

# **EXPERIENCE OF EIA FOLLOW UP IN LESOTHO**

**BY  
MATSELISO TSEHLO**

Submitted in partial fulfillment of the academic requirements for the degree of Master  
of Science in the school of life & Environmental Sciences,  
University of Natal,  
Durban.

September 2003

## ABSTRACT

Environmental Impact Assessment (EIA) is a process that is widely practised as it assists in decision-making and also helps to overcome the environmental problems that could result from development activities. However, the focus is still on EIA as a process and less on EIA follow-up. EIA follow-up is taken to mean the activities, such as monitoring and auditing, that are carried out after the Record of Decision has been made, although the importance of establishing EIA follow-up early in the project cycle is emphasised in this thesis. In most countries, EIA follow-up is not legislated and whilst it is generally recognized as important it is not widely practised. This thesis is aimed at assessing the status of EIA follow-up in Lesotho.

Nine development projects were selected and their reports; Environmental Impact Assessment Reports (EIRs), Environmental Management Plans (EMPs) and auditing reports were analysed to determine if there was provision for EIA follow-up. Four criteria were utilised in the analysis. These were: the impacts that were predicted and mitigation measures proposed, the provision made for EIA follow-up before the implementation of the project, the impacts that were experienced and the mitigation measures that were put in place and the EIA follow-up process that was undertaken, and the people responsible for it.

All projects had undergone an EIA process, except for one which did not have an EIR prepared, *viz.* C&Y garment factory at the Thetsane industrial site. Of the remainder, four projects contained provision for EIA follow-up, although in most case studies follow-up focused on the construction phase and little was stated about the implementation of follow-up. Generally, an environmental officer was appointed to monitor the impacts that were experienced and to ensure compliance with the EMP. However, in the Butha-Buthe industrial estate case study, the EIA follow-up process was detailed and specific, even giving the frequency with which EIA follow-up should be undertaken, by whom and how it should be done. This is most likely because it is the most recent industrial estate to be developed and that lessons were learned from previous industrial development sites discussed as case studies in this thesis, where problems were encountered due to lack of EIA follow-up.

Apart from the assessment of these reports, questionnaires were also administered to nine environmental consultants practising in Lesotho. Monitoring and auditing were identified as EIA follow-up by the majority of consultants (7 or 78%). Only one person identified it as including public participation, while the other person (11%) identified it as monitoring, which incorporates EMPs and Environmental Management Systems (EMSs). It was interesting to note that only one person included public participation as part of EIA follow-up, in contrast to the general understanding of EIA follow-up internationally, that the public have a role to play in follow-up activities. One person (1 or 11%) pointed out that EIA follow-up should start at the planning or design stage, while the majority (89%) stated that it should start after the completion of the EIA process and the Record of Decision, the latter group failing to recognise the importance of collecting baseline data early in the EIA process. Of all the projects, only the Lesotho Highlands Water Project (LHWP) was observed to implement EIA follow-up, such as monitoring and auditing, on a regular basis.

An assessment was also undertaken of the environmental legislation in Lesotho and the provision that it makes for EIA follow-up. Sections 31 and 32 of Part V of the Act specifically give provision for EIA follow-up. It is stated that in order to prevent environmental degradation, environmental monitoring and environmental auditing should be undertaken. Moreover, the Lesotho EIA guidelines (1997) do give guidance and procedures on how EIA follow-up should be undertaken. However, it was found that currently, the Environment Act, 2001 is not operational and that EIA follow-up like the EIA process is undertaken on a voluntary basis. It was therefore recommended that at present, the self-regulatory approach to EIA follow-up is the most suitable one for Lesotho. Recommendations were made to strengthen this approach until such time as legislation is in place or an environmentally aware public can participate in EIA follow-up.

Several problems were identified that were hampering the practice of EIA follow-up in Lesotho. These included: the un-operational Environment Act, an environmentally unaware public, few environmentalists and lack of sensitive and dedicated government ministries.

## **PREFACE**

The work described in this dissertation was carried out in the School of Life and Environmental Sciences, University of Natal, Durban, from January 2003 to September 2003, under the supervision of Professor Roseanne Diab.

This research represents original work by the author and has not otherwise been submitted in any form for any degree or diploma to any tertiary institution. Where use has been made of the work of others it is duly acknowledged in the text.

Name: \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

## **ACKNOWLEDGEMENTS**

I would like to give honour and glory to God the creator because He gave me the strength that I needed to complete this thesis.

A special and sincere thanks goes to my supervisor professor Roseanne Diab for her time, guidance, patience, inspiration and enthusiasm. Thank you very much Roseanne, YOU'RE THE BEST!!

My deepest gratitude goes to all the consultants who assisted in this research, you know who you are. Mrs Refiloe Sethathi thank you very much.

Thank you to all my friends who helped me directly and indirectly throughout the whole research: Njoya, Palesa, and Psigo. Thank you for your love and support.

I would like to thank Mr Libe Moremoholo for all his love, strength and support that he always provided when I needed it.

Finally, my deepest and sincere gratitude goes to mom 'M'e 'Mamatseliso Tsehlo and dad Ntate Thabang Tsehlo. Thank you mom and dad for your love and support for I have achieved things I only dreamt of (not yet there though). Thank you very much.

**THANK YOU SO MUCH TO ALL OF YOU.**

TABLE OF CONTENTS

ABSTRACT..... i

PREFACE ..... iii

ACKNOWLEDGEMENTS..... iv

TABLE OF CONTENTS..... v

LIST OF FIGURES..... x

LIST OF TABLES ..... xi

LIST OF TABLES ..... xi

CHAPTER ONE ..... 1

INTRODUCTION ..... 1

1.1 Background..... 1

1.2 Study area ..... 2

1.3 Aim and objectives..... 3

1.4 Structure of the thesis ..... 3

CHAPTER TWO..... 4

EIA FOLLOW UP ..... 4

2.1 Introduction ..... 4

2.2 Definition of EIA follow-up ..... 4

2.3 The need and importance of EIA follow-up..... 5

2.4 Basic components of EIA follow-up..... 9

2.4.1 Monitoring.....	9
2.4.2 Auditing.....	11
2.4.3 Evaluation.....	13
2.4.4 Environmental Management Systems (EMS).....	13
2.4.5 Environmental Management Plan (EMP).....	14
<b>2.5 EIA follow-up process.....</b>	<b>15</b>
2.5.1 Screening.....	16
2.5.2 Scoping.....	17
2.5.3 Evaluation issues .....	17
2.5.4 Monitoring and evaluation.....	18
2.5.5 Decision-making.....	18
<b>2.6 Models of EIA follow-up.....</b>	<b>18</b>
2.6.1 Legal-based approach .....	19
2.6.2 Partnership Approach .....	19
2.6.3 Self-regulatory approach .....	20
2.6.4 Incentive or disincentive approach .....	21
2.6.5 Summary .....	21
<b>2.7 EIA follow-up and sustainability .....</b>	<b>22</b>
<b>CHAPTER THREE.....</b>	<b>24</b>
<b>DATA AND METHODOLOGY .....</b>	<b>24</b>
3.1 Introduction .....	24
3.2 Environmental consultants' understanding of EIA follow-up .....	24
3.2.1 Sampling protocol .....	24
3.2.2 Questionnaire design .....	24
3.2.3 In depth interviews .....	25
3.3 Assessment of EMPs, EIRs and audit reports .....	25
3.4 Assessment of environmental policy in Lesotho .....	26
3.5 Limitations of the study .....	26
<b>CHAPTER FOUR.....</b>	<b>27</b>
<b>RESULTS AND ANALYSIS.....</b>	<b>27</b>

<b>4.1 Introduction .....</b>	<b>27</b>
<b>4.2 Environmental legislation .....</b>	<b>27</b>
4.2.1 Background.....	27
4.2.2 Environmental Act, 2001 and EIA follow-up.....	28
<b>4.3 Analysis of case studies .....</b>	<b>30</b>
4.3.1 Phase 1B of the Lesotho Highlands Water Project (LHWP).....	31
4.3.1.1 Background.....	31
Figure 4.1: Approximate locations of case studies .....	31
4.3.1.2 Predicted impacts of the project.....	31
4.3.1.3 Provision for EIA follow-up .....	33
4.3.1.4 Analysis of EIA follow-up.....	34
4.3.2 Metcash building .....	34
4.3.2.1 Background.....	34
4.3.2.2 Predicted impacts and proposed mitigation measures.....	35
4.3.2.3 Provision for EIA follow-up .....	35
4.3.2.4 Analysis of EIA follow-up.....	36
4.3.3 C & Y garments factory.....	36
4.3.3.1 Background.....	36
4.3.3.2 Predicted impacts and proposed mitigation measures.....	36
4.3.4 Nien Hsing denim mill.....	38
4.3.4.1 Background.....	38
4.3.4.2 Predicted impacts and proposed mitigation measures.....	38
4.3.4.3 Provision for EIA follow-up .....	39
4.3.4.4 Analysis of EIA follow-up.....	39
4.3.5 D.L.M. shopping center .....	39
4.3.5.1 Background.....	39
4.3.5.2 Predicted impacts and proposed mitigation measures.....	40
4.3.5.3 Provision for EIA follow-up .....	40
4.3.5.4 Analysis of EIA follow-up.....	40
4.3.6 Industrial estate in Butha-Buthe .....	41
4.3.6.1 Background.....	41
4.3.6.2 Predicted impacts and proposed mitigation measures.....	41
4.3.6.3 Provision for EIA follow-up .....	41
4.3.6.4 Analysis of EIA follow-up.....	42
4.3.7 Ha- Teko clay and extraction site .....	42
4.3.7.1 Background.....	42
4.3.7.2 Predicted impacts and the proposed mitigation measures.....	42
4.3.7.3 Provision for EIA follow-up .....	43
4.3.7.4 Analysis of EIA follow-up.....	43



4.3.8 MKM memorial park at Khubetsoana, Maseru .....	44
4.3.8.1 Background.....	44
4.3.8.2 Predicted impacts and the proposed mitigation measures.....	44
4.3.8.3 Provision for EIA follow-up.....	45
4.3.8.4 Analysis of EIA follow-up.....	45
4.3.9 Maseru South West (MASOWE) site and services project .....	46
4.3.9.1 Background.....	46
4.3.9.2 Predicted impacts and proposed mitigation measures .....	46
4.3.9.3 Provision for EIA follow-up.....	47
4.3.9.4 Analysis of EIA follow-up.....	47
<b>4.4 Summary.....</b>	<b>48</b>
<b>4.5 Analysis of questionnaires .....</b>	<b>49</b>
4.5.1 Understanding of EIA follow-up .....	49
4.5.2 EIA follow-up in Lesotho.....	50
4.5.3 Experience of EIA follow-up.....	52
<b>4.6 Applicability of EIA follow-up models to Lesotho .....</b>	<b>52</b>
4.6.1 Legal based approach .....	52
4.6.2 Partnership approach .....	53
4.6.3 Incentive/ Disincentive approach .....	53
4.6.4 Self-regulatory approach .....	53
<b>CHAPTER FIVE .....</b>	<b>55</b>
<b>CONCLUSION .....</b>	<b>55</b>
5.1 Introduction.....	55
5.2 Summary.....	55
5.3 Recommendations .....	57
<b>REFERENCES .....</b>	<b>59</b>
<b>APPENDIX A .....</b>	<b>64</b>
<b>APPENDIX B .....</b>	<b>65</b>
A. Understanding EIA follow-up .....	65

B. EIA follow-up in Lesotho ..... 66

C. Experience with EIA follow-up ..... 67

LIST OF FIGURES

**FIGURE 2.1:** EIA follow-up as a link between EIA and project implementation.....7

**FIGURE 2.2:** Outcomes of EIA follow-up for different stakeholders. ....9

**FIGURE 4.1:** Approximate location of case studies .....31

LIST OF TABLES

Table 4.1: Predicted impacts and the proposed mitigation measures for Phase 1B of  
the LHWP .....32

Table 4.2: Predicted impacts and the proposed mitigation measures .....35

Table 4.3 Predicted impacts and the proposed mitigation measures.....38

Table 4.4: Predicted impacts and the proposed mitigation measures .....40

Table 4.5: Predicted impacts and the proposed mitigation measures .....41

Table 4.6: Predicted impacts and the proposed mitigation measures .....43

Table 4.7: Predicted impacts and the proposed mitigation measures .....44

Table 4.8: Predicted impacts and the proposed mitigation measures .....47

Table 4.9: Summary of EIA follow-up provision for each case study .....48

## GLOSSARY OF ABBREVIATIONS

CBO	Community Based Organisations
CEQA	California Environmental Quality Act
DBSA	Development Bank of South Africa
CMA	Common Momentary Area
DWA	Department of Water Affairs
DBSA	Development Bank of South Africa
EAP	Environmental Action Plan
EIA	Environmental Impact Assessment
EIR	Environmental Impact Assessment Report
EMP	Environmental Management Plan
EMS	Environmental Management System
FOT	Field Operation Teams
HSG	Highland Service Group
I & AP	Interested and Affected Parties
LEA	Lesotho Environmental Authority
LHDA	Lesotho Highlands Development Authority
LHLDC	Lesotho Housing and Land Development Corporation
LHWP	Lesotho Highlands Water Project
LHWP EIR	Lesotho Highlands Water Project Environmental Impact Assessment Report
LNDC	Lesotho National Development Corporation
MCC	Maseru City Council
MASOWE	Maseru South West
NES	National Environmental Secretariat
NEAP	National Environment Action Plan
NGO	Non-governmental Organisations
PAP	Permit Advisory Panel
ROD	Record of Decision
RSA	Republic of South Africa
SDA	Selected Development Area
STD	Sexually Transmitted Disease
WASA	Water and Sewage Authority

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background

Environmental Impact Assessment (EIA) is a tool that can fulfill different roles depending on the situation and the people using it. For example, a planner might view EIA as a planning tool and also as a decision-making tool. Within this context Devuyst (1994; 2) defines EIA as “an instrument, which is used to aid and improve the decision-making process with an objective of determining the potential environmental, social and health effects of a proposed development project”. Alternatively, other people may view EIA as a tool to take account of the potential environmental consequences of an action (Morrison-Saunders *et al.*, 2002) and thereby emphasize its role in environmental conservation. EIA is a process that, whatever the emphasis, tries to minimize, mitigate or avoid potential negative impacts that might result from development projects, as early as possible in the project life cycle.

In the past, EIAs were conducted on a voluntary basis, however, in most countries today, the process has been legislated and EIAs are now undertaken on a mandatory basis. Despite this there have still been problems with EIAs fulfilling their role of minimizing the negative impacts of development. One of the main reasons for this is the failure to enforce the recommendations of the EIA through inadequate EIA follow-up (Arts, 1999). EIA follow-up is a process that is well documented in most Environmental Management Plans (EMPs) or Environmental Management Systems (EMSs) as monitoring and auditing. However, its implementation is a major downfall Arts *et al.* (2000). The process of EIA follow-up is still in its infancy and more attention needs to be focused on it because it is a critical component of the EIA process, due to its ability to remedy or assist in avoiding any adverse negative impacts (Arts *et al.*, 2000). It also completes the EIA process.

EIA follow-up mainly refers to the activities such as monitoring, auditing, and evaluation that are undertaken during the post-decision stages of the EIA process

(Morrison-Saunders *et al.*, 2002). Monitoring refers to the repetitive collection of environmental data with a defined purpose; auditing is the comparison of the recorded environmental monitoring data with a set of established criteria and the reporting of these results to the relevant authority. Environmental auditing is undertaken in order to assess compliance with the conditions set for the implementation of a development project and also to assist in facilitating management control (Morrison-Saunders *et al.*, 2002). Evaluation is a process that can be either backward or forward looking because it focuses on the planning stage which incorporates the analysis of the problem, the development and pre-selection of alternatives (Arts *et al.*, 2000). It also reviews current and past activities and consequences of the development and as such assesses the implementation, planning and post-planning stages of developments.

In order to assist in the implementation of the EIA follow-up in South Africa, Hulett and Diab (2002) proposed four EIA follow-up models, which are named the legal based approach, partnership approach, self-regulatory approach and finally the incentive and disincentive approach (Hulett and Diab, 2002). Each of these will be discussed in further detail in chapter 2.

## **1.2 Study area**

Lesotho is a small land locked country surrounded by the Republic of South Africa. It has a population of approximately 2 million, which is increasing at a rate of 2.6% per annum (Khalema and Setsabi, 1999). If current trends continue, the population will double by the year 2020, consequently increasing the impact on the environment (Khalema and Setsabi, 1999).

There are many factors that contribute to the negative impacts on the environment in Lesotho. Poverty places an enormous stress on the natural resources and deprives the country of the human resources needed to carry out sustainable environmental programmes (Chakela, 1999). Urbanization results in overcrowding, encroachment of prime agricultural land and livestock production. Natural disasters like droughts and epidemics also contribute to environmental degradation. One of the most serious threats to environmental degradation in Lesotho, especially in the southern parts of the

country, is desertification. It results from the combination of climate variability and poor land management strategies (Sekoli and Tseki, 1999).

In the light of these environmental problems it is clear that EIA and more particularly EIA follow-up are of great relevance to Lesotho.

### **1.3 Aim and objectives**

The main aim of this thesis is to assess the status of EIA follow-up in Lesotho. The specific objectives are:

1. To review the literature on EIA-follow-up;
2. To assess the provision made for EIA follow-up in environmental assessment legislation;
3. To investigate the extent to which EIA follow-up is planned and implemented in development projects;
4. To evaluate the suitability of the EIA follow-up models proposed by Hulett and Diab (2002) to Lesotho.

### **1.4 Structure of the thesis**

This thesis is divided into five chapters. Chapter 1 provides a brief introductory background to EIA follow-up and a rationale for focusing on Lesotho. The aim and objectives of the study are outlined. Chapter 2 gives a theoretical perspective on EIA follow-up and also covers the practice of EIA follow-up in selected countries. Chapter 3 outlines the methodology that was used in data collection, specifically the administration of questionnaires and assessment of reports such as Environmental Impact Assessment Reports (EIRs), Environmental Management Plans (EMPs) and audits reports. The results and analysis of the data are presented in Chapter 4. The final chapter includes the summary and recommendations based on the findings of the study.



## CHAPTER TWO

### EIA FOLLOW UP

#### 2.1 Introduction

Environmental Impact Assessment (EIA) is widely practised throughout the world and most countries have passed legislation making the process of EIA mandatory. However, relatively little attention is given to EIA follow-up.

The implications of poor EIA follow-up are serious environmental problems, which if not controlled, avoided or mitigated will eventually lead to environmental degradation. One example from the African continent is the delta region in Nigeria, where oil pollution and contamination has become a serious geo-political and environmental issue, attracting concern well beyond the borders of Nigeria (Dung-Gwom, 1998). Many authors have highlighted the lack of EIA follow-up. For example Arts *et al.* (2000) state that in theory, EIA follow-up is clearly stated, but its practice is still in its infancy. They further state that procedure to carry out EIA follow-up, good practice and future directions have not been addressed in much detail.

#### 2.2 Definition of EIA follow-up

Morrison-Saunders *et al.* (2002; 5) define EIA follow-up as the “activities that are undertaken during the post-decision stages of the process, it also refers to the monitoring and evaluation of the impacts of a project or plan (that has been subjected to EIA) for management of and communication about, the environmental performance of the project or plan”. Arts *et al.* (2000) indicate that EIA follow-up is usually seen as the complement of EIA. The dividing line between the two is the record of decision (ROD). Therefore it may be concluded that EIA might be viewed as a form of pre-decision analysis counterpart (Arts *et al.*, 2000). Moreover, it can be stated that EIA and its follow-up relates directly to the planning and development of projects, while EIA follow-up relates more specifically to the implementation of projects (their construction and operation). “Therefore, EIA follow-up may relate to the various stages of the project life-cycle after the consent decision has been taken – which may

include the (final, detailed) designing, the contraction and the operation phases” (Arts *et al.*, 2000; 2).

Arts *et al.* (2000) indicate that EIA follow-up includes:

- Monitoring, which is the collection of data and is an objective undertaking;
- Auditing, which is the comparison with standards, predictions, expectations;
- Evaluation, which is a subjective undertaking consisting of an appraisal of the conformance with standards, predictions, expectations, views, as well as the performance of the activity;
- An action component which is the stage when the consequences of EIA follow-up are used for making decisions and taking action (management) based on the results of the monitoring, auditing and evaluation;
- A communication component, where the general public is informed about what was obtained from the EIA follow-up.

Therefore, Arts *et al.* (2000; 2) define EIA follow-up as “the collection of data, the structuring and analysis of this data and the appraisal of the generated information about the impacts of a project (or plan) that has been subject to EIA”.

### **2.3 The need and importance of EIA follow-up**

The need and hence the importance of EIA follow-up are similar to the need and importance of the EIA process. Through the scoping process of EIA, different impacts of projects and hence plans are identified, and so alternatives are sought or remedial actions to either mitigate or avoid such impacts are devised. It is through the EIA follow-up process that mitigation or avoidance measures are implemented. Therefore it can be observed that EIA and EIA follow-up complement each other; one is not complete without the other (Arts *et al.*, 2000). EIA follow-up tries to minimize uncertainty by putting in place planned but adaptable strategies to mitigate the negative consequences of projects. It is through the EMP, which is planned and agreed upon by the relevant authority, that the follow-up is stated (Morrison-Saunders *et al.*, 2002). Holling (1978) in Morrison-Saunders *et al.* (2002) adds that the challenge is to cope with the unknown and the unexpected and how to plan in the face of the unknown. As a result, there is often a recommendation of an adaptive, flexible

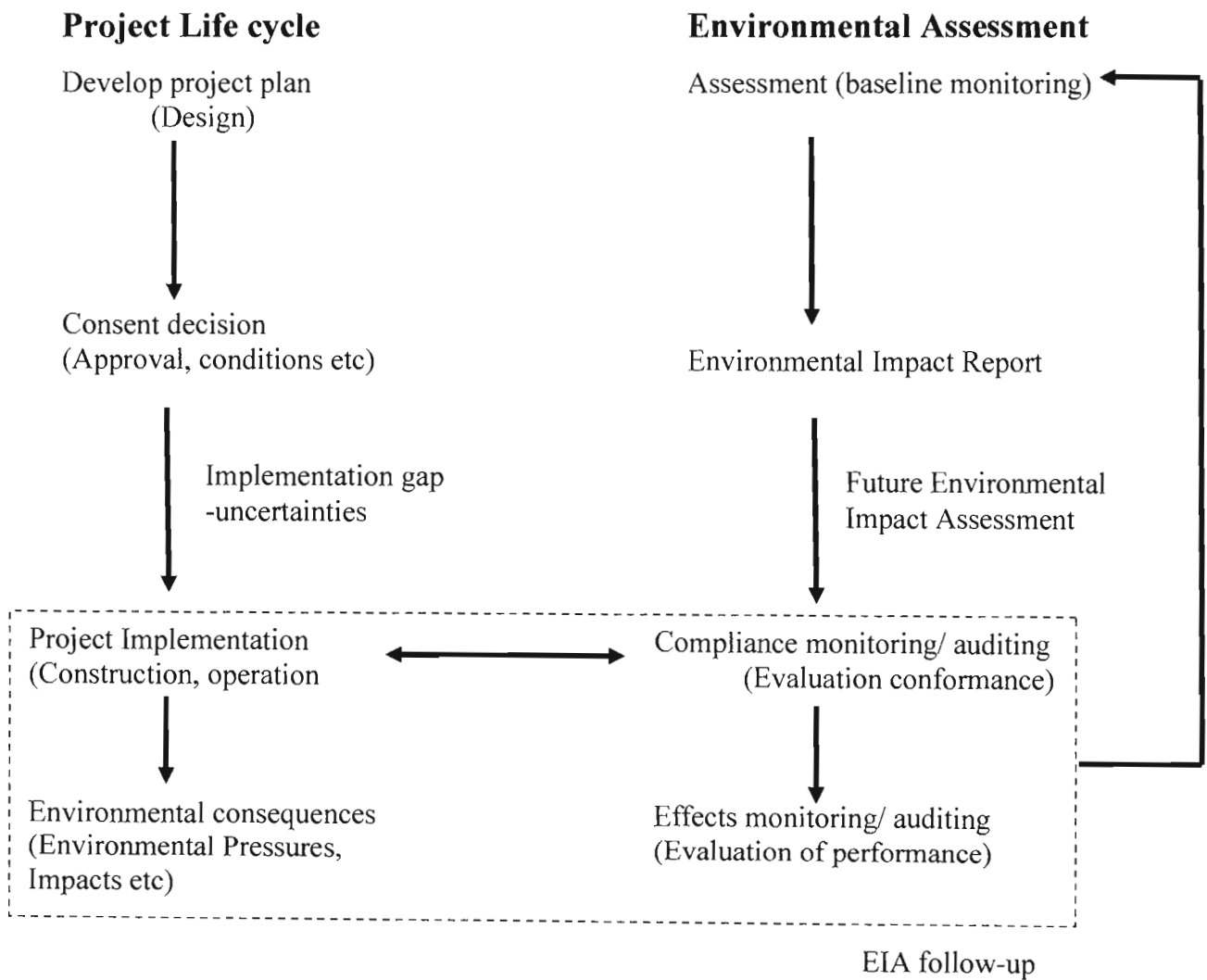
approach where there is an allowance for reactions to unanticipated decisions and imperfect knowledge (Morrison-Saunders *et al.*, 2002).

Morrison-Saunders *et al.* (2002) highlighted some of the importance of EIA follow-up as improving scientific and technical knowledge as some of the EIA follow-up activities assess some scientific techniques used in EIA. Morrison-Saunders and Bailey (2001) add that monitoring is a scientific activity and also the role of science in EIA follow-up is considered to be more important in mitigation than in ongoing management. Moreover, scientific knowledge is required more during the pre-decision stages of EIA than the post-decision stages of comparable activities (Morrison-Saunders and Bailey, 2001). In order to alleviate environmental problems, EIA follow-up programmes can be used in conjunction with other existing environmental information such as the state of the environment reports, EMPs and EMSs (Morrison-Saunders *et al.*, 2002). Marshall *et al.* (2001) add that one of the interesting facts about EIA and its follow-up is the ability to be integrated into a few other methodologies and be adapted readily to wide ranging forms of development. Sadler (1996) further notes that EIA follow-up is an important component of the EIA process in that it determines EIA effectiveness. He particularly emphasizes the need to consider EIA follow-up when the impacts are unknown but likely to be significant, when red data book species and endangered species are at risk and finally, when the actual environment is to be harmed.

EIA follow-up ensures that development projects are implemented in accordance with the stipulations of an EMP in order to mitigate or avoid environmental impacts and also an ongoing EIA follow-up process aids in environmental awareness and participation of the general public especially through publicizing of EIA follow-up reports (Morrison-Saunders *et al.*, 2002). Au (2001) adds that there are several reasons why the public needs to be involved and these include the fact that it is the basic right for individuals to be involved through consultation as it is their right to express their views. It also brings together public with different values, social objectives and preferences (Au, 2001).

As is the case with the EIA process, EIA follow-up aids in decision making, especially with regard to unforeseen impacts during the construction and operational

phases of development projects. Arts *et al.* (2000) indicate that one of the important points about EIA follow-up is that it is the missing link between EIA and its implementation. Moreover, EIA follow-up provides information about the results of an activity as they occur, but it also provides the responsible parties with information on the negative effects on the environment and the possible solutions and alternatives which might not have been picked up during the scoping phase (Fig. 1.1), (Arts *et al.*, 2000).

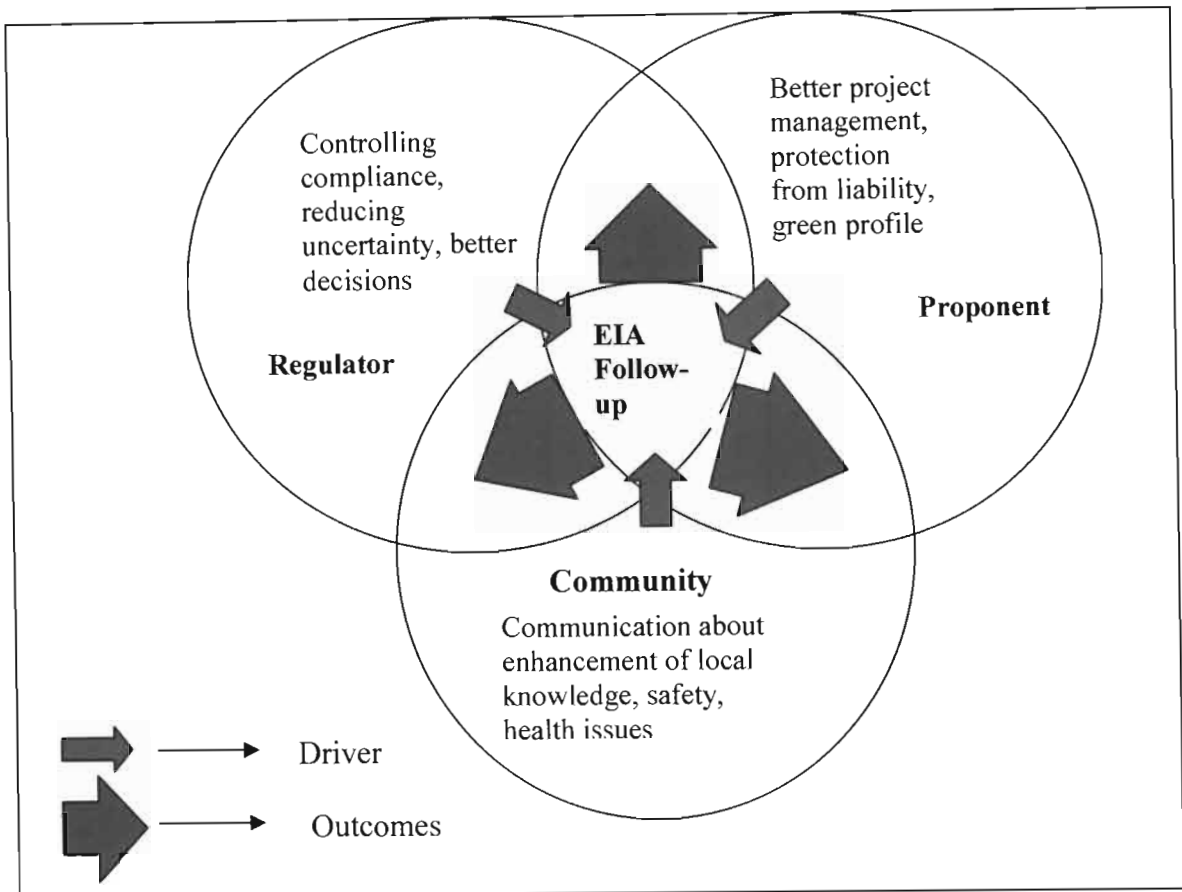


**Figure 2.1:** EIA follow-up as a link between EIA and project implementation (Arts *et al.*, 2000; 3)

Despite the problems that might inhibit EIA follow-up, the benefits and outcomes of it should be enough to ensure its implementation because the negative environmental consequences of a development might be severe.

EIA follow-up can result in outcomes which are relevant to proponents, the community and the government (Fig. 2.2). Morrison-Saunders *et al.* (2002) explain that benefits for proponents range from protection of the environment and establishing good relations with the community, abiding by EMSs, EMPs and better project management. For communities, EIA follow-up can provide improved knowledge about real impacts occurring in their environment, reduced uncertainties about impacts and ensuring that there are adequate management responses to their complaints and concerns. The community also becomes empowered and this satisfies an important sustainability criterion. For responsible authorities, EIA follow-up is relevant by providing a mitigation linkage. Follow-up structures such as monitoring and auditing can provide the progress of EIA performance, regulatory compliance, mitigation performance evaluation, certification of residual effects and linkages into contractual, permitting, licenses and other management systems (Morrison-Saunders *et al.*, 2002).

Despite the importance of EIA follow-up, there are some problems which are associated with the implementation of it. Arts *et al.* (2000) cite a number of these. Lack of an EMS is one, as some of the projects only provide the EIR and not an EMS or EMP. The EMS is considered important as it provides the backbone to the construction, operation, maintenance and management of the initial stages of development projects (Marshall *et al.*, 2001). Other factors that result in poor implementation of EIA follow-up include limited techniques of follow-up, legislative deficiencies, shortages in organizations, resource limitations (money, manpower) and insufficient support for conducting follow-up activities (Arts *et al.*, 2000).



**Figure 2.2:** Outcomes of EIA follow-up for different stakeholders (Morrison-Saunders *et al.*, 2002; 12).

## 2.4 Basic components of EIA follow-up

Morrison-Saunders *et al.* (2002) identify a number of processes or stages that guide EIA follow-up. These include monitoring, auditing and evaluation. Each of these will be discussed, as well as Environmental Management Plans (EMPs) and Environmental Management Systems (EMSs).

### 2.4.1 Monitoring

“This is a term that is used to cover the planned, systematic, measuring and recording of data relating to physical, social and economic variables associated with development impacts” ([www.art.man.ac.uk](http://www.art.man.ac.uk)). Morrison-Saunders *et al.* (2002) add that monitoring usually incorporates a program of repetitive observation, measurement and recording of environmental variables and operational parameters over a period of time. Glasson *et al.* (1999) point out that monitoring can be used as an early warning

system to identify harmful trends at a locality before it is too late to take remedial or mitigation measures. It can help to recognize and correct anticipated adverse impacts and also provide an acceptable database which can be useful in mediation between Interested and Affected Parties (I&APs). It is also essential for successful environmental impact auditing and can be one of the most effective guarantees of commitment to mitigation measures (Glasson *et al.*, 1999).

Glasson *et al.* (1999) state that since monitoring implies the repetitive collection of a potentially large quantity of information over a period of time, it should not only include traditional indicators (for example ambient air quality, and noise levels) but also causal underlying factors like the decisions and policies of the local authority and developer. The causal factors determine the impacts and may have to be changed if there is a wish to modify impacts (Glasson *et al.*, 1999).

The distribution of impacts will vary between groups and location. Certain groups may be more vulnerable than others, as a result of factors such as age, race, gender and income. The information collected needs to be stored, analysed and communicated to relevant participants in the EIA process. A primary requirement therefore is to focus monitoring activity on the environmental components expected to be affected significantly as well as those that were not fully assessed (Glasson *et al.*, 1999). An example of a monitoring program for California given by Glasson *et al.* (1999) would include: a summary of the significant impacts identified in the Environmental Impact Report (EIR), the mitigation measures recommended for each significant impact, the monitoring requirements for each mitigation measure, the timing and/or frequency of the monitoring, the agency responsible for ensuring compliance with the monitoring program and their requirements for reporting.

It is therefore apparent that monitoring is a very useful activity in EIA follow-up as it can even affect some of the other EIA follow-up components like auditing. In most countries, EIA follow-up is voluntary rather than mandatory, hence monitoring is not a mandatory requirement (Glasson, 1999). Neither the United Kingdom nor the European Union regulations specifically require monitoring. In the Netherlands, the competent authority is required to monitor project implementation, based on the information provided by the developer and to make the monitoring information

available for public inspection. If actual impacts exceed those predicted, the relevant authority must take measures to reduce or mitigate these impacts (Glasson, 1999).

In some countries such as New Zealand, parts of Australia, Canada and the United States of America, legislation gives provision for monitoring. For example, in California, since January 1989, the California Environmental Quality Act (CEQA), stipulates that, state and local agencies in California have to implement a monitoring and/or reporting programme that addresses the mitigation measures imposed as conditions of the project and any project changes that have been introduced (Glasson *et al.*, 1999). However, practice generally lags theory (Glasson, 1999).

Au (1995) identifies a number of different types of monitoring activities such as:

- **Baseline monitoring:** This refers to the measurement of environmental parameters during the planning and pre-implementation stages of a project for the purpose of determining the nature and ranges of natural variation and to establish, where appropriate, the nature of change.
- **Effects Monitoring:** This involves the measurement of environmental parameters during project construction and implementation so as to detect changes in these parameters which can be attributed to the project. It also allows for early detection of adverse impacts so that mitigation measures can be put in place.
- **Compliance Monitoring:** This type takes the form of periodic sampling and/or continuous measurement of environmental parameters. To ensure that regulatory requirements are observed and standards met. Monitoring to ensure compliance with an EMP or EMS would fall under this category.

#### 2.4.2 Auditing

This refers to the comparison of observations with pre-defined criteria, which might be contained in an EMP or an EMS, such as standards, predictions, expectations and reporting the results (Morrison-Saunders *et al.*, 2002). Audits are single or periodic events unlike monitoring which is continuous, and are carried out in order to facilitate management control and to assess compliance (Morrison-Saunders *et al.*, 2002). Au (1995) notes some objectives of environmental auditing as follows:



- There should be organization and interpretation of the environmental monitoring data in order to establish a record of change associated with the implementation or the operation of a project;
- It is a process of verification that ensures that all or selected parameters measured by an environmental monitoring programme have adhered to regulatory requirements, internal policies and standards and established environmental quality performance limits;
- It assesses the accuracy of predictions through the comparison of project impact predictions with actual impacts;
- It aids in the determination of the degree and scope of any necessary mitigation measures in case of non-compliance or in the situation where the organization's environmental objectives are not achieved.

The first mentioned objective clearly indicates the importance of monitoring data to environmental auditing. However, several studies highlight the lack of monitoring data as a major problem when attempting to carry out an environmental audit. Therefore, it is important that monitoring data are available for environmental auditing to be carried out. Au (1995) identifies two types of environmental auditing, *viz.* compliance auditing and post-project auditing. A compliance audit is prepared during the implementation and operation of a project, while a post-project audit is prepared after the implementation and commissioning of a project. Thus auditing can take place as soon as the first monitoring is carried out in order to compare data with standards or predictions.

The requirement for follow-up monitoring varies greatly between countries, although mandatory requirements appear to be the exception rather than the rule. One example of a country that requires project implementation monitoring is the Netherlands ([www.art.man.ac.uk](http://www.art.man.ac.uk)). Unless problems arise after implementation of the project and impact predictions turn out to be inaccurate due to lack of mandatory post-auditing together with a lack of enforcement, auditing tends to matter to the developer. Moreover, if impact monitoring data are available for post-auditing, they may not always be appropriate and there is also the danger that monitoring data may be biased towards a developer's own interests. Even if a monitoring program exists, the

variables that are monitored may not match or correspond to the variables used in the prediction, making it difficult to carry out a post-audit ([www.art.man.ac.uk](http://www.art.man.ac.uk)). Therefore, to avoid the difficulties indicated, monitoring programmes need to be planned and active during project design, construction and operational phases of development projects ([www.art.man.ac.uk](http://www.art.man.ac.uk)).

### **2.4.3 Evaluation**

Arts *et al.* (2000; 16) explain evaluation as a “term used in planning and policy for the generic process of gathering, structuring, analysing and appraising information”. It often relates to subjective policy oriented judgments rather than purely scientific and technical analysis. Ex-ante evaluation is forward looking and predictive in nature. It focuses on the preparation phase of the planning cycle, which includes the analysis of the problem, the formulation of project goals and the development and pre-selection of alternative proposals (Arts *et al.*, 2000). Ex-post evaluation has a backward looking nature; it reviews current or past activities and situations that followed a particular decision. It concerns the appraisal of a policy, plan or project, which has been or is currently being implemented (Arts *et al.*, 2000). It is therefore clear that evaluation starts early during the project EIA through ex-ante evaluation. Through the information that is gathered through environmental monitoring and comparing the gathered information with standards or predictions through environmental auditing, environmental evaluation is possible.

Hounsme (2002) has noted some of the characteristics of environmental evaluation. It is comprehensive as it encourages the review of a full range of environmental impacts; it considers specific actions and specific environmental elements, it separates the project actions from other forces, it is accurate and repeatable and free from analyst bias, and finally it should be able to identify impacts from a variety of projects in different environments.

### **2.4.4 Environmental Management Systems (EMS)**

An EMS is a system that operationalizes the implementation of all the measures developed in the pre-decision stage, while at the same time integrating a follow-up

system that will ensure compliance with these measures (Arts *et al.*, 2002). The EMS describes the actions that will be taken by the operator, including monitoring of impacts, during the subsequent operational phase of the project up to and including decommissioning. The EMP on the other hand describes all the relevant actions that will be taken by the developer, including monitoring of impacts and establishing capacity for on-going management, during the implementation or construction stage of a project up to and including post-commissioning of the project (George, 2000).

George (2000) has noted that many of the most serious environmental impacts that have resulted from development projects have arisen not because of poor implementation, but because of poor management during operation. Moreover, the impacts during construction and after commissioning may have been similar to what was predicted, whereas many years later, problems could arise, because the operation was badly managed. An EMS tries to avoid this because it consists of a written description of an operator's normal management procedures so that significant adverse environmental impacts can be prevented. Its benefit is that, in writing the procedures down, the developer or operator is forced to think about whether or not the normal management procedures really do achieve that aim and then to amend them if necessary (George, 2000). Marshall *et al.* (2001) add that the audit function possessed by the EMS is utilised as a controlling check on compliance and execution.

To be effective, an EMS needs to be monitored in the first place by the operator. This can be done through regular audits of implementation of the relevant procedures and of their effectiveness in avoiding significant adverse impacts. The relevant environmental authorities can also undertake the audits (George, 2000).

#### **2.4.5 Environmental Management Plan (EMP)**

Hill (2000) explains that the findings of an EIA are typically implemented through an EMP. He further indicates that the objectives of an EMP are to ensure that whatever is stipulated by the decision-making authority is implemented. Secondly, the EMP has to make sure that the resources allocated for the EIA follow-up are not over or under allocated. Thirdly, it has to attend to unforeseen changes in the project

implementation and finally, to learn from experience to ensure that the lessons learnt are not repeated.

Marshall (2001) states that EMPs act as a link between the EIA and stipulated conditions. Therefore EMPs outline the mitigation, monitoring and institutional measures which should be included during project implementation and operation to avoid or control negative environmental impacts (World Bank Operational Manual, 1999). It is therefore evident that an EMP forms the basis of EIA follow-up. However, the absence of an EMP or a poor EMP should not stop EIA follow-up from being carried out because the individual components of the EIA follow-up can be carried out without being stipulated in an EMP.

Horberry (2003) suggests some factors that could make an EMP a success:

- An EMP must be realistic and there should be a requirement for quantitative indicators of the level of environmental management;
- Realistic institutional responsibilities for implementation, taking account of the local conditions and the public, should be specified;
- An EMP should have the ability to utilize monitoring results in order to assess the project;
- It must be flexible in order to create effective accountability for implementation and to monitor its success, taking account of the various roles of the funding agency and host country and thus creating responsible engineers.

## **2.5 EIA follow-up process**

Apart from the different components of EIA follow-up described above, Arts (1999) highlights six steps that are needed in EIA follow-up:

1. Screening to determine the need for EIA follow-up;
2. Defining the scope of EIA follow-up;
3. Making the evaluation issues operational;
4. Data collection, measuring, observation (actual monitoring);
5. Assessment of research results (actual evaluation);

6. Decision-making about remedial measures and reporting of the evaluation results.

### 2.5.1 Screening

Two extremes of EIA follow-up are distinguished by Arts *et al.* (2000) viz. those projects for which follow-up is never required and those for which follow-up is always required. According to Arts *et al.* (2002) in many countries EIA follow-up is never carried out in practice and/or is not required by EIA regulations. However, they question this standpoint arguing that although there might be good reasons for not carrying out EIA follow-up for certain types of projects, it is unlikely that this could ever hold for all types of EIA projects. Such radical screening should be made in a more explicit way and based on clear argumentation Arts *et al.*, 2002).

Alternatively, there is the other extreme where EIA follow-up is always required. In the Netherlands, current EIA regulations follow the uncompromising standpoint that if EIA is required for a particular project then follow-up is assumed to be automatic based on the view that it is always useful to evaluate the actual environmental consequences of an activity and decision (Arts *et al.*, 1999).

Arts *et al.* (1999) describe screening thresholds, which may be used to indicate the need for post-EIA monitoring and evaluation for a particular project. These are as follows:

- The threshold for uncertainty and/or how complex is the EIS;
- The point of uncertainty and/or not being familiar with the effectiveness of mitigation or compensation measures;
- The complexity and magnitude of a proposed activity and the involvement of new or unproven technologies;
- The establishment of whether the area where the activity is proposed is sensitive or not;
- If the risk of the activity or measures are not currently implemented;
- If the proposed activity has a political and/or social impact on the area;

- Intervening developments, such as significant changes in a project in subsequent planning and decision-making and new insights or views on environmental impacts. (Arts *et al.*, 1999).

### 2.5.2 Scoping

The importance of scoping in the EIA process cannot be over emphasised. Glasson *et al.* (1999) indicate that scoping in an EIA seeks to identify at an early stage, based on all potential impacts and all alternatives, the significant issues. Similarly, scoping of the follow-up components of a specific EIA activity is critical for determining the objectives, functions and the relevant issues to be evaluated in the EIA follow-up process (Arts *et al.*, 2000). There are two extremes in scoping viz., comprehensive EIA follow-up and issue oriented EIA follow-up (Arts *et al.*, 2000). The former includes overall monitoring and evaluation of the project, whereas the latter includes monitoring and evaluation of a few issues relevant to the project.

There are a number of ways of determining the scope of an EIA follow-up and these include (Arts *et al.*, 2000):

- Determination of the objectives and functions that the EIA follow-up has to serve, for example communication with the public;
- Selection of relevant issues;
- Determination of the required level of detail of information;
- Determination of the methods and techniques available for monitoring and registration;
- Feasibility of EIA follow-up, including: methodological, information, organizational and financial aspects.

### 2.5.3 Evaluation issues

There must be consideration of issues especially how they are going to be measured as this is the following step in the framework of EIA evaluation (Arts, 1999). This step ensures that the objectives of the EMP are met and it is important to note that more elaborate and accurate measurements of an evaluation issue are needed than when evaluating an issue in order to communicate it to the general public (Arts, 1999).

#### **2.5.4 Monitoring and evaluation**

There should be an exploration of linking data collection, analysis of results, and undertaking of remedial actions with the other evaluative activities. The context in which evaluation and monitoring is done is also important because the expected environmental impacts described in the EIS must be taken into account (Arts, 1999). Therefore it is useful to set up a project team that will have the responsibilities shared amongst the team so as to handle and record data carefully.

The timing of EIA evaluation and monitoring is important as it is the dominant factor in determining the nature, position and function of the evaluation in an infrastructure project (Arts 1999). There are two EIA evaluation modes identified by Arts (1999) and these are EIA evaluation of the pre-construction stages and EIA evaluation of the post-construction phase. The pre-construction phase refers to the stage where EIS is finished but the actual implementation of the project has not commenced. This provides a link between the planning stage and the project development stage. This stage mainly deals with providing information and controlling the planning process (Arts, 1999). The post-construction stage provides information about the actual environmental impacts occurring in the successive stages of construction, operation and management (Arts, 1999). This stage is similar to EIA evaluation and monitoring at the operational level (Arts, 1999).

#### **2.5.5 Decision-making**

EIA and EIA follow-up are utilised in decision-making due to the importance of the irreversible impacts on the environment. Arts (1999) indicates that EIA undertaken for planning and decision-making will always have an open end if there is no follow-up to it. Moreover, EIA follow-up may provide a purpose for constant improvement of both the quality of predictions and the process of EIA itself (Arts, 1999).

### **2.6 Models of EIA follow-up**

Four models of EIA follow-up were proposed by Hulett and Diab (2002) based on interviews that were conducted, an assessment of current practices in South Africa and the prevailing views of EIA follow-up internationally. The four models are: legal

based approach, partnership approach, self-regulatory approach and incentive and disincentive approach (Hulett and Diab, 2002).

### **2.6.1 Legal-based approach**

This is an approach whereby EIA follow-up is required by law, and penalties are given for not complying. However, there are major limitations that inhibit the implementation of EIA follow-up and these include the fact that it is not legalised in some countries and therefore voluntary instead of being mandatory. In countries like South Africa, the EIA follow-up process is not legalised but the EIA regulations give allowance for EIA follow-up (Hulett and Diab, 2002). It can therefore be stated that lack of legislated EIA follow-up, especially specific steps intended to undertake EIA follow-up is a major cause of environmental degradation because negative impacts on the environment are not remedied or mitigated.

California is an example of a state where EIA follow-up is mandatory. The California Environmental Quality Act (CEQA) requires that any development has to have a monitoring and/or reporting programme in order to ensure the implementation of mitigation measures and to document any project changes that have occurred during the development (Glasson, 1999).

### **2.6.2 Partnership Approach**

Public participation is an essential component of the EIA process because it leads to improved decision-making whereby I&APs, technical specialists, the authorities and the project proponent work together to produce a better decision than if they had worked independently (Hounscome, 2003). In South Africa, public participation has objectives, which include:

- Presentation of views, concerns and issues
- Attaching local knowledge
- Increasing public confidence
- Better transparency in decision making
- Informing stakeholders

(Hounscome, 2003)



Scott (1999) highlights the importance of local knowledge that is based on experience. The importance of public participation in EIA follow-up has been emphasised by Hulett and Diab (2002) who have proposed a partnership approach for EIA follow-up. Some partnerships are formal and must be set up by the regulatory authority, whilst others are voluntary and emerge due to social movements and/or public pressure. Hulett and Diab (2002) noted that if partnerships between relevant authorities and society already existed when an EIA was carried out, then there is a possibility that it could continue into the EIA follow-up stage.

Hulett and Diab (2002) gave an example of a partnership approach to EIA follow-up, which arose as a result of the Sappi Saiccor incident, involving discoloration of seawater by its waste. Effluent produced from the factory which is situated on the Umkomaas River south of Durban is released at the rate of 4 200 m<sup>3</sup>/hr (Scott, 1999). Local divers and anglers complained that their activities were affected by this effluent (Scott, 1999).

It was therefore decided to form a partnership between the local community and Sappi Saiccor to overcome the problem. The forum was called the Permit Advisory Panel (PAP) and it was aimed at monitoring the effluent, which is discharged into the sea (Scott, 1999). PAP was a means of empowering people to contribute to environmental matters in order to promote sustainability and also Sappi Saiccor used the local knowledge of the community to actually overcome the problem.

### **2.6.3 Self-regulatory approach**

This is an approach whereby the proponent carries out EIA follow-up without being obliged to do so by law. EIA follow-up is undertaken on a voluntary basis to avoid any negative impacts which might result if follow-up was not carried out. This type of an approach can be achieved through incorporation into an EMS (Hulett and Diab, 2002). In most cases companies carry out the EIA follow-up for the sake of the environment, but also to avoid the financial strains that may result if EIA follow-up is not carried out resulting in the need for remedial actions.

This approach is best suited to countries where there is no legal enforcement to undertake EIA follow-up. It is also applicable to countries where the general public is unaware of their environment. Hulett and Diab (2002) further indicate that the approach is best suited to companies that have shown a continued commitment to environmental management through the introduction of a voluntary EMS. However, the approach does not satisfy all the criteria of sustainable development because, the involvement of the public is dependent on the willingness of the company or organisation apart from the fact that EIA follow-up is undertaken on voluntary basis.

#### **2.6.4 Incentive or disincentive approach**

This approach ensures that the detrimental impacts are kept to a minimum through many different methods which are not specified by the law. EIA follow-up is therefore also carried out on voluntary basis but more forcibly because penalties may be incurred if the procedure is not followed. Hulett and Diab (2002) describe some mechanisms that have been put in place in order to ensure environmental compliance. These are:

- Penalties or bonuses are given to the developer;
- To enforce compliance to EMP, a large sum of money is retained or deposited. This implies that if there is no compliance, the money is forfeited;
- “A contractual agreement, which establishes binding responsibilities for follow-up. Such an approach is favoured by the Cape Metropolitan Council in South Africa, which has proposed a generic EMP, to be used primarily for construction activities in urban areas, and which is intended to be included in the contract document of all environmentally sensitive construction activities” (Hulett and Diab, 2002; 306).

#### **2.6.5 Summary**

Each of the models of EIA follow-up can be assessed in terms of their contribution to environmental sustainability. The legally binding approach would achieve some elements of sustainability because it would ensure that each project has a mandatory EIA follow-up procedure. Failure to abide by the law would result in a penalty or prison sentence. However, this approach does not necessarily require involvement of

I&APs in the follow-up and therefore falls short in terms of the public participation requirement of environmental sustainability (Hulett and Diab, 2002). The partnership approach was judged by Hulett and Diab (2002) to fulfil most of the sustainability criteria. This is because it considers the economic, biophysical and social components of the environment. The public is taken into account through public participation and hence forums between the proponent, the authority, the company and the public are formed (Hulett and Diab, 2002). The self-regulatory approach is dependant mainly on the ability of the developers to recognise the importance of environmental management and therefore undertake EIA follow-up without any enforcement. However, it may not involve I&APs with the extent of public participation being dependant on the developer. Thus this model does not fully satisfy environmental sustainability criteria.

The incentive or disincentive approach was shown by Hulett and Diab (2002) to be mainly applied to the construction phase of projects. It was not recommended as a general model for all projects as it does not give provision for public participation or the consideration of equity or social justice issues.

## **2.7 EIA follow-up and sustainability**

Sustainable development is described as “development that meets the needs of the present without compromising the ability of the future generations to meet their own needs” (Oelofse, 2001; 4). Sustainable development is a concept that assists in re-thinking how development should be carried out and it also helps to ensure that certain issues are taken into account in planning and development. However, Oelofse (2001) indicates that the focus today has shifted toward sustainability, which is a pathway or direction for planning and development. O’Riordan *et al.* (2000) add that sustainable development has passed its ‘shelf-life’ because sustainability becomes less of an objective and more of a pathway, or a transition, to a state of harmony between nature and humanity.

It is important to note that sustainability does not begin or end at the same points for every nation. Differences arise due to lack of legislation and financial constraints and there are many pathways that can be followed. According to O’Riordan *et al.* (2000)

so long as the basic principles of self-generation, precaution, empowerment and revelation are followed the pathway does not matter.

Mikesell (1994) highlights some conditions that must be realized in assessing sustainability of projects:

- Compensations to the future generations for the loss of natural resources must be included in the social cost of the project and also the renewable resources must be restored;
- If the non-renewable resources are depleted, compensations must be included in the social cost of the project;
- “The compensation included in the social cost of the project may take the form of either contribution to the quantity and/or quality of natural resource assets equivalent to what has been depleted or damaged by the project, or the accumulation of a fund sufficient to offset the loss of income to future generations resulting from the depletion of natural resource capital associated with the project” (Mikesell 1994; 21).

EIA follow-up is one process that aims to achieve social, ecological and economic equity in an environment once its implementation is successful. Moreover, it assists in overcoming or avoiding unnecessary costs encountered through the physical impact assessment, ecological impact assessment and social impact assessment. As a result, it is important to carry out EIA follow-up on a mandatory basis so as to attain sustainability/sustainable development, otherwise, as Oelofse (2001; 8) notes, “if we do not know what the impacts of our actions will be, then we should rather not carry out that kind of activity or we should at least proceed with great caution”.

## **CHAPTER THREE**

### **DATA AND METHODOLOGY**

#### **3.1 Introduction**

Both primary and secondary data were used in this research. Primary data on environmental consultants' understanding of EIA follow-up were collected through questionnaires. In addition, Environmental Impact Assessment Reports (EIRs) and audit reports for development projects were assessed to determine the allowance given to EIA follow-up, and where relevant, the achievements of such follow-up. The relevant environmental policies in Lesotho were also examined to assess provisions made for EIA follow-up.

#### **3.2 Environmental consultants' understanding of EIA follow-up**

Questionnaires and in-depth interviews were used to investigate the understanding that environmental consultants in Lesotho have of EIA follow-up.

##### **3.2.1 Sampling protocol**

A list of environmental consultants who work in Lesotho was obtained from the National Environment Secretariat (NES). Initially, it was desired to administer the questionnaires personally to all the consultants. However, this proved to be difficult and only 69% of the consultants were readily accessible (Appendix A). The remaining questionnaires were distributed by fax or e-mail. The snowballing technique was used to increase the sample size, with consultants assisting in recruiting other consultants who were not included on the list obtained from NES. Of the 13 questionnaires administered, 9 were returned, giving a return rate of 69 %.

##### **3.2.2 Questionnaire design**

The questionnaire was semi-structured and consisted mainly of open-ended questions, with a few closed-ended questions. Open-ended questions are good for soliciting subjective data or when the range of responses is not tightly defined, and also the

variety of responses are wider and more truly reflect the opinions of the respondents ([www.cc.gatech.edu](http://www.cc.gatech.edu)).

The Hulett and Diab (2000) questionnaire was used as the basis for the questionnaire in this study. The questionnaire is presented in Appendix B with the questions related to the following topics:

- Understanding of EIA follow-up
- Responsibility for EIA follow-up
- Applicability of EIA follow-up to Lesotho
- Major constraints of EIA follow-up in Lesotho
- Finances of EIA follow-up
- Participants in EIA follow-up
- Commencement of the EIA follow-up process

A pilot survey was carried out in April 2003 to establish if the questionnaire would gather the information required. According to Kitchin *et al.* (2000) a questionnaire should be piloted in order to determine whether the questions work well and produce the data required. No problems were encountered and the final questionnaire survey took place in June 2003.

### **3.2.3 In depth interviews**

An interview was carried out with Mrs. Refiloe Sethathi, the EIA officer at NES. There was no list of questions or topics prepared before the meeting. She was interviewed to provide background information on the status of environmental legislation in Lesotho and also to provide information on the implementation of EIA follow-up for some projects.

### **3.3 Assessment of EMPs, EIRs and audit reports**

The EIRs, EMPs and audit reports were obtained from the NES library. The target was mainly development projects, which had been already implemented and therefore

nine development projects were selected. Four criteria were used to assess the allowance given to EIA follow-up:

1. The impacts that were predicted and mitigation measures proposed;
2. The provision made for EIA follow-up before the implementation of the project;
3. The impacts that were experienced and the mitigation measures that were put in place;
4. The EIA follow-up process that was undertaken and the people responsible for it.

### **3.4 Assessment of environmental policy in Lesotho**

The Environment Act, 2001 was examined to assess the allowance given to EIA follow-up. This is the Act that provides for the management of the environment and all natural resources in Lesotho.

### **3.5 Limitations of the study**

The study was limited by the low number of environmental consultants who had worked in Lesotho and who were available to be interviewed.

## **CHAPTER FOUR**

### **RESULTS AND ANALYSIS**

#### **4.1 Introduction**

The chapter deals with the analysis and interpretation of the data that was collected on nine case studies through EMPs, EIA reports and audit reports. It also includes an analysis of the questionnaires administered to environmental consultants in Lesotho. The layout of the chapter is such that the first part of the analysis is an assessment of the Environment Act, 2001 of Lesotho in order to determine the status of EIA follow-up in legislation. This is followed by an analysis of the case studies and then an analysis and interpretation of the results of the questionnaires.

#### **4.2 Environmental legislation**

##### **4.2.1 Background**

Lesotho has come a long way in establishing environmental legislation. Majoro and Matlosa (1999) identify four phases of environmental change in Lesotho:

1. Phase one was guided by the principle that the land belonged to the “Basotho” with no written laws which governed the use of the land. The land was communally owned (“mobu ke oa sechaba”). Every “Mosotho” had a right to land, water, woodlands and wildlife with regulation done by chiefs through the councilors (Partow and Motsamai, 1999);
2. Foreign settlers initiated the second phase. Laws relating to land management were passed without public involvement and were imposed in a written form on illiterate people. This altered the relationship between the “Basotho” and their environment (Majoro and Matlosa, 1999);
3. The third phase commenced with the independence of Lesotho in 1966, when there was the establishment of programs to improve arable agriculture and establishment of the Lesotho National Development Corporation (LNDC) which was to initiate, promote and facilitate industrial development (Majoro and Matlosa, 1999);



4. In 1987, a fourth phase was recognized which coincided with the publication of the Brundtland Report, “Our Common Future” (Majoro and Matlosa 1999). The main aim was to consider environmental issues in order to ensure sustainable development. This resulted in the formulation of the National Environmental Action Plan (NEAP) in Lesotho (Majoro and Matlosa, 1999).

The legal reformation process started with the adoption of the National Environmental Action Plan (NEAP) in 1989 (Partow and Motsamai, 1999). In order to include a clause which states that the environment should be enhanced and protected as one of the principles of the state policy, the constitution was amended in 1993. Thereafter, the Lesotho Ombudsman Act 1996 was passed, which provides for punishment on activities that may endanger the natural environment or ecosystems (Partow and Motsamai, 1999). In 1998, the Environment law was to have been enacted, but this was not accomplished and since it was only passed in 2001, it was called the Environment Act, 2001. It was established to erase the traditional notion of protection of environment where the people were neglected and aimed to establish sustainable management of Lesotho’s environment and natural resources (Partow and Motsamai, 1999).

#### **4.2.2 Environmental Act, 2001 and EIA follow-up**

The Environment Act, 2001 contains many principles relevant to EIA follow-up. Section 3 (2a) Part II states that every person living in Lesotho has a right to a clean and healthy environment. Implicit in this statement is an understanding that processes such as EIA follow-up are necessary because if they are not carried out, environmental degradation may result and the goal of a clean and healthy environment may not be reached. Section 4 (1b), Part II of the Act indicates specifically that every “Mosotho” has a duty to safeguard and enhance the environment and that includes a duty to report to the authority any activities that might negatively affect the environment in a significant manner.

Part V of the Act specifically gives provision for EIA follow-up. In section 31 and section 32 of Part V, it is clearly stated that environmental monitoring and environmental auditing should be carried out in order to mitigate the negative impacts.

There should be an environmental inspector who will be a qualified public officer, with a designated responsibility for monitoring and auditing. However, in the Lesotho EIA guidelines (1997), it was stated that given the limited resources of the Lesotho Environmental Authority (LEA) and the line ministry, it would be desirable for as much monitoring as possible to be done by the developer or licensee. They are required to submit self-monitoring reports to the government. The process of auditing should be conducted by independent external auditors, although it was recognized that it could be carried out by the developer (Lesotho EIA guidelines, 1997).

Environmental auditing is defined in the Act as a “systematic, documented, periodic and objective evaluation of how well environmental organizations, management and equipment are performing in conserving the environment and its resources” (Environment Act, 2001; 1036). Environmental monitoring on the other hand is defined as “continuous determination of actual and potential effects of any project, activity or phenomenon on the environment whether short-term or long term” (Environment Act, 2001; 1036). Both the definitions of environmental auditing and environmental monitoring refer to processes that take place after the decision stage. Monitoring refers to the collection of data, continuously and systematically, with a view to providing information for the EIA follow-up process, while auditing compares the data that was collected during monitoring with the conditions that were stipulated in the EIS or EMP.

It is stated in the Lesotho EIA guidelines (1997) that environmental audits, including inspections, record keeping and monitoring will be required for activities as determined by mitigation plans or otherwise. The Environment Act, 2001 makes provision for enforcement because it is stated that any person who:

“Fails to keep records of the activities, products, by-products and wastes required to be kept by the Act; commits an offence is liable on conviction of to a fine not less than M5 000 but not exceeding M100 000 or to imprisonment for a term not less than 2 years but not exceeding 10 years or to both” (Environment Act, 2001; 1117).

Although the Environment Act, 2001 contains many principles that are supportive of EIA follow-up, the act has not yet been implemented (pers comm. R. Sethathi, 2003). The EIA process and by implication EIA follow-up is carried out on a voluntary basis.

The main reason for the ineffective Environment Act, 2001 is that the Government of Lesotho has not yet created an environmental ministry headed by a minister who will be responsible for the implementation of the Act, and the establishment of LEA. The LEA will be responsible for the approvals and refusals of EIAs. The proposed LEA is to be NES

In view of the above, currently the only enforcement for carrying out an EIA process is the need for a development license. It is stated in the Lesotho EIA guidelines (1997) that an EIA license is only issued when an EIS is deemed adequate in terms of facilitating sustainable development and environmental management. This may need adherence to the appropriate EMP developed during the EIA process, a well developed mitigation plan, self monitoring, record keeping and reporting requirements, requirements for submission of an updated EIS where there are changed or unforeseen circumstances and various other provisions related to inspections, monitoring and auditing (Lesotho EIA guidelines, 1997). Even though this is the case, many developments were implemented without any EIA process being undertaken, making it difficult for the undertaking of EIA follow-up.

#### **4.3 Analysis of case studies**

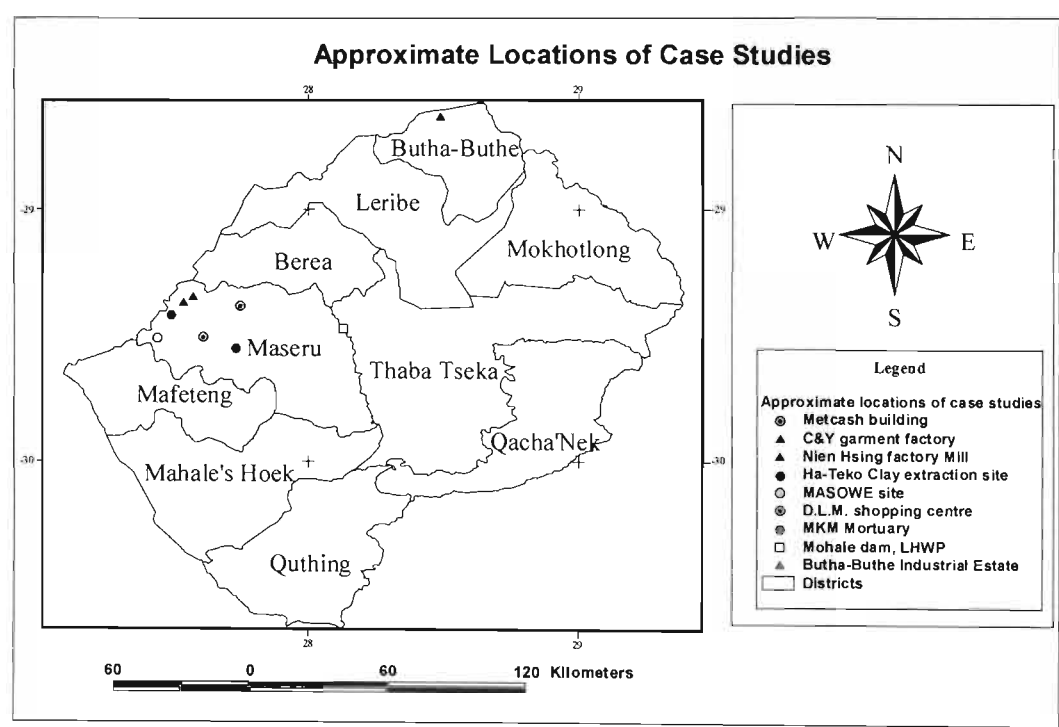
In the light of the failure to implement the Environment Act, 2001 (see above), it is not surprising that many developments are implemented without any EIA process. However, there are a few where an EIA is undertaken, on a voluntary basis. Nine case studies were selected in order to assess the nature of EIA follow-up considerations that were included. Four assessment criteria were utilized:

1. The impacts that were predicted and mitigation measures proposed;
2. The provision made for EIA follow-up before the implementation of the project;
3. The impacts that were experienced and the mitigation measures that were put in place;
4. The EIA follow-up process that was undertaken and the people responsible for it.

### 4.3.1 Phase 1B of the Lesotho Highlands Water Project (LHWP)

#### 4.3.1.1 Background

Phase 1B of the Lesotho Highlands Water Project (LHWP) focuses mainly on the development of the water resources of the upper Senqunyane River catchment and the upper Matsoku River. The construction of Phase 1B started in 1986 and was completed in 1997. It consists of the Mohale dam on the Senqunyane River, a diversion weir on the Matsoku River and transfer tunnels that deliver water to the Katse reservoir. It is located in the districts of Maseru and Thaba-Tseka (Fig. 4.1).



**Figure 4.1:** Approximate locations of case studies

#### 4.3.1.2 Predicted impacts of the project

Many impacts were predicted during Phase 1B of the LHWP and are documented in the EIA report (LHDA, 1997) and summarized in Table 4.1. Due to the significant problems that were encountered with the earlier construction of the Katse dam,

lessons were learned and the developers wanted to ensure that the same mistakes were not repeated.

**Table 4.1:** Predicted impacts and the proposed mitigation measures for Phase 1B of the LHWP

Construction phase	Operation phase	Predicted impacts	Proposed mitigation measures
✓	✓	Reduction in water flow of Senqunyane River downstream of the dam	Compensation flows
✓		Contamination of water of Matsoku and Senqunyane Rivers	Contractual requirements for containment of toxic substances and strict control of run-off
	✓	Deterioration of water quality downstream of Mohale Dam	Operational procedures to ensure anoxic substances not released downstream
✓	✓	Aquatic habitats destroyed upstream and greatly modified downstream	Man made lake/aquatic habitat replaces natural fast flowing sub-alpine river habitat
✓	✓	Rare and endangered aquatic species, particularly the Maloti Minnow, greatly threatened	Comprehensive Maloti Minnow conservation programmes to identify possible other habitats, to breed in captivity and to re-introduce to suitable habitats; construction of barriers to prevent trout invasion of remaining habitats
✓		Increase in soil erosion at construction sites throughout the catchment	Contractual obligations require that work site areas be managed in a way to prevent erosion; rangeland management associations to be established, public awareness campaigns and controls on cattle brought into area
✓	✓	Reduced rangeland and livestock production	Formation of rangeland management associations leading to effective rangeland management

Construction phase	Operation phase	Predicted impacts	Proposed mitigation measures
√	√	Reduced cropland and crop production	Improved crop production methods on remaining cropland
√	√	Loss of access to land	Construction of rural access roads, bridges and ferry facilities
√	√	Rare and endangered terrestrial species reduced through collection and sale	Public awareness campaign and propagation programme for the Spiral Aloe
√		Loss of houses	Construction of new houses built through resettlement programme
√		Loss of agriculture-based livelihood	Through the resettlement programme, those who lose agricultural land can opt for compensation packages, one of which includes resettlement to other agricultural lands; alternatively other income generating opportunities offered
√		Loss of biomass fuel	Establishment of vegetation through woodlot programme; introduction of paraffin stoves
√		Erosion of cultural identity	No mitigation but project will avoid giving handouts whereby people lose their independence
√	√	Diminished traditional activities	Re-establishment of plants lost through inundation or downstream flow changes
√		Increase in Sexually Transmitted Diseases (STD) incidence	Public awareness, free condoms and improved public health services will be provided
√	√	Occurrence of other health problems	Improved public health services including health clinics and public awareness
√		Destruction of archeological sites	Recording of sites

Adapted from: LHDA (1997)

#### 4.3.1.3 Provision for EIA follow-up

A monitoring programme was recommended to ensure that appropriate action would be undertaken in order to alleviate any additional impacts not identified in the EIA, secondly, to ensure that the mitigation measures identified during the EIA process

were implemented and appropriate for correcting the impacts experienced, and finally to report back to the management (LHDA, 1997).

Each of the Phase 1B components had their individual monitoring programme, but all the environmental monitoring was coordinated through the Highlands Services Group (HSG) of LHDA. Each of the sectoral programmes had designated monitors in order to meet the environmental protection requirements associated with various engineering activities carried out in the field by the resident engineers and their staff. A number of field monitors were also required (LHDA, 1997).

#### **4.3.1.4 Analysis of EIA follow-up**

EIA follow-up that is undertaken by the LHDA is done annually together with the World Bank and presented in an annual audit report (for example, LHDA, 2002). The monitors were properly trained in monitoring techniques, and mechanisms which would provide feedback to the management were established. Apart from the annual EIA follow-ups, there are monthly follow-ups that are done by the LHDA (LHDA, 2002). The mitigation measures listed in Table 4.1 were implemented by HSG. According to the audit report (LHDA, 2002), it was established that overall, LHDA was behind schedule in achieving the aims, for example, there was a delay in resettlement and compensations. The audit report (LHDA, 2002) states that Field Operation Teams (FOTs) were established to handle matters concerning compensations. It was hoped that through the FOTs, the compensations and resettlement would be completed on time, however, this was not the case. Furthermore, there were delays in the construction of access roads and schools (LHDA, 2002). In summary, the main concern in the audit report (LHDA, 2002) was that everything promised in the EIR was achieved, but there was a delay in the actual implementation.

### **4.3.2 Metcash building**

#### **4.3.2.1 Background**

The building is located in central Maseru (Fig. 4.1) and is intended to restore and improve commercial activity within the city and to enhance the city's aesthetic

beauty. It is phase 1 of a large, modern shopping complex, combining mall and high street shopping concepts, with the aim of creating a covered arena for shopping that is accessible to the disabled. It was built in 2002 (Tradorette Wholesalers (Pty) Ltd, 2002)

#### 4.3.2.2 Predicted impacts and proposed mitigation measures

The EIA report by Tradorette Wholesalers (Pty) Ltd (2002) noted that the predicted impacts on the biophysical environment were regarded as insignificant, however, a number of socio-economic impacts were identified. These are listed in Table 4.2.

**Table 4.2:** Predicted impacts and the proposed mitigation measures

Construction phase	Operation phase	Predicted impacts	Proposed mitigation measures
√		Safety of construction workers and pedestrians	Adherence to labour code order 1992 and relevant by-laws
√		No public toilets close to the project for workers	Provision of ablution facilities
√	√	Traffic congestion	Movement of vehicles to be strictly regulated during rush hour periods; construction of a sky walk and installation of escalators
√		Dust pollution	Water spraying
√		Increased accidents	Provision of protective clothing and first aid equipment for construction workers
√		Increased noise pollution	Businesses in the vicinity of the building to be notified

Adapted from: Tradorette Wholesalers (Pty) Ltd (2002)

#### 4.3.2.3 Provision for EIA follow-up

The process of EIA follow-up was not given much attention in the EIA report, except to state that the developer should place an environmental officer on site during



construction to advise and monitor environmental aspects of the project (Tradorette Wholesalers (Pty) Ltd, 2002).

#### **4.3.2.4 Analysis of EIA follow-up**

The developer, together with the environmental consultant (Tradorette Wholesalers (Pty) Ltd), appointed an environmental officer on site during the construction phase to ensure that the mitigation measures that were stipulated in the EIR were implemented and also to address any impacts that were not foreseen. After construction, the developer had to submit a monitoring report to NES, and subsequently NES, together with the developer and the consultant visited the site to ensure that EIA follow-up had been undertaken properly (pers. comm., R. Sethathi, 2003).

### **4.3.3 C & Y garments factory**

#### **4.3.3.1 Background**

C & Y is a textile factory that is located in the Thetsane industrial estate on the outskirts of Maseru (Fig.4.1). It produces denim garments that are exported to European and North American markets. The factory is approximately 20 000m<sup>2</sup> in surface area and employs approximately 1 800 people.

#### **4.3.3.2 Predicted impacts and proposed mitigation measures**

There was no EIA process undertaken for this factory, which was constructed in 1990. Consequently there were no predicted impacts or mitigation measures proposed and no provision for EIA follow-up.

However, a blue effluent, produced in the denim-making process that was discharged into the Caledon River without any form of treatment attracted much attention because of potential negative impacts on human health and flora and fauna. A monitoring and auditing process was therefore undertaken to try to remedy the blue effluent problem and it was found that besides for its blue color the effluent had a high content of suspended solid and organic solvents (Pulles, *et al*, 2003).

The effluent also had a negative impact on the aesthetic value of the city itself and the river. Local communities living downstream of the factory were using the water for domestic purposes such as washing clothes, watering their livestock and swimming (Pulles, *et al*, 2003). In addition to the negative aesthetic impact caused by the bright blue effluent, litter, plastic bags, silty material and pieces of fabric were observed at the sides of the drains and in the water (Pulles, *et al*, 2003).

The audit report recommended a number of mitigation measures to address the problem. A water treatment plant should be installed to allow for the pre-treatment of the effluent before it is discharged into the Caledon River. The chemical, physical and biological characteristics of the effluent, as well as the volumes of the effluent should be considered (Pulles, *et al*, 2003).

Another category of mitigation was the adoption of appropriate water quality guidelines. Since there are no official guidelines in Lesotho, it was therefore recommended that the South African Water Quality Guidelines for the discharge of effluent into the water environment and for the domestic use of water be adopted (Pulles, *et al*, 2003).

The implementation of a monitoring programme was also recommended. It should be divided into tiers, where the first tier should occur on a daily or weekly basis. This tier should be focused on the parameters that are found to exceed the proposed discharge standards (Pulles, *et al*, 2003). There are several variables included here such as; electric conductivity (EC), zinc, lead, mercury, total dissolved solutes (TDS) and colour. The second tier is recommended to occur on a summer and winter basis and to cover a full chemical analysis. Parameters found to exceed the recommended discharge standards should be included in the more frequent monitoring schedule (Pulles, *et al*, 2003).

### 4.3.3.3 Analysis of EIA follow-up

Although no provision for EIA follow-up was made in this case study, it is interesting to note that an audit was undertaken as a result of negative impacts and public pressure. The audit report, which has only recently been completed, was undertaken by an environmental consultant at the request of the NES.

### 4.3.4 Nien Hsing denim mill

#### 4.3.4.1 Background

Nien Hsing International Lesotho (Pty) Ltd is a Taiwanese- based company which has established a denim mill and garment factory in the Thetsane industrial estate in Maseru (Fig. 4.1). The factory was constructed in 2002.

#### 4.3.4.2 Predicted impacts and proposed mitigation measures

The EIA report by Pulles *et al* (2001) identified a number of impacts and proposed mitigation measures which are described in Table 4.3 below.

**Table 4.3** Predicted impacts and the proposed mitigation measures

Construction phase	Operation phase	Predicted impacts	Proposed mitigation measures
√	√	Pollution of surface water by industrial effluent	Construction of three water treatment plants for the pre-treatment of effluent before discharging into Water and Sewage Authority (WASA) pipeline
√		Production of dust	Regular water spraying
√	√	Increased traffic	Create alternative pedestrian and vehicular routes
√		Pollution by sludge generated biologically and chemically	Dried and fed into the boiler system, disposed off at the Maseru City Council (MCC) landfill side

Adapted from: Pulles, *et al* (2001)

#### **4.3.4.3 Provision for EIA follow-up**

The EIA report (Pulles, *et al*, 2003) recommended the implementation of a monitoring programme and the appointment of an environmental officer to monitor effluent from the factory. Monitoring should occur on a regular basis and samples should be submitted to an accredited laboratory for analysis. The overall objective of the monitoring programme should be to ensure compliance of the treated effluent with recommended South African discharge guidelines. In addition, it should ensure that no significant environmental impacts are caused through the disposal of waste products of the treatment process. The database generated by the Nien Hsing monitoring programme should be coordinated by either the Water and Sewage Authority (WASA) or the Department of Water Affairs (DWA) and should be updated regularly (Pulles, *et al*, 2003).

#### **4.3.4.4 Analysis of EIA follow-up**

Although adequate provision for EIA follow-up during both the construction and operational phases was made, the factory has been operating for only a year, thus a full assessment of follow-up is not possible. During the construction phase, the environmental consultant (Pulles, *et al*, 2003), the developer and NES were responsible for ensuring that the proposed mitigation measures were put in place. The involvement of NES was to ensure that the experiences of the C & Y factory were not repeated through a full adherence to the mitigation measures and monitoring programme that was proposed (pers. comm., R. Sethathi, 2003).

### **4.3.5 D.L.M. shopping center**

#### **4.3.5.1 Background**

The shopping center is located at Khubetsoana in Maseru (Fig. 4.1) to provide essential services to the surrounding villages. It consists of one relatively larger shop covering a floor space of about 740m<sup>2</sup> and about 40 smaller shops (Lancelot Geotechnics and Construction (Pty) Ltd, 2003).

#### 4.3.5.2 Predicted impacts and proposed mitigation measures

The EIA was conducted by Lancelot Geotechnics and Construction (Pty) Ltd (2003) and the predicted impacts and proposed mitigation measures are summarized in Table 4.4.

**Table 4.4:** Predicted impacts and the proposed mitigation measures

Construction phase	Operation phase	Predicted impacts	Proposed mitigation measures
√		Noise from construction and traffic operations	Erect sheets around the site during construction
√		Motorists view obstructed by the sheets	Sheets to be tapered so that motorists can see on both sides
	√	Congestion caused by motorists and shoppers	Proper study of the traffic patterns
√		Increase in solid waste	Use of solid waste removal tank
√	√	Pedestrian safety	Construction of speed humps
	√	Production of liquid waste	Use of WASA truck to empty septic tank

Adapted from: Lancelot Geotechnics and Construction (Pty) Ltd (2003)

#### 4.3.5.3 Provision for EIA follow-up

A number of mitigation measures were proposed, however, there were no specific recommendations for monitoring or auditing.

#### 4.3.5.4 Analysis of EIA follow-up

During the construction phase, the developer together with the environmental consultant, Lancelot Geotechnics and Construction (Pty) Ltd, ensured that the mitigation measures were put in place and that there was adherence to the recommendations of the EIR (pers. comm., R. Sethathi, 2003). The long-term impacts on traffic patterns and consequently pedestrian safety were identified and a study of traffic patterns recommended, but no mechanisms were put in place to ensure that this happened.

### 4.3.6 Industrial estate in Butha-Buthe

#### 4.3.6.1 Background

The Butha-Buthe industrial estate is located midway between Butha-Buthe and the Caledon border post along the Butha-Buthe-Fourisburg road (Fig. 4.1). The land was originally undeveloped and was mainly used as arable land producing maize and sorghum for consumption by the local communities (Pulles, *et al*, 2002).

#### 4.3.6.2 Predicted impacts and proposed mitigation measures

Pulles *et al* (2002) proposed mitigation measures which were to be used in alleviating the impacts which were predicted. They are listed in Table 4.5 below.

**Table 4.5:** Predicted impacts and the proposed mitigation measures

Construction phase	Operation phase	Predicted impact	Proposed mitigation measures
√		Land use change	Compensation provided to farmers
√		Building waste material	Collected and disposed off at an appropriate site
	√	Generation of solid waste	Development of a solid waste site
	√	Smoke pollution	Filters in stacks
√		Noise and dust pollution	Day time construction and water spraying
√	√	Traffic increase	Route and speed control
√	√	Increase in STD's	Sex education, social workers and clinics

Adapted from: Pulles, *et al* (2002).

#### 4.3.6.3 Provision for EIA follow-up

A specific monitoring programme was recommended as part of the EIA process. It is intended that it should be commenced once the Butha-Buthe complex is functional and the foreign investors are found. There is a specific provision made for effluent monitoring to avoid the situation that was encountered with the C & Y factory. Lesotho National Development Corporation (LNDC) through WASA must ensure that the effluent-monitoring programme is implemented by various industries who are

required to monitor the effluent leaving the factories at the point of discharge and after it has been treated. The monitoring data produced by the industries monitoring programme must be coordinated by either DWA or WASA (Pulles *et al*, 2002). Implicit in this monitoring function is an audit requirement as each industry has to have a license issued by WES or LEA that will stipulate the quality and volume of the effluent that may be discharged. (Pulles, *et al*, 2002).

#### **4.3.6.4 Analysis of EIA follow-up**

The developer; (LNDC) together with the consultant; Pulles *et al* ensured that EIA follow-up was carried out during the construction phase. This is the only follow-up that has been undertaken at this stage because the Butha-Buthe Industrial Complex is still in its infancy (pers. comm., R. Sethathi, 2003).

### **4.3.7 Ha- Teko clay and extraction site**

#### **4.3.7.1 Background**

The Ha-Teko clay and extraction site is located along the Kofi Annan by-pass, behind the Tikoe Industrial Estate and across the Phuthiatsana River (Fig. 4.1). The site was identified in order to provide clay for the production of clay bricks at the Loti Brick Company (Mokuku, 2002).

#### **4.3.7.2 Predicted impacts and the proposed mitigation measures**

Impacts were predicted in the EIA report which was produced by Mokuku (2002) and mitigation measures were proposed. Table 4.6 lists the predicted impacts and proposed mitigation measures.

**Table 4.6:** Predicted impacts and the proposed mitigation measures

<b>Construction phase</b>	<b>Operation phase</b>	<b>Predicted impacts</b>	<b>Proposed mitigation measures</b>
✓		Removal of medicinal plants	Land clearance kept to a minimum
✓		Increase in soil erosion	Incorporate drainage site plan, top soil kept for use in reclamation
✓		Dust pollution	Develop dust suppression programme
✓		Noise pollution	Restrict movement of vehicles to normal working hours
✓		Loss of agricultural and grazing land	Compensation programmes
✓	✓	Traffic flow disruption	Movement should be restricted to normal working hours
✓	✓	Land use conflicts	Continuous consultation with local land users in siting access road
	✓	Degradation of air quality and visibility from air borne particulates	Watering, re-vegetation of disturbed areas and installation of wind breaks
✓	✓	Water pollution in the Phuthiatsane stream	Creation of a buffer zone

Adapted from: Mokuku (2002)

#### **4.3.7.3 Provision for EIA follow-up**

No specific mechanisms for monitoring were put in place, although there were many mitigation measures proposed for both the construction and operational phases. It was stated in the EIA report (Mokuku, 2002) that it was the responsibility of Loti Brick to ensure that the mitigation measures were implemented.

#### **4.3.7.4 Analysis of EIA follow-up**

The environmental consultant, together with Loti Brick (Pty) Ltd, the developer, carried out EIA follow-up during the construction phase in order to ensure that adequate action was taken to implement the mitigation measures which were proposed in the EIS. NES was also involved in an overseeing capacity to ensure that no harm was done to the environment (pers. comm., R. Sethathi, 2003).



### 4.3.8 MKM memorial park at Khubetsoana, Maseru

#### 4.3.8.1 Background

The MKM memorial park is located at Khubetsoana, which is about 9km from the center of Maseru (Fig. 4.1). It comprises a crematorium, cemetery and walls of remembrance. Prior to construction in 2002, the area was used for poultry farming (Mafatle, 2003).

#### 4.3.8.2 Predicted impacts and the proposed mitigation measures

In the EIA, conducted by Mafatle (2003), a number of cultural and conservation issues were identified on the site, as well as direct impacts resulting from the operation of the mortuary. These together with proposed mitigation measures are described in Table 4.7 below.

**Table 4.7:** Predicted impacts and the proposed mitigation measures

Construction phase	Operation phase	Predicted impacts	Proposed mitigation measures
	✓	Wastage of potable water	Proper adjusting of flushing water storage tanks
	✓	Occupational health risk	Intensive training of crematorians, use of low sulphur content fuel
✓	✓	Increase in odour	Use of low carbon content gaseous fuels, cremator fitted with after burner, ensure that cremator is operating at required temperatures. Only well trained operators should conduct cremation
✓	✓	Increase in STDs	AIDS awareness campaign, supply condoms
	✓	Danger to visitors	Warning notes at specific locations, forbid walking on graves,
✓	✓	Loss of land due to construction of access roads	Use of existing roads, improved access beneficial to the neighboring community

Construction phase	Operation phase	Predicted impacts	Proposed mitigation measures
	√	Increased fire accidents	Gas cylinders kept in locked cages outside the crematory. Crematory equipped with water sprinkler system, Organise regular fire drills
√		Loss of home stead and residential site	Resettlement and compensation
	√	Increased traffic congestion and road accidents	Upgraded and realigned access road leading to the mortuary
√	√	Noise pollution	Regular service of machinery, site supervision, demolition and construction confined to daytime working hours,

Adapted from: Mafatle (2003)

#### 4.3.8.3 Provision for EIA follow-up

Both monitoring and auditing were suggested and details given in an EMP attached to the EIR (Mafatle, 2003). It was stated that monitoring was essential during the construction and the initial stage of operation of the project activities, and that an independent person should be responsible (Mafatle, 2003). The objectives of environmental monitoring and auditing of the project were: to supply information against which any short or long term environmental impacts of the project could be determined; to provide an early indication, should any of the environmental control measures or practices fail to achieve the acceptable standards; to monitor the progress of the project and the effectiveness of mitigation measures; to facilitate and implement remedial actions if unexpected problems or unacceptable impacts arise; and to provide information which will enable an environmental audit (Mafatle, 2003).

#### 4.3.8.4 Analysis of EIA follow-up

The environmental consultant and the developer, MKM, carried out the required monitoring during the construction phase. The developer was involved despite the fact that the EMP recommended that this should be the responsibility of an independent

person. NES was also involved in the construction phase monitoring in order to ensure that the public and the environment were not negatively affected. It was also established from the environmental consultant (pers. comm., T.J. Mafatle, 2003) that a public gathering (“Pitso”) was hosted by the consultant and the developer after the construction in order to get the views of the surrounding villagers on the mortuary (pers. comm. T.J. Mafatle, 2003). No negative comments were recorded.

#### **4.3.9 Maseru South West (MASOWE) site and services project**

##### **4.3.9.1 Background**

The Lesotho Housing and Land Development Corporation (LHLDC) have earmarked a large tract of land on the periphery of Maseru (Fig. 4.1) for housing development. The purpose is to reduce urban sprawl through the planned and orderly allocation of sites. The sites are sold to the individuals who are responsible for construction of their own houses. There are three phases to the project: phase 1 that encompasses the development of middle-income plots, phase 1A which is the development of a low-income area with 234 plots; phase 2 which caters for the low-income group; and phase 3 which has a further 153 residential plots for the low-income group. The development of the land has commenced and some houses have been built.

##### **4.3.9.2 Predicted impacts and proposed mitigation measures**

There were various impacts that were predicted in the EIA report (Mokuku, 2002) for the construction and operational phases of the project. Table 4.8 summarises the predicted impacts and the proposed mitigation measures.

**Table 4.8:** Predicted impacts and the proposed mitigation measures

<b>Construction Phase</b>	<b>Operation Phase</b>	<b>Predicted impact</b>	<b>Proposed mitigation measures</b>
✓		Increased soil erosion	Infrastructure designs should optimize gradients and avoid fragile areas
✓	✓	Increased water pollution	Adequate drainage structures and retention walls should be designed
✓		Loss of agricultural land	Provide appropriate compensation to the affected farmers
✓		Loss of grazing land	Compensate affected livestock owners and capacitate them in proper range management
✓		Noise	Restrict construction activities to normal working hours
✓	✓	Poor sanitation	Ensure that all the basic facilities are available to avoid water pollution and littering
✓	✓	Traffic congestion	Regulate traffic at intersections

Adapted from: Mokuku (2002)

#### **4.3.9.3 Provision for EIA follow-up**

There were many mitigation measures suggested, most of which related to the preparation of the land area. There was also a recommendation for the initiation of a long-term land-care programme that would integrate conservation and sustainable land use of the area. The programme would involve the people who buy the land from the LHLDC since they are the ones who have the responsibility for making sure that the land they occupy is managed to avoid negative impacts.

#### **4.3.9.4 Analysis of EIA follow-up**

The recommendation for the land-care programme represented a genuine attempt to involve the local communities in the effective management of the land. Unfortunately

no detail or guidelines as to how this programme should be initiated, who should be responsible and what factors should be included in the programme were given.

#### 4.4 Summary

Table 4.9 summarises whether an EIA was undertaken for each of the case studies, whether a separate EMP was prepared and whether provision for EIA follow-up was made.

Four criteria were used to assess the provision made for EIA follow-up process: the impacts that were predicted and mitigation measures proposed, the provision that was made for EIA follow-up before the implementation of the project, the impacts that were experienced and the mitigation measures that were put in place and finally the EIA follow-up process that was undertaken and the people responsible for it.

**Table 4.9:** Summary of EIA follow-up provision for each case study

Case study	EIR	EMP	Provision for monitoring/ auditing
LHWP Phase 1B	✓	✓	✓
Metcash building	✓	✓	✗
C & Y garment factory	✗	✗	✗
Nien Hsing denim mill	✓	✓	✓
D.L.M. shopping center	✓	✗	✗
Butha-Buthe industrial estate	✓	✓	✓
Ha-Teko clay extraction site	✓	✗	✗
MKM memorial park at Khubetsoana	✓	✓	✓
MASOWE site and services project	✓	✗	✗

With the exception of one case study, all projects had EIRs prepared, and four had separate EMPs which indicated mitigation measures. Provision for formal EIA follow-up was made in four of the cases by recommending monitoring and auditing. A further project (C & Y factory) had a monitoring and auditing procedure imposed due to problems experienced during operation. In most cases EIA follow-up was confined to the construction phase and little attention was given to the operational phase. Seldom, were recommendations made for the enforcement of the follow-up provision.

The lack of EIA follow-up in Lesotho can be attributed to the un-operational Environmental Act, 2001, which implies that the process of EIA follow-up is undertaken on a voluntary basis. It was established during the assessment of the reports that the reason that EIAs were undertaken was due to the need to obtain an EIA license. As long as this is the only driving force for the undertaking of an EIA at present, there is little to induce a developer to include EIA follow-up.

## **4.5 Analysis of questionnaires**

A total of thirteen questionnaires were administered to environmental consultants who work in Lesotho. Of the thirteen questionnaires administered, nine were returned (69%).

### **4.5.1 Understanding of EIA follow-up**

The majority of the respondents (7 or 78%) identified EIA follow-up as including monitoring and auditing. One person (11%) indicated that in addition to monitoring and auditing, it included public participation, while another person (11%) identified it as monitoring, but incorporating EMPs and EMSs. It is interesting to note that there were few people who viewed public participation as part of EIA follow-up. A similar finding was noted by Hulett and Diab (2002) in their study in KwaZulu-Natal. The incorporation of an EMP and/or EMS into EIA follow-up is believed to implement whatever was stipulated in the ROD (Arts *et al.*, 2000) and serve as a link between the EIA and project implementation, yet only one person identified EMPs and EMSs as part of EIA follow-up.

Most of the consultants (8 or 89%) stated that EIA follow-up should start immediately after the ROD or approval of the EIA, at which stage the mitigation measures proposed should be implemented in order to ensure compliance and to be able to identify any unforeseen impacts and to suggest remedial measures.

Only one person (11%) indicated that EIA follow-up should begin at the planning and design stage, arguing that this ensures that environmental issues become an integral part of the planning and design of the project. Similarly Hulett and Diab (2002) noted

that few respondents recognized the need to start EIA follow-up early in the project cycle. In chapter two, it was emphasized that EIA follow-up should commence as early as possible (Glasson *et al.*, 1999) in order that baseline data could be collected for use later in the project cycle when undertaking comparative assessment.

On the question of who should be involved in EIA follow-up, there were differences of opinion. Four people (45%) suggested that it was the developer's responsibility to select a person to conduct the EIA follow-up. Only 2 people (22%) stated that I&APs should be involved as well as the relevant authority, arguing that this is the only way to achieve sustainable development. This minority view is similar to that of Arts (1999), who noted that the public should be involved as well as the government and the developer. One of the reasons why so few consultants identified a role for the public in EIA follow-up is the lack of capacity and often low education level of the public and the paucity of environmental non-government organisations (NGOs) and community based organisations (CBOs) in Lesotho. A further three people (33%) pointed out that the developer and an independent government body should be involved in EIA follow-up.

Despite their differences in understanding and the fact that few consultants' views conformed to those generally accepted in the literature, most indicated that EIA follow-up should be undertaken. Moreover, EIA follow-up was said to ensure compliance to statutory requirements, and would assist in the protection of communities from the impacts that result from development projects.

#### **4.5.2 EIA follow-up in Lesotho**

Most of the consultants (7 or 78%) stated that EIA follow-up is applicable in Lesotho. Reasons given included the following:

- Many large and medium size projects that have a potential impact on or have impacted on the environment have been implemented in Lesotho;
- Any country striving for sustainable development should ensure that environmental issues become an integral part of the national planning process;

- Any EIA undertaken should be monitored for performance to assess whether the mitigation measures proposed are appropriate and to enhance and supplement them where necessary;
- It was consistent with the requirement of the Environment Act, 2001 and the soon to be established LEA;
- EIA follow-up is the only the way to justify and ensure implementation of the EIA.

However, despite recognition that EIA follow-up was important, all of the consultants stated that EIA follow-up is not widely practised in Lesotho except with the LHWP or LHDA projects, where monitoring and auditing is done on a monthly and annual basis respectively. Apart from the LHWP it was noted that only one company, Water and Sewage Authority (WASA), has an environmental officer to carry out monitoring.

The lack of EIA follow-up in Lesotho was attributed to many factors. The fact that basic EIA guidelines and procedures are not yet in place to guide people who have to implement the environmental legislation was cited as a factor. It was also noted that there was a lack of awareness by the general public on the need to protect the environment and to report any malpractices which might have serious impacts on the environment. There are few environmentalists in Lesotho and EIA tends to be a fairly new initiative. Furthermore, few company leaders recognize the importance of environmental issues.

But the overall view was that EIA follow-up is necessary regardless of the obstacles that are encountered. A number of suggestions were provided by the consultants to overcome the obstacles to the implementation of EIA follow-up. The first of these was to operationalize the Environment Act including the formation of the relevant bodies and the promulgation of relevant regulations to support the environment legislation. It was noted that intensive capacity building of government officials is needed in order that they can perform their duties efficiently and with dedication. They need to recognize the benefits of EIA and its follow-up, and create awareness amongst developers, consultants and the public that EIA follow-up is part of the project. It was also important to train environmentalists, strengthen the environmental



awareness and capacity of CBOs, NGOs, company leaders and developers. Partnerships with other countries in the region should be considered to identify lessons learned, worst and best practices and to facilitate communication. It was also recommended that spot checks should be undertaken and that enforcement should be through fines where necessary.

#### **4.5.3 Experience of EIA follow-up**

Although the analysis of the case studies indicated that EIA follow-up is not widely practised in Lesotho, 55% (5) of the consultants had undertaken EIA follow-up. One was involved as an external consultant on the LHWP project, a second as a laboratory technician in the WASA laboratory in water sampling and analysis, and the others were involved as the local communities in the EIA follow-up process, as they were impacted by the project. The LHWP consultant was involved as an external consultant due to a problem of the project being understaffed and was trained by World Bank staff.

The funding of the EIA process, as well as EIA follow-up was mostly derived from external sources such as the Republic of South Africa, World Bank, Development Bank of South Africa (DBSA), European Bank and the Common Monetary Area (CMA) funding. Some projects were funded by LHDA as the monitoring was done for them.

#### **4.6 Applicability of EIA follow-up models to Lesotho**

Hulett and Diab (2002) proposed four EIA follow-up models which were discussed in Chapter 2. This section therefore aims to establish if any of the four models is appropriate for EIA follow-up in Lesotho.

##### **4.6.1 Legal based approach**

This model relies on the availability of legal enforcement for EIA follow-up. Although the Environment Act, 2001 does give provision for EIA follow-up through sections 31 and 32, Part V, The Act is not operational and therefore does not provide any form of enforcement for undertaking of EIA follow-up in Lesotho. The National

Environmental Action Plan (NEAP) of 1987 stipulated the need to undertake an EIA but failed to include anything specific about EIA follow-up. For these reasons, the legal based approach is not applicable to Lesotho at this point in time.

#### **4.6.2 Partnership approach**

This was the model that was recommended as most suitable for application in South Africa by Hulett and Diab (2002), as there are many examples of partnerships that are established between the public and private companies that are successfully undertaking EIA follow-up. One example is the Sappi Saiccor mill where there was the formation of a Permit Advisory Panel, representing a partnership between industry and the public and responsibility for ongoing monitoring of factory effluent to the ocean (Scott, 1999). However, this model is unlikely to be successful at this stage of Lesotho's development due to the lack of involvement of the public in environmental matters. There is therefore a need for environmental awareness amongst the public to increase in order for the partnership model to be operational and effective.

#### **4.6.3 Incentive/ Disincentive approach**

This model could be applicable in Lesotho due to the necessity of obtaining an EIA license before any development license is issued. Failure to apply for an EIA license could result in a fine. The NES could take responsibility for issuing EIA licenses and fines related to failure to comply. However, the problem with this approach is that it is not suited to long term monitoring and auditing. It could be applied to the construction phase but is not suited to the operational phase.

#### **4.6.4 Self-regulatory approach**

This is the model that is most applicable to Lesotho. In most of the reports studied, a self-regulatory approach to EIA follow-up was recommended. At present, the developers together with the consultants carry out EIA follow-up in order to ensure that impacts on the environment are fully addressed. The NES ensures that mitigation measures are implemented because the monitoring report is generally submitted to NES by the consultant and the developer (pers. comm., R. Sethathi, 2003). However, according to this model EIA follow-up is undertaken on a voluntary basis without any

legal enforcement. The self-regulatory approach does make sure that the environment is taken care of, but it does not involve the public at all. Moreover, the involvement of the public is wholly dependent on the willingness of the developer to involve them unless forced by law.

Even though the self-regulatory approach is applicable to Lesotho, it has some drawbacks as mentioned above. There is therefore a need to include some of the elements of both the legal based and partnership approaches for EIA follow-up to be successful. This can only take place once the Environment Act, 2001 is fully operational and the public more environmentally aware. In the meantime, it is recommended that environmental consultants recommend the self-regulatory approach. Some form of EIA follow-up training for environmental consultants practising in Lesotho may be beneficial to promote this activity.

## CHAPTER FIVE

### CONCLUSION

#### 5.1 Introduction

This chapter aims to summarise the findings of the study, and to provide recommendations made from the research for EIA follow-up practice in Lesotho.

#### 5.2 Summary

The main aim of the research was to assess the status of EIA follow-up in Lesotho. The objectives that guided this research were:

- To assess the provision made for EIA follow-up in environmental assessment legislation;
- To investigate the extent to which EIA follow-up is planned and implemented in development projects;
- To evaluate the suitability of EIA follow-up models proposed by Hulett and Diab (2002) to Lesotho.

The Environment Act, 2001 does give allowance for EIA follow-up specifically as monitoring and auditing, in sections 31 and 32 of Part V of the Act. Monetary penalties are also imposed on people who fail to comply with the law. However, at present the Environment Act, 2001 is not operational and the process of EIA follow-up is undertaken on voluntary basis. A separate ministry for the environment headed by a minister has not yet been established. Thus there is no one to ensure compliance with the Act. Moreover, the LEA needs to be established to take responsibility for approvals and refusals of the EIAs and also to make sure that EIA follow-up is undertaken. At the moment, the only reason that EIAs are undertaken is the requirement for an EIA licence in order that developers can obtain building or project licences. Thus EIA follow-up, which is part of the EIA, is similarly dependant on this requirement.

Nine development projects were selected and utilised as case studies in this research. Of all the case studies, only four contained specific EIA follow-up provisions. In some case studies, such as the Butha-Buthe industrial estate, the EIA follow-up that was provided was very elaborate and specific, giving the frequency with which EIA follow-up should be undertaken, by whom and how it should be done. The possible reason for this is that it is the most recent industrial estate to be developed and that lessons were learned from the Thetsane and Maseru industrial development sites. In most of the case studies that had provision for follow-up, an environmental officer was selected to monitor the impacts that were experienced and to ensure compliance to the EMP during the construction phase.

Apart from the case studies that were reviewed through their EIA reports, nine environmental consultants were interviewed regarding the status of EIA follow-up in Lesotho. It was established that the majority (7 or 78%) identified monitoring and auditing as EIA follow-up. One person (11%) included public participation as part of EIA follow-up and another one (11%), considered it as monitoring but incorporating EMPs, EMSs. Majority of the consultants (89%) stated that the EIA follow-up process should start immediately after the approval of the EIA. Only one (11%) pointed that it should start as early as possible, during the planning and design stage. This is the stage where baseline monitoring could be undertaken in order to avoid difficulties that may be encountered. The consultants did not recognise that monitoring programmes need to be planned and active during both project design and during the preparation of EIA documentation ([www.art.man.ac.uk](http://www.art.man.ac.uk)), as was the case with the Butha-Buthe industrial estate.

It was established that EIA follow-up is applicable in Lesotho but that it is severely lacking in terms of implementation capacity. Only the LHWP was observed to implement EIA follow-up on a regular basis. The major cause for the lack of EIA follow-up was found to be the unoperational Environment Act, 2001. The lack of an environmentally aware public to assist in taking care of the environment and insufficient environmental consultants were also found to be constraints to undertaking EIA follow-up. To overcome these constraints, there is an urgent need for the operationalizing of the Environment Act, 2001 so that there is enforcement capacity. The situation in Lesotho is similar to many other countries, such as New

Zealand, parts of Australia, Canada and the USA, where provision is made for monitoring in the legislation but practice lags behind (Glasson, 1999).

The self-regulatory approach was one of the models proposed by Hulett and Diab (2002) that was perceived to be most applicable in Lesotho at present because there is no law to enforce compliance to EIA follow-up and also the public is not aware of their environment. Therefore, the monitoring process that is provided for in EMPs is carried out voluntarily. However, if the Environment Act, 2001 becomes operational and the public is aware of their environment, participatory and legal based approaches could both be applicable. They are the most effective forms of enforcing adherence to the EMP.

There were constraints which inhibit the undertaking of EIA follow-up that were identified by the consultants who were interviewed. These were the unoperational act, the lack of commitment by government ministries, insufficient budgetary allocation dedicated towards supporting environmental initiatives and lack of awareness of the general public on the need to protect the environment and to report any malpractices which might have serious impact on the environment

It can therefore be concluded that at present the process of EIA follow-up is minimal in Lesotho and therefore the self-regulatory approach should be used to its maximum so that it can effectively contribute towards sound development practices.

### **5.3 Recommendations**

The results obtained in this research lead to a number of recommendations to ensure better EIA follow-up practice in Lesotho. These are:

1. The Environment Act, 2001 should be operationalised because that is the only way of enforcing the undertaking of EIA follow-up. Other benefits will also flow from the operationalisation of this Act;
2. The government should take steps to educate the public about their environment. The first step should be to incorporate environmental studies as part of the school curriculum (environmental education). A public awareness

campaign about the need to carefully manage develop and protect the environment should be undertaken for those who do not attend school;

3. There should be a recognition that budgets need to be made available for the implementation of EIA follow-up processes for government as well as private projects;
4. Environmental consultants practising in Lesotho should be encouraged to include aspects of EIA follow-up in their EIA reports to enforce the self-regulatory model. This could be done through LEA sponsored workshops where there is a discussion of matters concerning the environment especially EIA and its follow-up;
5. The government should be more concerned about matters concerning the environment if Lesotho as a small developing country expects to attract foreign investment;
6. Once the LEA is established, people who are hired should be well qualified as environmental managers or scientists and should be sent for additional training if necessary;
7. Lessons learned from the difficulties experienced by companies such as C & Y garments factory should be used to ensure that there is no repetition of the same problems in any future developments;
8. There should be a follow-up study once the Environment Act, 2001 is operational in order to assess if EIA follow-up is practised in the way that it should be.

## REFERENCES

Arts J., (1999). **To be Continued? Follow-up to Infrastructure EIA's: Linking EIA with Project Implementation**, Transportation/ EIA Centre, Rijkswaterstaat, The Netherlands.

Arts J., Caldwell P., Tache M., (2000). **EIA follow-up, Good Practice and Future Direction**, Transportation/ EIA Centre, Rijkswaterstaat, The Netherlands.

Au E. W K., (1995). **EIA follow-up and Monitoring**, EIA Training Resource Manual, [www.unep.za](http://www.unep.za)

Au E. W. K., (2001). **Latest Developments of EIA Follow-up in Hong-Kong**, IAIA '01 Impact Assessment in Urban Context Conference.

Chakela Q. K., (1999). Environmental Trends and Scenarios, in the **State of the Environment Lesotho**, (1999), Chakela Q. K., (ed), The National Environment Secretariat, Maseru.

Davy A., (1999). **Environmental Assessment Source Book Update**, Environment Department, The World Bank.

Devuyst D., (1994). **Instruments for the Evaluation of Environmental Impact Assessment**, Department of Human Ecology, University of Brussels, Belgium.

Dung Gwom J. Y., (2003). Recent Developments in **EIA Newsletter 12**, [www.art.man.ac.uk](http://www.art.man.ac.uk).

George C., (2002). Environmental Monitoring, Management and Auditing in **Environmental Assessment in Developing and Transitional Countries**, Lee N., and George C., (2000) (eds), John Wiley & Sons Ltd, England.



Goodland R., & Mercier J., (1999). **The Evolution of Environmental Assessment in the World Bank from “Approval” to Results**, Environment Department Papers, The World Bank.

Glasson J., (1999). **Life After the Decision: The Importance of Monitoring in EIA**, Built Environment Vol. 20 No. 4.

Glasson J., Therivel R., and Chadwick A., (1999). **Introduction to Environmental Impact Assessment**, UCL Press, London.

Horberry J., (2003). Monitoring, Environmental Management Plans and Post Project Analysis in **EIA Newsletter 12**, [www.art.man.ac.uk](http://www.art.man.ac.uk).

Hounscome R., (2002). **EIA Lecture Notes**, School of Life and Environmental Science, University of Natal, Durban.

Hounscome R., (2003). **EIA Lecture Notes**, School of Life and Environmental Science, University of Natal, Durban.

Hill R. C., (2000). **Integrated Environmental Management Systems in the Implementation of Projects**, South African Journal of Science 96.

Hulett J., and Diab R. D., (2002). **EIA follow-up in South Africa: Current Status and Recommendations**, Journal of Environmental Assessment Policy and Management, 4 (3), 297-309.

Khalema K. and Setsabi S., (1999). The Urban Environment, in the **State of the Environment Lesotho**, (1999) Chakela Q. (ed). The National Environmental Secretariat, Maseru.

Kitchin R., and Tate N. J., (2000). **Conducting Research into Human Geography**, Prentice Hall, Harlow.

Lancelot Geotechnics and Construction (Pty) Ltd, (2003). **Project Brief for D. L. M. Shopping Centre**, Maseru

Lesotho Government Gazette (2001). **Environment Act, 2001**, Government printers.

Lesotho Highlands Development Authority (1997). **Environmental Impact Assessment: Phase 1B Main Report**, Hunting-consult 4 joint Venture, Maseru.

Lesotho Highlands Development Authority (2002). **Environmental Impact Assessment audit report**, Hunting-consult 4 joint Venture, Maseru.

Mafatle T J., (2003). **Environmental Impact Assessment Project Brief for Memorial Park at Khubetsoana**, Maseru

Majoro M. and Matlosa K. (1999). Environment and Economic Development, in the **State of the environment Lesotho**, (1999), Chakela Q. (ed), The National Environment Secretariat, Maseru.

Marshall R., (2001). **Mitigation Linkage: EIA Follow-up through the Application of EMPs in Transmission Construction Projects**, IAIA '01 Impact Assessment in the Urban Context Conference.

Marshall R., Smith N., and Wright R., (2001). **A new Challenge for Industry: Integrating EIA within Operational EMS**, IAIA '01 Impact Assessment in Urban Context Conference.

Melville S. and Goddard W., (1996). **Research Methodology: An Introduction for Science and Engineering Students**, Juta & Co Ltd, Kewyn.

Mikesell R.F., (1994). Environmental Assessment and Sustainability at the Project and Program Level in **Environment Assessment and Development**, (1999), Goodland R., & Emundson V., (eds). The International Bank for Reconstruction and Development, The World Bank.

Morrison-Saunders A. and Arts J., (2002). **An Introduction: the Role of EIA Follow-up**. Murdoch University, Western Australia.

Morrison-Saunders A. and Bailey J., (2001). **EIA Practitioner Perceptions on the Role of Science in Impact Assessment**, IAIA '01 Impact Assessment in the Urban Context Conference.

Mokuku C., (2002). **Project Brief of MASOWE and Services Project**, The national University of Lesotho.

Mokuku C., Moeti T., Tanor E. B., Phoofolo M., (2002). **Environmental Impact Statement for Ha-Teko Clay Extraction Site**, Loti Brick (Pty) Ltd.

National Environment Secretariat (1997). **Lesotho EIA Guidelines**, Maseru

Oelofse C., (2001). **Sustainable Development Theoretical and Conceptual Issues**, LA 21 Training Programme, School of Life and Environmental Science, University of Natal, Durban.

O'Riordan T., Preston-Whyte R., Hamann R., Manqele M., (2000). **The Transition to Sustainability: A South African Perspective**, South African Geographical Journal.

Partow H. and Motsamai B., (1999). Environment Policies, Legislation and Institutional Arrangements, in the **State of the Environment Lesotho**, (1999), Chakela Q. (ed), The National Environment Secretariat, Maseru.

Pulles Howard and De Lange Inc (2002). **Draft Environmental Audit of C & Y Garments Factory**, Auckland Park, South Africa.

Pulles, Howard and De Lange Inc (2001). **Environmental Project Brief for Nien Hsing Denim Mill**, Auckland Park, South Africa.

Pulles, Howard and De Lange, Inc (2003). **EIA Project Brief for Industrial Estate Establishment in Butha-Buthe**, Auckland Park, South Africa.

Sadler B., (1998). Environmental Assessment: An Overview, in **EIA Newsletter 17**, [www.art.man.ac.uk](http://www.art.man.ac.uk).

Sadler B. (1996). The International Study of EA Effectiveness: An Overview, in **EIA Newsletter 12**, [www.art.man.ac.uk](http://www.art.man.ac.uk)

Sekoli B. and Tseki P. (1999). Climate and Climate Change in **State of the Environment in Lesotho**, Chakela Q. K, (1999) (ed), National Environment Secretariate, Maseru, Lesotho.

Scott D., (1999). Civic Science: **The Inclusion of the Local Knowledge in the Process of Monitoring Marine Water Quality**, School of Life and Environmental Science, University of Natal, Durban.

Tradorette Wholesalers (Pty) Ltd, (2002). **EIA Project Brief for Metcash Building**, Maseru

The World Bank Operational Manual (1999), **Operational Policies; Environmental Assessment**, [www.worldbank.org](http://www.worldbank.org).

UK Economic and Social Research Council (1998). Monitoring and Post-Auditing in Environmental Impact Assessment, **Leaflet 19**, EIA Leaflet series, [www.art.amn.ac.uk](http://www.art.amn.ac.uk).

### Websites Visited

[www.worldbank.org](http://www.worldbank.org)

[www.cc.gatech.edu](http://www.cc.gatech.edu)

[www.art.man.ac.uk](http://www.art.man.ac.uk)

[www.unep.za](http://www.unep.za)

**APPENDIX A****LIST OF INTERVIEWED ENVIRONMENTAL CONSULTANTS  
IN LESOTHO**

1. Envirotech services (Pty) Ltd  
P.O box 12039  
Maseru, 100  
Contact person: Ms K.B. Molapo
2. SM Consulting  
P.O.Box 7716  
Maseru  
Contact person: Mr. T.Moloi
3. Mr. Tsukutlane J. Mafatle  
P.O. Box 14503  
Maseru 100  
Lesotho
4. Mrs. Refiloe Sethathi  
NES Lesotho
5. Mr. David Nkalai (x2)  
LHDA  
Lesotho
6. Ntlafalang Consultants  
Private bag A409  
Maseru, 100  
Contact person: Ms. Limpho Letsele
7. Mr. Lehlohonolo Lesemane
8. Mr. Chaba Mokuku  
NES Lesotho

APPENDIX B

QUESTIONNAIRE

EXPERIENCE OF EIA FOLLOW-UP IN LESOTHO

(You may tick more than once where appropriate, for example: Question 5).

A. Understanding EIA follow-up

1. What do you understand by EIA follow-up?

.....  
.....  
.....  
.....  
.....

2 At what stage of the project should EIA follow-up start?

.....  
.....  
.....  
.....

3. Please provide reason(s) for your answer above

.....  
.....  
.....  
.....  
.....

4. Who should be responsible for EIA follow-up? Why?

.....  
.....  
.....  
.....  
.....

5. What do you understand EIA follow-up to be?

Monitoring	[	]
Auditing	[	]
Public Participation	[	]
EMP	[	]
EMS	[	]

6. What do you think the benefits of EIA follow-up are?

.....  
.....  
.....  
.....  
.....

**B. EIA follow-up in Lesotho**

1. Do you think EIA follow-up is applicable in Lesotho? Why?

.....  
.....  
.....  
.....  
.....

2. Do you think EIA follow-up in Lesotho is widely practiced? List examples please.

.....  
.....  
.....  
.....  
.....

3. What are the major constraints to EIA follow-up in Lesotho at present? (Please list them).

.....  
.....  
.....  
.....  
.....

4. What do you think is the cause(s) of such constraints?

.....  
.....  
.....  
.....  
.....

5. What do you think should be done to over come such constraints?

.....  
.....  
.....  
.....  
.....

C. Experience with EIA follow-up

1. Have you carried out EIA follow-up before?

Yes	[	]
No	[	]

2. Who did you involve in such a process? Why?

.....

.....

.....

.....

.....

3. Did you get funds for such projects? Source?

.....

.....

.....

.....

.....

4. Did you encounter any problems in carrying out such a project? Please elaborate.

.....

.....

.....

.....

.....

5. How did you solve them?

.....

.....

.....

.....

.....

6. At what stage did you start your EIA follow-up? Please give reasons.

.....

.....

.....

.....

.....



7. What suggestion can you give about the whole EIA process and its follow-up?

.....

.....

.....

.....

.....