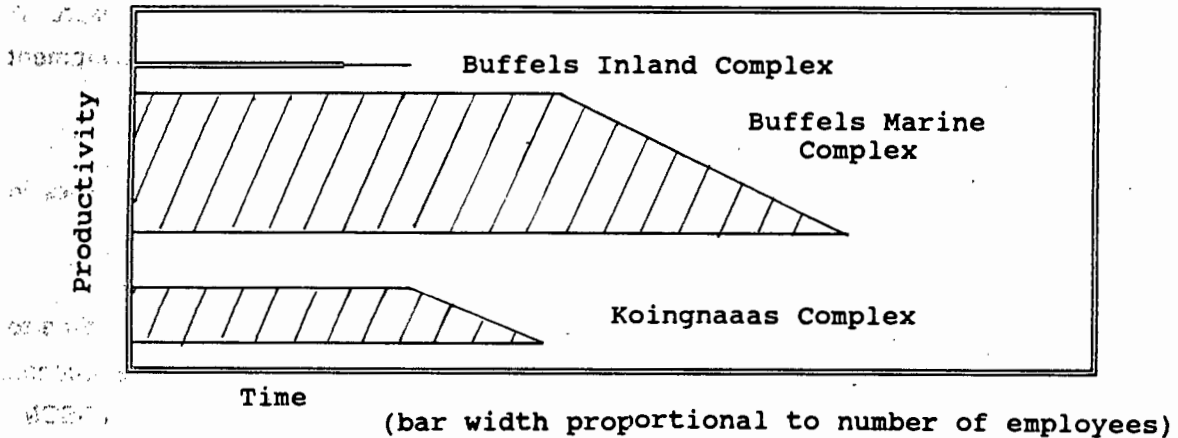
Figure 3.3 Simultaneous gradual closure



(b) Phased gradual closure

This closure procedure would result in the maximum reduction of negative impacts associated with closure.

Figure 3.4 Phased gradual closure



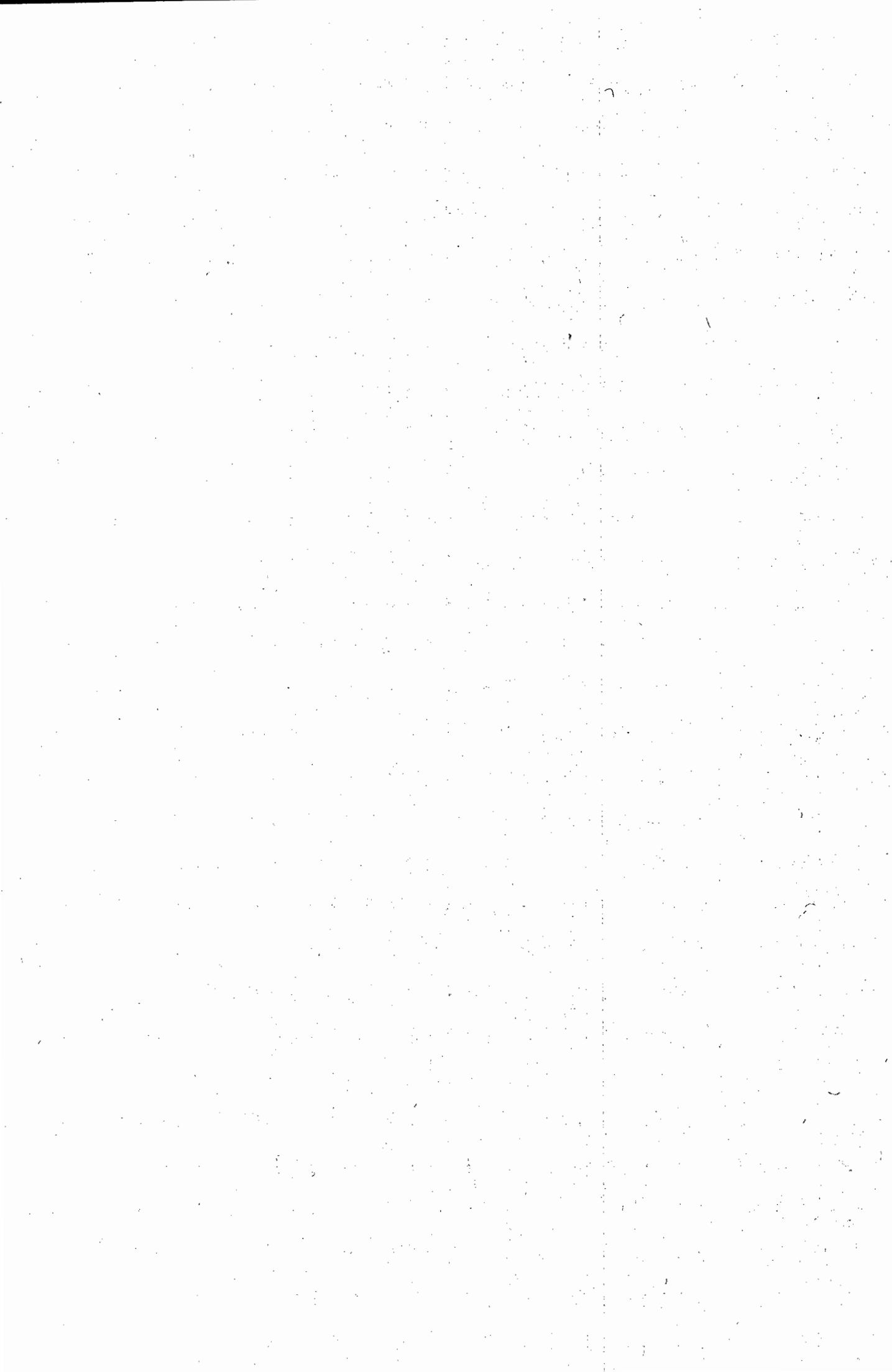
3.5.4 Conclusions

From the identification of major impacts associated with different closure procedures, rapid closure is anticipated to produce the greater "shock" to the biophysical and socio-economic environment. Simultaneous rapid closure and phased rapid closure are therefore discouraged.

A particular scenario exists for which rapid closure could be feasible. The rapid closure and retrenchment of employees from DBNM could be phased in with the re-employment of a proportion of these employees at the heavy mineral mining operation at Brand se Baai. This operation is being conducted by the Anglo American Group, of which DBCM are a member. This possibility requires further investigation.

However, in the event that no alternative operation of a scale similar to DBNM is commissioned in phase with the closure of DBNM, it is suggested that gradual simultaneous closure and gradual phased closure be further investigated in developing a plan for mine closure.

This concludes the assessment of the major impacts due to the closure of DBNM. For a summary of the major impacts, the reader is referred to the Conclusions and Recommendations (chapter 5) or to the Executive Summary. Arising from the assessment of impacts, the following chapter contains preliminary suggestions for mitigating the impacts of closure.



Chapter 4

PRELIMINARY SUGGESTIONS FOR MITIGATION MEASURES

Chapter 4

PRELIMINARY SUGGESTIONS FOR MITIGATION MEASURES

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4. PRELIMINARY SUGGESTIONS FOR MITIGATION MEASURES

4.1 INTRODUCTION

Following from chapter 3, which identified the impacts of closure and associated them with different closure procedures, this chapter presents suggestions for mitigating the impacts resulting from closure. The focus of the NM2002 study is on assessing the impacts of closure, and these mitigation measures are presented as preliminary suggestions which require further investigation.

This chapter is divided into three sections. Firstly, in order to generate appropriate mitigation measures, the chapter begins by summarising the features of recent development strategies in Namaqualand. This is followed by discussion on two important concerns identified during the social study and which must be taken into consideration when generating mitigation measures. These are the issues of land ownership in Namaqualand and the extent to which DBNM contribute to the development of the region. Thereafter, mitigation measures for reducing the impact of closure are suggested. Mitigation measures are suggested for DBNM employees, DBNM property, and the Namaqualand region and the Herschel District.

Mitigation measures arise from the interaction of a number of inputs: the employee survey; community meetings in Namaqualand; interviews with DBNM management; mitigation measures suggested by the external consultant for the Herschel District; external literature reviews; and the analysis and assessment of impacts contained in chapter 3 of this report.

The approach followed in this chapter is consistent with the three criteria proposed by Emmett (1988) in his report on the evaluation of development projects in Namaqualand. These criteria are:

- (a) consistency and coherence in the aims and planning of projects;
- (b) compatibility with existing development theories and experiences; and
- (c) community acceptance of the projects and satisfaction or dissatisfaction of project beneficiaries.

The first two criteria emphasize the importance of considering recent development strategies in Namaqualand (section 4.1) when generating mitigation measures. The third criteria supports the inclusion of the concerns of the Namaqualand community with regard to mine closure (section 4.2).

4.2 PREVIOUS AND EXISTING DEVELOPMENT STRATEGIES IN NAMAQUALAND

4.2.1 Purpose of this review

The purpose of this review is to identify the features of development strategies and projects which have been implemented in Namaqualand since the mid-1980s. From the successes and failures of these different strategies, an introductory understanding of a feasible strategy and specific mitigation measures is developed. The compatibility between mitigation measures in this report and existing strategies and projects in the region is enhanced.

Only one reference is made to development strategies in Herschel. It is understood that before developing any mitigation measures, the external consultant for the Herschel District took into account any previous development strategies in the area.

4.2.2 Trends in development strategies

A wide variety of strategies have been attempted in Namaqualand. There has been a lack of coordination between different strategies and development agents (Dunne, 1988: 101). Emmett, in his review of development strategies in Namaqualand over the past 40 years, concluded that "little consensus has emerged and sharp differences still exist in relation to the most appropriate strategy that should be adopted for the region" (1988: 37). Despite the disparity of development strategies, the following three trends have been identified.

Firstly, there has been a shift in emphasis from production oriented activities such as agriculture and mining to placing emphasis on developing trades, crafts, business skills and small-scale enterprises. In 1985/6 Operation Hunger commissioned an Israeli professor from the Desert Research Institute to conduct a feasibility study of Namaqualand's development potential. He produced a substantial report which focused on five different types of agriculture (Dunne, 1988:92). A second report, produced in 1986 for the Department of Local Government, Housing and Agriculture (House of Representatives), focused on the development potential of agriculture, tourism and mining in Steinkopf (Cloete, 1986). Both of these reports focused on production oriented activities related to mining or agriculture.

This trend can also be seen in the evaluation of the Small Business Development Corporation's (SBDC) promotion of development in Steinkopf. In this evaluation, Emmett (1988) recommends that the SBDC shift its emphasis from supporting agricultural projects (such as the Goodhouse irrigation scheme) to supporting industrial, commercial and service enterprises. He observes that the most

successful of the SBDC projects were in providing assistance to retail businesses and "home industries" in Steinkopf (1988: 32). The trend to place emphasis on assisting small businesses instead of agricultural development projects was also proposed by the consultant for the Herschel District, who asserts that "rural development is not synonymous with agricultural development" (Lund, 1992: 9). She then goes on to recommend that development in the Herschel District should place an emphasis on providing improved rural infrastructure and training in business and artisan skills.

A second trend is the need for development strategies to address both structural and cultural constraints. A major debate in development theory is between dependency (or radical) theorists and modernisation (or Eurocentric) theorists. Dependency theorists emphasise the external constraints of structure, domination and exploitation as the limiting factors for development. Whereas, the modernisation theorists emphasize culture as a limiting factor. For example, in the debate on overstocking in the RCAs, the dependency theorists would emphasize that overstocking is due to the external, political forces which resulted in "coloured" farmers having access to less and less land. Modernisation theorists would emphasize the socio-cultural attitudes to stock farming that lead to overstocking. Emmett argues that a successful development strategy for Namaqualand needs to address both cultural and structural constraints (1987).

The third trend is the move towards localised, small scale projects. This trend arises from the recent crisis in development theory, which has shown the major theoretical models to contain "fundamental defects" (Todaro, 1991: 524). "Disillusionment with existing theoretical models and the urgency to affect change in underdeveloped communities has prompted many developmentalists to abandon theory in favour of more pragmatic approaches emphasizing such features as basic needs, quality of life and technical aspects of development" (Emmett, 1987: 16). Emmett argues that the inherent flaws in development theory have led to the failure of large scale projects. He motivates for "tailor made" projects, which are practically oriented, locally initiated and developed from a small-scale. Although limited in their scale and influence, local schemes have several advantages. They prevent large amounts of money being lost in unsuccessful development projects, as the project is initiated at a small-scale with small amounts being invested. Should the project fail, the financial losses to the development organisation and the debts incurred by the community are less. A second advantage of "tailor made" projects is that they can be more specifically adapted to a particular environment than the broad "blue-print" approach to development planning.

4.2.3 Recommendations for development strategies

A number of recommendations have emerged from the various authors on development strategies in Namaqualand.

Firstly, strategies must aim to **develop human and organisational skills** in order to facilitate development:

- Projects should be initiated on a *small-scale basis* and be flexible and iterative in their planning. The "blue print" approach has been rejected in favour of a "learning process approach", which allows for input from participants and constant monitoring and adjustment of the development efforts. In particular, provision is made for the uncertainties built into development situations (Emmett, 1987: 206).

- Inherent in the "learning process approach" is the importance of *community participation*. Projects should include consultation with all leadership in the community, so as to envelop cleavages existing between, for example, youth and older residents. In order to ensure community participation, good communication of goals and results of projects is required, as well as sensitivity to the skills, talents and knowledge of the community.

- There is a need for greater *coordination* with other development agencies and interested and affected parties involved in development in Namaqualand.

- Skills need to be developed through *education and training*, with an emphasis placed on developing business and trade skills appropriate to the needs of the communities. Formal secondary education is also essential for tertiary education and for pupils to compete beyond the boundaries of the region. Training is also required in managerial and leadership skills.

Secondly, strategies must aim to **develop the primary, secondary and tertiary industries and to generate employment**:

- The development of *primary activities* could include activities such as stock farming, irrigation farming, date plantations, mineral exploitation and mariculture.

- However, greater emphasis should be placed on developing *secondary industries* associated with the above. For example, weaving, leatherworks, arts, crafts, trades, small business enterprises and home industries should be promoted.

- The development of *tertiary industries and services* such as tourism, administrative and social services, and physical infrastructure.
 - Develop *tourism* in Namaqualand. For example, Ninham Shand have proposed the development of a series of marinas and harbours up the west coast between Cape Town and Alexander Bay, with the possibility of a harbour at Kleinzee.
 - The development of *administrative services* to assist with running businesses, financing loans and the provision and coordination of resources and knowledge.
 - The provision of *social services* for health, nutrition, recreation, social care and unemployment security.
 - The provision of *physical infrastructure* such as roads, water, sewage treatment and buildings for community and educational purposes.

Further investigations into mitigation planning should be done in conjunction with the following development strategies currently being generated:

- The Springbok municipality are presently considering a draft structure plan for the town, which is still confidential.
- An economic development strategy is currently being drawn for Region A by the Regional Development Advisory Committee.
- The Development Action Group are initiating studies in Namaqualand, coordinated by Laurine Platsky.
- The Surplus People's Project have recently advertised two research posts in Namaqualand: (i) an investigation into the Namaqualand land claims and (ii) a study of the future of the RCAs.
- The Environmental and Development Agency is working on six integrated programmes in the Herschel District: Water, Livestock, Social Forestry, Business Training and Loans Facilitation, Community Store and Community radio.

The above trends and recommendations for development strategies in Namaqualand are important to the generation of mitigation measures. In addition, mitigation measures must address the concerns of people in Namaqualand. Two important concerns were identified in the social survey

in Namaqualand. They are discussed below.

4.3 CONCERNS OF THE NAMAQUALAND COMMUNITY

Community meetings in Namaqualand identified the land issue and the extent to which DBNM have contributed to the region as the two primary concerns. Meetings with the Komaggas and Buffelsrivier community, Komaggas Management Board, Steinkopf community and Steinkopf Management Board gave rise to seven important concerns relating to mine closure. The issues of land and DBNM inputs into Namaqualand were the only two issues which arose at each of these meetings. They are not directly related to the impacts of closure and therefore were not included in chapter 3. Due to their social importance amongst Namaqualand communities, they are included before the suggestions for mitigation measures. In social assessment, theoretical consensus has emerged on the importance of considering the attitudes of the affected communities (Freudenberg, 1986).

4.3.1 The land ownership issue

In order to understand the importance of the land issue to indigenous Namaqualand people, a brief review of the history of Namaqualand is provided.

(a) Introduction to the history of Namaqualand

The history of Namaqualand since the 1700s is one of gradual occupation and expropriation of land by white settlers. When European settlers arrived in Southern Africa in the late fifteenth century, the Namaqualand Khoi Khoi occupied the area of Little Namaqualand¹ and were spreading southwards into the south-western Cape. Their nomadic stock farming often resulted in them crossing the Orange River into the coastal region between the Swakop River in the west and the Fish river in the east, known as "Great Namaqualand".

With the movement of the "trekboere" northwards from approximately 1700 onwards, the Khoi Khoi in Namaqualand were steadily forced away from the good sites onto less suitable, more isolated areas. By 1847 the boundary of the Cape Colony had gradually shifted to the Orange River and included the whole of Little Namaqualand. At this time the territory was effectively controlled

¹ Little Namaqualand corresponds with what is today the boundary of the Namaqualand Magisterial District

by missionaries and local chiefs, but it became more and more difficult to prevent white farmers and traders encroaching on their land. In order to protect their land, the missionaries and chiefs requested tickets of occupation, which led to the establishment of the reserves of Komaggas, Leliefontein and Steinkopf. (The extent of these reserves is shown in Figure 1 in the Executive Summary). The Rural Coloured Areas Act (Act 24 of 1963) signalled the government's intention to do away with the communal land tenure system, and implement individually owned "economic units" (Dunne, 1988: 12-19). Strong opposition to this system resulted the failure of government plans to implement "economic units" and the continuation of the communal land tenure system.

(b) The communal land tenure system

The debate around the implementation of "economic units" initiated intensive discussion on the communal land tenure system. For the Namaqualand people, who have either experienced retrenchment or accept the possibility of sudden retrenchment at some time in the future, the communal system provides the security of quick access to the bonds of reciprocity. "What was necessary was not the actual possession of livestock, lands or implements at that given moment, but the possession of the right to have these things at some time in the future" (Sharp, 1984: 17).

(c) Attitudes expressed at the community meetings

Participants in the community meetings expressed concern and sometimes anger at how DBNM had acquired the land. A few respondents to the social survey mentioned that the RCAs had consulted a lawyer in Cape Town and been told that the land and mineral rights legally belong to DBNM.

The second more important concern expressed at the meetings was that the land belonged to the people of Komaggas and Steinkopf. Although they have no legal right to the land they believe that they have an historical right and have a strong desire for the land to be returned to them.

The land debate in Namaqualand is at present separated from the national political debate, due to the isolation of the Namaqualand communities. Increasing awareness amongst the communities of the national debate and the growing importance of the land issue nationally could result in the Namaqualand land issue becoming even more important in the near future (Redlinghuis, pers. comm.)(CPSA, 1991).

4.3.2 The limited inputs made by DBNM into Namaqualand

This section discusses the dissatisfaction identified at the community meetings about the limited inputs being made by DBNM into Namaqualand. Information is then provided on the contribution

made by DBNM into Namaqualand.

(a) Attitudes expressed at the community meetings

At the community meetings concern was expressed that DBNM may leave the region without ploughing many benefits back into Namaqualand. It was stated that while De Beers Consolidated Mines (DBCM) supported programmes elsewhere in the world² they neglected the communities in whose midst they operated. Workers lived in third world conditions while profits were used for first world developments elsewhere. The Steinkopf community proposed that all DBNM profits for the next ten years be ploughed into development in Namaqualand, particularly into the development of infrastructure, facilities and services. The Komaggas community proposed that all profits from overproduction³ be placed into a fund for creating employment opportunities in Namaqualand. Money spent on activities such as Oppenheimer Day would be better spent by being invested in this fund.

(b) Inputs made by DBNM into Namaqualand

Information on the inputs made by DBNM into Namaqualand were obtained from memorandums produced on the community needs and recommended projects. A list of donations and financial assistance provided between 1977 and 1985 showed the total annual donations for 1984 as R3700, and for 1985 also as R3700. Other donations between 1977 and 1985 totalled R28 270, and up until 1985 DBNM had financed building loans for houses to the value of R371 742 (Memorandum dated 11/1985).

A memorandum dated 15/3/1989 was produced on the Namaqualand Community Needs. It contains an updated list of projects completed since 1986, and seven recommended projects for 1989 to 1991. The construction of a clinic at Buffelsrivier was approved for 1989. The memorandum states that the amount of R58 249 authorised for 1989 will be enough for this project only. Another two of the seven recommended projects were scheduled for 1990: a sheep shearing project at Steinkopf costing R40 000; and the provision of medical beds for the Steinkopf Old Age Home costing R20 000. Therefore a total of R60 000 was budgeted for 1990. Considering that the 1991 figure for the turnover of DBNM is approximately R530 million (Namaqualand RSC, 1991), this would have amounted to approximately 0,01% of DBNM's turnover. However, the plans for Steinkopf did not come to fruition as no further funding was made available for Namaqualand in 1990 and 1991. In the Transkei, Sterkspruit received R89 000 in 1989 towards

² The communities did not provide specific information on these programmes. The DBCM Annual Report 1988 (p17) refers to a donation being made to Oriel College at Oxford.

³ DBNM sets a production target for each week. This target is regularly being exceeded.

community development (Claasen, pers. comm.).

The Annual Reports of DBCM indicate that the company's commitment to education and social development in southern Africa is expressed through The Anglo American and De Beers Chairman's Fund and Chairman's Fund Educational Trust, and indirectly through De Beers support for The Urban Foundation (DBCM Annual Report 1990: 17). The Anglo American and De Beers Chairman's Fund and Educational Trust approved expenditure of R56,7 million for the 1990 financial year, of which R46,8 million was received by education. Other priority areas included health, welfare and social development. In addition, the 1990 Annual Report describes De Beers's commitment to the "initiation by the (Company's) mines of educational upgrading projects at nearby schools determined in consultation with the communities involved, with emphasis being given to English, mathematics and physical science." (p11).

However, although DBNM produced 11% of the carats recovered by DBCM mines in 1990 (DBCM Annual Report 1990: 10), no money has been reported to be spent by DBCM on community development in Namaqualand during 1990. Of the R56,7 million approved for expenditure in 1990, 83% was spent education and health facilities in the Pretoria Witwatersrand Vereeniging (PWV) area. These statistics lend weight to the reports from the communities in Namaqualand that De Beers are neglecting the communities in whose midst they are operating and extracting profits.

Lastly, DBNM do not contribute to the diamond fund, since they own the land on which they mine. Only companies who mine on land that they do not own make payments to central government which then go into the diamond fund (Sullivan, DBNM, pers comm.). The diamond fund is intended for development in the RCAs.

4.4 PRELIMINARY MITIGATION MEASURES

Before suggesting mitigation measures to facilitate development, the approach of non-development is considered. There are a number of alternative strategies for non-development. The most extreme is to leave the region and allow it to decline, with the population being absorbed into more productive areas. However, this is unlikely to accomplish much more than the displacement of poverty and underdevelopment from one area to another. A softer strategy for non-development is to provide welfare services which support the region. However, this approach leads to further dependency, isolation and an inability to overcome poverty (Emmett, 1987). A third strategy is to provide services (e.g. education) that empower people to leave the region. This strategy overlaps with the approaches of non-development and development: it improves the mobility and quality of life of those receiving the services, such as education, but results in those who are older,

uneducated and least able to cope being left behind (Emmett, 1988: 38). Therefore the non-development approaches have been put aside, and this report focuses on options for generating development in the region in order to mitigate the impacts of the closure.

In order to guide the generation of mitigation measures, it is necessary to establish a broad, overall statement of the goals and principles to be followed. This is embodied in a strategy, which remains general and fairly unmeasurable. Thereafter recommendations can be made at a project level, which prescribe more specific objectives and activities and have more measurable results. The recommendations from recent development strategies in Namaqualand (section 4.1.3.) serve as strategy guidelines for the mitigation measures contained in this report. The mitigation measures in this report are preliminary suggestions which have not been subject to rigorous feasibility studies and which require further investigation.

Mitigation measures can be applied on different scales of time and space. They can occur both before and after closure, and apply to both DBNM employees and at a wider regional scale in Namaqualand and the Herschel District. DBNM's responsibility lies in mitigating the impact of closure on their employees. Therefore the following section begins with mitigation measures for reducing the impact of closure on DBNM employees. Thereafter, mitigating measures are considered for DBNM property, before presenting mitigation measures applicable at a broader regional scale in Namaqualand and the Herschel District.

4.4.1 Mitigation measures aimed at DBNM employees

The following mitigation measures are aimed at reducing the direct impacts of closure on DBNM employees and their households.

(a) Reduce the rate of production

Reducing the rate of production will prolong the life of the mine and extend the length of employment offered to DBNM employees. The employee questionnaire asked for comments on mine closure. Of the responses received, 16% suggested a reduction in the rate of production. This was the second highest response category for this question, with the response being highest for the Namaqualand Group.

Reducing the rate of production has a number of advantages: employees have more time to save money and prepare themselves for closure; a larger number of employees would have reached a pensionable age, especially amongst the Transkei group; and there is more time to initiate mitigation measures. The mine at present operates on a 46 hour working week, and it is suggested

that a 40 hour week be considered.

(b) Pension and retrenchment packages

The pensionable age for full pension benefits should be reduced from 60 to 55 years. This would result in a further 31% of Transkei workers being eligible for full pension benefits. These workers were identified as being unlikely to find re-employment or other sources of income.

Secondly, for the Transkei workers, it is suggested that the unpaid, compulsory "leave" between contracts be included in their length of pensionable service. This will result in their length of pensionable service increasing by approximately 17%.

Furthermore, it is suggested that the rules of the new pension and retrenchment packages be negotiated with the employees and trade unions.

(c) Transfers and Re-employment

The possibility of transferring employees to other De Beers mines should be investigated. DBNM anticipate that the high level of education of the Mine Group should facilitate the transfer of approximately 18% to 21% of the members of this group.

The feasibility of re-employing DBNM employees in the Anglo American heavy mineral sands mining at Brand se Baai should be investigated. De Beers Consolidated Mines are part of the Anglo American Group. The possibility of DBCM transferring pensions and other service benefits to Anglo should also be investigated. Further information is required on when Anglo plan to start mining, labour requirements, and the extent to which the closure of DBNM can be phased with the opening of the heavy mineral sands mine.

(d) Mining

As mentioned above, Anglo's plan to mine heavy mineral sands at Brand se Baai provide a possible mitigation measure. Based on currently available information, this is the only large scale mining operation being commissioned in and around the Namaqualand region.

The possibility of small-scale extraction of minerals in the RCAs still needs to be investigated in detail. Preliminary studies point towards deposits of beryl, spodumene, muscovite, slate, feldspar and tantalite which may be economically viable to mine on a small-scale (Strachan, no date). Although DBNM's proficiency in extracting minerals is primarily at a large scale level, they have considerable knowledge and skill on finding the location of mineral reserves. They could provide

valuable assistance in the process of locating diamond and other mineral reserves in the RCAs for small-scale mining.

Small scale diamond mining is currently carried out by subcontractors in the intertidal zone along the Namaqualand coast. The possibility of providing training and assistance to DBNM employees who intend to switch to inter-tidal diamond mining needs to be investigated.

(e) Administrative Infrastructure

De Beers West Coast Farms could provide administrative assistance to members of the Namaqualand Group who, after closure, turn to farming in the RCAs. Assistance could be provided with the marketing of stock products, particularly for farmers in Komaggas and Steinkopf.

(f) Physical Infrastructure

In motivating for De Beers (i.e. DBCM) and DBNM to provide assistance in developing physical infrastructure in Namaqualand, the following four factors must be taken into consideration (see section 4.3.2(b) for more details):

- A need for assistance with the provision of physical infrastructure, especially schools and medical facilities, was identified in a community needs survey undertaken by DBNM in 1989.
- Reports from DBNM indicate that they made no funds available for community development in Namaqualand in 1990 and 1991.
- De Beers's are committed to education and social development in southern Africa.
- De Beers's have plans for their mines to initiate educational upgrading projects at nearby schools. The projects must be determined in consultation with the communities involved, with emphasis being given to English, mathematics and physical science.

Considering the above factors, it is suggested that DBNM motivate for financial assistance from the De Beers Chairman's Fund and Chairman's Fund Educational Trust in order to develop education and health facilities in towns in Namaqualand which are home towns to DBNM employees. Further investigation is required to obtain updated information on the infrastructural needs in these towns.

Secondly, DBNM should continue to assist with the provision of physical infrastructure in Herschel, as demonstrated by the R89 000 provided in 1989. Assistance could also be provided through the

De Beers Chairman's Fund and Chairman's Fund Educational Trust. It is suggested that financial support be provided to development programmes aimed at improving water supply, supply of wood fuel, and the extension of electricity grids to employees villages to overcome the shortages of wood fuel. In addition, medical services were identified as a major infrastructural inadequacy in the Herschel District. Consideration should be given to supporting hospital needs, clinics in the employees's villages, and the training of health workers. It is suggested that DBNM work in conjunction with the Environmental and Development Agency (DAG), who are currently implementing programmes for social development in Herschel.

(g) Education and training

The following mitigation measures suggest the provision financial assistance for the education of children of DBNM employees. These measures must be considered against De Beers's policy to assist with education of South Africans from disadvantaged backgrounds, both in the form of physical infrastructure (discussed above) as well as bursaries and scholarships (the focus of this section).

Members of the Namaqualand and Transkei groups and participants in the Namaqualand community meetings expressed concern that, following closure, they might not be able to afford the costs of educating their dependants. Consideration should be given to providing financial support to DBNM employees who, following retrenchment, might not be able to afford to continue the education of their children. The possibility of providing this support from the De Beers Chairman's Fund and Chairman's Fund Educational Trust should be further investigated.

The external consultant for the Herschel District recommended that DBNM award entrepreneurial sponsorship to one young, able-bodied adult from each directly dependent household of the Transkei employees. Training options should be directed towards business and artisan skills, and should commence at least five years before the date of closure. (Further details are contained in Appendix C of the BIR). This recommendation requires further investigation.

(h) Establish a fund for DBNM employees

In the same way that a rehabilitation fund has been established, it is suggested that DBNM establish a fund for employees. This would be used to assist in development projects in Namaqualand and Herschel. The fund could provide the underlying financial support for the mitigation measures relating to physical infrastructure and education.

4.4.2 Mitigation measures relating to DBNM property

(a) **Continue with rehabilitation programme.**

It is suggested that DBNM endeavour to follow the recommendations made by Le Roux and Odendaal (1991) as closely as possible. Their recommendations include:

- levelling mine dumps to heights less than 25m and slopes less than 22 degrees
- immediate use of topsoil on flattened areas to avoid the smothering of seeds
- the preservation of islands of natural vegetation to assist in the regeneration of vegetation.

(b) **The Spoeg-Groen National Park**

It is suggested that DBNM remain committed to proclaiming this reserve. In section 3.2.1 the proposed holiday resort at the mouth of the Groen River has been assessed to be environmentally and socio-politically unsuitable. Access to the proposed resort would be through DBNM property. Therefore DBNM should use this leverage to effect a change in the location of the resort. A site at Island Point, south of the proposed National Park, has already been offered as an alternative.

(c) **Sustainable farming and associated industry**

It is suggested that DBNM continue with their sustainable methods of grazing, and endeavour to provide as much employment as possible to local farmers. It is anticipated that the formation of the proposed West Coast Farming Company, after the closure of DBNM, will provide additional employment for approximately 30 to 50 farmers. In forming the West Coast farming company and employing additional farmers, it is suggested that means for providing access to De Beers land for farmers from Komaggas and Steinkopf be investigated. The motivation for this mitigation measure is discussed in section (d) below.

It is further suggested that industries associated with stock farming such as shearing, weaving, tanning and leatherworks be investigated. These industries should be labour intensive and appropriate to local resources.

The Namaqualand coast is rich in intertidal marine resources which could be harvested on a sustainable basis (Odendaal, in EEU, October 1991). Odendaal provides reasons why Namaqualand may, in the near future, evolve into a major exporter of a number of intertidal resources. These resources include limpets, seaweeds (*Porphyra* and *Laminaria*) and mussels. The possibility of kelp and limpet collection, and carefully managed culling of the seal colony near Kleinzee should be investigated. These resources can be exploited with relatively little initial capital investment. They also provide employment for women, for whom few employment opportunities exist in a region

whose economy is dominated by mining (Odendaal). A diversity of activities would help in increasing the number of employment posts offered by the West Coast Farming Company.

(d) The land issue

The mitigation measures on the land issue follow from the discussion in sections 3.2 and 4.3.1. These sections discussed the impact of closure on the biophysical environment and the strong desire of the members of the RCAs to have access to DBNM land. It is suggested that DBNM investigate the possibility of allowing controlled access to the land for the members of the RCAs, while it is anticipated that DBNM would want to keep the mineral rights. Members of the RCAs could bring their own stock onto the land, while adhering to DBNM's guidelines for sustainable pastoralism. This opportunity could be used to train members of the RCAs in methods of sustainable grazing which they could take back into the RCAs. They would also be introduced to ostrich and game farming.

(e) Use of DBNM mining towns of Kleinzee and Koingnaas

The following uses for the mining towns need to be further investigated:

- A holiday and tourist resort for Namaqualand people as well as tourists from further afield. Kleinzee and Koingnaas could be linked into the suggestion of a package tour for Namaqualand (section 4.4.3.(g)). Following the closure of DBNM, the opening of approximately 250 km of coastline will attract tourists.
- An education and training centre. Appropriate education and training has been identified as an essential need in Namaqualand. The possibility of obtaining financial support through the De Beers Chairmans's Fund and Education Fund should be investigated.
- The siting of support infrastructure for a Nuclear Power Station at Kleinzee or Koingnaas.

(f) Use of DBNM equipment and vehicles

Mining equipment which cannot be used elsewhere or resold could be used to create a mining museum. Unused equipment and vehicles could be donated or sold to small scale mining operators. Vehicles, particularly unused buses, could be donated to schools and communities in the rural areas who have cited transport as a limitation to economic mobility (e.g. marketing goods).

4.4.3 Mitigation measures for Namaqualand and the Herschel District

The following mitigation measures are aimed at reducing the impacts of closure on the home towns of DBNM employees and more broadly in Namaqualand and the Herschel District. The majority of these mitigation measures are not the responsibility of DBNM alone. Rather it is suggested that DBNM play a role in initiating and assisting with these mitigation measures, in conjunction with development agencies and government bodies.

(a) A Regional Development Programme for Namaqualand

The review of development strategies in Namaqualand (section 4.2) identified the need for cooperation and coordination amongst development agencies working in the region. This need resulted in the Small Business Development Corporation (SBDC) initiating the formation of the Regional Development Programme in June 1989. The Programme's purpose is to provide a broad range of services to communities and to facilitate the cooperation of different development agencies (Fehrsen, 1989).

The Programme should fulfil the following functions:

- facilitate the cooperation of different development agencies in Namaqualand, resulting in the pooling of knowledge, physical resources, and administrative and managerial skills.
- facilitate a participative approach to development planning.
- provide training and assistance in stock farming, agriculture and small business.

It is suggested that DBNM investigate the possibility of supporting the Regional Development Programme. Further investigation is required on the recent activities of the Programme and possible areas in which DBNM could provide assistance.

(b) Improvement in stock farming

Improvement in existing methods of stock farming in Namaqualand and Herschel would reduce the degradation of the biophysical environment. It is suggested that DBNM initiate an investigation into the adequacy of agricultural extension services on sustainable grazing techniques, stock breeding and marketing of stock products. Services could also be provided on alternative stock such as indigenous sheep, game and ostrich. It is suggested the following bodies should work together in providing these extension services: the proposed De Beers West Coast Farming Company, the Regional Development Programme, the Department of Local Government, Housing and Agriculture in the House of Representatives, and the Springbok Agricultural Extension Officer.

(c) Improvement in crop farming

Due to low and unreliable rainfall, Namaqualand is unsuitable for crop production, except in the Kamiesberg where rainfall is slightly higher (Landbouontwikkelingsprogram, 1985). Crop production in Namaqualand leads to soil erosion and increasingly poorer yields. However, despite these disadvantages, dryland agriculture is used to meet basic needs in Namaqualand. Therefore the need exists to find alternatives to dryland farming.

It is suggested that DBNM investigate the feasibility of irrigation projects along the Orange River and in the Kamiesberg. If these projects are found to be feasible, DBNM should consider providing financial support. Investigations should be conducted in conjunction with the bodies listed in (b) above.

(d) Other options for agriculture and horticulture

It is suggested that DBNM initiate an investigation by the Regional Development Programme into the feasibility of activities such as date farming and the growing of succulents for retail.

(e) Establishment of secondary and tertiary industries

It is suggested that DBNM continue investigations into possible secondary industries in Namaqualand such as a tannery, leatherworks, shearing and weaving. Secondly, it is suggested that DBNM continue to monitor the progress of existing secondary developments which they have initiated. Other secondary industries which should be considered include an abattoir and associated canning industry, arts and crafts for the tourist industry, and the use of shells and semi-precious stones.

(g) Promotion of tourism

Tourism has been identified as one of the major sources of creating employment in South Africa. A London-based tourist firm, Greene Belfield-Smith, who recently established offices in Durban, Cape Town and Johannesburg anticipate a rapid increase in the number of international tourists visiting South Africa. In 1991, 500 000 international tourists visited South Africa. The projections of 2 to 3 million overseas tourists per year in 4 to 5 years time are "probably conservative" (Financial Mail, 3 April 1992: 63).

International trends are that 10 tourists provide 1 job (Financial Mail, *ibid.*). Although the correlation may be lower for Namaqualand, an increase in tourism would increase employment opportunities in the accommodation sector, transport services, catering and food suppliers, arts and crafts etc.

It is suggested that the proposed West Coast Farming Company investigate the option of tourism and initiate the coming together of different interested parties in Namaqualand. A tourist package could be developed for the region. This could be done through the Regional Development Programme.

Amongst others, the package could include the following tourist attractions:

- Richtersveld National Park, which has been experiencing a marked increase in visitors since its opening in 1991,
- Augrabies falls,
- Kalahari Gemsbok National Park,
- Proposed Spoeg-Groen National Park,
- Orange River canoe trips and holiday camps,
- Fish River Canyon hiking trail,
- Namaqualand flower season,
- Museums displaying the cultural and mining history,
- Pari au Cap rally, and the possibility of holding similar events in the area,
- Possible yacht harbour at Kleinzee as part of a plan for marinas and harbours along the west coast.

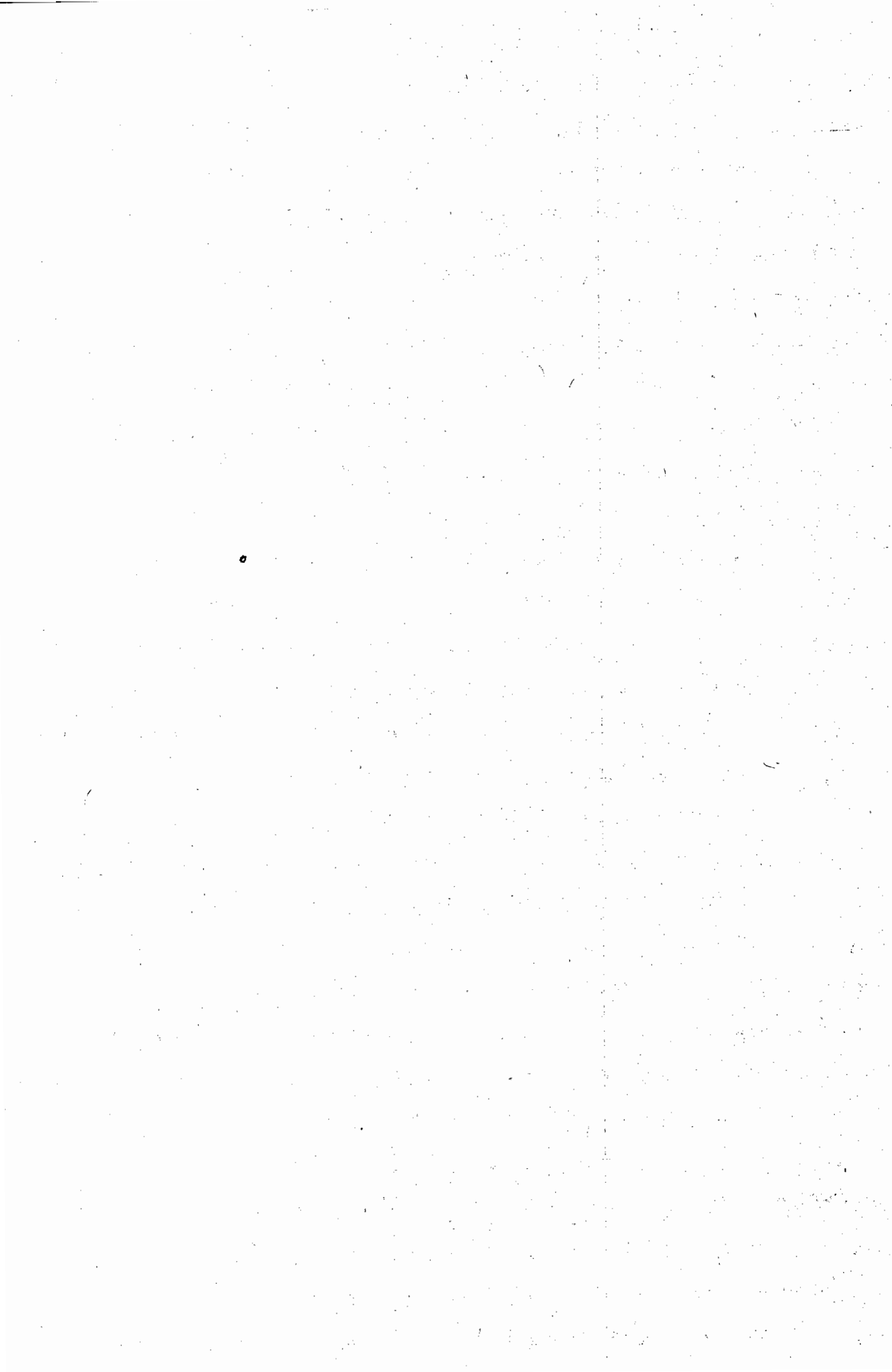
(h) Reducing economic "shock"

The following two mitigation measures are aimed at reducing the economic impact on businesses with links with DBNM when the mine closes.

DBNM should maintain good communication on the closure process with all businesses with whom they have links. This is important so that businesses can plan ahead. For example, businesses may seek other clients or change the nature of their activity.

DBNM should endeavour to close the mine gradually. Gradual closure will cause less of an economic "shock" on businesses with links with DBNM. As business with DBNM gradually decreases, businesses will be able to phase in new clients or gradually change the nature of their business.

This concludes the section on preliminary suggestions for mitigating the impacts of the closure of DBNM. A summary of the mitigation measures is contained in section 5.2 of the conclusions and recommendations.



Chapter 5

CONCLUSIONS AND RECOMMENDATIONS

Chapter 5

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5. CONCLUSIONS AND RECOMMENDATIONS

The conclusions highlight the major biophysical, economic and social impacts in Namaqualand and the Herschel District, resulting from the closure of the DBNM. They are followed by preliminary recommendations for mitigation measures.

5.1 MAJOR IMPACTS RESULTING FROM THE CLOSURE OF DBNM

The major impacts resulting from the closure of DBNM are grouped into four categories:

- impacts on the biophysical environment
- impacts on the economic environment
- impacts on the social environment
- impacts associated with different procedures for mine closure.

5.1.1 Major impacts on the biophysical environment

(a) The following impacts are identified for the biophysical environment of **DBNM's property**:

- Rehabilitation of the mining areas is supported by DBNM management and required by the Minerals Act. This will have a positive impact on the biophysical condition of land used by DBNM for mining.
- De Beers intends to continue farming on the land and to form a De Beers West Coast Farming Company, after closure. This company aims to continue to farm in the present well-managed, sustainable manner, which would result in negligible change in the impacts on the biophysical environment.
- Overstocking and degradation could result from access to De Beers land for farmers from the RCAs, if inadequate grazing management is practised.
- After closure, DBNM property no longer being a restricted area. This will allow public access to the National Park proposed from the Groen River to the Spoeg River. The National Park would have a positive impact on conservation and tourism in Namaqualand. Plans proposed by the Garies Municipality for a holiday resort at the mouth of the Groen River are assessed to have negative ecological and social impacts.

(b) The following impact is identified for the biophysical environment of the RCAs and the Herschel District:

- Increased pressure will be placed on the already overstocked and overgrazed land in the RCAs and the Herschel District, if employees from the Namaqualand and Transkei Groups return to farming.

5.1.2 Major impacts on the economic environment

(a) In Region A⁴ and the rest of South Africa, the following economic impacts are identified:

- An input-output analysis indicated that the total loss due to the closure of DBNM would be R142 million per annum (1985 rands). 13% of this loss would occur in Region A (R18 million), 78% in the rest of South Africa (R111 million) and the remaining 9% internationally (R13 million).
- The services sector would experience the greatest loss, totalling R64 million per annum throughout South Africa. This sector includes legal services, accounting, engineering and architectural consulting and other businesses services.

(b) The Namaqualand RSC would experience the following economic impacts:

- The Namaqualand RSC would lose the 30% of its annual fees which are currently received from DBNM. This amounts to 6% of the RSC's total annual budget (Namaqualand RSC, 1991).

(c) In towns and businesses in Namaqualand the following economic impacts are identified:

- The closure of DBNM will result in a 32% drop in the turnover of Namaqualand, from R1,7 billion to R1,2 billion (Namaqualand RSC, 1991).

- This impact will be softened by the fact that DBNM makes 59% of its purchases directly from businesses outside the Namaqualand Region. Therefore, this 59% of their turnover does not enter into circulation in Namaqualand.

- 98% of DBNM's purchases in Namaqualand in 1991 were made in Springbok (with the

⁴ The boundaries of Region A are shown in Figure 2 in the Executive Summary

exception of a single purchase of R22 million from Shell Oil in Cape Town, but paid in Port Nolloth). Therefore Springbok will experience the largest magnitude of impact due to loss of business with DBNM company.

- On closure, Springbok will experience a loss of approximately 12% of turnover due to the loss of business with DBNM company. Business with DBNM employees, which accounts for a further 2% of Springbok's turnover, would also be expected to decline.
- The greatest impacts which would be experienced by the business sectors in Springbok are:
 - The turnover of the mining sector would drop by 27% (R32 million) due to loss of business with DBNM company.
 - The turnover of the construction sector would drop by 14% (R5,1 million) due to loss of business with DBNM company.
 - The magnitude of the loss of business with DBNM company in the office equipment sector is small (R0,27 million), but constitutes a significant 19% drop in the turnover of this sector.
 - The turnover of the clothing/furniture sector would drop by R2,1 million (8%) from the loss of business with DBNM company. A decline in the present R5,2 million (20% of turnover) spent by DBNM employees is expected.
- Businesses in Komaggas and Steinkopf would experience a significant economic impact. Purchases by DBNM employees, which would decline following closure, account for 36% and 40% of the turnover of these towns respectively.

5.1.3 Major impacts on the social environment

Discussion expands from focusing on impacts on DBNM employees and their households, to focusing on the impacts on communities in Namaqualand and Herschel. The employees are divided into three groups:

- The Namaqualand Group who live in Namaqualand and who usually return home to their families every weekend or second weekend (mostly coloured employees).
- The Mine Group, who receive permanent accommodation in houses or single quarters in the

DBNM mining towns (mostly white employees).

- The Transkei Group, who are recruited from the Herschel District in the Transkei and whose families live in the Transkei (black employees).
- (a) **Loss of income** was cited as the second most important concern of employees regarding closure. The magnitude and extent of this impact is shown below.

TABLE 5.1 SOCIAL CHARACTERISTICS RELATING TO THE LOSS OF INCOME

Average social characteristics for each employee group	Namaqualand Group	Mine Group	Transkei Group
Number of employees affected	1865	535	700
Average monthly income to be lost	R1250	R3000	R1250
Number of dependants in household	3	2	7
Extent of direct impact on households in the Namaqualand Region and the Herschel District	10% of households in Namaqualand affected	1,3% of households in Namaqualand affected	2% of households in Herschel affected
Percentage of households with additional sources of income independant of DBNM	31%	6%	15% (but income is less than R300 per month)

- The loss of income will impact on the ability of families to meet the basic needs of food, clothing and education. This will be worsened by problems of re-employment, low numbers of employees being eligible for full pension, and loss of DBNM benefits. These associated impacts are discussed below.
- Employees in the Namaqualand and the Transkei Groups expressed concern that they might not be able to afford the education of their children following closure. Children may abandon their schooling to seek wage employment. But as wage work declines, so these youngsters chances of finding employment drop, and they soon find themselves in urban poverty, and with little education or training.

- (b) Problems of **unemployment and re-employment** were cited by employees as the most important concern regarding closure. The impacts of re-employment for each employee group are shown below.

TABLE 5.2 IMPACTS OF UNEMPLOYMENT AND RE-EMPLOYMENT

Namaqualand Group	Mine Group	Transkei Group
At the time of closure 70% of these employees would be in the midst of their working years (28-45 years old). 86% would seek re-employment.	At the time of closure 77% of this group would be in the midst of their working years (36-55 years old). 87% would seek re-employment.	At the time of closure 30% of this group would be over 60 years and a further 31% between 55 and 60 years. Only 35% would seek re-employment
Impact of unemployment worsened by: - low level of education (72% less than Std 9) - high unemployment in RCAs and Namaqualand (higher than the average for coloured people in the Western Cape)	Impact of re-employment would be mitigated by: - higher level of education (67% above Std 8) - higher mobility - 18% to 21% eligible for transfers within De Beers	Impact of unemployment worsened by: - low level of education (81% less than Std 6) - advanced age - negligible job or farming opportunities in Herschel

- (c) The conditions of **pension and retrenchment packages** for the employees are currently being negotiated. The assessment and recommendations of this study should contribute to the negotiations.
- The current pensionable age is 60 years. For closure in 2002, approximately 11% of Namaqualand, 6% of Mine and 30% of Transkei employees would be eligible for full pension. Therefore, the benefits of a full pension would have a positive impact on 30% of the Transkei employees, but provide minimal mitigation for Namaqualand and Mine employees. A further 31% of the Transkei Group would be between 55 and 60 years. They would be vulnerable as they would not receive full pension benefits, while struggling to find re-employment.
 - On closure, the average Transkei worker receiving full pension would have 25 years service and a monthly salary of R1250 (1992 Rands). This would result in him receiving a pension which is 50% of his monthly income (R650). This is approximately the average amount of

R700 sent home monthly by the Transkei employees.

- On closure, employees not eligible for full pension benefits would receive a retrenchment package consisting of four months salary and a payout of their contribution to the pension fund. This payout would amount to between one and two years salary. It would temporarily delay the impact of the loss of income.

(d) The loss of DBNM benefits was identified by employees as the third most important concern regarding closure. The impacts experienced by the employee groups are shown below.

TABLE 5.3 LOSS OF DBNM BENEFITS

Namaqualand Group	Mine Group	Transkei Group
<ul style="list-style-type: none"> - loss of building loans - loss of subsidised groceries - loss of medical aid benefits - loss of opportunity for adult education and training - loss of access to DBNM sporting and recreational facilities 	<ul style="list-style-type: none"> - loss of subsidised accommodation (72% do not own houses) - loss of medical aid benefits - loss of assistance with the education of dependants - Loss of subsidised sporting and recreational facilities 	<ul style="list-style-type: none"> - loss of subsidised groceries and accommodation - loss of access to medical facilities in mining towns (facilities in Herschel are poor) - fewer benefits to lose: they do not receive medical aid or educational assistance for dependants.

(e) Impacts on the socio-cultural structure of communities would result from the closure of DBNM. The communities of Komaggas and Steinkopf anticipate an increase in migrant labour following closure, which will result in young, educated people leaving the region. Woman in these communities felt that increased migrant labour would separate men from their families and slowly tear the fabric of the communities.

(f) Closure would lead to an increase in social pathology. This would be result from increased poverty in the communities, which would manifest itself in higher occurrences of crime, school drop-outs, alcoholism, teenage pregnancies and moral and religious degeneration.

(g) Communities in the Namaqualand might experience a decline in physical infrastructure and social services after closure. The condition of infrastructure and services would also be dependent on national political policies.

A decline in infrastructure and services might be due to:

- loss of income of retrenched employees
- loss of fees paid to the Namaqualand RSC by DBNM
- loss or reduction in assistance from DBNM and De Beers.

The decline in infrastructure and services would be manifest in the following ways:

- Schools in Namaqualand would lose the assistance received by DBNM for equipment and facilities.
- Towns in Namaqualand would lose the infrastructural assistance which DBNM has provided. For example, DBNM has assisted with sewage treatment, levelling sportsfields, a building for spinning and weaving in Komaggas and a townhall in Steinkopf.
- Pupil attendance at schools could drop due to parents leaving Namaqualand or children being forced into wage labour. This could result in schools closing and teachers being retrenched.
- The cost of fresh water to Kleinzee might increase after closure. Maintenance costs for the pipeline from the Orange River to Kleinzee would remain constant while consumption may decline. The present cost of water in Kleinzee is fivefold that of Cape Town.
- DBNM is the largest consumer of electricity in Namaqualand. 87% of DBNM'S consumption is for mining purposes alone. Closure would result in an increase in electricity supply cost in Namaqualand. In particular, supply costs to Port Nolloth would increase as the power line to Port Nolloth branches off from the power line to Kleinzee and Koingnaas. A large proportion of the maintenance expenses on this power line are presently covered by DBNM's high level of consumption.

Based on the above summary, the relative impacts on the three employees are ranked:

- The Namaqualand Group and their households would experience the greatest impact. This is due primarily to their limited mobility, the high unemployment levels in Namaqualand, the high percentage (10%) of households directly affected and limited pension benefits. Furthermore, this group would experience the greatest cumulative impact on infrastructure, services and businesses in Namaqualand.
- The Transkei Group and their employees would experience the second greatest impact. This is primarily due to their lack of employment mobility and the limited employment

opportunities in the Transkei. However, their high eligibility for full pension (30% over 60 years) and the high percentage (31%) between 55 and 60 years, offers a possible avenue for mitigating the impacts on this group.

- The Mine Group would experience the smallest impact. Their higher level of education and employment mobility will soften the impact of closure on this group.

5.1.4 Impacts associated with different procedures for mine closure

DBNM can either be closed "gradually" or "rapidly". Gradual closure describes a gradual reduction in the rate of production of the mine over a longer period of time. Rapid closure describes a rapid drop in the production over a short period of time (see figures in section 3.5).

- Of the two closure procedures, rapid closure would be less desirable as it would cause the greater "shock" to the biophysical and socio-economic environment
- Rapid closure would be feasible if it was in phase with the initiation of Anglo's large -scale mining operations at Brand se Baai

This concludes the major impacts resulting from the closure of DBNM.

5.2 PRELIMINARY SUGGESTIONS FOR MITIGATION MEASURES

The following preliminary mitigation measures are suggested. They have not been subject to feasibility studies and require further investigation.

5.2.1 Guidelines for the generation of mitigation measures

Guidelines for the generation of mitigation measures were required. For this purpose, recommendations from recent research on development strategies in Namaqualand were used. These recommendations are that:

- greater coordination amongst development agencies and interested and affected parties in Namaqualand is necessary

- projects should be initiated at a small-scale basis and be flexible and iterative in their planning
- community participation and consultation should be included in projects
- education and training is required to develop skills appropriate to the resources and needs of the communities
- greater emphasis should be placed on the development of appropriate secondary and tertiary industries and services

5.2.2 Two important concerns to be considered

Two important concerns of the Namaqualand community need to be considered in the generation of mitigation measures.

- The land issue is of growing political importance in Namaqualand and in the rest of South Africa. Namaqualand communities expressed anger and suspicion at how the land had been taken from them. They want the land to be returned to them.
- DBNM (and DBCM) have made limited inputs into Namaqualand. Although DBNM produces approximately 11% of the carats recovered by DBCM (1991 figures), no funding was made available for community development in Namaqualand in 1990 nor 1991. However, the Annual Reports of De Beers indicate the company's commitment to education and training in South Africa.

5.3.3 Preliminary mitigation measures

Mitigation measures are considered at three levels:

- for DBNM employees
- for DBNM property
- for Namaqualand and the Herschel District

(a) **Mitigation measures aimed at DBNM employees**

DBNM should further investigate, and if considered feasible, implement the following mitigation measures:

- reduce the rate of production and prolong the life of the mine (change from a 46 hour working week to a 40 hour working week)

- reduce the age for full pension benefits from 60 years to 55 years
- for the Transkei workers, include the time of compulsory "leave" between contracts in their length of pensionable service
- negotiate the rules of the new pension and retrenchment packages with employees and trade unions
- transfer employees to other DBCM operations (18% to 21% of the Mine Group are eligible for transfer)
- phase in the retrenchment of employees from DBNM with their re-employment at the Anglo American heavy mineral sands mine at Brand se Baai
- motivate for financial assistance from the De Beers Chairman's Fund and Chairman's Fund Educational Trust to:
 - develop education and health facilities in towns in Namaqualand which are home towns of DBNM employees
 - improve infrastructure in the villages of employees in the Herschel District (e.g. through improving water supply, the supply of wood fuel, the extension of electricity grids, and supporting hospital needs, clinics and training of health workers)
- establish an employee fund to assist retrenched employees and projects in Namaqualand and Herschel (the fund could be used in the following four mitigation suggestions)
- provide financial support to DBNM employees who, following closure, are not able to afford the education of their children
- assist in locating deposits of diamonds and other minerals in the RCAs, which are economically viable for DBNM employees to mine on a small scale
- train and assist DBNM employees in inter-tidal diamond mining operations
- assist with the marketing of stock products for the RCAs (especially in Komaggas and Steinkopf, where the largest percentage of the Namaqualand Group live)

(b) Mitigation measures relating to DBNM property

DBNM should also further investigate, and if considered feasible, implement the following mitigation measures:

- continue with their rehabilitation of mining areas and follow Le Roux and Odendaal's (1991) recommendations for rehabilitation as closely as possible
- remain committed to the establishment of the National Park between the Groen River and the Spoeg River
- continue with methods of sustainable grazing
- increase the amount of employment offered on De Beers West Coast Farm through a diversification of activities (e.g. industries associated with stock farming such as sheep shearing, spinning, weaving, tanning, leatherworks etc.)
- allow farmers from the RCAs to bring stock onto De Beers land, while adhering to De Beers's guidelines on sustainable pastoralism
- explore options of tourism for the De Beers West Coast Farms
- the possible use of the mining towns of Kleinzee and Komaggas for a holiday and tourist resort, an education and training centre for Namaqualand, or for siting supporting infrastructure for a Nuclear Power Station

(c) Mitigation measures for Namaqualand and the Herschel District

In order to reduce the impact of closure on businesses, DBNM should implement the following two mitigation measures:

- maintain good communication on the process of closure with all businesses with whom DBNM do business
- endeavour to plan a gradual closure of the mine to minimise the economic "shock" on businesses, which have links with DBNM.

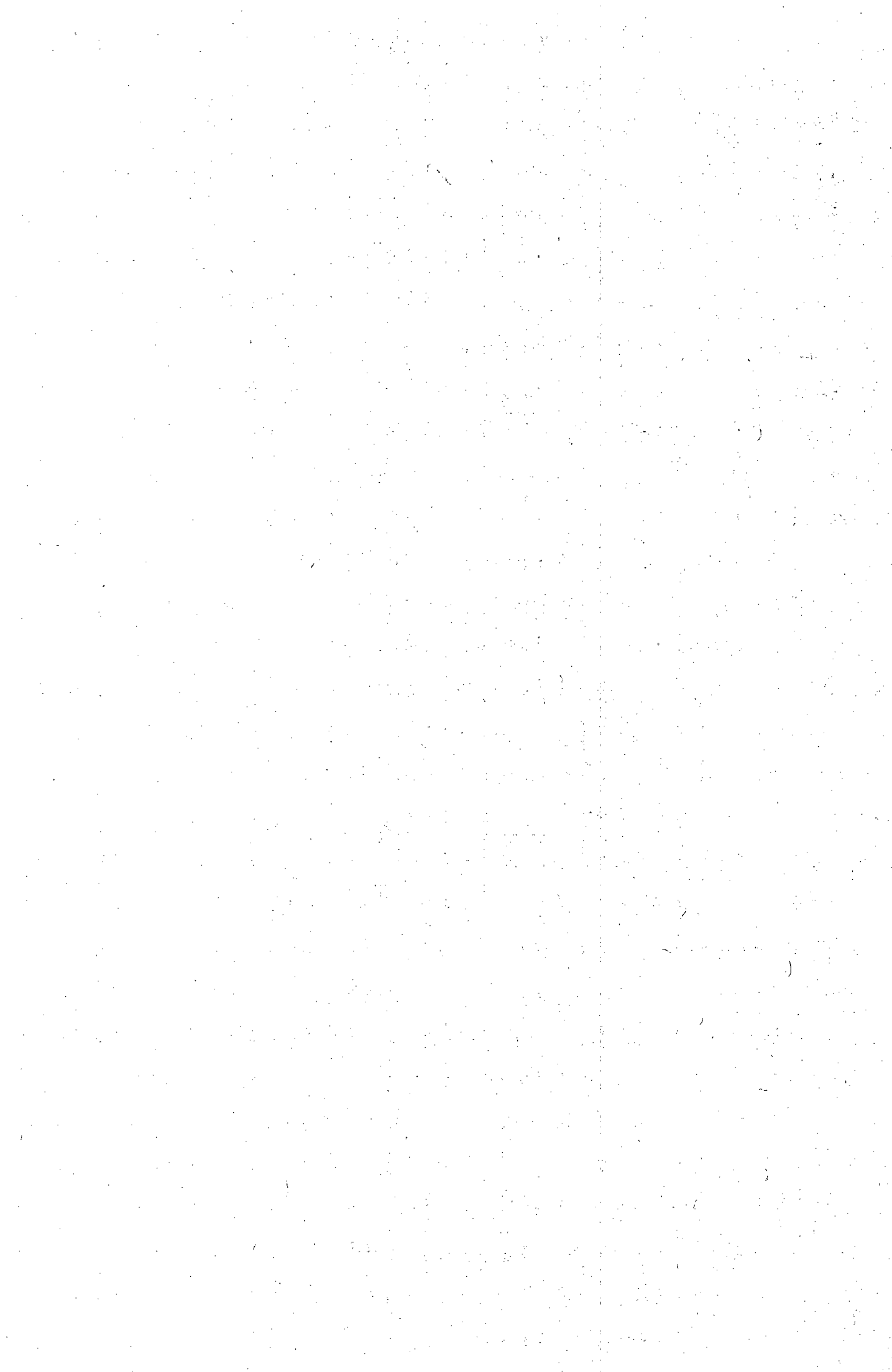
The following mitigation measures are not the responsibility of DBNM alone. Instead it is suggested that DBNM (and DBCM) play a role in investigating, initiating and assisting with the following measures, in conjunction with development agencies and government bodies.

- Firstly, it is suggested that DBNM investigate the present status and operations of the Regional Development Programme and provide support and assistance where possible (the programme was initiated in July 1989 for the coordination of development in Namaqualand)

The following five mitigation suggestions should be investigated in conjunction with the Regional Development Programme and affiliated agencies.

- work in conjunction with the Regional Development Programme, the Department of Local Government and Housing (House of Representatives) and the Springbok extension officer to provide extension services to the Namaqualand communities (e.g. extension services should cover sustainable grazing techniques and the marketing of stock products)
- investigate irrigation farming in the Kamiesberg and along the Orange River in conjunction with the Regional Development Programme
- support an investigation by the Regional Development Programme into the feasibility of alternatives for agriculture, horticulture and mariculture (e.g. date plantations, succulent nurseries, oyster farming)
- continue investigating and initiating appropriate secondary industry in Namaqualand (e.g. sheep shearing, weaving, tannery, leatherworks, abattoirs and associated canning industries, trades, and arts and crafts for the tourist industry)
- initiate the coming together of different parties interested in tourism in Namaqualand in order to develop a tourist package for the region

This concludes the summary of the major impacts due to the closure of DBNM and the preliminary suggestion of mitigation measures.



Chapter 6

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6. REFERENCES

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PERSONNEL COMMUNICATIONS

Brand, F. Estates Manager, DBNM.

Claasen, C. NM2002 liaison person at DBNM.

Redlinghuis, A. Geography Department, University of the Western Cape.

