SOCIO-ECONOMIC IMPACT ASSESSMENT

OF DE BEERS NAMAQUALAND MINES

CLOSURE

IN 2002

Prepared by :

Gregory McCulloch

A masters student in the department
of Environmental and Geographical Science

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University of Cape Town

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EXECUTIVE SUMMARY

This summary contains three sections. Firstly a review of the Baseline Information Report followed by a presentation of the findings of this assessment report. The findings are the impacts of closure. Finally mitigatory measures are recommended.

THE BASELINE INFORMATION REPORT

The Baseline Information Report, 5/92/87, was produced by the Environmental Evaluation Unit (EEU) with the assistance of the 1992 Masters students of the department of Environmental and Geographical Science. Its primary aims were to introduce the NM 2005 study, describe methods used and present results. A brief description of its contents follows :

De Beers Namaqualand Mines (DBNM) commissioned the EEU to undertake a study, scoped to assessment of the socio-economic effects of mine closure and recommendations for mitigation. The effects or impacts; vary in their magnitude and significance further more they effect a wide range of people and organisations. To establish the magnitudes and significance of the socio-economic effects, the environments of Namaqualand and the Transkei region, in which the impacts are to occur, needed definition. The defined environments acted as a baseline for changes brought about through DBNM closure. Firstly, the history of the Namaqualand people and their socio-economic activity trends was established and issues were put in context. History indicates Namaqualand went through a land-grabbing phase, during which the Khoi Khoi people were dispossessed of their land to make way for trekboer farming and copper and diamond mining (Fig, 1991). The latter industries continue to dominate the region today, providing labour opportunities for Namaqualand's coloured majority and 58 % of the region's gross geographic product in 1991. The agricultural and fishing industries are marginal and are expected to remain that way (Dunne, 1988). Secondly, the Transkeian environment, its history and trends were established using the Herschel District as microcosm for study. The results indicated a history of forced removals. The present subsistence community are struggling with poor infrastructure and are heavily dependant on pensions and money sent home from migrant labourers.

Having established some background the report continues by describing the social effects which could be felt by the DBNM employees, their dependants, their communities and other interested and affected parties. The social effects were gauged through surveys, meetings, written and telephonic correspondence. The employees were divided into three groups; Namaqualand, Transkei and mine town, based on the regions the employees called "home". The survey results showed that the three groups were distinctly different. Indicating that group members along with their dependants and communities, could be effected by DBNM closure to different levels of significance. Their concerns with closure, revolved primarily around; unemployment and the lack of opportunities, education, quality of life and the regional economy. The groups also suggested mitigation such as the establishment of a development aid fund, returning DBNM land to the Rural Coloured Areas and DBNM involvement in local projects.

The economic effects will be felt by businesses who deal with DBNM and its employees. The businesses in the Namaqualand region are likely to experience the most significant effects. While the national and international communities are likely to be influenced to a lesser extent. Economic effects were established through the examination of macro-fiscal flows, input-output analysis and a business survey in Namaqualand. The macro scale study was covered by the input-output analysis which found South Africa, outside of development region A, is likely to experience the largest financial loss, greater than that of the local region and the international community (see figure 3.5.). In particular, the services and machines sectors were predicted to experience the greatest loss due to closure. On a micro scale, the survey of Namaqualand businesses indicated that 17 % of the regions turnover emanates from dealings with DBNM and its employees. DBNM closure would result in business closures (3 % in Springbok and 5 % elsewhere in Namaqualand) and retrenchments (a predicated 250 or 4.7 % of business employees) primarily in Springbok, Steinkopf and Komaggas.

THE SIGNIFICANT IMPACTS OF DBNM CLOSURE IN 2002

The results from the Baseline Information Report were assessed to find the following impacts, presented in the impact groupings;social, economic, government and other.

The social impacts on employees, their dependants and communities

The average member of the Namaqualand group (1700 employees) and the low income members of the mine town group (350 employees), will be severely impacted by mine closure, as they are typically young and poorly educated, receiving the smallest retrenchment package and having to seek work in a region where unemployment is high (Fig, 1991).

Of the total, 61 % (430 employees) of the Transkei group may live on their pension pay post-closure and, provided the pensions are adequate, the impacts of closure should be of minor significance to them. Another 34 % of this group may look for work, but their age (between 46-55 years) and poor education, may thwart their efforts and unemployment could impact their lives significantly, when their retrenchment packages lapse.

The 58 % of the mine town group (500 employees) who earn more than R 3000 per month will experience impacts of the least relative significance. The loss of employment, benefits and accommodation are likely to be temporary setbacks for this well educated, highly mobile group who will receive the most substantial retrenchment packages. The remainder of the mine town group (low income segment) is likely to experience more significant impacts.

The dependants of the Namaqualand, Transkei and low income mine town groups, live in relative poverty and are heavily reliant on the DBNM worker's income, which if reduced or halted, could impede the purchase of basic goods, the education of children, forcing those children who are old enough into wage labour. An interruption in a child's education could have a long term impact.

The more affluent mine town groups' households are typically small with an average of 1.9 dependants per worker. Furthermore the household is often supported by more than one income (62 % of households). These factors imply closure impacts are likely to be of a lesser significance to the dependants of elite members of the mine town group. Dependants may, however, experience minor impacts such as stress related to the closure, moving residence and temporary unemployment of the household breadwinner.

The underdeveloped Rural Coloured Areas (RCAs) and areas of the Transkei/Ciskei are home to the majority of the poverty ridden communities of the Namaqualand and Transkei group respectively. The substandard and overburdened infrastructure and the scarcely viable subsistence economic activities, such as stock farming and dry-land agriculture, may be further pressured by the return of the retrenched workers and their reduced income. The retrenched may have to depart for urban areas to seek work where unemployment is high and competition is fierce.

Impacts on the economy

The significant impacts are likely to occur predominately in Namaqualand where DBNM closure may directly affect 17 % of the regions turnover. When DBNM employees are retrenched their consumer spending (approximately R 14 million in 1992) is likely to be cut back and businesses in **Namaqualand areas outside of Springbok** could stand to lose a significant portion of their income. This could lead to business closures (predicted at 5 %) and retrenchments, particularly in Komaggas and Steinkopf where 36 % and 40 % of their respective turnovers relate to DBNM employees spending. The economic impacts on **Springbok businesses** could be primarily from the termination of DBNM supply contracts, particularly in the mining supplies, general suppliers, home and office supplies and transport sectors. The results are likely to include retrenchments (approximately 260) and closure for 3 % of Springbok businesses.

The basic sectors of Namaqualand, namely mining, agriculture, stock farming and fishing, may face competition if large numbers of retrenched workers set up small scale businesses in those sectors.

Impacts on the government

The local government of Namaqualand is impacted through reduced income from DBNM, a loss in the order of R 2 million. This could lead to reduced spending. The maintenance on present infrastructure is likely to take precedence over new initiatives and services may become defunct as the necessary equipment is not replaced. Local government is likely to increase service costs and retrench redundant government workers to cover their budget requirements.

Other peripheral impacts

Closure may induce investors of capital intensive projects to look to areas where returns have higher guarantees. This would be a significant setback for Namaqualand's developmental future.

De Beers Consolidated Mines' public and business image can be impacted upon significantly if mitigation is not considered and the impacts of closure, leave Namaqualand exploited and impoverished with escalating economic disintegration.

There could be a significant impact on development aid schemes. The rising unemployment rates and the local inhabitants increased poverty, could counteract progress, making these organisations look unsuccessful.

A significantly positive impact of the closure, leaves approximately 7 % of Namaqualand, in the form of the DBNM property, open to new land uses. Access to this land is dependant on DBNM policy.

To conclude the findings, it seems that the significant impacts of closure will run deep within the socio-economic support infrastructures of the employees and the regions in which they reside. Namaqualand and areas of the Transkei and Ciskei, where these impacts will occur, are already grappling with widespread poverty, unsustainable practices and a poor socio-economic infrastructure. DBNM closure could entrench these patterns even further. The moral responsibilities of DBNM should be shown through mitigation which is comprehensive and planned within regional contexts.

RECOMMENDED MITIGATORY MEASURES

The impacts of closure can be influenced using certain measures. Mitigatory measures attempt to minimize those economic and social changes viewed as undesirable and to enhance beneficial changes through the initiation of projects. Mitigation should be undertaken by the instigator of the changes. The quantity, quality and success of mitigatory measures is dependant on several aspects of those measures. Aspects such as the level of involvement in mitigation, the timing and duration of involvement, the type of mitigation and the magnitude of the measures. Even when these aspects have been decided there is no one correct mitigative plan. The mitigation in this report and the process in which it is set, is not prescriptive, leaving the decision maker to conclude which of the measures could be investigated and implemented.

Mitigation Stage 1

It is recommended that a closure working group be established immediately to coordinate and manage mitigatory activities prior to and after mine closure. Such a working group should consider and decide upon :

- the goals to be achieved ?
- how much is likely to be spent ?
- the mitigation period ?
- the types of mitigation to be used, how and where they will be applied ?
- the levels to which mitigation will be directed ?

Mitigation choices will rest entirely upon decisions made by DBNM. The company is not bound by any laws in that respect, with the exception of provision made in the Employment Act 3 of 1983, for the retrenchment and pension packages of employees and the Minerals Act No. 50 of 1992 for the physical rehabilitation of the mined land. The inclusion of interested and affected parties in the decision making process is advisable, however, as the decisions are likely to be more widely accepted and more successful in their implementation.

Mitigation Stage 2

Consideration should be given to mitigatory measures put forward in response to impacts identified. The working group should decide which mitigatory measures warrant further study including consideration of their feasibility and suitability. Once again interested and affected parties should be involved.

The mitigation suggestions in table E.1., provide broad categories into which mitigative effort could be channelled. They are classified under; **level of involvement** and **timing**. The mitigatory measures are broad in nature for the following reasons :

- this report is preliminary or "broad brush" in nature and is the first of a series of reports to be commissioned prior to closure
- a more detailed plan would require feasibility studies for each of the measures put forward to give them a specific focus

Table E.1. Mitigatory measures

BEFORE CLOSURE	AT CLOSURE	POST CLOSURE
LEVEL 1 EMPLOYEES		
Be open and frank about closure involving employees in decisions. Clear up mistrust. Find employment for workers eg: • with DBCM • on DBNM property • on other mines • local businesses Provide training for entry into different fields. eg: • business • tourist trade • farming • artisan trades Provide for employees education in fields that will assist their communities. eg: •managerial •financial •agricultural •technical skills Encourage saving and investment. eg: • to buy property • finance a business venture	Undertake the physical closure of the mine such that impacts are minimized. Find employment for workers. Provide negotiated retrenchment and pension packages. Financial loan support so workers can start small intensive enterprises.	Find employment for workers. Financial loan support so workers can start small intensive enterprises. eg: • home industries • clothing design • mining • services • tourist orientated activities • transport service
LEVEL 2 DEPENDANTS		
Assist housewives with ideas, training and financial support for home industries. eg: • spinning and weaving • food processing • leather work Educational and training scholarships for employees children in their chosen fields.		Educational and training scholarships for children.

Table E.1. Mitigatory measures (continued)

PRIOR TO CLOSURE	AT CLOSURE	POST CLOSURE
LEVEL 3 COMMUNITIES		
Assist with the upgrading of infrastructure; water, energy (electrification and wood fuel), medical facilities and buildings. (Conducted personally or through development agencies.) Educate towards sustainable stock farming, small scale agriculture and mining operations. eg. Provision of a crushing mill at Steinkopf. Negotiate with the Port Nolloth municipality to give the camps, township status, if DBNM workers are likely to go there.		Financial support for development aid programmes.
LEVEL 4 REGIONAL ECONOMY		
Give the businesses ample warning of closure and be open to avoid unsubstantiated rumours. Help to stimulate growth sectors, such as services, commerce, catering, accommodation and real estate. Assist the establishment of business training courses on efficiency and survival during difficult periods. Phase out suppliers slowly so that they can adapt the changing demands. Minimize psychological impacts on business and investor confidence in Namaqualand. Encourage other businesses to look at ways of expanding their operations to include further processing and thereby create more employment.	Undertake the physical closure of the mine such that impacts are minimized.	Assist the establishment of business training courses on efficiency and survival during difficult periods.
LEVEL 5 LOCAL GOVERNMENT		
Keep the government informed of closure and mitigation plans. Minimizing impacts through mitigation, will assist the local government maintain a more stable local economy. Assist the government in development initiatives eg: • industrial parks • tourist • infrastructure • irrigation schemes • harbours/railways		Help create land uses which will keep DBNM infrastructure at its maximum use post-closure, for continued local government income. Provide materials and expertise for local government retraining courses for workers who might be retrenchment due to DBNM closure.

To conclude this summary, the results of the environmental (socio-economic) impact assessment indicate a wide range of impacts and present a corresponding broad range of mitigatory measures. This report was a preliminary or "broad brush" assessment of closure and results were indicators rather than in depth analyses. However, in the commissioning of this report, DBNM have indicated that they are willing to appraise the social responsibility for their actions, it is hoped that they will move forward with a more detailed assessment of significant impacts and feasibility studies of mitigatory measures timeously, to ensure the implementation of projects which could counteract much regional hardship.

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TERMS OF REFERENCE

This impact assessment report was commissioned by De Beers Namaqualand Mines (DBNM) in 1990. The Environmental Evaluation Unit (EEU) was commissioned to undertake a study which would assess the impact of DBNM closure in 2002 and to provide some suggestions as to viable business alternatives, employment opportunities and land-use options for the future.

DBNM's specific instructions were :

- assess the social and economic impacts of mine closure on the immediate geographic environment
- investigate post-mining use of company properties

The 1992 masters group from the Environmental and Geographical Science Department of the University of Cape Town, were brought into the project to assist the EEU, by collecting baseline information. This assistance was of such a nature, that it partly fulfilled the academic requirements for the masters project towards the degree M(Phil) Environmental Science. To complete the academic requirement, an individual assessment of the baseline information was required. Hence the project was split into two phases ; the production of the Baseline Information Report as a group effort and the production of an assessment of the socio-economic impacts of DBNM closure, as an individual effort. The requirements for the individual report were submitted by R. Hill and Professor R.F. Fuggle on the 6th of January 1992 as representatives of the Department of Environmental and Geographical Science, but these requirements have had several amendments.

The specific requirements of this assessment report were :

- The individual report is written for academic evaluation by examiners.
- The individual report will communicate the findings of the assessment but need not explore all avenues of impacts provided sufficient reason is given.
- The report is not a critique of the project.
- Demonstrate an adequate grasp of principles, methods and techniques for analyzing, evaluating and presenting information, appropriate to this project.
- Satisfy the general and specific requirements of a good assessment report.
- Include a concise executive summary, in which it is permissible to repeat information from the Baseline Information Report.
- The individual report should range between 10 000 and 20 000 words excluding appendices.

The individual report for academic purposes is to be submitted by the 26th of June 1992.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

List of Figures

List of Tables

GLOSSARY

IEM : Integrated Environmental Management is a process designed to ensure that the environmental consequences of development proposals are understood and adequately considered in the planning process. The term *environmental* encompasses biophysical and socio-economic components.

EIA : Environmental Impact Assessment is an activity designed to identify or predict biophysical and socio-economic impacts, of proposals, projects, policies or programmes. To interpret and to communicate that information.

Input-output analysis : This technique provides specific information on the interconnections within an economy to identify specific changes within it.

Export theory model : An empirical model providing a conceptual foundation for all operational economic impact assessment models.

Service sector consists of activities such as bookkeeping, data processing, advertising, engineering consultation, legal services, auditing and other business services on a fee or contract basis.

Khoi Khoi indigenous population : An ancestral group of the present day coloureds, who occupied the coastal plains of the Cape when the first Europeans arrived. The acquisition and occupation of their land over the past 350 years has left a few small reserves for the population where many live off the land communally.

Trekboers (1700 A.D. - 1770 A.D.) : A group of Dutch pastoralists who moved north toward the Orange river from Cape Town, occupying the Khoi Khoi's land and driving them further north.

GGP : The Gross Geographic Product is the monetary value of economic production referring to a defined geographical area.

RCA : Rural Coloured Areas are reserves in which the indigenous coloured population can live communally off the land but are denied the right to mine it. There are six reserves in Namaqualand which cover 25.3 % of the regions land area.

1. INTRODUCTION

Consider Namaqualand prior to the discovery of diamonds in that region. It was an underdeveloped region, with a largely subsistence community, living off the land. The only economic activity to speak of was copper mining and its support industries in the vicinity of Springbok. These mines coerced members of local population to leave the rural way of life to become wage earners, by enforcing Act 29 of 1909 (cited in Dunne, 1988), which placed an annual tax on adult males. When diamonds were discovered the method of recruiting instituted by the copper industry was further entrenched and mining became the focal business and employer of the region.

De Beers Namaqualand Mines (DBNM) brought with it employment opportunities, improved infrastructure, a stable market for secondary industries and several problems. These problems included, the way in which DBNM purchased large tracks of land during the depression years, land to which many of the members of the local population feel they have a right. A second problem surrounds the diamonds, which leave the area along with the profits they produce. This leaves many of the locals with the notion that the area is being plundered, while receiving very little in return. However the seemingly inexhaustible supplies of diamonds and copper gave the population a sense of security, fathers felt their sons could follow in their footsteps and enter the industry for a long and stable career. But this security has been short lived, however, as fluctuating commodity prices have forced copper and diamond mines to retrench workers or to close down on several occasions during the last three decades. The retrenchments and unemployment associated with mine closures in the past, has typically lead to increased impoverishment amongst the mine workers communities.

The planned closure of DBNM in 2002 and the associated withdrawal of approximately 3000 jobs and millions of rand which was expended locally, is likely to induce significant socio-economic impacts. The employees and their dependants who have been reliant on DBNM for the past 62 years are now faced with finding a new source of income in a region where the mining industry is winding down (CSS, 1989). Moreover the associated local supply industries and consumer industries could be faced with a reduced demand for their products. In an attempt to minimise these impacts, a series of mitigatory measures would be required on the part of DBNM.

The objectives of the study are :

- to assist DBNM in identifying the impacts of closure in 2002
- to present mitigatory options to counteract the effects of the impacts
- to assist DBNM choose land use options for its properties in Namaqualand.

In *this* project report, the objectives are :

- to identify the important impacts made evident in the baseline information
- to consider the magnitude and significance of these impacts using critical assessment techniques
- to consider mitigatory options appropriate to the impacts
- to demonstrate an understanding of principles, methods and techniques of analyzing and evaluating data

The approach to the impact assessment

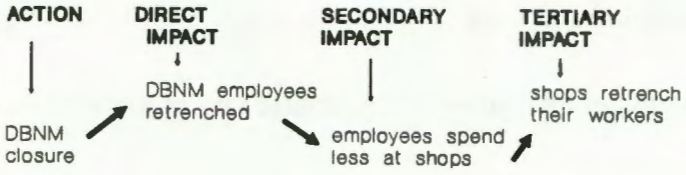
Having defined the objectives of the study, an approach was formulated to reach those objectives. The approach consists of several steps :

- The studies assumptions and limitations were defined. Through their definition the reports scope was set to match the requirements of the objectives. The impacts of mine closure differ in severity depending on the level of mitigation implemented prior to closure. To assess the full impact of closure the "no mitigation" alternative was chosen in which DBNM makes no effort to mitigate impacts. The full extent of the impacts should be found prior to the inclusion of mitigatory measures.

- The Baseline Information Report and several other literature sources were used for the identification of direct impacts. Direct impacts are those impacts which are a direct result of closure, such as the loss of salary.

- The direct impacts of closure in turn cause secondary and tertiary impacts. Consider the direct impact of unemployment which could impact upon local shops as the unemployed spend less money. This reduction in income is a secondary impact which may result in a tertiary impact such as retrenchment of some of the shop's workers. These ramifications of direct impacts can be viewed as "impact paths". Figure 1.1. illustrates an impact path.

Figure 1.1. An impact path



This technique of impact identification and presentation is particularly effective at uncovering secondary and tertiary impacts. Another advantage of this technique is the way in which it aids the logical flow of the assessment from one impact to the next, explaining the linkages.

- Having identified the direct, secondary and tertiary impacts using the impact paths, the decision had to be taken as to which impacts should be investigated. This decision was necessary as there was a large range of impacts and assessment should concentrate on the more important ones. The impacts **significance** was used to separate those impacts which warranted further investigation from those which did not. A table of significance criteria was drawn up for this task. The table was designed to indicate what is important for those social and economic groups who are likely to be effected by the closure. Hence the significance of the impacts could assessed by rating them against the criteria. For example unemployment effects a worker's security and employment status, both effects are rated as being very significant to the worker, hence the impact of unemployment is very significant. The results of the significance assessment are presented in a framework and are indicated on the impact paths. The *significant* impacts and their paths are explored in detail.

- Once an impact path and its associated impacts have been investigated, mitigatory measures are suggested. As there are several impact paths, the mitigation is fragmented in the report, hence a following chapter is devoted to the consolidation of mitigatory measures so that they form a mitigatory plan.

- The land use options for the DBNM property were considered. DBNM has some tentative plans but the study goes on to recommend alternative land uses. The recommendations will require feasibility studies to indicate their financial viability. Several of the recommendations act to counter the impacts of closure by providing employment opportunities.

- Finally a summary chapter draws together the impacts and the mitigatory suggestions to make concluding comments and broad recommendations. It also briefly critiques the procedures followed in this project against a relevant theoretical background.

2. ASSUMPTIONS AND LIMITATIONS

- It is assumed that those reading this report have studied the Baseline Information Report or the synopsis thereof in the executive summary of this document. This is a prerequisite for a full understanding of this report which was restricted in that it was not to repeat information presented in the Baseline Information Report.

- This study was commissioned to take cognisance of mining closure in 2002. Quantifying the impacts which will occur in ten years time, however, is hampered by a lack of predictive information and trend analyses. In overcoming that problem, 1985 and 1991 data have been used to quantify the impacts as though closure had occurred in those years and are not extrapolated to 2002. The difference in the impacts from a closure in 1991 and 2002 is likely to be one of magnitude. The stability of the DBNM operation implies magnitude changes will be small and probably inflation related. For example a service company may lose R 5 million due to a 1991 DBNM closure, whereas in 2002 that loss may be R 6 million.

- The project was limited by time and financial constraints. It was to be a preliminary and "broad brush" look at the closures impacts. Financial and time constraints kept the study from becoming inappropriately detailed for a first iteration.

- The baseline information used in this assessment report has been limited to that contained in the Baseline Information Report. No further information was to be gleaned from the mine or the region. Relevant theoretical and case study literature has been investigated, however, to provide a theoretical framework for the study.

- Certain information could not form part of the baseline report as it was confidential and DBNM reserved the right to prevent its publication.

- In the baseline report the investigation of the current situation and consideration of the outcomes of closure of the mining activities was confined to the Namaqualand region due to time, cost constraints and the preliminary nature of the study.

- The investigations were to be primarily socio-economic in nature as the consideration of the physical environmental and its rehabilitation was to be handled separately. (Le Roux and Odendaal report on the study of natural recovery of overburden dumps on DBCM properties in Namaqualand).

- The mitigatory measures presented were to revolve primarily around the DBNM property and its employees rather than about a regional strategy which supposedly enters the realm of government responsibility.

- It is important to realise that this report is a compromise between an academic thesis and an impact assessment project. Moreover the project is a socio-economic impact assessment, a relatively new field in South Africa. Thus a formal theoretical framework was in some cases not available or in other cases those that were available, were not suited to the project. The result is a report which requires an innovative approach, ting in with theory where possible. The nature of the masters course has emphasised a practical, skills-orientated approach. Thus the products of this report, should allow those skills to be tested, while displaying the quality of academic rigour.

3. IMPACTS DUE TO DBNM CLOSURE

3.1. DEFINING IMPACTS USING IMPACT PATHS

The identification of impacts is this report has been undertaken using an impact paths method. The method is an adaption of Sorensen's hybrid approach (cited in Wathern, 1988) and is effective as a means through which indirect or secondary impacts many be reached. The technique allows all impacts and their ramifications to be followed from the action of mine closure but makes no attempt to rate the significance of the impacts.
The paths identified were :

- Impact Path 1 : Closure impacts surrounding Namaqualand DBNM employees
- Impact Path 2 : Closure impacts surrounding Transkeian DBNM employees
- Impact Path 3 : Closure impacts surrounding mine town DBNM employees
- Impact Path 4 : Closure impacts on the business sector
- Impact Path 5 : Closure impacts on the basic sector industries
- Impact Path 6 : Closure impacts on the Government
- Other Impact Paths : Peripheral impacts

The paths were created around various interested and affected groups. The three impact paths for groups of employees were not combined into a single group. Although employees are likely to experience similar impacts, the impact magnitude and significance differs from group to group. Using separate analysis, only one group is associated with at a time, facilitating the formation of a clearer picture of that group's predicament.

The paths are presented graphically at the beginning of the relevant section within the assessment chapter, providing the reader with an overview of impacts and the structure in which they will be discussed. See figure 3.1. for an example.

3.2. CHOICE OF SIGNIFICANT IMPACTS AND THEIR ASSOCIATED PATHS

Having identified the direct, secondary and tertiary impacts using the impact paths, a decision had to be taken as to which impacts should be investigated. This decision was necessary as there was a large range of impacts and the assessment was to concentrate on the more important ones. The impact's *significance* was used to separate those impacts which warranted further investigation from those which did not. Significance is a subjective measure and would usually involve multi-disciplinary impact assessment teams, civic leaders and opinion formers who would evaluate the social significance of particular impacts (Fuggle & Rabie, 1983). However in this report assessors personal judgements are used. Significance criteria were designed to indicate what is important for those social and economic groups who are likely to be effected by the closure. Hence the significance of the impacts could assessed by rating them against the criteria. For example unemployment effects a worker's security and employment status, both criteria are rated as being very significant to the worker, hence the impacts of retrenchment are very significant. The results of the significance assessment are presented in a framework.

3.2.1. Impact significance criteria

Significance reflects an informed value judgement on the importance of a particular impact to society as a whole, using criteria most people will accept as reasonable. Figure 3.1. indicates the significance criteria against which impacts can be rated.

Table 3.1. Significance criteria

Impacts are socially significant when they influence :	**Impacts are economically significant when they effect a change in :**	**Impacts are significant in the biophysical environment when there are changes in :**
• health • safety/security • employment status • religion • land ownership or occupation • economic opportunity • desired growth rate • quality and quantity of services • civil rights • political access • housing quality	• employment opportunities in the basic sector • employment opportunities in the non-basic sector • business income • economic growth • service costs • tax revenues • land values • business efficiency	• nonrenewable resource reserves • renewable resource reserves • water availability • energy availability • climate • flora
Ranked from most significant to least significant		

The significance criteria presented in table 3.1. were sourced from Wathern (1988), McEvoy & Dietz (1977) and Leistritz & Murdock (1981). The criteria were then ranked in descending order of importance to the majority of the interested and affected parties in Namaqualand, as judged by the writer. The greater the impacts significance the higher up the list of criteria its effects can be felt. The DBNM closure is particularly significant as it involves the depletion of a non-renewable resource and the removal of basic work, both of which are at the top of employee and business significance lists (Table 3.1.).

3.2.2. Assessing impact significance

The impacts significance was assessed using the significance criteria and impact magnitude. Where the magnitudes were unavailable or difficult to calculate the significance criteria were used alone in the assessment. The framework (Table 3.2.) indicates the results of the assessment. The framework does not present alternatives but presents relevant information so that the decision can be taken as to which impacts warrant further study.

Table 3.2. Impact significance framework

GROUP	EFFECTS OF DBNM CLOSURE	SIGNIFICANCE WITH NO MITIGATION	COMMENTS
DBNM EMPLOYEES	RETRENCHMENT	VS	Significant if employees have inadequate funds.
	LOSS OF DBNM LAND OCCUPATION	S	Employees will have to leave the DBNM property and many do not have houses to move to.
DBNM EMPLOYEES' DEPENDANTS	HEALTH AND SECURITY	VS	Reduced income may effect ability to obtain basic needs.
	EMPLOYMENT STATUS	VS	Housewives and children may have to find wage labour.
EMPLOYEES' COMMUNITIES	DBNM EMPLOYEES OCCUPY LAND AND USE INFRASTRUCTURE	S	Substandard housing and poor infrastructure or poverty ridden communities will have to be shared with returning employees.
	DBNM EMPLOYEES INFLUENCE LAND USE OPPORTUNITIES	S	DBNM employees may want to partake in overburdened communal land use practices.
	SOCIAL INTERACTIONS	S	The community social structures may not accept the retrenched DBNM employees sympathetically.
NAMAQUALAND URBAN AREA RESIDENTS	DBNM EMPLOYEES OCCUPY LAND AND USE INFRASTRUCTURE	M	Many urban areas have better housing standards and an infrastructure of reliable water and electricity supply.
	DBNM EMPLOYEES INFLUENCE ECONOMIC OPPORTUNITIES	S	Competition amongst the unemployed will become more fierce. Other employees will create opportunity through small business enterprise.
NAMAQUALAND BUSINESS SECTOR	REDUCED INCOME THROUGH A DROP IN DEMAND	VS	Supply contracts with DBNM lapse and retrenched DBNM employees spend less.
	RETRENCHMENTS	VS	Businesses may have to retrench staff due to the reduced demand.
	BUSINESS CLOSURES	VS	Businesses may have to close due to reduced demand.

Table 3.2. Impact significance framework (continued)

GROUP	EFFECT OF DBNM CLOSURE	SIGNIFICANCE WITH NO MITIGATION	COMMENTS
NAMAQUALAND NON-BASIC SECTOR	REGIONAL INSECURITY	S	Psychological impact leads to lack of consumer and investor confidence.
	LOSS OF SOME SUPPLIERS	S	Increased costs as some local suppliers close due to DBNM closure.
	COMPETITION	M	Retrenched workers may start many small enterprises in the non-basic sector.
	FLOODED LABOUR MARKET	M+	Large scale unemployment will keep wages down.
NATIONAL BUSINESSES	REDUCED INCOME	M	Contracts with DBNM lost but impact spread amongst thousands of businesses.
	LOSS OF NAMAQUALAND BRANCHES	M	Reduced income may make a Namaqualand branch unviable.
INTERNATIONAL BUSINESS	REDUCED INCOME	M	Small income loss for an international business.
CENTRAL GOVERNMENT	REDUCED TAX REVENUES	M	Minor loss in a tax base of billions of rand.
LOCAL GOVERNMENT	REDUCED RATES AND TAX REVENUES	S	DBNM operation and the services it consumed made a significant contribution.
	NO NEW INITIATIVES	S	Infrastructural deterioration.
	SERVICE COST INCREASE AND QUALITY DECREASE	S	Loss of DBNM consumption means a lower economy of scale and price rises.
	RETRENCHMENT OF GOVERNMENT EMPLOYEES	S	DBNM closure may force government cutbacks.

Table 3.2. Impact significance framework (continued)

GROUP	EFFECT DUE TO DBNM CLOSURE	SIGNIFICANCE WITH NO MITIGATION	COMMENTS
DE BEERS CONSOLIDATED MINES	DBNM CLOSURE WITH MINIMAL MITIGATION	S	Poor closure management can reflect negatively on DBCM public and business relations.
THE DIAMOND INDUSTRY	LOSS OF DBNM PRODUCTION	M	DBNM production represents 10 % of South Africa's production but only 1.5 % of world production.
DEVELOPMENT AID AGENCIES	INCREASED WORK LOAD	S	The likely increase in unemployment and poverty will place greater pressure on these organisations.
FUTURE GENERATIONS	LOSS OF EMPLOYMENT OPPORTUNITY AT DBNM	S	The exploitative nature of the DBNM operation should account for the fact their operation was not sustainable.

KEY :

VS	VERY SIGNIFICANT IMPACT
S	SIGNIFICANT IMPACT
M	IMPACT OF MINOR SIGNIFICANCE
+	POSITIVE IMPACT (THE REMAINDER OF THE IMPACTS ARE ASSUMED TO BE NEGATIVE)

The information from the framework (table 3.2.) is transferred to the impact paths. The significant impacts are highlighted on the impact path diagrams. Each significant impact is investigated in detail in following sections, 3.3. and 3.4..

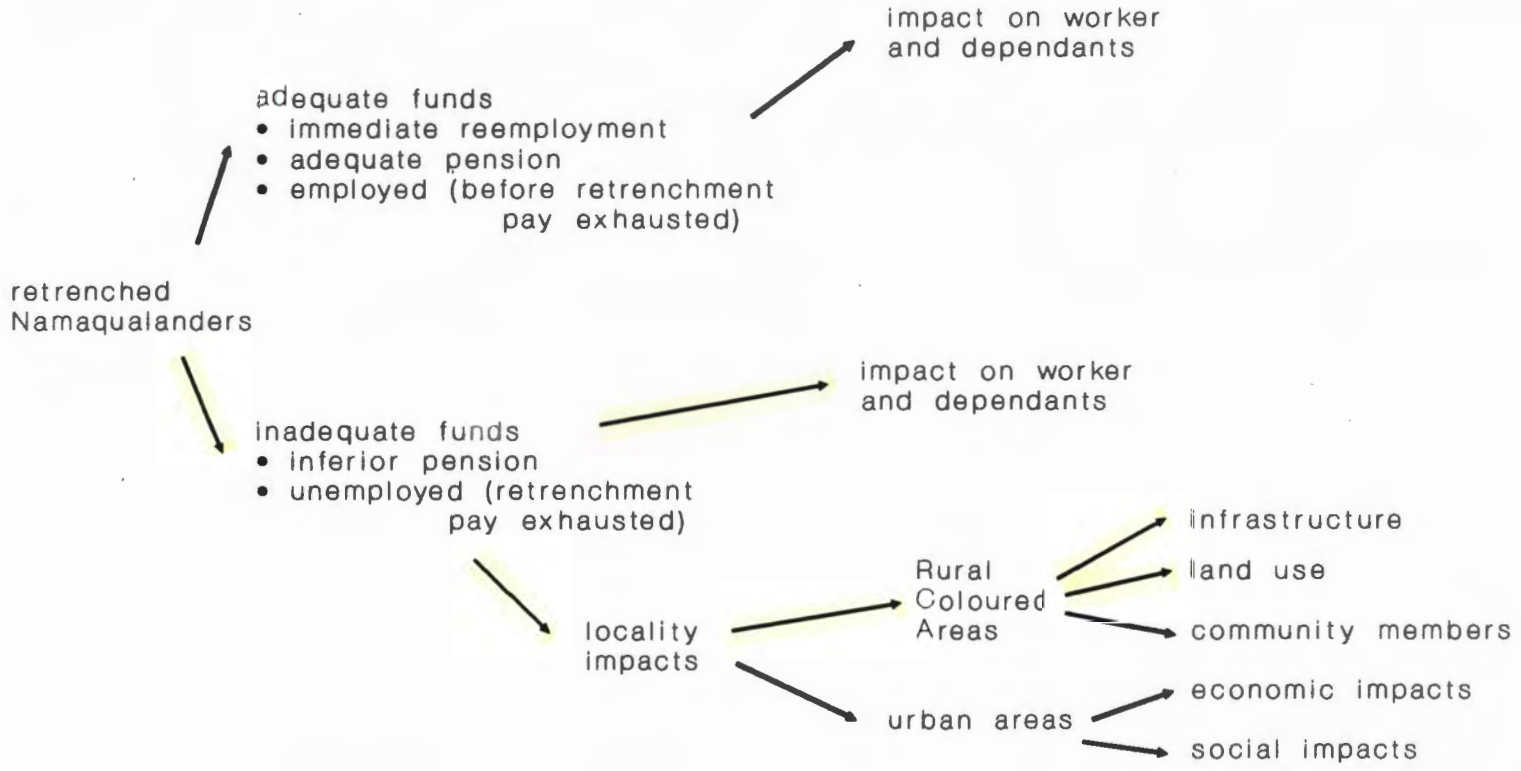
3.3. IMPACTS DUE TO THE METHOD OF MINE CLOSURE

The method of mine closure is a project action which is likely to have a similar effect on various social and economic groupings. Mine closure could be a slow process of rationalisation over several years or the mine could go from full production to a shut down in several days. The actual closure process and its phasing are variables which have yet to be decided upon by DBNM. However some ideas have been expressed by DBNM management and these shall be subjected to a cursory analysis to find the impacts which might arise out of the suggested methods of mine closure.

Mine closure techniques all have the same end result, namely the complete shutdown of the operation. Socio-economic impacts of the process can differ depending on how and when the phasing of shutdown takes place. It is debatable as to which methods have the least impacts as there are several perspectives with differing requirements.

The economic perspective is that the mine should close in the most efficient manner. Towards closure the operation would be rationalised through cut backs on employees and privatisation of various non-mining functions, in a drive to reduce overheads. When it becomes apparent that further cut backs will effect efficiency of the mining operation itself, a sudden closure of the entire operation would make economic sense, minimizing loss. Therefore closure would occur when overheads exceed income. To continue operating would mean running at a ever increasing loss. It is likely however, that the most economical method of closure will have the greatest impact on employees. Employees who are not retrenched during the cut backs face increased pressure to perform their own jobs and the additional work of the retrenched, at a time when morale is likely to be low. When sudden closure does occur and workers flood onto the job market, those who were retrenched earlier are likely to have absorbed any employment positions that were available. The reaction of the local economy to a sudden closure as to a phased closure is uncertain. Businesses might wish a phased closure to enable them to adjust to lowered demand. Time would allow the businesses to implement cost saving measures.

Figure 3.1. Impact Path 1 : Closure Impacts surrounding DBNM Namaqualand Employees



[ ] Significant impacts

3.4. SOCIAL IMPACT ASSESSMENT OF MINE CLOSURE

From the scoping framework, table 3.1., significant impacts have been traced along impact paths which places them in context. The social impacts of mine closure are discussed individually in each case identifying their magnitude and significance within the broader context of mine closure. The discussion focuses upon the most significant impacts. Mitigatory considerations are grouped at the end of each section so as not interrupt the discussion of impacts interactions and linkages.

3.4.1. Impacts Surrounding the Namaqualand DBNM Employees

Refer to Impact Path One, figure 3.1., the significant paths and impacts have been highlighted in yellow.

Reduced income : impacts on the workers and their dependants

The group of 1705 domiciled in Namaqualand represent 55 % of the mine workers. Upon closure the majority of the 1705 employees will be retrenched, either accepting a retrenchment package or a pension package. This group comprises the youngest employees, with 68 % of the group presently between 18 and 35 years of age. During the next ten years, new recruits are likely to be Namaqualanders which will maintain the young composition of this group. This assumption is supported by DBNM policy which discourages recruitment of unskilled migrant labour from the Transkei or Ciskei. Further more this recruiting policy is indicated in a Patterson band analysis. The analysis shows 19 % of the Namaqualand group are new recruits (level A1) as against 5 % and 8 % of the mine town and Transkei groups respectively. This implies that **the Namaqualand group will have the smallest retrenchment packages** as they average the least number of years with the company. The majority of members in the group are earning between R 500 and R 2000 per month implying that their contributions to DBNM pension funds have been small with a correspondingly small potential pay out.

If the pension packages are inadequate to cover basic needs or workers are still unemployed when their retrenchment funds run dry, **the quality of life for 75 % of worker households is likely to decline significantly** as only 25 % have more than one income source for the household. At present only 46 % of the Namaqualand group are married with an average of 2.8 dependants, but over the next ten years this figure could increase substantially as the group's average age rises into a more family orientated stage. In 76 percent of the households, the housewife is currently unemployed and the number of dependants is an average of 5 people per household. **Upon DBNM closure these unemployed household members may be forced into the wage labour market.** Moreover when work takes the mother from the home on a daily basis, **family cohesion is likely to suffer** and the children will lack parental care. Daycare facilities are unlikely to be available and typical results could be juvenile delinquency, social retardation, increased teenage pregnancies, criminal tendencies and drug abuse (Glavovic, 1990).

There are estimated to be 3016 children under 18 years of age dependant on the Namaqualand group. In 2002, 1355 children will be between 10 and 20 , they and those born during the next 10 years will require schooling or tertiary educational support from their parents. **Educational support could be endangered in several ways due to DBNM closure**:

- In the face of low pension packages and unemployment, the costs of children's school and tertiary education fees might exceed abilities to pay fees.
- The children might be withdrawn from school to assist in the generation of income for the household
- DBNM scholarships might be suspended limiting the opportunities to attend high school or a tertiary training centre
- Transport to and from school might become prohibitively expensive on a tight family budget

Those children who are presently older than ten, will probably have completed their education and will be wage earners or looking for a job in 2002. The support of those earning a wage, could assist the households of the DBNM Namaqualand group post-closure. The employment prospects in the region are, however, poor.

In 1985 approximately 38 % of the potential labour force of Namaqualand, were not actively employed (Dunne, 1988). This situation is unlikely to change by 2002 and may force work seekers out of the region to urban centres throughout South Africa, where the situation is little better. Out migration of labour could result in the further breakdown of the family structure.

If upon closure DBNM benefits such as medical aid are discontinued, retrenched workers and their families could experience significant financial impacts, if an illness in the family required hospitalisation and payment of the associated fees. Hence the **reduced quality and quantity of health care that could be afforded by the family will further reduce the standard of living** for the majority of the Namaqualand group.

Reduced income : locality impacts

When DBNM closes the majority of workers will lose their jobs and 86 % of the Namaqualand group indicated they will search for another. The future use of the DBNM property will dictate if they remain on the property. For the purposes of this report however, it is assumed that they will leave the property and their removal to other areas must thus be explored. Only 36 % of the group currently own homes to which they can return after closure. The influx of approximately 1700 workers to local areas outside the DBNM property would give rise to a range of impacts. There are two areas which are likely to receive the retrenched employees; the Rural Coloured Areas and urban centres in the Namaqualand region. See Impact Path 1, figure 3.1.. It is difficult to estimate the respective number of the employees who will relocate to urban centres in Namaqualand, to RCAs or move outside the region as migrant workers. Some workers who have housed their dependants in an urban area might move to an RCA to escape absolute poverty, if work in the urban centres is not forthcoming.

The Rural Coloured Areas (RCAs)

First consider the Namaqualand workers who return to the RCAs or move there with their dependants on a full time basis. This could be the choice of approximately 1000 workers who currently spend their weekends in RCAs. **Towns within reserves which will be most affected by the return of the workers are Komaggas, Buffelsrivier and Steinkopf** where 89.5 %, 59 % and 43.2 % of the households are likely to include at least one retrenched DBNM employee respectively. The impacts experienced by the retrenched workers and their dependants through loss of salary and benefits is likely to influence the community infrastructure, land use patterns and members.

The infrastructure of RCAs is poor (Fig, 1991) **and the return of the retrenched workers will compound the situation :**

- The **lack of suitable housing** for those returning to the RCAs, will mean that the workers either move in with relatives or create temporary housing on the outskirts of the towns. It is unlikely that many will be able to afford to have a house built for them and due to the housing shortage it is unlikely that there will be houses to rent.

- **Water** is a scarce commodity for many of the reserves, where it is normally pumped from boreholes and stored in small tanks. A recent report in the *Nanaquanuus* (1991) indicates that variability in the quantity and quality of the supplies is a recurring problem in the RCAs, through poor maintenance and management. **The return of the retrenched workers and in some cases dependants, is likely to place further pressure on the poor extraction techniques of this crucial resource.** The exception is Steinkopf which is linked to the Orange river pipeline, but water tariffs are high.

- There is likely to be little impact on **energy consumption**, as in these settlements, individual households are responsible for the provision of their own energy source such as a diesel generator or paraffin. In some cases the RCA towns have been electrified.

- The **medical facilities** will need to cope with workers and their spouses, who previously received care and financial aid form DBNM as part of the benefits package.

The three **economic functions** in the reserves are likely to be impacted by the return of the retrenched workers who might wish to become involved in these practices. **Increased competition for the use of the natural resources of the reserve will result.**

- For over a century, land use has primarily revolved around **stock farming** despite the fact that it can only play a marginal role as a source of employment and income (Emmett, 1987). Through land-grabbing policies of the trekboers and industry and poor stock management, pressure on the land resources has become acute. The mean stocking rate for the RCAs, is 77 % above the recommended carrying capacity for grazing. The two areas surrounding the three towns of Komaggas, Buffelsrivier (in the Komaggas reserve) and Steinkopf, are likely to be most severely impacted as they have overstocking rates of 94 % and 1043 % respectively.

- Of the Namaqualand group of employees, only 28 % have stock in the reserves. Upon mine closure, however, many of the group may see fit to expand their flocks while other retrenched workers may wish to enter the stock farming industry. Further overstocking of **the reserves will lead to accelerated veld deterioration.**

- Another form of land use in the reserves is small scale **dry land and irrigated agriculture.** Retrenched workers may wish to enter this field which has logistical and infrastructural constraints, making it costly and risky. **The retrenched workers agricultural initiatives are unlikely to be of any detriment to the community, unless, through poor farming technique, veld is damaged irreparably.**

- The reserves have mineral deposits some of which warrant **small scale mining.** The deposits of tungsten, mica, feldspar, beryllium, scheelite, bismuth and clay could be mined by the retrenched DBNM workers upon their return with **little disadvantage to the existing communities** provided they can obtain legal mining rights and raise the required capital.

Beyond the impacts which retrenched workers and their households might have upon the infrastructural resources and land use patterns of the communities, is the question of the interaction of the two groups. The migrant labour system used by DBNM to draw labour from the reserve areas of Namaqualand, seems to have encouraged a withdrawal of workers from involvement in and responsibility for the household (Emmett, 1987). When the men and women return to the RCAs on a permanent basis, their **reincorporation into the social structures of the communities could be a difficult one**. Personal interactions could go one of two ways. The residents may feel enthused by the return of some of the labour force, feeling that their input could lead to the exploration of new ideas and management techniques within the reserves. On the other hand, the residents may feel threatened by workers who may place strain on their land use and infrastructural resources and be opposed to their return, leading to potential resentment, anger and conflict.

The more formal **social structures** in the communities such as the management boards, committees, church groups and class groups **could also choose either to reject or accept the retrenched workers into the social frameworks of the communities**. Acceptance could lead to the input of new ideas which could influence the lives of community members. If the workers and their dependants are living under conditions of impoverishment, the negative aspects of social pathology may emerge, dropping the standard of living for the whole community. **The possible withdrawal of children and members from schools and churches may threaten the existence of these institutions, as numbers drop, so could the funds which cover the overheads**. Community perceptions might change as community growth suffers or flourishes with the return of the DBNM workers.

Impacts on the RCAs will thus be largely determined by the abilities of retrenched workers to make positive contributions to these areas. Positive inputs could rescue the reserves from the poverty spiral in which they currently find themselves. Negative inputs could entrench the poverty even further.

The Namaqualand urban areas

Those Namaqualand group employees who do remove to the RCAs are likely to go to urban areas. Some 15.3 % of the group have their origins in the urban areas. Of the total, 31 % spend their weekends in the towns where 1 % of the group owns a house. **Towns which are most likely to be affected by an influx of retrenched workers are Hondeklip Bay, O'Okiep, Nababeep and Port Nolloth.**

On average 12 % of the households in these areas may shelter a retrenched DBNM employee, with the exception of Hondeklip Bay where 48.3 % of the households have a DBNM employee as a resident.

Unlike members of a RCA community, the residents of the urban areas do not tend to display strong community cohesion. Absorbtion of the retrenched workers, irrespective of their

retrenchment status, will thus not be as traumatic as it might be in the RCAs. A greater variety of jobs exists in the urban areas and prospects are more promising than in the present RCAs. The presence of the DBNM workers in the urban areas, however, will make competition of jobs more fierce, and greater experience and training might place retrenched workers at an advantage. Social tensions might arise from such a situation.

The urban infrastructure is geared toward expansion and possibilities of renting or purchasing a house, equipped with water and electrical power might increasing the quality of life for the retrenched workers. If the retrenched worker is successful in obtaining a job in the urban area retrenchment impacts are likely to be minimized and the urban economy will be boosted. Prolonged unemployment, on the other hand, may result in severe poverty as there is unlikely to be community support and a basic subsistence cannot be derived from the land. This situation could drive the retrenched worker and dependants back to the RCAs or to exhibit negative pathological behaviour such as crime.

Mitigation measures for the retrenched Namaqualand group

To mitigate the impacts of employment, salary and benefits loss the following measures could be considered :

- Find alternative employment for the DBNM employees.
- Provide a retrenchment package which assures an acceptable standard of living for workers and their dependants for a period which covers the average time taken to find a new job, considering the unemployment situation of the time.
- Put money and expertise into the region in the sectors which will stimulate job creation.
- Prior to the mine closure, provide the employees with the necessary training to enter a field with good job prospects.
- Help secure the family structure by assisting housewives with ideas and training for basic home industries.
- Continue and expand the scholarship scheme particularly in tertiary education.

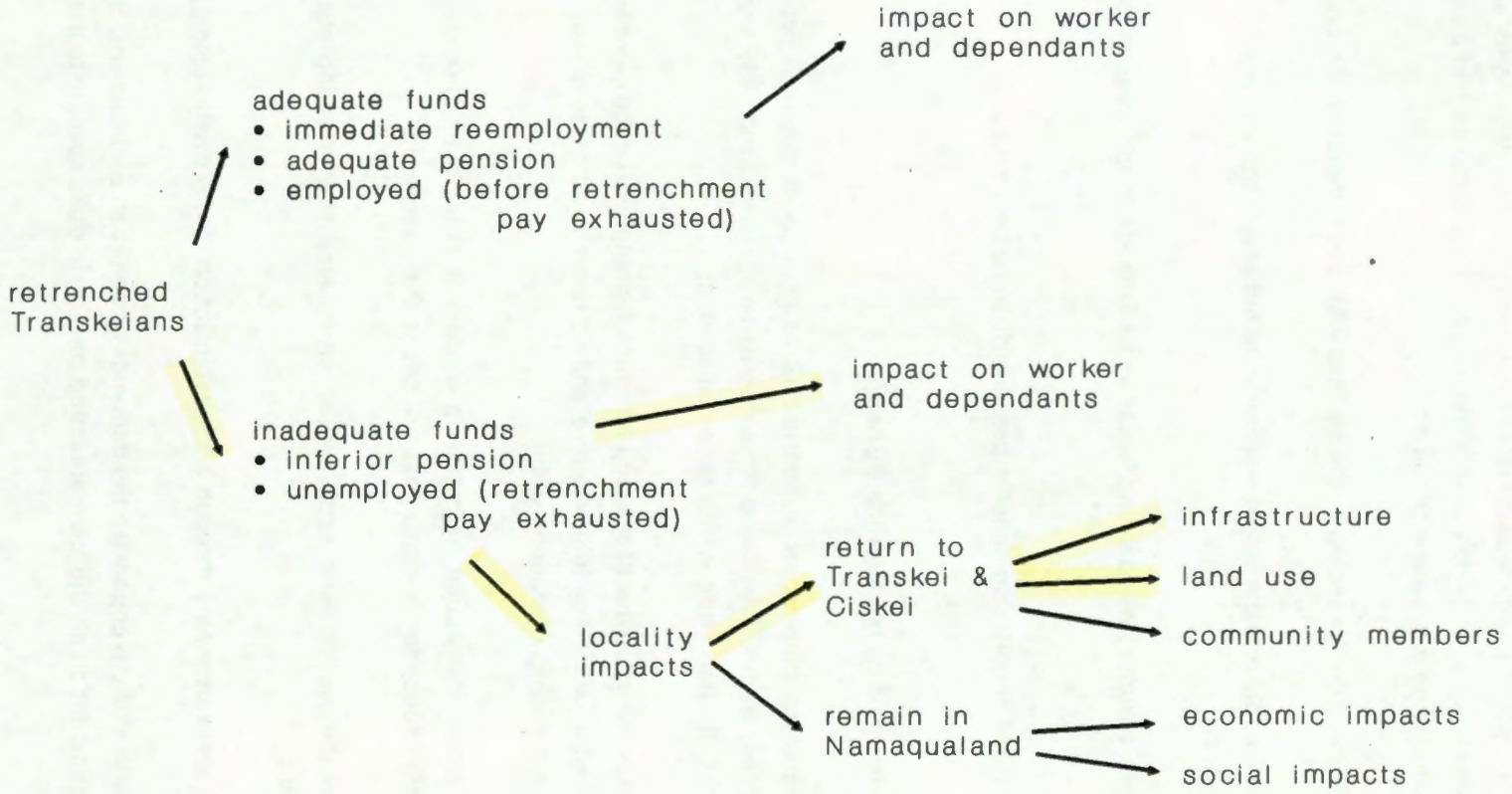
To mitigate impacts of the influx of workers on the RCAs:

- Assist with the upgrading of physical infrastructure to cope with the new pressures. Reliable water supplies, electrification and house construction are particularly important aspects of community infrastructure which require attention.
- Educate towards the sustainable use of the land for stock farming, introduce more efficient techniques to make small scale agriculture viable and consider a processing plant which could make small scale mining operations viable.
- Assist community-worker integration by fostering a positive attitude to their return, by providing workers with education in fields that will assist the community.

To mitigate the impacts on the worker who settles in an urban area the following mitigation measures can be considered :

- Stimulate the urban areas economy through a capital injection into growth sectors.
- Equip the workers with skills to cope with the demands of an urban environment. Such as the preparation for competition on the job market and training in skills specific to the urban area's requirements.

Figure 3.2. Impact Path 2 : Closure Impacts surrounding DBNM Transkeian Employees



[ ] Significant impacts

3.4.2. Impacts surrounding the Transkeian DBNM employees

Referring to impact path 2, figure 3.2., appearances suggest that it is similar to impact path one. The social profile of the Transkeians, their migratory work patterns and their communities, however, are very different from those of the Namaqualand group.

Reduced income : impacts on the workers and their dependants

Those who consider the Transkei and Ciskei to be their homes represent the Transkei group. They make up approximately 18 % of the DBNM employees (550 workers). The membership of the Transkei group is unlikely to be significantly different in 2002 due to the suspension of migrant labour recruitment. **In 2002, however, 61 % of the group will be over 55 years old** and if the closure pension package reduces the qualifying age from 60 to 55, **this 61 % will receive the full pension package**. It can be estimated that this group will have the longest average service with DBNM upon closure, meaning that those not qualifying for a full pension package are likely to receive a reasonable retrenchment package. The salaries of the Transkeian group, however, are low (presently R 500 to R 2000 per month) and this factor may result in a relatively low value retrenchment package in absolute terms.

The loss of salary will have direct impacts on the worker's dependants. The average migrant DBNM worker typically sends in excess of R 700 home per month to support the basic needs of food, shelter, fuel and transport of the dependants at a subsistence level. If the retrenchment/pension packages are sufficiently generous the impact of a reduced income may be ameliorated or delayed but **if the packages are insufficient or short lived and further income sources are not found, significant impacts are likely**. With an average of 7.3 dependants and 77 % of the households dependant on a single DBNM income, **the quality of life of a large group of people could drop considerably. Housewives may search for wage earning positions**, but as the coordinators of marginal activities such as tending the livestock, dry-land agriculture, the collecting of fuel wood and water, this is unlikely.

Of the total number of children of these workers, 60 % are older than ten years of age with the majority attending junior school. These figures are encouraging but the children attend poorly staffed and crowded schools. **The reduction in family income could force the children out of schools or tertiary education due to fee expenses and for them to search for employment to support the household**. The opportunities for poorly educated, untrained and poverty stricken youths are likely to be slim. Hence the family whose basic needs cannot be met and who cannot survive on the poor returns from the land, may be **forced to move to urban areas where hopefully work can be obtained**. This option is highly popular, as can be seen by the rapid expansion of the informal housing surrounding the larger urban areas of South Africa. The limited skills of those arriving in these areas, however, places successful employment, out of the reach of many.

Of the total, 65 % of the Transkei group indicated that they would not search for work when retrenched. This figure ties in with the 61 % over 55 years of age. **The 35 % who will search for work are likely to be between 46 and 55 years old and their chances of securing work are slim, not only because of their age but their education standards are poor** with no workers having matriculated and 81 % having a standard five qualification or less. This 35 % of workers may decide to remain in Namaqualand, as prospects may look bleak in the Transkei and Ciskei and a wage salary could be the only source of money to sustain the dependants.

Impacts on Namaqualand

The socio-economic impacts on Namaqualand of approximately 245 migrant workers remaining in the region to search for work, are **small, if one considers unemployment in the region which was roughly 13 000 in 1985** (38 % of the total workforce) (Dunne, 1988). The significant impacts will tend to be localised around their place of residence. The only land set aside for black informal housing in the region is in Port Nolloth (assumption : the bulk of the Transkei workers are black). The rental or purchase of property outside of the informal camp is likely to be beyond the financial capabilities of the retrenched workers. In this Conservative Party dominated region, attempts to do so may face strong resistance.

The arrival of retrenched workers might create tension or conflict within the camp community. Pressure will be placed on the camp's inadequate infrastructure and greater competition between the unemployed for available jobs will rise. Work opportunities will be slim and workers are likely to have limited skills. Furthermore the workers dependants may come to Namaqualand. The relaxation of constraints on mobility and occupation means this could be possible. An influx is currently occurring in Namaqualand as indicated by the number of black women increasing from less than 1 % of the black population in Namaqualand in 1985 to 15 % in 1991 (CSS, 1991). The result of **the arrival of the dependants in the area means increased pressure on the camp,s infrastructure. Family cohesion is likely to be disrupted when the housewives seek wage employment** and the children, through neglect and poverty experience pathological problems such as gang formation, prostitution, drug abuse, teenage pregnancies and psychological disorders. **The response to the arrival of the worker and his dependants is likely to be unfavourable, creating tension and conflict within the camp.**

Impacts on the Transkei and Ciskei

The return of workers, predicted to number some 450, to the Transkei and Ciskei rural and urban areas may have complex impacts on the local communities within which they resettle. Communities in the Herschel District from which the majority of workers originate and to which they are likely to return, will be most effected.

The **infrastructure** of communities in the Transkei and Ciskei is poor in several respects. Conditions in the Herschel District are no exception.

- It is only **the sphere of housing** that **impacts are likely to be low**. The survey of the Transkei group showed that all of the affected workers own a home in the territory. A housing shortage is thus not likely to arise but housing quality is poor (Lund, 1992).

- The **water supply** is unreliable, inadequate and is often located at a distance from points of consumption. Moreover installed water technology projects in many areas have either not been fully completed or have fallen into disuse for lack of maintenance. The **additional pressure placed on water resources can only be to the detriment of the resident population.**

- The local communities use a wide range of **fuels** to meet their energy requirements. **The retrenched worker may not be able to afford the more convenient energy supplies** such as diesel generators or paraffin stoves. As a result the retrenched workers may resort to firewood from the area's indigenous trees. The further removal of trees will **impact the environment. Erosion may increase and the water absorption capacity of the land may fall in consequence.** Such impacts may in turn affect the water table. Potentially sustainable resources will thus be further degraded.

- Migrant workers do not receive **medical benefit payments** as a component of their wage. Their individual medical needs are directly covered by the mining authorities during the periods of contract but do not extend to the families in the home communities. **The medical care requirements of the returning workers will thus pose a problem.** They will become dependant upon state subsidized medical services which are already inadequate and financially and physically stretched (Lund, 1992).

Upon their return, the pensioners and retrenched workers may wish to become involved in local **agricultural** practices. The land is already under extreme pressure. In the Herschel District for example some 350 000 people are already living on the land, an average density of 186 persons per sq km. **Livestock farming** is undertaken on village commonage land. The carrying capacity of the indigenous veld is limited and is already under stress. Intensification of use is likely to extend the stress and accentuate already high erosion rates. The **situation is likely to worsen with retrenched/pensioned workers wanting to increase their share in this activity.**

Opportunities in agriculture are constrained due to inadequate water supplies and poor yields under dry-land cultivation, where input costs frequently outweigh the output value. **The retrenched/pensioned workers efforts may add to erosion and soil degradation. Where crops are produced they are unlikely to exceed the bare minimum of what the dependants need.** Cultivation under irrigation has potential but the workers who decide to enter that field need training to make the operation financially viable (Lund, 1992).

The return of retrenched workers to areas of the Transkei and Ciskei many have a limited positive impact within the social frameworks of these regions. The migrant labour system splits up families, however, the return of workers may lead to the potential reunification of families and the **strengthening and broadening of community structures.**

Mitigation measures for the retrenched Transkeian group

The following measures are intended to minimize the impacts of retrenchment upon individual workers, their dependants and their communities :

- Find alternative employment for those who want it.
- Initiate training programmes in relevant skills, so that they have better employment prospects.
- Provide acceptable retrenchment/pension packages for the employees, bearing in mind that their age and poor education, will make it difficult for the majority to find replacement work under their own initiative.
- Concentrate on education and employment opportunities for the dependants of DBNM workers. Educational scholarships and training in business and artisan skills of their preference should be started without delay. The process will ensure that the next generation of bread winners is established when closure takes place. They may be able to support the needs of their aging parents.

Mitigation of impacts on Namaqualand in circumstances where a proportion of the retrenched Transkei group remain in the Namaqualand region. If the Port Nolloth camps are the destination of most of the workers who remain in this region, DBNM could :

- negotiate with the Port Nolloth municipality to assist the transition of the existing squatter camps to township status. That change could lead to an improvement in services and infrastructure.

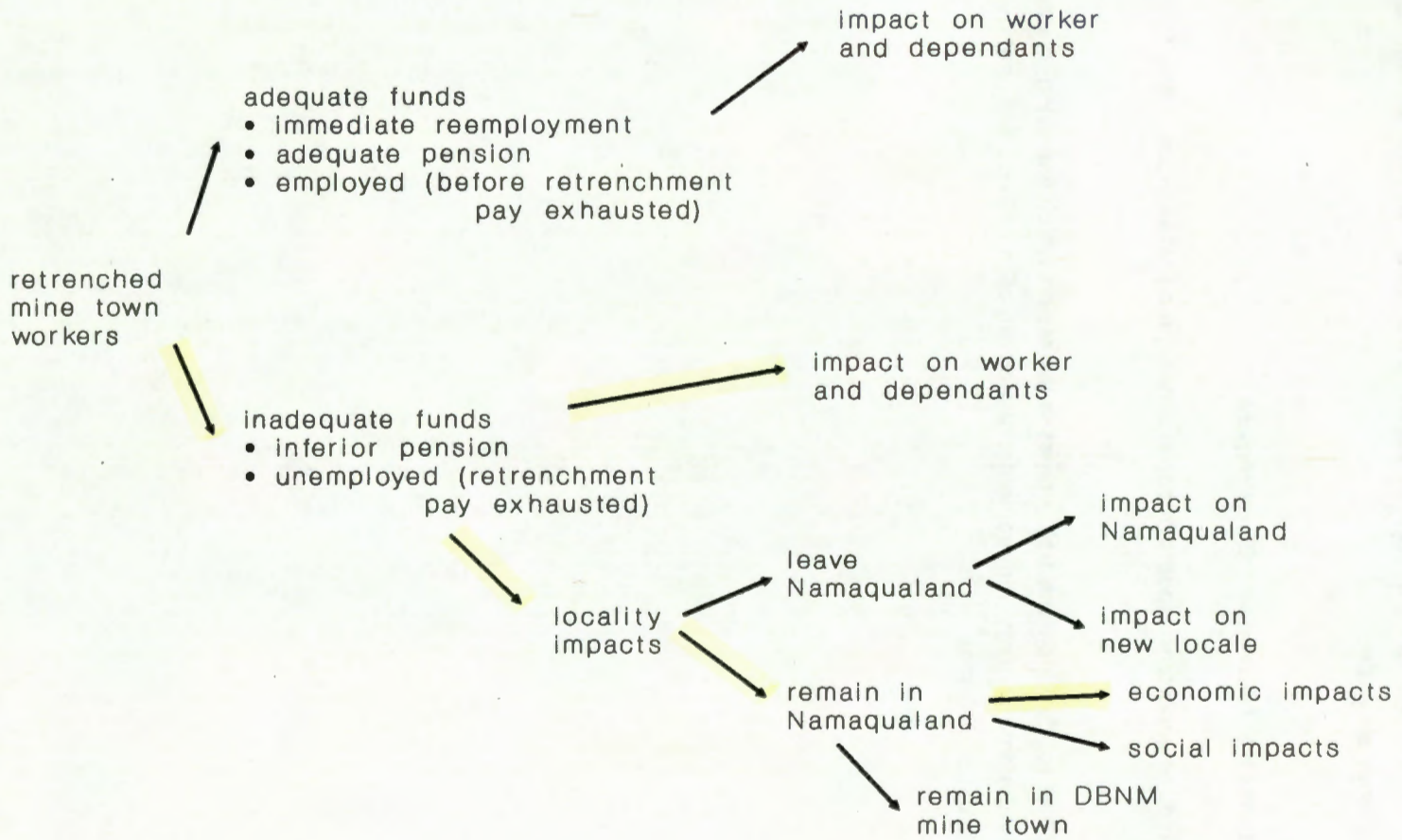
- Make provision for financial support to assist retrenched workers in starting small enterprises, if they so wish

Mitigation of impacts for the Transkei and Ciskei regions :

- contribute to three important aspects of social service; medical services, water supply and wood fuel

- financial support for development programmes in the region which are trying to ameliorate problems surrounding; energy requirements, water supplies, clinics and improved and advanced education facilities

Figure 3.3. Impact Path 3 : Closure Impacts surrounding DBNM Mine Town Employees



[ ] Significant impacts

3.4.3. Impact of closure on the DBNM mine town residents

This group of DBNM employees consider the mine town to be their home, as their families reside there. Impact Path 3, figure 3.3., indicates the impacts, the retrenchment of this group could create.

Reduced income : impacts on the workers and their dependants

The mine town group number 800 workers who live with their dependants within the towns. Unlike the Transkei and Namaqualand groups, this group has an elite component who are earning over R 3000 per month. This elite component, 58 % of the group, represent the skilled labour such as managers, bookkeepers and specialists, **they will be in a relatively good financial position at closure.** On the other hand, those group members earning from R 500 to R 2500 per month are likely to be **less fortunate at closure.**

In 2002, only 11 % of this group is likely to be older than 55 years indicating that **the majority of this group will receive the retrenchment package.** The retrenchment package for the elite component may, in most cases, double packages received by the Namaqualand, Transkei and lower income mine town group. However, the impacts on the lives of the elite component could still be significant. The significance of the impacts arises from the mine town lifestyle, which is one of high standards and many benefits. This lifestyle is supported by the fact that 62 % of the mine town group's households have more than one source of income. Double incomes support high living standards currently, but **upon closure, 55 % of the mine town households will lose two DBNM salaries.**

The **loss of benefits** such as free accommodation, free electricity and water and subsidised food and beverages, is **likely to cause a drop in the quality of life** for this group. The magnitude of this impact is dependant on the size and duration of the retrenchment packages.

Education standards of the group are high with 90 % of the group having above standard 8 qualifications implying improved employment opportunities. This is further reflected in the fact that only 53 % thought finding work would be difficult. Approximately 87 % of the group will search for further employment. **Should a portion of the workers remain unemployed, however, impacts on their dependants could be severe.** The number of the workers who are married, however, is relatively small (31 percent) and on average they have 1.9 dependants. At closure, these figures could be significantly different as the younger members of the group may consider marriage over the next ten years. The number of dependants, however, is likely to remain low. Presently 40 % of the children of the mine town group are under five years of age . During the next ten years they can successfully complete primary school in one of the 2 primary schools in the mine towns. Of the total, 26 % percent who are now between 5 and 14 years may wish to go to high schools and tertiary education facilities during the coming decade, facilities DBNM does not have and is unlikely

to provide. The costs involved in sending a child to boarding school or a tertiary institution can range from R 450 to R 1500 per month (B. Duncan, superintendent, Rondebosch Boys High School, pers. comm.). Some assistance is presently provided by DBNM. Upon mine closure, however, education costs may become too expensive for these higher education options to be exercised particularly where parents are the only financial contributors towards their children's education.

Reduced income : locality impacts

The loss of employment will probably force this group and their dependants to uproot and move off the DBNM property. Only 28 % of the group presently own housing elsewhere in South Africa, the lowest proportion among of all the groups. In consequence a **majority of the group members will experience the additional impact of the cost of having to buy or rent accommodation upon closure**. The workers may remain within Namaqualand or leave the region resulting in differing locality impacts outlined below.

Impacts on Namaqualand

Prospects for absorbing labour locally are limited. Mining operations and their associated secondary industry are winding down and competition for the few available positions will be fierce. Intrinsically this relatively skilled group may have a potential to find innovative solutions to their workless status. They could become small scale entrepreneurs in the growth sectors of the local economy. This productive initiative would impact positively on Namaqualand. If, however, the mine town group workers were to remain unemployed, they would probably move with their dependants to an area which holds more promise. It is unlikely that members of this group will easily become impoverished without some action to relieve it.

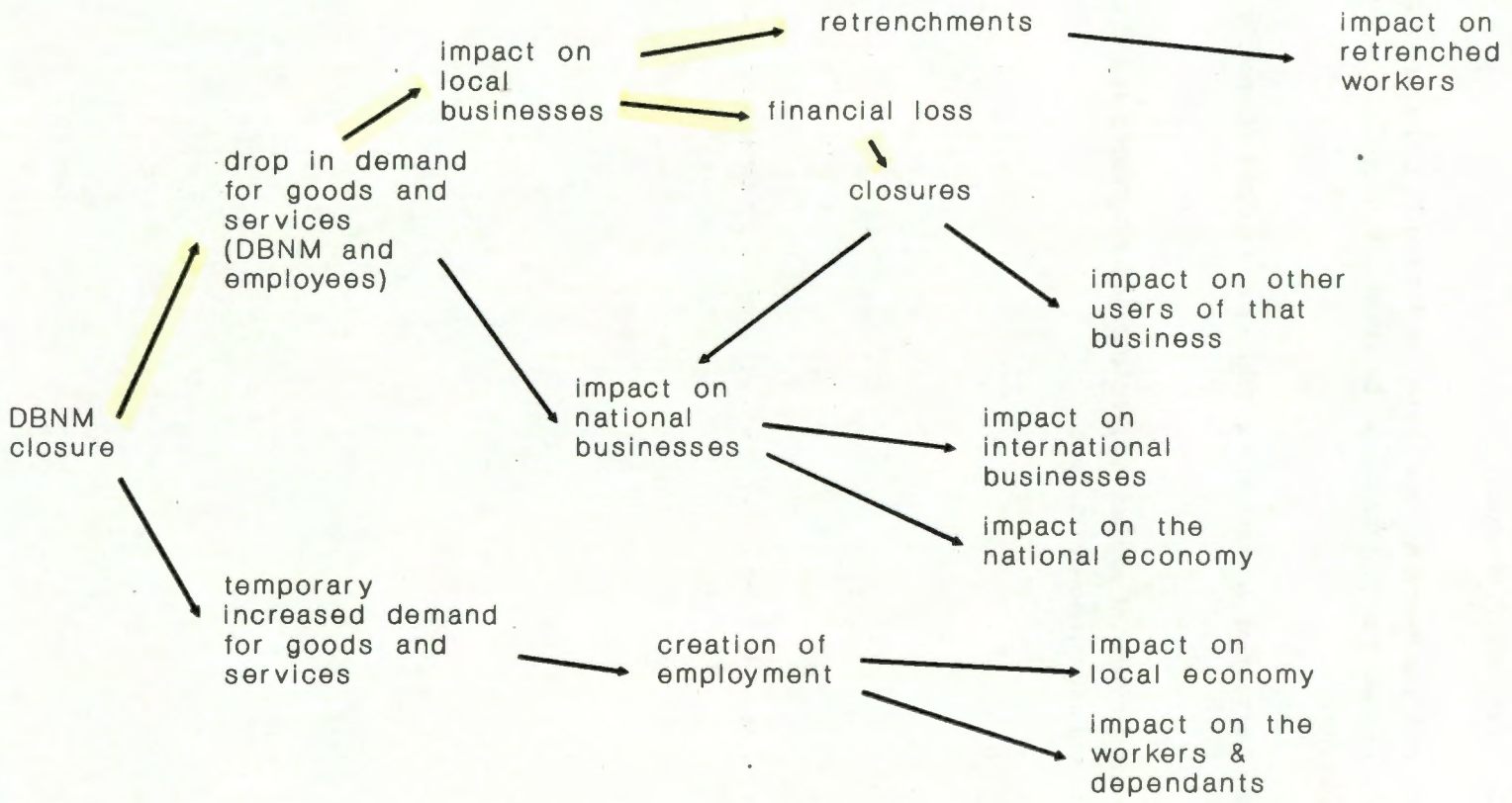
Impact on areas outside Namaqualand

The migration of these workers from Namaqualand into other areas is likely to have minor impacts on such areas. Numbers will be small and the group will be able to offer a range of employable skills. They are, in any event, unlikely to move to one area *en masse*.

Mitigatory measures for the mine town group :

- Consider keeping the mine towns open post-closure and stimulating a new economic base.
- Find employment for the group members.
- Provide a package sufficient to cause minimal disruption to the important aspects of the workers' and dependants lifestyles.
- Employees with the relatively large salaries in this group, could be encouraged to live a more frugal existence so that money can be saved or invested in a place to live or a small business venture.
- Provide training to equip workers with an additional range of skills including entrepreneurial skills.
- Continue the provision of educational scholarships for high schools and tertiary education based on need and not solely on merit.

Figure 3.4. Impact Path 4
Closure impacts on the business sector



[ ] Significant impacts

3.5. ECONOMIC IMPACT ASSESSMENT OF MINE CLOSURE

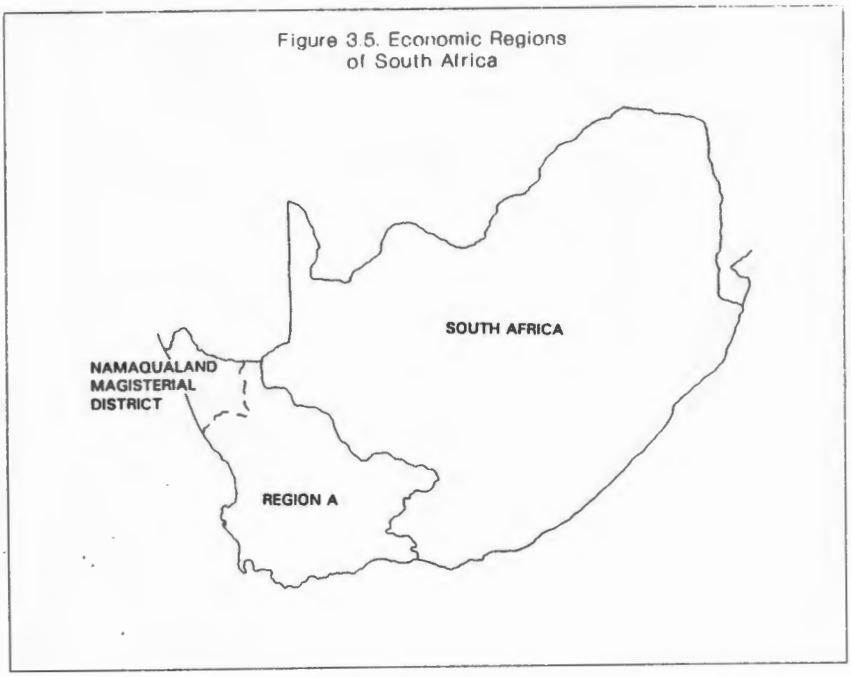
Having completed a discussion of the major social impacts which mine closure is likely to exert, the next area of concern is an assessment of the broader economic impacts which such action may impose. Those impacts are likely to be spread over a wide range of sectors in the economy. This report will concentrate on significant impacts which the following sectors may experience :

- The business sector (non-basic sectors) which consists of the consumer and capital goods industries and which supply DBNM and its employees with their requirements.
- Basic sectors of the economy such as mining, agriculture and stock farming, who export from Namaqualand and are not directly linked to DBNM. These sectors may experience several ramifications of the closure in 2002.
- The government which derives income from the operation through taxes and levies and in return maintains the infrastructure of the region.

3.5.1. The business sector

Referring to impact path 4, figure 3.4., it can be seen that impacts on the business community are likely to be wide ranging and far reaching, the impacts may be positive or negative in nature. The terms of reference, set for this report, state that impacts in the Namaqualand region are to take priority above those relating to national and international spheres. The former thus receives greater attention in the discussion that follows.

Figure 3.5. Economic Regions of South Africa



Impacts of the DBNM closure in 2002 are likely to reach the national and international communities. As the input-output analysis indicated, approximately 78 % of the financial loss to the business sector, would be in South Africa excluding region A (figure 3.5.), if closure were to take place in 1995 . The international community would bear 9 % of the loss for a closure in 1995. By elimination 13 % of the losses are thus likely to occur in region A, of which Namaqualand is only a small portion. The magnitudes indicate that the broader South African community is the sphere for greater concern, however, national impacts are of less significance than those in the Namaqualand region for several reasons :

- While losses may be large outside of Namaqualand, they will be spread amongst thousands of businesses. DBNM has approximately 2350 suppliers, 90 % of whom are outside of Namaqualand.

- National and international businesses tend to be more robust, than a regional businesses which tend to serve regional needs only. Upon closure the large national and international businesses, who tend to have a large number of customers, will only lose a fraction of their sales.

- National and international businesses are likely to have access to greater reserves (fixed and liquid assets) which will enable them to finance an aggressive search for new clients.

- The businesses in Namaqualand who have a small market for their goods made up of a few large consumers are the most vulnerable and the impacts of closure are likely to be more significant for them.

The positive impacts of closure as indicated in the lower path on impact path 4, figure 3.4., are temporary in nature having little significance. These temporary positive impacts around closure will be found mainly in two sectors. The first is the reconditioning sector which would be directed at keeping machines which would normally be replaced operating until closure. The second is the transport sector, which would be involved in the relocation of thousands of people and their belongings, and the removal of mine equipment.

The negative impacts on Namaqualand businesses are more significant and it is upon these that the discussion will concentrate. Local businesses is a broad category and it will be broken down to indicate where impacts are likely to be more significant :

Level 1 — The primary split in the local businesses is within the Namaqualand region. The impacts on Springbok are analyzed separately, as they would obscure the significant impacts on the rest of Namaqualand.

Level 2 — Within the two, level 1 spheres, businesses are split sectorially and the impacts of closure are analyzed within each sector.

Level 3 — Within each sector of level 2, business can be done with DBNM, the DBNM employees or both. These monetary sources will have different impacts associated with them when the mine closes.

Prior to assessing local impacts it is important to realise that businesses in this area are distribution and service orientated rather than creative primary manufacturers, hence the goods which they sell and the service components they use are imported into the region. This means that large sums of money are flowing out of the region to cover stock purchasing. This can be illustrated by analyzing a Namaqualand town such as Springbok, where 51 % of its turnover leaves the region to purchase 89 % of the stock it requires. Such findings suggest that the **impacts on Namaqualand's business community will in fact be impacts felt largely by their suppliers elsewhere in the country**. Therefore the local monetary impacts are largely dependant on the businesses origin. If it is a local business the overheads, profits, taxes and renumeration remain in Namaqualand. Therefore monetary losses the locally owned businesses experience, due to DBNM closure, have significant consequences for the region. On the other hand, a local branch of a national company, spends very little locally, as profits and taxes are handled at the national level, implying a smaller impact on Namaqualand.

Impacts on Springbok and Namaqualand

Springbok has been differentiated from Namaqualand to ensure that impacts it may experience do not obscure impacts on the rest of Namaqualand. To average out the impacts across Namaqualand would be misleading. This differentiation is supported by the turnover data supplied by the Regional Services Council of Namaqualand for 1991, indicating turnover in Springbok totalled R 468.25 million in comparison to a total for the rest of Namaqualand of approximately R 150 million.

Due to its relatively high level of economic activity in the Namaqualand region, impacts in **Springbok** have been analyzed in some detail. Of the total, 41 % of the businesses in Springbok claim to have direct economic relations with DBNM to the value of R 20.335 million on an annual basis. While 67 % interact economically with DBNM employees to an estimated value of R 19.35 million. These magnitudes indicate a potential for the occurrence of significant impacts.

The dimensions of possible impacts are analyzed sector by sector and are predicted in terms of potential earnings lost and the likely number of workers to be retrenched. While potential earnings lost are relatively easy to predict as all direct business contracts with DBNM will cease, predicting earnings loss from the DBNM employees' private spending is more difficult. Each retrenched worker will determine his/her own level to which they will cut back on purchases. Therefore in this assessment, the worst case is taken, in which all spending by DBNM employees ceases as they are retrenched. Such an occurrence is very unlikely, but covers all possibilities. The potential loss in earnings and retrenchment figures are presented in table 3.3. for a closure during the present year, as extrapolation is not statistically feasible. The table does, however, give an impression of what could be expected from a closure and suggests those sectors which are likely to be most strongly impacted.

Table 3.3. Potential losses for Springbok businesses due to DBNM closure

Sector →	Mining supplies	Construction	Household\Office goods	General suppliers	Transport
Springbok turnover of the sector	R 114 million	R 37 million	R 28 million	R 170 million	R 101 million
% of direct contact with DBNM	100 %	87 %	7 %	43 %	70 %
% of turnover which could be lost	27.5 %	13.8 %	8.4 %	5.9 %	6.7 %
resultant loss for a business representing 1 % of the sector	R 315 000	R 59 000	R 350 000	R 234 000	R 97 000
% contact with DBNM employees	15 %	37 %	100 %	71 %	74 %
% turnover which could be lost	0.5 %	0.5 %	18.7 %	3.9 %	5 %
DBNM employee contact losses for a business representing 1 % of the sector	R 38 000	R 5 000	R 52 000	R 93 000	R 68 000
Maximum projected loss of business per % per year	R 353 000	R 64 000	R 402 000	R 327 000	R 165 000
Predicted retrenchments (% of sectors workforce)	12.5 %	10 %	0.5 %	10 %	3 %

Referring to table 3.3., potential financial losses have been calculated by finding what percentage of a sector's turnover may be lost as a result of DBNM closure. This loss is then divided by the percentage of that sectors businesses who are involved with DBNM. The result is the percentage loss per percentage of the sector. This percentage was converted to monetary terms by multiplying by the sectors turnover. For example, if a business represented 10 % of the mining supply industry in Springbok and had direct business with DBNM, it can be seen, in table 3.3., that the sector may lose 27.5 % of its turnover. The loss, however, is assumed to be covered equally by all businesses involved, which in the case of the mining sector is 100 % of the sector. Thus the 27.5 % loss divided by 100 %, means that 0.275 % or R 315 000 will be lost per percent of the sector. As our business represents 10 % of the sector the loss could be ten times R 315 000 or R 3.15 million per year if closure had occurred in 1992.

- An assessment of the impacts presented in the table 3.3., suggest that certain **companies in the household and office goods sector are likely to be impacted the most severely** losing approximately R 402 000 per percent of the sector. This is largely due to the fact that only 7 % of the industry is currently involved with DBNM and the potential loss of 8.4 % of sector turnover will be confined to those few businesses.

- The **mining supplies sector may experience the impact of the greatest magnitude**, as every company in the sector has direct dealings with DBNM. The loss per percentage of the industry is high (R 353 000/%) but is spread throughout the industry. The high retrenchment percentage indicates the potential for widespread losses.

- **Another sector which might be significantly impacted sector is the general supply industry**. The annual projected loss of a closure in 1992 is R 327 000 per percent of the industry's turnover coupled with 10 % retrenchment of the working staff.

These findings indicate that in the case of Springbok's business sectors, the closure of DBNM, would lead to a **total loss of R 20.335 million per annum in direct dealings with DBNM and the loss of an indeterminate portion of the R 19.3 million worth of employee spending**. In addition the town is likely to **retrench 5.1 % of its own labour force** which will have further impact on local spending.

The rest of Namaqualand (excluding Springbok) earns R 36.8 million from the activities of DBNM per annum. Of this total, 61 % is directly derived from DBNM and the remainder from the private spending of DBNM employees. However 98 % of the direct business the region has with DBNM is with Shell South Africa through the Port Nolloth harbour. Thus the only **meaningful relationship DBNM has with the rest of Namaqualand, is through the private spending of its employees**. They spend a sum of approximately R 14.33 million per annum. Approximately 67 % of the businesses in the region benefit from such spending.

At this stage it is important to consider the effects closure might have upon consumer spending. Continued spending power post-closure will be dependant on the magnitude of the pension and retrenchment packages. Irrespective of their size, however, a cut back in spending will occur through consumer fear and anxiety over their economic future. Spending on non-essentials may be the first to be minimized and more economic use of essentials will result in reduced purchases of these items. Considering that poverty dominates the lives of the majority of Namaqualanders, it is unlikely that they are presently spending extravagantly on luxury items, hence spending now is unlikely to be significantly higher than spending post-closure.

For those reasons **impacts are likely to be confined to non-essentials businesses.** These may include clothing, furniture and construction goods businesses, **and to those essentials businesses which are in a poor financial position upon closure**. If a business experiences significant impacts due to closure, the business is likely to take some form of action. The business may close down or staff members may be retrenched. It is estimated that **some 5 % of the current number of Namaqualand businesses (excluding Springbok) will be forced to close and 4.2 % of the 2095 workers involved in those businesses are likely to be retrenched** by the closure of DBNM. Towns which are likely to be significantly effected are **Steinkopf** in which 20 % of the businesses would close and 30 % of the businesses would retrench workers and **Komaggas** where 12.5 % of the businesses would retrench workers.

Mitigation for the impacts on the business sector :

- Give the businesses ample warning of closure to enable them to strengthen the rest of their client base and settle all their outstanding accounts with DBNM and its employees.

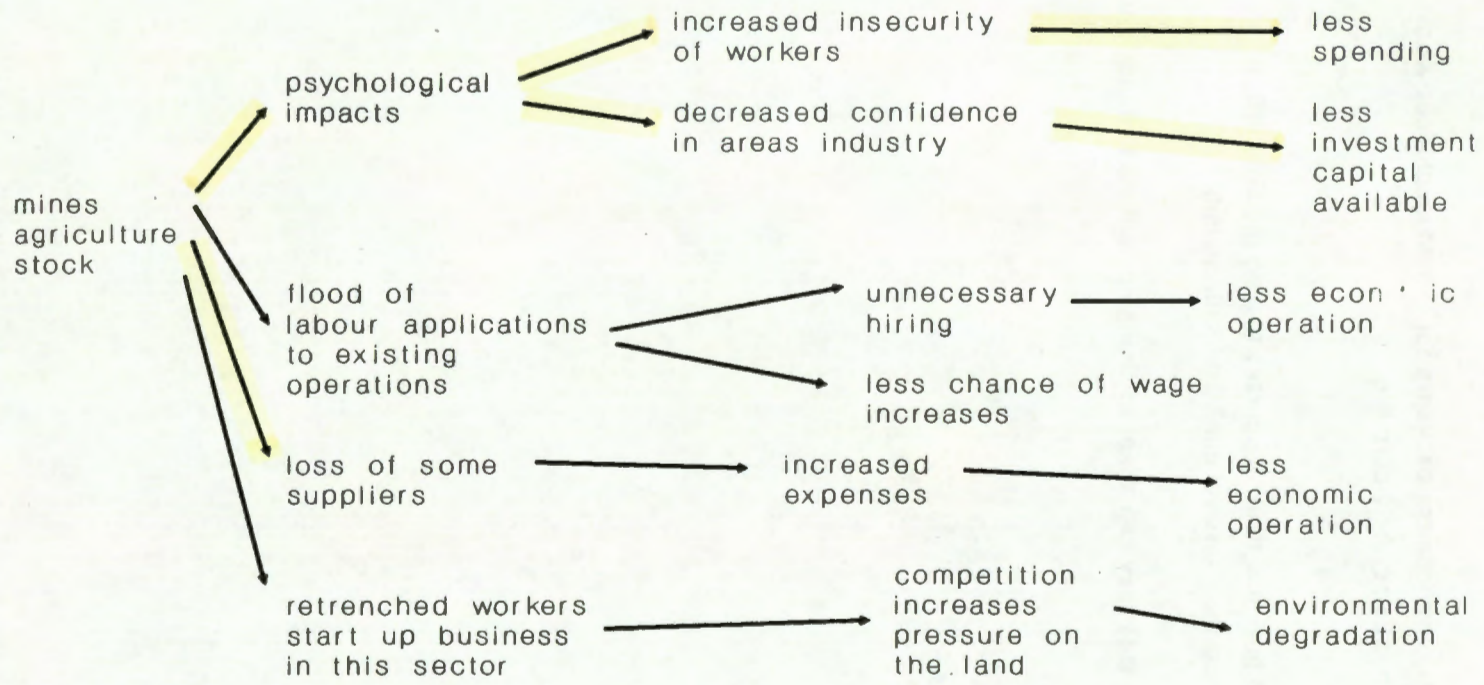
- Help to stimulate business around new focuses and growth sectors such as services, commerce, catering, accommodation and real estate. This may assist to counter the decline in the mining sector.

- The provision of an acceptable retrenchment packages for DBNM employees would mean that buying power will not be severely curtailed.

- Assist in the establishment of business training courses to help promote efficiency within existing businesses to aid their survival during difficult periods .

- Phase out suppliers slowly so that they can adapt to changing demands induced by the multiplier effect of closure.

Figure 3.6. Impact Path 5
Closure impact on Namaqualand's basic sectors



[ ] Significant impacts

3.5.3. Closure Impacts on Basic Sectors

The Namaqualand region has three basic economic sectors, that is sectors selling goods to regions outside of Namaqualand. They are the mining industry, the stock farming industry and agriculture. When DBNM closes down in 2002 the impact will be felt not only by the non-basic sector which supplies it (chapter 3.5.1.) but also by other businesses in the basic sector, with which it co-exists. Unlike the direct impacts likely to be experienced by suppliers to DBNM, these businesses have very few direct links with DBNM and the impacts of closure are likely to filter through as secondary or tertiary impacts. As a result the losses which the basic sector experience are difficult to measure in rands and cents as they are of a more subtle nature. All three sectors are likely to experience similar types of impacts and are thus analyzed together as can be seen in impact path 5, figure 3.6..

The first impact likely to be experienced by these sectors is of a **psychological nature**. The Namaqualand region centred around the mining sector saw this industry peak in the 1970's. Its input to the GGP of the region has decreased steadily since (CSS, 1989). Prospecting is currently undertaken to maintain production levels rather than as a basis for the expansion of operations (Mr. Potgieter, senior geologist, Gold Fields pers. comm.). As deposits are mined out so the region's future becomes increasingly unpredictable. The closure of DBNM is likely to be the first of a series of closures. This particular shutdown will, however, bring regional concerns to the fore. **Workers throughout Namaqualand will feel less secure in their positions** and many may opt to migrate or will start hoarding money and other assets. Such actions may lead to reduced spending in the region. Levels of confidence in the regions economic potential and performance are also likely to suffer and **investors of capital may look to other areas, where higher returns are probable**. The resilience of the population and non-basic business sectors will be tested by the DBNM closure, and investors might avoid the region if planning for its future economy is not handled correctly.

A second but less significant impact may be **pressure on remaining basic sector businesses to employ redundant workers**. Unemployment in Namaqualand indicates little opportunity for unskilled and semi-skilled labour. The basic sector could, acting under some form of social duty, employ a portion of the retrenched workers to subdue regional concerns, but at the risk of operating less efficient businesses due to increased renumeration pay outs. The intensified demand for work is likely to keep wages in the region down. Such circumstances might be viewed as a positive impact for local businesses, the operations of which are often dependant on the cheap semi-skilled labour of the region. They would, however, constitute a negative impact on non-unionised workers who are unlikely to receive adequate wages. It is likely that many unemployed Namaqualanders could take up jobs at absurdly low wages, just to get some income.

The non-basic sector, which supplies the basic industries with a proportion of their needs, is going to be significantly affected as discussed in (3.5.1.). As a result some of the non-basic suppliers, faced with reduced turnovers, could be forced to increase prices to support business

overheads. Some businesses (predicted to represent 3 % of those in Springbok and 5 % of those in the rest of Namaqualand) will be forced to close down altogether. Hence the **basic sector industries may face increased prices for some of their supplies, or, due to closures, have to transport the supplies in from farther afield.** This secondary impact could effect the efficiencies of the basic sector industries. Its significance, however, will be dependent on the level of price rises and the number of suppliers who are common to DBNM and other basic sectors. These aspects of the impact were not investigated in this research.

A final impact on the basic sector is one of competition. The retrenched workers may, under their own initiative or with financial assistance, set up small scale businesses in the basic sectors. Although well established businesses may have the advantage, small scale businesses if sufficient in number could compete for resources and markets. Such a development would impact upon the existing basic sectors. Small scale prospecting, irrigated agriculture and stock farming are options which could be attempted. **Developments of this kind could in turn give rise to negative environmental impacts.** Basic activities which retrenched workers may start up are likely to be located on land in marginal environments. Environmental degradation resulting, in particular from stock farming, may arise. Reductions in produce prices, however, could result in the withholding of stock from the market in the hope that prices would improve. A result of such a position, which has already occurred in the region, is that extreme pressures will be exerted upon the veld by flocks which are not reduced by sales (Archer, 1992).

Mitigation to minimize the impacts on other basic sector industries

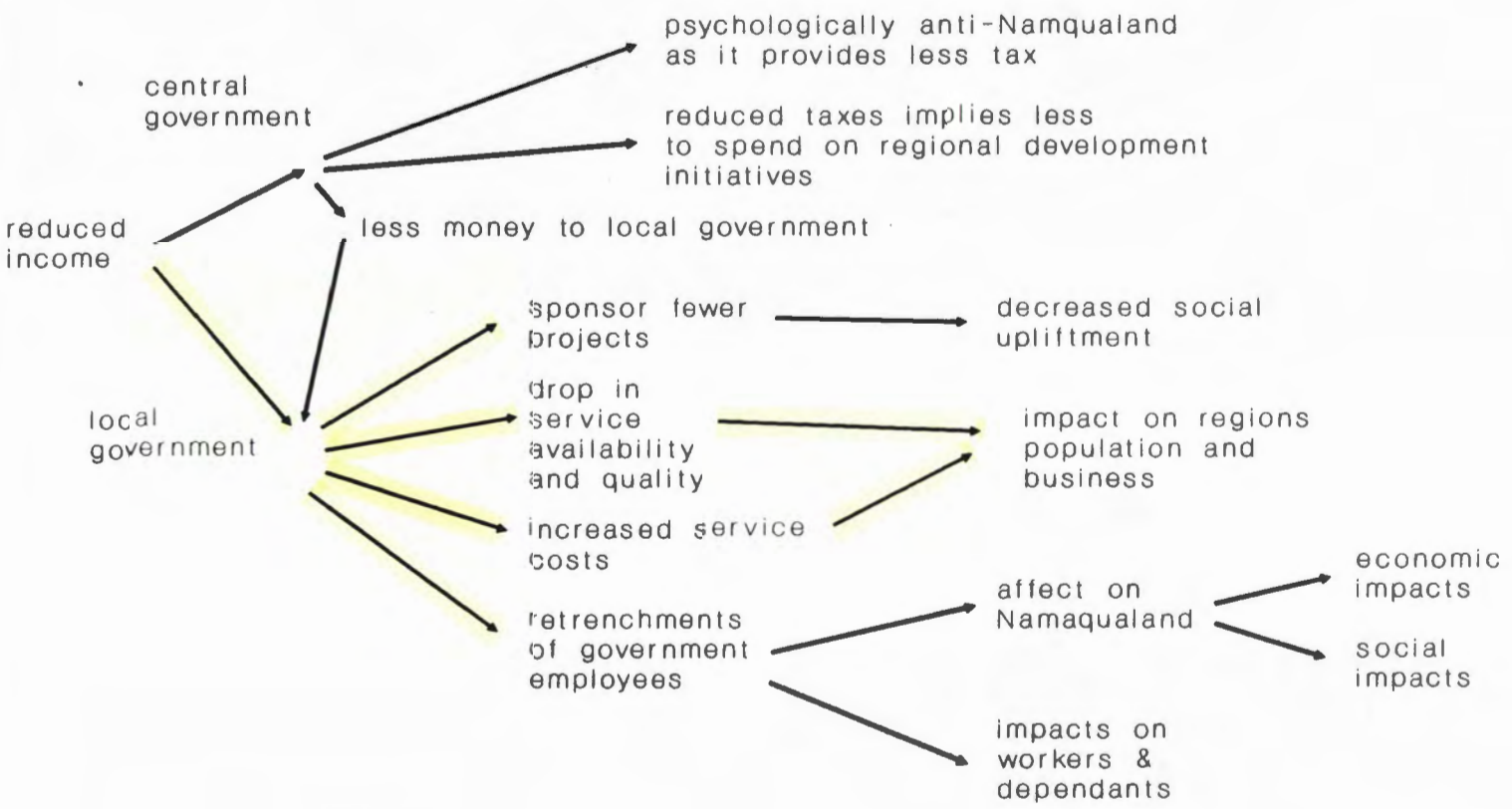
- Psychological impacts cannot be avoided as the realities of the region's mining future cannot be bypassed. By assisting the region to find a new focus, however, a sense of hope could be instilled in the population and investor confidence could improve. DBNM should be open and frank with existing industries in the region to enable them to prepare themselves timeously to cope with the range of impacts which mine closure will initiate. They should not be required to predict DBNM's moves through unsubstantiated rumours.

- Encourage other basic industries to examine ways of expanding their operations to include further processing and thereby to create more job opportunities. Stock farming, for example, could expand into the processing of meat in an abattoir of international standards.

- Advise those suppliers who could be forced to close down when DBNM does, regarding business efficiency and methods of market expansion.

- Encourage small business development using appropriate techniques and technologies to aid intensive high yield utilisation of suitable areas, rather than extensive use of marginal lands. Environmental degradation could be reduced in this way.

Figure 3.7. Impact Path 6
Closure impacts on the Government



[ ] Significant impacts

3.5.2. Impact on the Government

Referring to impact path 6, figure 3.7., impacts on the government are likely to occur at both central and local government levels. The central government received R 72 million in tax from De Beers Consolidated Mines in 1990. This was for their entire South African operation. The tax paid specifically on the operation of DBNM could not be ascertained. Thus the loss central government will experience cannot be predicted. However the central government received approximately R 12 million in income tax from DBNM employees. Moreover the para-statal organisations, Telkom and Eskom received R 9.98 million from DBNM for 1991.

The **income from these four sources cannot be termed significant in a state budget of thousands of millions**. The recent rearrangement of DBCM and the creation of a foreign holding company has had far more significant implications. Since then the South African government has not be able to tax foreign diamonds which used to be imported by the Central Selling Organisation. The resultant tax loss is approximately R 500 million per year (CSS figures, 1989).

Closure of DBNM will mean the loss of income from several sources for local government :

- Reduced income from central government which is provided through the Cape Provincial Administration and the House of Representatives.
- Reduced income from services such as water consumption by DBNM which was worth R 0.99 million to the Springbok water board in 1991 and the Telkom income from the 689 DBNM General Post Office lines operating on the DBNM property.
- The Regional Services Council (RSC) will lose its levies of 0.1 % on the DBNM turnover and 0.26 % on the renumeration to employees. These taxes accrued R 735 673 for the RSC in 1991 (29.6 % of its annual tax income). The taxes made a significant contribution towards a total RSC budget of R 12 million in 1991.
- Local businesses which may be impacted by the closure may retrench workers or shut down. Levies received by the RSC and the rates and taxes of the municipalities would be reduced in such an event.

The results of reduced income for local government can have several impacts on Namaqualand and its residents. **The impacts are likely to arise primarily from compromises which will have to be made to remain within a reduced budget**. Further funding from central government may take one of two courses. The less likely scenario is one of increased funding. The government may try to "kick start" the economy of the region into new growth areas before it collapses completely due to the winding down of the mining sector. The second option, which is more

probable considering a government grappling with cut backs and optimisation, is reduced spending in the region. The reduction of taxes derived from the region may attract lower state funding.

With less to spend the **priority will be on maintenance of present infrastructure rather than on new initiatives**. The implications are that social upliftment will be retarded while services are likely to deteriorate and it will not be possible to restore them. A **drop in service availability and quality is likely to lead to a poorer standard of living.** Local government departments, such as law enforcement, water supply and treatment, waste disposal, education , housing and medical facilities, will have to operate under restricted budgets leading to the partial breakdown in some of the systems. Changes in availability and quality of public services are among the most visible and widely noted impacts that arise from the withdrawal of a basic economic activity (Leistritz & Murdock, 1981). This observation is likely to hold true for the closure of DBNM's operation.

The local community can expect **service cost increases** to help cope with the budget shortages. The impact of raising rates and taxes will fall upon the local population and businesses many of whom will be grappling with more direct impacts from the closure. Those impacts will be accentuated . It is important therefore that small cost increases are not seen in isolation. They should be contemplated in relation to other direct and secondary impacts of the closure.

Another method of maintaining a reasonable standard of services on a decreased budget is to **retrench redundant government workers**. Renumeration paid by the government in the region for 1984 was the third highest after the mining and service sectors, at R 9.357 million (CSS, 1989). The retrenchment of workers from government departments will exacerbate the impacts on the region. Depending on the size and duration of the government retrenchment packages, government employees and their dependants could be in a similar situation to the lower income groups of DBNM upon closure. Impacts would include :

- greater competition on the job markets
- social and economic impacts on the areas in which employees reside
- possible disruption of the social institutions of the retrenched government workers family due to their financial insecurity. Institutions such as the operation of the family structure and the children's education.

Mitigation to minimize the impacts on the government

- The central government has a role in facilitating the regions needs. DBCM, however should not use this fact to assist them in "passing the buck" of the closure impacts onto the government.

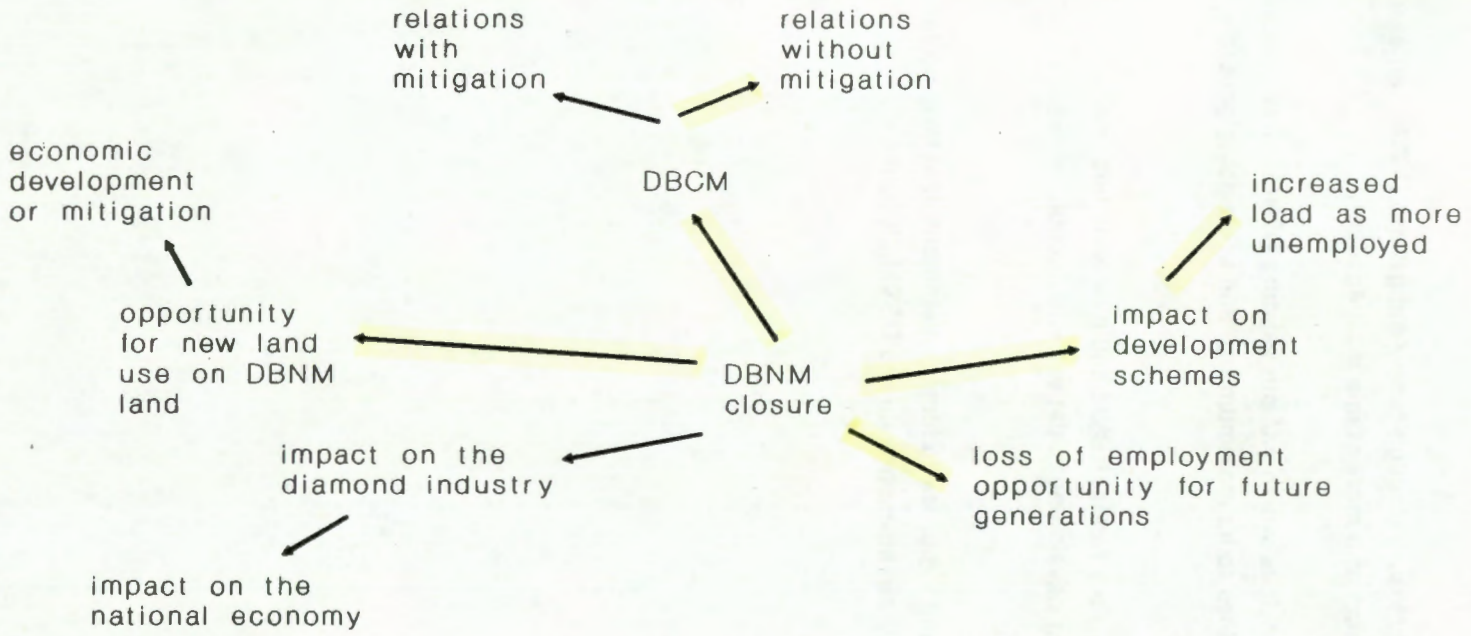
- By minimizing the impacts of closure through timely mitigation, DBNM can assist the local government in the creation of a more stable local economy.

- Attempt to find economic activities which will put existing DBNM infrastructure such as roads, water and telephone lines to its maximum use and in so doing generate funds for the local government.

- Where the local government lacks funds, DBNM could provide financial assistance and join the central government in developing initiatives which could form part of the mitigation plan.

- Provide material assistance and expertise to local government in setting up retraining courses for workers who may be retrenched due to DBNM closure.

Figure 3.8. Other Impact Paths
Peripheral closure impacts



[ ] Significant impacts

3.5.4. Peripheral Impacts due to Closure

Referring to figure 3.8., DBNM closure gives rise to a series of impacts which are peripheral to the central issues of retrenchment and the local economy.

De Beers have taken a responsible and courageous step through the commissioning of this report, and through mine dump rehabilitation research and the commencement of rehabilitation. These are important steps, considering the history of the interaction of the mine and the Namaqualanders. More comprehensive measures are going to be needed, however, as closure draws near. Significant progress has been made in South Africa on issues affecting human rights. Moreover a new bill of human rights is likely to emerge from the Codesa process. The future S.A. public is likely to be far more critical of a closure incorrectly handled. The company's public relations will be seriously damaged in such an event. Broader business interactions too could be affected as other companies start to show concern about ethical stances of their business associates. Consider the stigma which would be attached to DBCM if mitigative efforts were not undertaken and the impacts of mine closure left Namaqualand in abject poverty.

Development aid schemes and policies from the government and external organisations are attempting, with various degrees of success, to stimulate economic development in the region and to address problems and inequalities. The Goodhouse irrigation project financed by the Small Business Development Corporation is a case in point. DBNM closure, without effective mitigation, will make their task more difficult, as unemployment rates rise and as local inhabitants become dejected. Continued funding for many development schemes is reliant upon project successes. The negative mine closure impacts, however, may overshadow the work done by these organisations, making them look unsuccessful and thus jeopardising their funding.

The termination of mining operations on the DBNM property and the rehabilitation of disturbed areas, could open up new opportunities for the future use of the property. The DBNM property is extensive in size occupying some 366 000 ha or approximately 7 % of Namaqualand (Dunne, 1988). Future economic activities on the properties could stimulate economic development and mitigate some of the negative socio-economic impacts of the mine closure. This potential will be discussed in chapter 5.

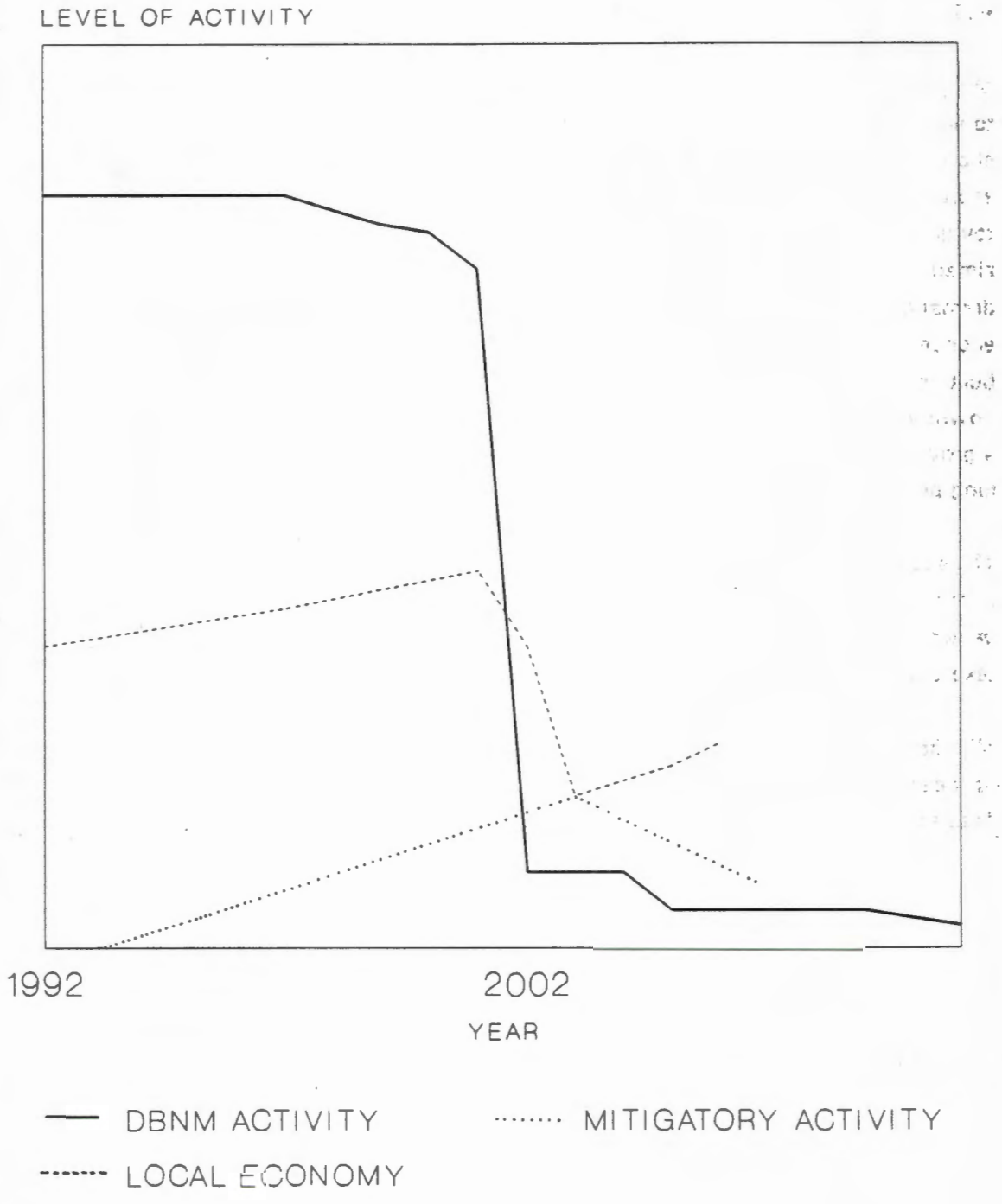
The diamond industry as a whole, is likely to experience only minor impacts from the DBNM closure. In the light of DBCM's new foreign holding company, the occasional closure may in fact be good for demand and price setting strategies, maintaining the image of scarcity. The production from the mine represents only approximately 1.5 % of the world's total production (The Economist, 1987).

The impacts of closure are likely to be felt over generations, as they strike at fundamental aspects of the social and economic life of the people of the region. **The loss of employment opportunities for following generations**, is an inevitable outcome of a finite, unsustainable operation, but this impact should be taken into account in the creation of a mitigatory plan.

Mitigation of peripheral impacts could take the following form :

- Ensure the continuation of the present process of proactive investigations based on moral responsibility.
- Attempt to minimize the impacts of closure such that development aid organisations are not placed under even further pressure. Ensure DBNM's mitigatory actions work in harmony with the plans of other organisations.
- DBNM should be open to the consideration of a variety of land use options for the DBNM property and the mine towns.

Figure 4.1. Mitigation : Its role



4. MITIGATION CONSOLIDATION AND COORDINATION

4.1. ASPECTS OF MITIGATION

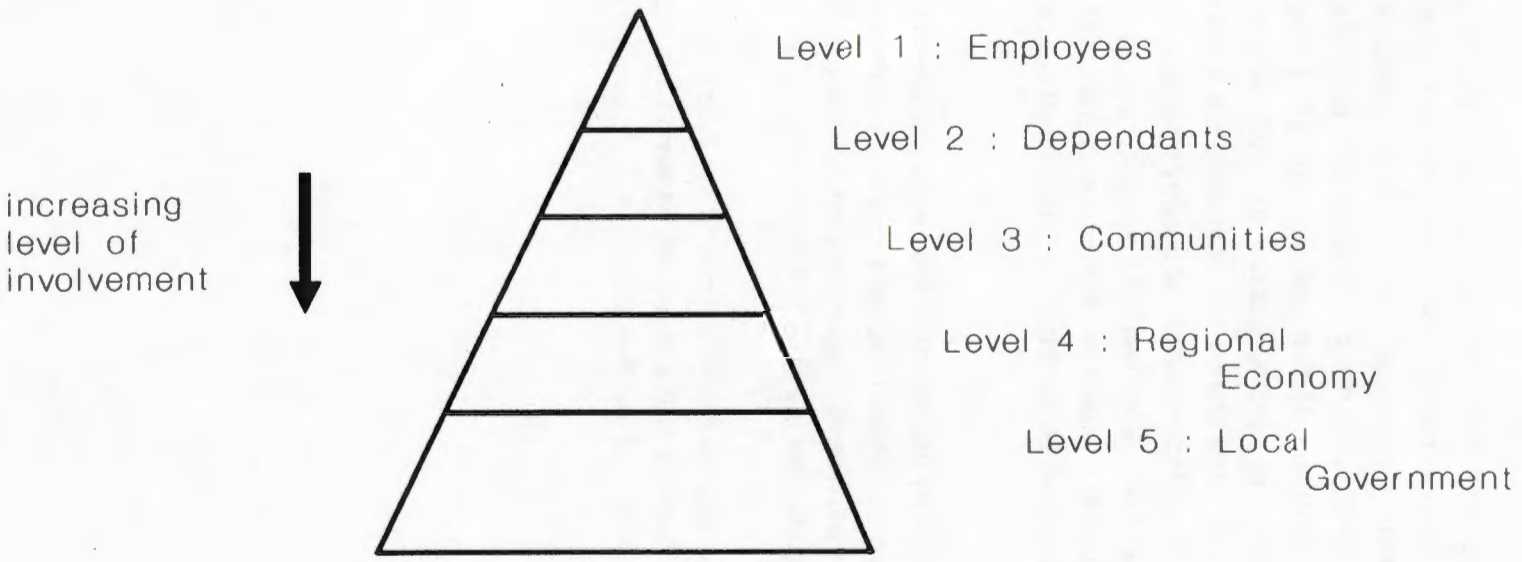
4.1.1. Mitigation and its role

Mitigation is the effort to minimize those economic and social changes viewed as undesirable and to enhance beneficial changes. This concept is best explained with reference to figure 4.1., which shows a graph of economic activity as time passes. In 1992 DBNM is running at a high level of economic activity while the Namaqualand economy is in a depressed state. As DBNM moves towards its planned closure in 2002 it starts a mitigation plan consisting of a number of projects aimed at helping the economy survive the pending impact. In 2002, DBNM activity drops dramatically leaving only a small crew for rehabilitation and to manage the stock farm. The local economy reacts to the impact and begins to decline rapidly. Mitigatory intervention, if successfully built up over several years, however, will counteract many of the impacts and arrest the economic downturn. Successful mitigation measures may enable the economy to sustain itself and to develop a growth trend. The choice of projects should be such that mitigation need not be on-going for a long period of time.

The success of mitigation measures is largely dependant on their appropriateness for the region or community for which they have been designed. **Mitigation projects should consider regional development strategies, regional trends and historical lessons in their formulation**. They should also take cognisance of defined long term goals that the region or community are trying to attain.

Mitigation should be undertaken by the instigator of the changes. The quantity, quality and success of measures are dependant on **several aspects of the mitigation chosen** to suit a particular case. These four aspects are outlined in the following four sections.

Figure 4.2. Mitigation : Level of Involvement



4.1.2. Level of involvement

Figure 4.2. suggests five levels at which the company might involve itself in the mitigation process. The levels are cumulative :

- level one indicates a commitment to employees only
- level two, a commitment to the reduction of impacts on the dependants of employees
- level three, assistance to the local communities within which employees have their housing
- level four, represents intervention to minimize impacts inflicted on the regional economy and
- level five, mitigation of impacts on the local government

The impacts surrounding the formation, operation and demise of DBNM have been and are significant for Namaqualand. Mining operations in themselves are not a sustainable form of development, and constitutes temporary exploitation. The windfall discovery of diamonds in this region has led to the build-up of what might superficially appear to be development with an illusion of permanence. Were all the mines to shut down tomorrow, however, the temporary nature of this exploitation linked "development" would be exposed. Under these circumstances employment, physical infrastructure and social infrastructure,which serve the mining activity, are all vulnerable in the long term.

In this instance, Namaqualand has been a relative bystander as capital has flowed at a macro level in and out of the region to benefit the developers far from the region. The demise of DBNM could lead to the collapse of its temporary support base leaving the Namaqualand region to recover from the loss of 17 % of its turnover. Historically little has been done to invest earnings in the sustainable development of the region itself. The state was invariably left to pick up the pieces but often did not have the funds. In 1990, DBCM's profits after tax amounted to R 441 million and the Anglo American-De Beers Chairman's Fund, which is directed toward expenditure on welfare projects, amounted to R 56.7 million (DBCM, 1990). The profits and welfare spending are impressive. Namaqualand and its people, however, are currently only receiving on average from R 60 000 to R 100 000 per year of that R 56.7 million (DBNM community needs report, 1989). The level of redistribution seems to represent a gross inequity when it is realised that the region currently produces over 10 % of the country's diamonds. Considering that the lifespan of the mine is approximately 86 % complete, DBNM now have the opportunity to redress some of the regional inequality through a comprehensive, multi -levelled approach to mitigation. Mitigatory planning should commence timeously and include the considerations outlined in the following sections.

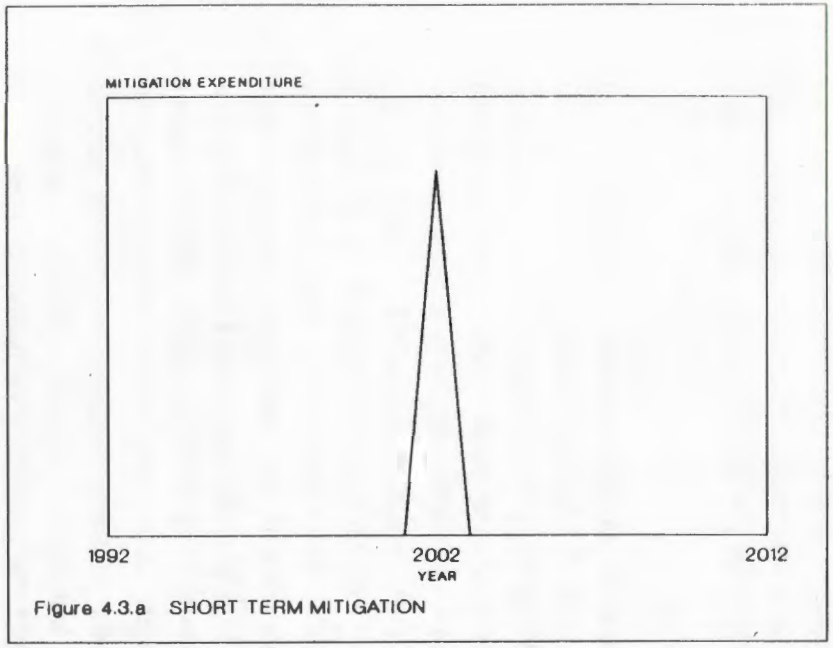


Figure 4.3.a SHORT TERM MITIGATION

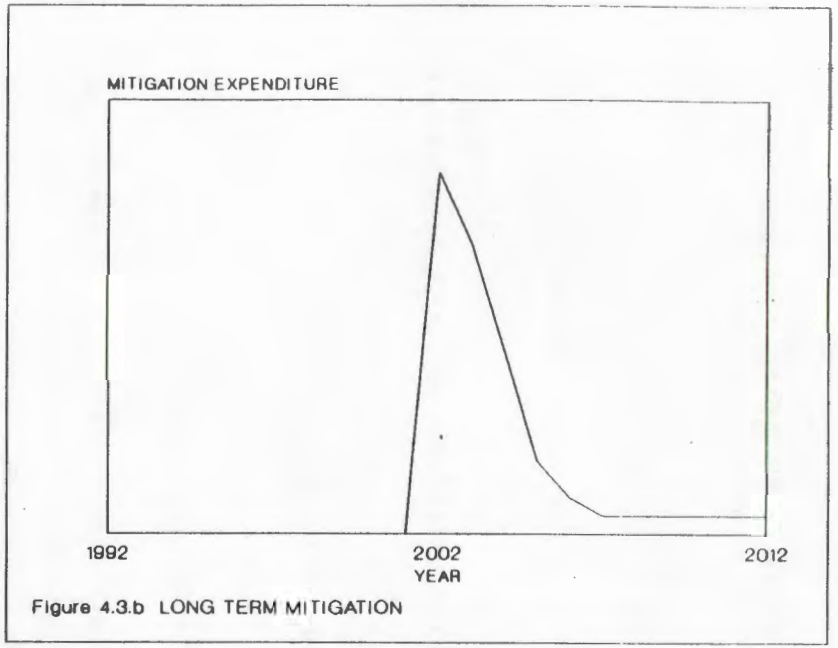


Figure 4.3.b LONG TERM MITIGATION

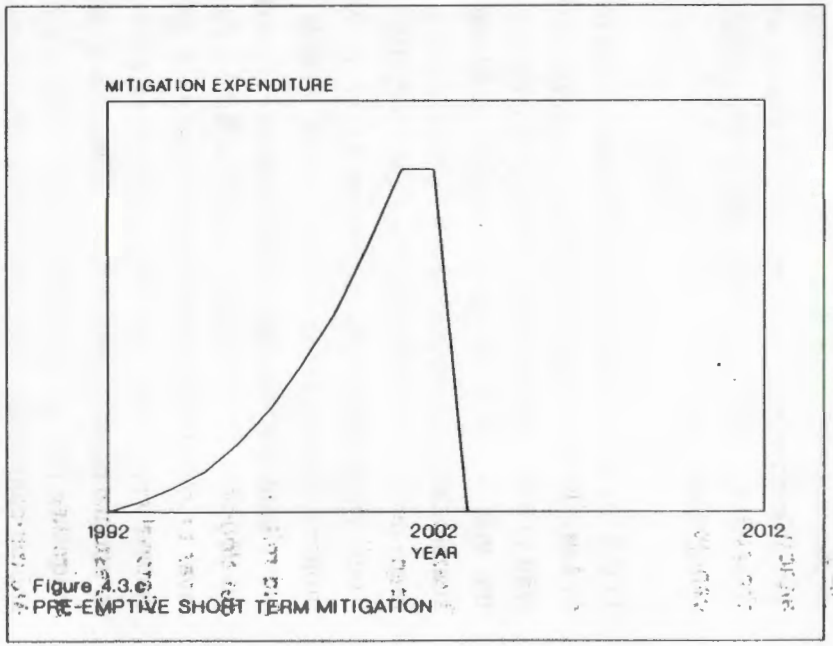


Figure 4.3.c
PRE-EMPTIVE SHORT TERM MITIGATION

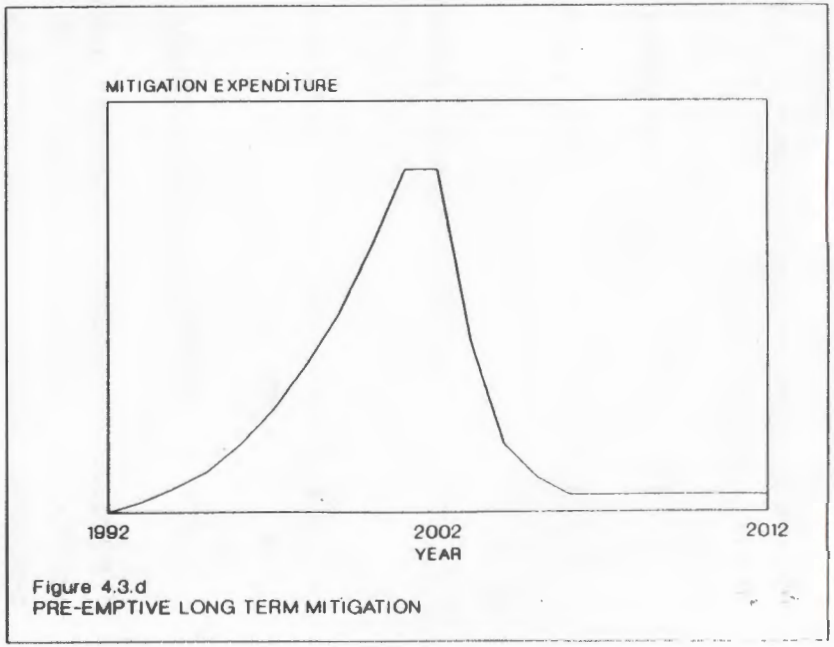


Figure 4.3.d
PRE-EMPTIVE LONG TERM MITIGATION

4.1.3. Timing and duration

Mitigation plans may be implemented over a series of different time frames as is suggested in figures 4.3.a - d.

Short term mitigation is shown in figure 4.3.a, where measures are implemented around the date of closure only. An example of this short term mitigation is the pay out of retrenchment packages and other one-off donations.

A long term mitigation plan indicated in figure 4.3.b involves the initiation of mitigation when closure occurs and the monitoring of its success for a specified period thereafter assisting and making changes where necessary.

The short term preemptive mitigatory process seen in figure 4.3.c, would allow the closing company to make a clean break from an area at closure after assisting in the reduction of the impacts of closure through preemptive measures such as the creation of new employment opportunities into which retrenched workers might enter.

The long term preemptive approach illustrated in figure 4.3.d, has the added advantage over the previous process, in that the success of preemptive work can be monitored and aided post-closure.

DBNM should choose the time frame which suits it financially and logistically. The final approach although involving the greatest length of time, cost and commitment has distinct advantages over the others. Impacts may be minimized effectively through anticipatory action and project progress can be actively assisted to ensure long term success.

4.1.4. Types of mitigation

Two basic types of mitigatory actions exist. In this report they have been dubbed "aid" and "backing".

Aid mitigation could be classified as a hand out. It could be a cash lump sum, an infrastructural development or the provision of equipment. But its primary characteristic is the detached approach it has to the communities and environments in the region where the development is likely to occur. Material projects are particularly suited to this form of mitigation. A specified monetary input can be established and concrete results can be seen. The local population, however, are often the group left to keep the project operational, where as they may not have been involved in project choice. Aid mitigation does have its role, such as the tarring of a substandard gravel road, but should be investigated carefully prior to implementation to see if, in fact, it will help the community.

Backing mitigation, on the other hand, does not provide requirements directly but does create skills training along with the possible provision of implements and financial loans. Thus an affected group can satisfy its own requirements. For example, instead of building houses *for* the homeless, teach the people how to lay bricks and provide a loan to enable them to build their own houses. This approach tends to instill pride and a sense of achievement provided loans can be repaid. DBNM's spinning and weaving project in Steinkopf is an example of a backing project.

Both approaches have applications and in some cases are combined. Used together they overcome shortcomings in each to the benefit of the region.

4.1.4. Size of mitigation projects

Aid and backing mitigation projects can have a range of magnitudes but experience has shown that the scale of projects should be appropriate to the needs of particular circumstances. Consider poverty stricken rural areas, where Development Aid groups have increasingly recognized that exaggerated expectations of development schemes have been replaced by an appreciation of local efforts. The small and unassuming projects which are conceived by residents of the rural areas may be more appropriately motivated as they have an in depth understanding of the regions requirements and which projects are feasible within that particular environment (Emmett, 1987). These small scale self motivated backing mitigation projects are finding success as :

- smaller and more sustained efforts are better investments
- goals are more easily attainable
- smaller scale allows for self reliance
- the smaller projects are more adaptable and flexible

Large scale aid projects which are preplanned, highly centralised and inflexible could turn out to be "white elephants", losing a lot of investor capital. Hence projects need to be formulated in conjunction with the community that will support or live with that development and the realization that no single project is the final solution.

4.2. COORDINATED MITIGATION FOR DBNM CLOSURE

Throughout the impact assessment stage of this report (chapter 3), suggested mitigatory measures concluded each section. In this section of the report, those mitigatory measures are brought together into a mitigatory plan. There is no one correct mitigative plan and the mitigation in this report is not prescriptive. The decision maker is left to conclude which of the measures should be investigated further and possibly implemented.:

Mitigation Stage 1

It is recommended that a closure working group be established immediately to coordinate and manage mitigatory activities prior to and after mine closure. Such a working group should consider and decide upon :

- the goals to be achieved ?
- how much is likely to be spent ?
- the mitigation period ?
- the types of mitigation to be used, how and where they will be applied ?
- the levels to which mitigation will be directed ?

Mitigation choices will rest entirely upon decisions made by DBNM. The company is not bound by any laws in that respect, with the exception of provision made in the Employment Act 3 of 1983, for the retrenchment and pension packages of employees and the Minerals Act No. 50 of 1992 for the physical rehabilitation of the mined land. The inclusion of interested and affected parties in the decision making process is advisable, however, as the decisions are likely to be more widely accepted and more successful in their implementation.

Mitigation Stage 2

Consideration should be given to mitigatory measures put forward in response to impacts identified. The working group should decide which mitigatory measures warrant further study including consideration of their feasibility and suitability. Once again interested and affected parties should be involved. The mitigation suggestions in table 4.1., provide broad categories into which mitigative effort could be channelled. They are classified under; **level of involvement** and **timing**. The mitigatory measures are broad in nature for the following reasons :

- this report is preliminary or "broad brush" in nature and is the first of a series of reports to be commissioned prior to closure
- a more detailed plan would require feasibility studies for each of the measures put forward to give them a specific focus

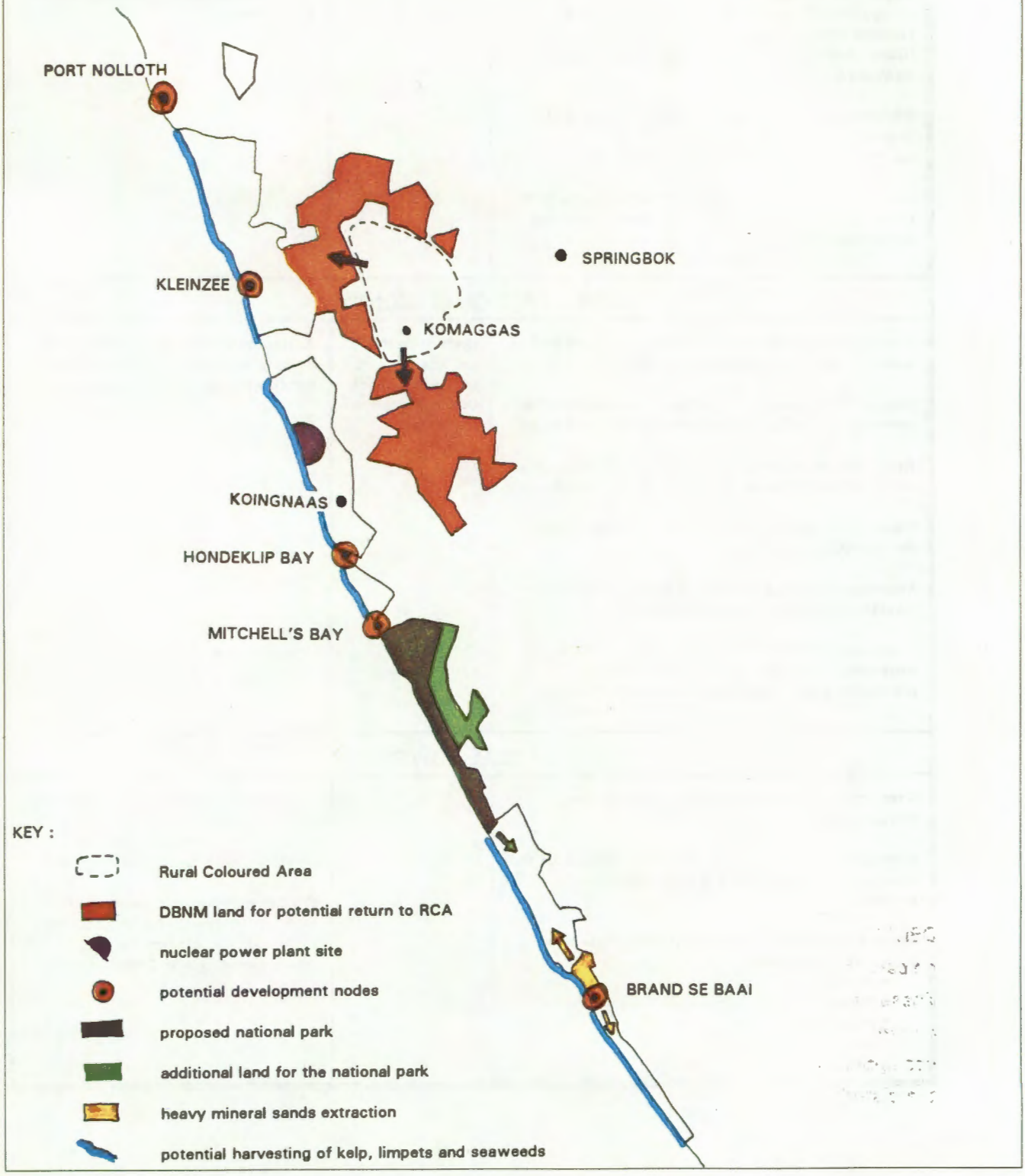
Table 4.1. Mitigatory measures

BEFORE CLOSURE	AT CLOSURE	POST CLOSURE
LEVEL 1 EMPLOYEES		
Be open and frank about closure involving employees in decisions. Clear up mistrust. Find employment for workers eg: • with DBCM • on DBNM property • on other mines • local businesses Provide training for entry into different fields. eg: • business • tourist trade • farming • artisan trades Provide for employees education in fields that will assist their communities. eg: •managerial •financial •agricultural •technical skills Encourage saving and investment. eg: • to buy property • finance a business venture	Undertake the physical closure of the mine such that impacts are minimized. Find employment for workers. Provide negotiated retrenchment and pension packages. Financial loan support so workers can start small intensive enterprises.	Find employment for workers. Financial loan support so workers can start small intensive enterprises. eg: • home industries • clothing design • mining • services • tourist orientated activities • transport service
LEVEL 2 DEPENDANTS		
Assist housewives with ideas, training and financial support for home industries. eg: • spinning and weaving • food processing • leather work Educational and training scholarships for employees children in their chosen fields.		Educational and training scholarships for children.

Table 4.1. Mitigatory measures (continued)

PRIOR TO CLOSURE	AT CLOSURE	POST CLOSURE
LEVEL 3 COMMUNITIES		
Assist with the upgrading of infrastructure; water, energy (electrification and wood fuel), medical facilities and buildings. (Conducted personally or through development agencies.) Educate towards sustainable stock farming, small scale agriculture and mining operations. eg. Provision of a crushing mill at Steinkopf. Negotiate with the Port Nolloth municipality to give the camps, township status, if DBNM workers are likely to go there.		Financial support for development aid programmes.
LEVEL 4 REGIONAL ECONOMY		
Give the businesses ample warning of closure and be open to avoid unsubstantieted rumours. Help to stimulate growth sectors, such as services, commerce, catering, accommodation and real estate. Assist the establishment of business training courses on efficiency and survival during difficult periods. Phase out suppliers slowly so that they can adapt the changing demands. Minimize psychological impacts on business and investor confidence in Namaqualand. Encourage other businesses to look at ways of expanding their operations to include further processing and thereby create more employment.	Undertake the physical closure of the mine such that impacts are minimized.	Assist the establishment of business training courses on efficiency and survival during difficult periods.
LEVEL 5 LOCAL GOVERNMENT		
Keep the government informed of closure and mitigation plans. Minimizing impacts through mitigation, will assist the local government maintain a more stable local economy. Assist the government in development initiatives eg: • industrial parks • tourist • infrastructure • irrigation schemes • harbours/railways		Help create land uses which will keep DBNM infrastructure at their maximum use post-closure, for continued local government income. Provide materials and expertise for local government retraining courses for workers who might be retrenchment due to DBNM closure.

Figure 5.1. DBNM Property Land Use Options



5. LAND USE OPTIONS FOR THE DBNM PROPERTY

5.1. PRESENT AND FUTURE LAND USE PLANS

When the mining operation ceases, it is envisaged that DBNM will maintain ownership of the property. The reasons for maintaining ownership could not be clearly ascertained but they could be a combination of the following factors :

- Future on site mineral exploitation, such as heavy mineral sands, which the Anglo American Corporation are currently mining at Brand se Baai under contract with DBCM (see figure 5.1.). Further heavy mineral sand operations are likely to the north and south of Brand se Baai, as prospecting proceeds (EEU, 1990).

- The mining of further diamonds when extraction technologies of the future make deposits viable. Current technology does not permit economic mining of the remaining deposits.

- The 366 000 hectares of DBNM property may in itself be a good investment. Its potential value stems from the property's 300 kilometre coastline. This coastal stretch is one of the few undeveloped coastal areas of South Africa. In the future this coastline property may provide DBCM with good financial returns from sales to property developers.

- The land might be needed as a strategic buffer to the offshore operations deterring poaching from the coastline.

- Environmental concern may be a factor as is indicated in DBNM's desire to create a national park on part of the property.

- An attempt to earn money from the use of the land through farming enterprises. This is fairly unlikely as the operation is insignificant when compared to the diamond trade of DBCM

DBNM's current thoughts on post-closure land use involve farming of game, sheep and ostriches on part of the farm, nature conservation in another section and rehabilitation of the disturbed areas. These uses will have little positive influence in mitigating the impacts likely to be experienced by current employees, and the regional economy. The remainder of this chapter presents some land use options for the three aspects of the mine property ; the mine towns, the undisturbed areas and the disturbed areas which have potential for financial return or as mitigatory measures.

5.2. THE MINE TOWNS KLEINZEE AND KOINGNAAS

There are two mine towns on the DBNM property, see figure 5.1, whose future use is as yet undecided. However DBNM have indicated that studies may investigate the feasibility of privatisation of "some of the non-mining aspects of our business" (DBNM, 1992). For the assessment of impacts it was assumed that the two towns would close down and that employees would be asked to leave the property. This need not necessarily be the case. The infrastructures of Kleinzee and Koingnaas resembles that of a small municipal town. They have permanent housing, water borne sewage, electricity, telephones and a range of amenities. The closure and removal of this infrastructure would represent a large write off of invested capital and a waste of resources. Opportunities to keep the towns operational should thus be investigated. DBNM could sell the land the towns presently occupy and open up access corridors to accommodate the roads leading to the interior. The government or private developers could be possible buyers. Alternatively DBNM could retain the towns under its control and rent out the housing. The towns could act as :

- retirement villages for DBNM employees
- holiday resorts. Kleinzee in particular could be considered in this light as it has excellent recreational facilities.
- functioning towns based on
  - the fishing industry (Kleinzee)
  - the marine diamond industry
  - small land based diamond mining prospectors
  - meat processing such as an abattoir or a canning factory. The meat would be obtained from local game, ostrich and sheep
  - clothing and hide industry supplied by the stock farms
- the employee housing for a new industry in the vicinity such as: a nuclear power plant, a toxic waste dump, a heavy mineral sands mine or offshore natural gas.
- South African Defence Force bases

The viability of any one of these schemes would have to be investigated further. During the investigations it is likely that several constraints to development will be found, for example the isolation of the towns and their poor access roads are likely to act as constraints. Table 5.1. gives an example of another constraint that will influence the type of development in these towns. It indicates the present costs and availability of services as compared to Cape Towns rates.

Table 5.1. Service availability and cost

	DBNM mine towns	Cape Town
Electricity (in cents per kilowatt hour)	60 cents/kWh including service costs	14.62 cents/kWh
Water (in cents per kilolitre)	250 cents/kl 94 000 kl/month limit	84 cents/kl

The service costs in the mine towns are presently wholly subsidised by DBNM. If the town is opened up for rental with DBNM maintaining ownership residents will have to pay rent and a service bill approximately four fold of what would have to be paid in Cape Town. Hence the options of open towns or retirement villages are unlikely to attract people unless the rates are subsidised.

5.3 UNDISTURBED LAND

5.3.1. Farms

75 % of the DBNM property is farmed upon by the company or is leased to local farmers. All stock farming is conducted under guidelines, which include limitations on stock numbers to protect the veld from becoming overgrazed. The farms have domestic animals, game and ostriches but a new emphasis on game has seen a reduction in the number of sheep and ostrich. DBNM is forming the West Coast Farming Company to control these farms after mine closure. Consideration has being given to possibilities of harvesting limpets and kelp (F. Brand, Farm Manager, DBNM, pers.comm.)

As discussed in section 5.1., it is uncertain why DBNM is farming the land, a possibility is that the strategic and financial reasons for holding the land, dictate that it cannot be sold. Farming is a sustainable activity, providing employment and marginal revenues to bide the time. Whatever the reasons, these areas have potential economic functions which can mitigate mine closure impacts.

The first issue which requires consideration is **the resolution of the land issue**. This question is central to satisfying the needs of the Namaqualanders, which revolve around equitable distribution, sustainable development and conservation (Fig, 1991). Historically dispossession has been a way of life since the 1850's and the final size of the rural coloured areas has limited the traditional nomadic herding of goats and sheep, leading to overgrazing and poverty. It is uncertain how a future South African government will attempt to resolve this deep seated resentment. Wether it be reincorporation, privatisation or expansion of the reserve areas, it is important to realize that certain systems of land tenure work more effectively in certain areas. The attempt to divide the reserves into economic units was unsuccessful for that very reason (Dunne, 1988). Communal tenure has benefits where the land has a particularly low carrying capacity, (E. Moll cited in Fig, 1991) but for a communal area to be productive it needs effective organisational and financial management. DBNM could take up the 150 year old issue by making some land available by rental, sale or gift, to assist the viability of the reserves.

Secondly, the **farms may have potential outside of stock and game farming** as indicated in the following investigations :

- Recent confidential surveys of the coastal stretch indicate potential sites for nodal holiday resorts linked to small harbours (Mr. Niehouse, Ninham Shand, pers. comm.). The strategy of nodal developments has been endorsed by regional planners on areas of the west coast (KPA, 1990).

- A recommended site for a nuclear power plant on the coast at Skulpfontein, 16 km north of Koingnaas (EEU, 1991). See figure 5.1.

- Viable heavy mineral sand deposits at Brand se Baai and the southern extremity of DBNM's land (EEU, 1990). Prospecting is likely to be continued to the north and south of the Brand se Baai operation. See figure 5.1.

Other potential uses include :

- Irrigated agriculture, especially intensive fodder crops

- The farming of kelp, seaweed and limpets

- Incorporation of more farm land into the current nature reserves discussed in section 5.3.2.

5.3.2. Nature reserves

Another activity on the undisturbed land is nature conservation, presently occupying 7 % of the DBNM land. There is a chance that a further 5 % of the property between the Groen and the Spoeg rivers, will be converted to a national park. The reserves, as indicated in figure 5.1, aim to preserve endangered biomes, migratory bird resting areas, marine and estuarine resources and game such as gemsbok, blesbok and springbok. Besides this important conservation task, the reserves can attract tourists resulting in the creation of employment and the generation of wealth. There is also potential for game hunting as part of a reserve's culling programme.

The multi-facetted importance of these areas suggests that they could be expanded to allow greater carrying capacities and inclusion of inland vegetation biomes. The necessary specialists could define the areas with potential .

Though nature reserves may bring development, nature conservation should not be over compromised. The issue of placement of a resort in the proposed National Park on DBNM property has indicated priorities different to those of conservation motivating some parties.

Although the National Parks Board have introduced the concept of sustainable use in several nature reserves, the extraction of diamonds from the Groen river mouth is cause for concern, considering the pristine state of the mouth and the migratory bird habits. The IEM (Integrated Environmental Management) principles should be adhered to when investigating the suitability of this site to mineral exploitation. A further point of consideration is the precedent set if mining on an estuarine system in a National Park proceeds.

5.4. DISTURBED AREAS

The DBNM mining operation takes place on 13 % of the property and rehabilitation has already begun on parts of it. The Minerals Act No. 50 of 1992 states that rehabilitation must return the veld as close as possible to its original state, prior to the commencement of mining, unless an acceptable alternative is found. Alternatives which have been put forward during research included :

- maintaining a processing plant as a museum
- subcontract areas to small prospecting businesses, as their low overheads and simple extraction techniques may be economically viable

6. THE SUMMARY CHAPTER

6.1. CONCLUSIONS FROM THE FINDINGS

The primary impact of closure is likely to be the retrenchment of approximately 3000 workers. The employees, their dependants and their communities will be influenced by the adequacy of funds post-closure. The most significant negative impacts arise through the lack of financial reserves which may prevent many workers and their dependants from purchasing basic requirements and hence inflicting a load on their communities. These impacts can be countered proactively by ensuring the worker continues to receive an income after the mine closes. This task is far easier than attempting to repair widespread socio-economic impacts associated with a sustained loss of income. Prior to the consideration of DBNM's role in countering the impacts of the mine closure it is noted that employees should be able to help themselves by creating opportunities and learning new skills. According to Glavovic (1990), however, low incomes and poor living conditions cultivate low aspirations, immobility and a reluctance to change. Thus in this case the people are going to require assistance to counteract those forces acting against the local populations. DBNM should ensure that pension and retrenchment packages provide an adequate financial base, defined through negotiation. Secondly DBNM should start up training courses in relevant fields and thirdly, consider finding replacement jobs for the workers.

The economic impacts of closure are likely to influence businesses and the basic sector industries. There is little DBNM can do to counteract the drop in demand induced by DBNM closure. The best that these sectors can do is to prepare themselves. Increased efficiency and a broader customer base, may help businesses avoid retrenchments and closures. The mine closure could also act as a catalyst for new ideas with an urgency which may promote rapid change. DBNM's primary task should be to keep the business sectors informed of its plans for preparatory purposes. DBNM could sponsor feasibility studies of various business ventures which could be open to public examination.

The government stands to lose tens of millions of rands upon DBNM closure. While this is relatively insignificant for central government, local government is likely to encounter budget problems post-closure. DBNM could become involved in local development initiatives to maintain the regions productivity and thereby create income for the local government. The central government should be kept abreast of closure developments as they are potentially the main initiating party of a new economic focus for the region.

An important positive impact of the completion of diamond mining is the potential of the DBNM property to create wealth for the Namaqualand region. Although DBNM is likely to hold the land it could be used for economically viable and sustainable developments, assisting mitigate the mine closure impacts such as increased unemployment. DBNM should at least consider alternatives and be open with the local population as regards land use plans and the rationale behind the plans.

6.2. RECOMMENDATIONS

The mere commissioning of this study indicates DBNM is recognising its moral responsibility for the last 62 years of mining in Namaqualand. Consideration of the plights of their employees and local business and the study of land use options on their property, are measures which cannot be studied in isolation. Employees have communities, businesses operate within a regional economy and the property is part of a regional land use scheme. If DBNM provides assistance out of context, these measures may not be to the regions benefit. DBNM could provide short term "aid" mitigation or they may wish to help the communities take up some of the long term issues surrounding material and human resource development by implementing "backing" mitigation. In both cases solutions should take regional conditions into account. The communities could assist DBNM by indicating which solutions they would prefer. From meetings undertaken during this study, requests included; the return of the land to the RCAs, upgrading of infrastructure, education and job creation.

However the present state of the underdeveloped regions of Namaqualand, Transkei and Ciskei have been fashioned by many hands and so it is unrealistic and unfair to expect DBNM to resolve regional crises. There are many parties who can play a role in regional development and they should work in a coordinated fashion according to a strategy devised by the group. Parties could include :

- the local populations, who need to motivate themselves to help themselves. However years of neglect, isolation and discrimination makes it difficult for the communities to reverse their situation alone.
- local government, who hold much of the responsibility for controlling and directing development.
- Development Aid organisations
- the private sector, like DBNM, who feel social and moral responsibilities to the environments in which they operate.

Therefore it is recommended that DBNM initiate a planning process with these other parties on a macro scale. Constructive joint recommendations could be made as to how the Namaqualand, Transkei and Ciskei regions could be developed. DBNM can decide on the scope of its role, but they should be sure that whatever action they take will be towards common regional development goals for Namaqualand and to a more limited extent the Transkei and Ciskei. The mitigation presented in this report should instigate the formation of a DBNM mitigatory plan, a process which can be tested for its feasibility within these regional strategies constructed by a working group for such a purpose. Secondly on a micro scale DBNM should consider further investigation of significant impacts to quantify the assistance required to counteract them.

6.3. CRITIQUE OF PROJECT PROCESS AND PRODUCTS

Drawing on the literature reviewed and considering the methodology of the baseline and assessment reports, this comparative critique is primarily to establish the projects credibility and to act as a set of recommendations for the future assessments of this nature.

The Integrated Environmental Management (IEM) procedure as defined by Fuggle et al (1992) consists of three stages, namely the planning and assessment stage, the decision stage and finally implementation. This assessment report and its associated Baseline Information Report remain within the confines of stage one of IEM. The commissioning of the NM 2005 project during this stage allows the underlying principles of IEM to be incorporated into its development.

The reports act as a comprehensive **initial assessment** in some ways, while in others it fulfils the requirements of a **full impact assessment**. As an initial assessment the reports can play a very important planning role in the IEM process as :

- It identifies mitigatory measures as part of a mitigatory process, which, if implemented timeously, could reduce impacts significantly.
- The proposal itself was reviewed, in this case the action of mine closure, allowing preliminary recommendations to be made as to how the proposed action should occur such that impacts are minimized.
- It provides a good information base for future studies.

However, the reports also indicate elements of a full impact assessment such as the inclusion of limited scoping, interactions with I&APs and a detailed field investigation.
Fuggle and Rabie (1983) state the four tasks of an Environmental Impact Assessment (EIA) are :

- to collect the raw data
- to analyze the data turning it into information
- the identification of significant impacts considering mitigation
- communication of the findings

In this particular project these tasks were split between the Baseline Information Report which covered the first two aspects while the third and fourth steps are in this assessment document. The four tasks will act as the framework in which the reports will be critiqued in more detail.

6.3.1. The collection of raw data

The primary concern when collecting raw data for a project is that the research "net" is cast wide enough to capture the information needed, but not so wide that vast quantities of unnecessary information is caught and has to be dealt with. Fortunately the tool called scoping has assisted in making a good cast more attainable. Beanlands and Duinker (cited in Walthern, 1988) state scoping should be done as early as possible in the impact assessment process so that research is focused on components of the social, physical and economic environments for which there is public concern. In the NM 2005 approach the initial scoping was poor, as the net was cast at "the current biophysical, social and economic environments and to identify changes and trends in the region" (Draft Background Information Document). The vastness of the task of accumulating the information on all aspects of Namaqualand showed itself in the cursory nature of early results. The results skimmed the surface of topics and information was only developed around those topics which had literature readily available on them, painting a largely incomplete picture.

The work undertaken could be termed *profiling*, as suggested by Taylor *et al.* (1990). It is an analysis and overview of current social, economic and environmental contexts of a region and its historical trends. Taylor *et al.* (1990) contends that this type of research can lack focus and it was recommended that profiling should follow naturally from the activity of scoping, but this did not occur in the initial stages of NM 2005. The background data's primary aim is to describe the point of departure for estimating the effects of change. The scoping activity would have limited the profiling of the region to those important issues relating to the mine closure, such as the workings of the mining economy and the employment prospects in the region. Scoping should not just focus on the issues, but set the boundaries for the study in terms of depth and extent of analysis (Taylor *et al.*, 1990).

The lack of scope was rectified at the first meeting with the client who scoped the study down to the socio-economic impact assessment of mine closure and consideration of land use options. Unfortunately the new focus had little time to purge the project, as field work commenced almost immediately, allowing little time to regroup and rethink. The interactions with interested and affected parties (I&APs) included the DBNM employees, their communities, and Namaqualand businesses.

The surveys focused on obtaining further baseline information and on issues surrounding the mine closure. The questionnaire basis on which the majority of these groups where approached was effective, but more time should have been given to the validation of the question selection and the variables the questions represented. The result was several questions, which produced large amounts of data, which was found to be inconsistent and unnecessary for the assessment.

The methods and content of the social surveys indicates a balanced approach which transcends typical orientations as described by Taylor *et al.* (1990). A strong commitment was made to a participatory approach above a technocratic approach. The framework of values used in the survey was closely aligned with the affected parties making the survey more effective. The surveys also

uncovered information surrounding the issues which could provide a basis for social action. However some baseline research was orientated towards new knowledge for knowledge's sake.

The economic research was hampered by the lack of expertise within the research team. An understanding of macro and micro economics, multipliers and input-output analysis was required for an effective assessment. The investigation of multipliers and input-output analysis was not particularly effective. The multiplier effect or flow-on from initial impacts to indirect or induced impacts could not be ascertained due to a lack of data. Kerr (cited in Taylor *et al.*, 1990) explains how multipliers are often quoted to indicate the economic benefits of a development, but often negative effects are transferred to another part of the economy. The input-output analysis is a tool which does not indicate aggregate changes but provides details for the industries in which those changes occurred. This technique was constrained by data availability, tables were available for Region A as a whole but with no breakdown for regions such as Namaqualand. Moreover the estimation of DBNM's portion of the regional diamond output (50.8 % in 1985) was based on the assumption that all industries within a sector have identical requirements, an assumption supported by Kerr (cited in Taylor *et al.*, 1990). The input-output method has inherent inaccuracies, due to rapid advances in technologies and economy of scale. Moreover, due to the massive amount of data that needs to be processed, the tables are invariably out of date when published. Therefore the input-output information derived from the NM 2005 report was primarily to indicate which industries would be effected by DBNM closure with less emphasis on quantification.

The interactions with the local business community was done particularly thoroughly and accurately, as was borne out by comparison of research results with government generated turnover figures. The questions in the economics survey concentrating on the closure issue, resulting in the creation of useful issue related data.

A strong point of the report, in terms of IEM and EIA requirements, is its compilation by a diverse multidisciplinary team of researchers with different interests and abilities resulting in a balanced presentation of information. Taylor *et al.* (1990) explains a team brings together a range of viewpoints, experiences and skills and importantly allows time restrictions to be overcome.

6.3.2. Turning data into information

The baseline profiling was presented in a scoped form in the Baseline Information Report, to act as the baseline against which change could be measured. All the surveys and contact with other I&APs was interpreted effectively into tables and graphs showing current situations and trends. The presentation of issues put forward by various parties allowed the assessment stage to concentrate on those issues over which the public had shown concern.

6.3.3. Identification of significant impacts and the consideration of mitigation

The impacts of an event are the social, economic and environmental changes as a result of that

event (Leistritz & Murdock, 1981). Hence the identification of impacts is the identification of changes which would not have occurred if conditions had remained the same. Many of the impacts of a proposed action may be trivial or of no significance to decisions which have to be taken. Hence a decision will generally turn to a more focused set of impacts attained, through the scoping technique. The scoping process determines which issues are important by canvassing the views of several groups including the decision markers, the public and the scientific community (Wathern, 1988). However in this report scoping was a combination, of the issues which emerged in the surveys and an individual effort based on personal judgements on behalf of the interested and affected parties (I&APs).

The identification and assessment of impacts stemming from the significant issues was done using an adaption of Sorensen's network approach to traced significant direct impacts through their secondary and tertiary ramifications. The impacts were rated using significance criteria and presented in a framework which summarizes relevant information. These techniques were used, above the more cursory and limiting checklist, and the quantitative scaling and weighting approach (Wathern, 1988). Despite separate analyses of the impact paths and their significant impacts, there was limited interfacing between paths such as the interaction between social change and the economy in the form of reduced consumer spending. Impact paths could form an impact "web" illustrating the interfacing. As expressed by Leistritz and Murdock (1981) the interfacing between paths should be done as earky as possible as they influence the final results.

The mitigation used an original approach for classification of measures according to the level of involvement they required and the timing of their implementation. The measures tended to be unspecific but this was largely due to the lack of scoping constraints, constraints which might have indicated the level DBNM was prepared to get involved, or regions of involvement. Therefore a complete set of measures had to be found and detailed analysis was avoided. The opportunity to trade off which aspects of mitigation to consider was left to the decision maker rather than the report being prescriptive. The trade off decisions are aided by a section which describes the aspects of mitigation and the advantages and disadvantages of each.

6.3.4. Presentation of the information

The assessment report is dominated by the flowing structure of the impact paths. This technique had the advantage of allowing paths of interacting impacts to be discussed logically. To maintain the course of discussion and to avoid fragmentation, however, individual impacts were not rigorously analyzed as recommended by Fuggle *et al.* (1992) using a set of systematic points such as statement, description, affected group, criteria and significance (with and without mitigation). In many cases the impacts were poorly quantified due to the preliminary nature of this report, making the fragmented approach laborious for impacts which had not been thoroughly researched. The mitigation was presented simply in tabular form to aid decision makers.

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