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**THE PERFORMANCE EVALUATION OF ENVIRONMENTAL  
IMPACT ASSESSMENT IN SELECTED ENVIRONMENTAL  
IMPROVEMENT PROJECTS:  
ENHANCING AND DETRACTING FACTORS**

*Case studies: “Prevention of Groundwater Contamination of the  
Duikersvlei Stream at the old Kynoch Factory Site” & “Proposed  
Processing and Disposal of Sulphur Produced at the Caltex Refinery”*

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Mini dissertation presented in partial fulfilment of the requirements of the  
Degree of MASTER of PHILOSOPHY in Environmental Management in the  
Department of Environmental and Geographical Science

**Faculty of Science  
UNIVERSITY OF CAPE TOWN**

September 2008

## DECLARATION

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## ABSTRACT

This dissertation presents a comparative analysis of two selected Environmental Impact Assessments (EIA) of environmental improvement projects and evaluates the performance of this tool towards its overall goal of promoting sustainable development.

Principles for EIA effectiveness are articulated in different countries in general and in South Africa in particular; which describe the current state of knowledge on EIA effectiveness. A framework for evaluation of the two cases is developed from the EIA literature which includes criteria such as contributing to project design, development control, and informing the planning process and decision making. Various perspectives on effective EIA and problems in South Africa informed the evaluation framework. The dissertation outlines legal and institutional arrangements including EIA regulation, administration and enforcement at different government levels, the extent of cooperation between the province and the local municipality, and the implications for EIA performance.

In evaluating EIA, it is crucial to define the factors underlying a given EIA problem or strength and the consequences, rather than just outlining the problems. This requirement for in-depth analysis inspired the choice to conduct the study on the basis of case studies. Prevention of groundwater contamination of the Duikersvlei stream at the old Kynoch Factory site and proposed processing and disposal of sulphur produced at the Caltex Refinery are two selected EIAs of environmental improvement projects. They were both done under Environmental Conservation Act (ECA), 1997. For the record of decision, the scoping report was considered in the case of Duikersvlei project and for the Sulphur processing project a full EIA was done.

The Duikersvlei scoping report refers to the phenomenon that South Africa knew of “beefed up” scoping process or mini EIA that occurred under the 1997 regulations. For some projects, the relevant authority should issue an authorisation after considering the scoping report. However, when the information in the scoping report is not enough a full EIA should be required. This highlights the evolution of EIA, where much of EIA process is included in scoping report. This situation has been formalized in the basic assessment report format under the 2006 regulations.

From the findings of both case studies, EIA has brought about positive changes in planning, and the post-decision implementation phase, which is an ongoing process, reveals positive improvements in the environment. The difficulties experienced in the processes are presented, including the limited number of public members who attended the meetings for the Duikersvlei project and the attempt to implement Caltex’s preferred alternative on its sulphur-processing project prior to the competent authority decision. The dissertation draws attention to the factors underlying the EIA strengths and weaknesses and the need to address planning issues at a strategic level.

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- 6) Charlotte M. Karoli my mother, for her encouragement during my studies

## DEDICATION

This dissertation is dedicated to Bonaventure Twagirimana and Axel Ishema for their support during my studies.

University of Cape Town

## DISSERTATION OVERVIEW

When reading this dissertation, it is important to understand the context in which this research was undertaken. The research was conducted in two phases, which involved group work for the first phase and individual work for the second phase. In the group of three students, Norman Mathebula, Alex Maina, and myself Sophie Nyirabakwiye, we developed the EIA theoretical framework on which was based an evaluation framework and a description of the EIA institutional context in the Western Cape. The group work is presented in the dissertation as follows:

Annexure 1: EIA effectiveness, problems in South Africa and performance evaluation framework

Annexure 2: Legal and institutional arrangements for EIA in the Western Cape, South Africa

The individual work involves evaluation of EIA performance within selected case studies and an analysis of the factors underlying the strengths and weaknesses of EIA in regard to the case studies. The work is presented as follows:

Chapter 1: Research purpose and methodology

Chapter 2: Theoretical framework, institutional arrangement, and EIA problems in South Africa.

Chapter 3: EIA performance: a comparative analysis of case studies

Chapter 4: Factors enhancing or detracting from EIA performance

Chapter 5: General conclusion and recommendations

## LIST OF ACRONYMS AND ABBREVIATIONS

<b>A</b>	Applicable
<b>AECI</b>	African Explosives and Chemical Industries
<b>CAPCO</b>	Chief Air Pollution Control Officer
<b>CCA</b>	Crowther Campbell & Associates
<b>DEA&amp;DP</b>	Department of Environmental Affairs and Development Planning
<b>DEAT</b>	Department of Environmental Affairs and Tourism
<b>DECAS</b>	Department of Environment, Culture and Sport
<b>DSD</b>	Draft Scoping Document
<b>DWAF</b>	Department of Water Affairs and Forestry
<b>EAP</b>	Environmental Assessment Practitioner
<b>ECA</b>	Environmental Conservation Act
<b>EIA</b>	Environmental Impact Assessment
<b>EMP</b>	Environmental Management Plan
<b>I&amp;AP</b>	Interested and Affected Parties
<b>IEM</b>	Integrated Environmental Management
<b>l</b>	litre
<b>mg</b>	milligram
<b>N/A</b>	Non-Applicable
<b>NB</b>	Note Well
<b>NEMA</b>	National Environmental Management Act
<b>No</b>	Number
<b>NWA</b>	National Water Act
<b>ROD</b>	Record of Decision
<b>TOR</b>	Terms of Reference
<b>UNCSD</b>	United Nations Commission on Sustainable Development
<b>UNEP</b>	United Nations Environmental Program

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# CHAPTER 1: RESEARCH PURPOSE AND METHODOLOGY

## 1.1 Introduction

The environment is an inescapable part of our lives as it provides resources to sustain our lives. It is a pillar of sustainable development, which is development that considers economic, social and environmental concerns for present and future generations (Bruntland, 1987).

Important activities of humans such as industrialization, urbanization, agriculture and others are continuously imposing a threat not only to the quality of the physical environment but also to human health and social and economic well being (Rwomire & Darkoh, 2003). Human diseases related to industrial pollution are emerging in different parts of the world and South Africa is no exception. In South Africa, everyone has the right to an environment that is not harmful to his/herself and to have the environment protected for the benefit of present and future generations (Republic of South Africa, 1996).

To build sustainable development, EIA has been recognised as an important tool for integrating social, economic and environmental considerations. It is a legal requirement for listed activities. The purpose of this study is to assess the performance of EIA in two selected projects in the Western Cape and the factors enhancing or detracting from the effectiveness of this tool.

## 1.2 Aims and objectives

The overall aim of this research is to find out the performance of EIA. As the research was done in two phases, the group work objectives inspired the individual ones. The group aims are described as follows.

- determining the strengths and weaknesses of EIA as a process to achieve its goals by using case studies
- determining the most important factors underpinning and/or undermining the performance of EIA

The group objectives of the study are as follows, to:

- document and evaluate institutional arrangements and practices of EIA in the Western Cape
- choose and analyse two cases selected from a particular field
- assess the EIA process stages' performance to improve decision making
- identify the most significant strengths and constraints of EIA to meet its goals using case studies
- identify measures that can improve the conduct of EIA and the achievement of its outcomes

By assessing selected case studies in the Western Cape, the particular aim of this dissertation is to analyse the performance of EIA and the factors that are enhancing or detracting from EIA effectiveness by

- analysing comparatively two case studies throughout the different EIA stages
- exploring the role of EIA in planning and design
- determining the performance of, and difficulties in, EIA
- determining the factors behind EIA performance and constraints to its operation.

In this regard, to study the performance of EIA in selected case studies, the objectives are:

- assessing the performance of the EIA process in terms of improving decision making
- identify difficulties within the process
- provide measures that can improve the conduct of EIA and its performance.

### **1.3 Justification for the project**

Effective EIA would contribute to sustainable development in the Western Cape as it informs decision makers about better options that minimise negative impacts and enhance benefits. There are many criteria to consider while evaluating EIA effectiveness; namely, the availability of sufficient information for decision-making, operational procedures, time frames for the EIA process to take effect, the cost, and others. In the Western Cape, in particular, there is a need to continue to evaluate the way EIA has (or has not) been achieving its expected outcomes, and to provide theoretical and practical measures to improve its performance, which is the purpose of this work.

### **1.4 Methodology**

To carry out this study, qualitative research methodology was chosen and consisted of the following components.

#### ***Establishment of evaluation framework***

A framework for evaluation was developed to comparatively analyse the case studies. It has been constructed to ensure that all concerned parties' inputs are considered and that all relevant stages are covered. Among other aspects, this evaluation framework covers the main phases and activities involved in the EIA process such as scoping, impact analysis, evaluation and mitigation,

consideration of alternatives, public participation, reporting and review, decision-making, and follow-up. The reviewing of the EIA literature helped in the elaboration of the framework.

### ***Selection of case studies***

The case study method involves an in-depth, longitudinal examination of a single or few instances or events (Wikipedia Contributors, 2008). It is often more important to clarify the factors underlying a given problem and its consequences than to identify the symptoms of the problem and how frequently they occur (Wikipedia Contributors, 2008).

The Western Cape province hosts many and various development projects. Given the limited time allocated to the research component of the Master of Philosophy degree and the need to interview different EIA stakeholders and undertake site visits, the selection of case studies was limited to the City of Cape Town to keep down the extent of travelling. Two projects have been selected for the comparative study. These are the prevention of groundwater contamination of the Duikersvlei stream at the Old Kynoch factory site, and the proposed processing and disposal of sulphur produced at the Caltex Oil Refinery in Cape Town, both in the suburb of Milnerton on opposite sides of the Platteklouf Road. The factors underlying the choice of both case studies are presented in section 1.6.

Consultation with Department of Environmental Affairs and Development Planning (DEA&DP) was undertaken to get the case studies. At the beginning, the idea was to look for a good and a bad EIA for comparative purpose. From 16 April, 2008, we approached the DEA&DP's EIA section to assist in the selection of case studies. My request was answered on 4 June, 2008, recommending the Duikersvlei EIA to me, as the project appeared to be successful in remedying the site, and the Caltex EIA due to a fine issued to the proponent before

environmental authorization. The EIA section in DEA&DP considered both projects to be relevant case studies for an EIA effectiveness study.

### ***Case studies analysis***

The case study provides a strategy to investigate a phenomenon within its real-life context (Wikipedia Contributors, 2008). The selected case studies were both done under the Environmental Conservation Act (ECA), (Act No. 73 of 1989). Structured and unstructured interviews were used to collect data from Interested and Affected Parties (I&AP), the Environmental Assessment Practitioners (EAP), the competent authority, the proponent, and the general public. Thereafter, data analysis and interpretation was done.

### ***Site visit and stakeholders' interviews***

Rather than relying solely on EAP reports, visits to and observations of the study areas were undertaken to see as far as possible the contribution of EIA to improving the environment. Dwyer and Limb (2001) describe the advantages of site visits and interviews. Interviews enable the researcher to cover a wide variety of topics, to clarify issues raised by participants, and to follow up unanticipated themes that arise. Unstructured interviews were used in this research in order to remain as open and adaptable as possible to the interviewees' concerns.

Through observation, a researcher may learn things people would not mention during an interview, and in this way, the researcher gains a broader overview of the development and the environment and the interactions between them and the community. In this regard, the Duikersvlei stream was visited. The historical pictures of the contaminated stream were provided by the proponent. However, the new pictures of the stream taken during the study help to convey and understand the contribution of EIA in remedying the degraded ecosystems. The visits to the sulphur processing plant at Caltex and interviews with stakeholders contributed to the understanding of how the EIA system operates, the way the

decisions related to the case studies were implemented, factors enhancing or detracting from EIA effectiveness, and other relevant information about the study.

### **1.5 Stakeholders' interview**

The EIA process involves many role-players, namely, the proponent, the competent authority, EAP, IA&P. In this research, a number of stakeholders involved in the case studies were interviewed and the data collected were analysed. Informants are listed in Table 1, below.

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Name	EIA role player	Affiliation	Date of contact	Means of contact
Pat Titmuss	Local authority	Senior Environmental Officer, City of Cape Town	17 July 08	0215501096 & face to face
Thurgood Longden	I&AP	Institution of Nuclear Engineers and Table View Resident	13 June 08	0215526634 & face to face
Nick Steitler	EAP	Senior Environmental consultant, DJ Environmental Consultants (DJEC)	13 June & 11 July 2008	0218519000 & Email: <a href="mailto:nick@djec.co.za">nick@djec.co.za</a> & face to face
Martin Burr	Proponent for Duikersvlei project	African Explosives and Chemical Industries (AECI), Director of Environmental Remediation	21 July 2008	021 852 1111 & face to face
Ritchie Morris	Engineer	Environmental hydro-geologist, AECI	22 July 2008	021 7905793 & face to face
Kula Luxolo	DEA&DP	Environmental Officer	14 July 2008	0214832896 & face to face
Alvin Gabriel	DEA&DP	Senior Environmental Officer	17 June 2008	0214832742
Judy Gestleger	On behalf of Proponent	Environmental Officer, Caltex	22 June 2008	0215083911
Mbulero Muzangwana	On behalf of Proponent	Engineer	1 July 2008	0215083310 & face to face
Andrew Maclean	Proponent	Senior engineer	22 July 2008	0215083911 & face to face
Jonathan Crowther	EAP	Managing Director, Crowther Campbell & Associates (CCA)	21 July 2008	0214611118 & face to face
S. Nathmi	On behalf of Proponent	Environmental Officer	25 July 2008	0215083310

**Table 1: Participants to interview**

N.B. Some of the informants participated in both projects namely Martin Burr and Pat Titmuss.

## **1.6 Criteria underlying the choice of case studies**

In this research, case studies were selected with the intention of meeting the goal of this study. The following are the factors underlying the choice of these two case studies.

### **a) Environmental remediation**

Many development activities bring about great changes in the physical and social environment structures such as roads, housing, airports and others. In most cases, EIA is done before a project is implemented to anticipate and reduce potential impacts. In both selected case studies, the EIAs were undertaken for projects that aim to reverse existing environmental degradation in seeking for improvement.

In the Duikersvlei project, the EIA was undertaken of a proposal to remedy a brown field site in order to clean up an ecosystem before any redevelopment can take place. The place was previously occupied by Kynoch, a fertilizer factory suspected to be the source of various levels of soil and ground-water nutrient contamination arising from the past operation. Nitrogen is one of the pollutants identified on the site and affecting the neighboring sensitive ecosystems such as Rietvlei and Milnerton lagoon.

For the second case study, Caltex oil refinery is an industry that generates airborne emissions, including sulphur and its related chemicals, which are known to be dangerous pollutants. In this context, the refinery is seeking to remove more sulphur from products, to reduce its impact on the environment. It is in this regard that an EIA was needed to seek a safe alternative for processing and disposing of the sulphur produced in that industry.

### **b) Community complaints about Caltex**

Residents neighboring Caltex often complain about the emissions generation. Although the project proposed by Caltex is in order to improve the environment,

one can ask the reasons why there are always complaints about Caltex emissions. It is not easy to confirm the success of EIA in predicting and mitigating impacts as it may happen that some impacts only appear to be severe over a long time. In addition, many observers may evaluate the success or failure of the EIA predictions according to their level of being affected. In this regard, the Department of Environmental Affairs and Developmental Planning (DEA&DP), as the EIA relevant authority in the Western Cape, provided assistance in choosing the two case studies. Moreover, the fact that there were many articles in the media about the complaints and dissatisfaction of the neighboring community was also a factor in selecting the case studies.

#### **c) The locality of case studies**

Both case studies are adjacent to each other, in Milnerton, in the City of Cape Town. The Caltex refinery is zoned “undetermined” and reserved for petrochemical use. Just over the Platteklouf Road from the main entrance of the refinery, the old Kynoch factory is also zoned “undetermined”. Both are situated in industrial zones. Specifically, the old Kynoch fertilizer factory is close to environmentally sensitive ecosystems namely Rietvlei and Milnerton lagoon (DJEC, 2005). In addition, for closer proponents such as Caltex and Kynoch, it is of interest to know about the performance of EIA and the possibility of such neighboring and interacting proponents learning from each other’s EIA experience how to improve their practices. Figure 1 shows the geographical location of both projects.

#### **d) The possibility of public attending meetings**

The possibility of public from the nearest residential areas such as Dunoon and Table View and stakeholders from neighboring industries attending the EIA meetings was part of the factors. In an industrial zone, industrial owners or workers are not often interested in what happens next door, and the area is often frequented solely by workers as residences are not close.

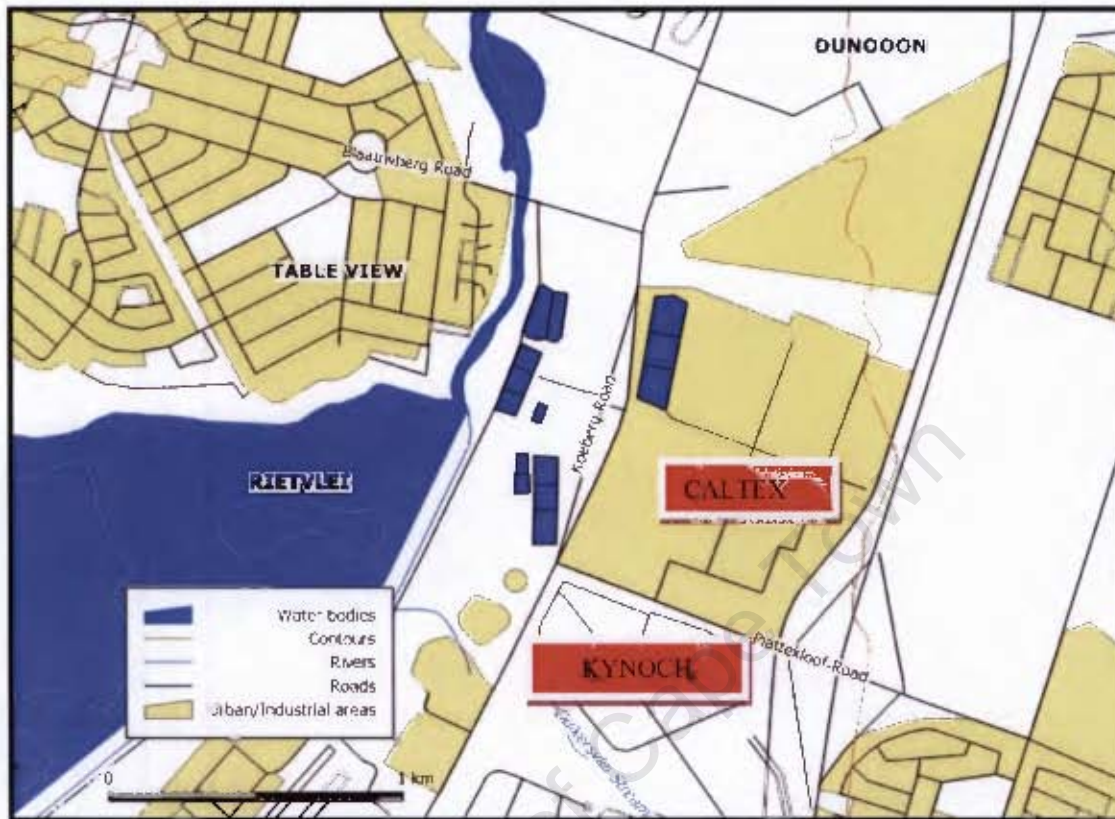


Figure 1: Geographical location of case studies

e) The proposed projects both relate to pollution reduction or environmental remediation

Pollution is a problem as some chemicals released or generated by these industrial activities may cause air, water, and land pollution. The main idea is to study how efficient EIAs have been in predicting impacts in such areas where specific skills must be applied and many risk constraints are associated with the chemicals. In the first case study, the EIA team was appointed to assess measures of preventing groundwater contamination from the fertilizer factory site, where nitrogen was known to occur as a pollutant, while the other case study is in the context of processing sulphur, a known air pollutant.

#### **f) Full EIA and scoping process**

The Duikersvlei study was limited to scoping. One can ask whether it was able to predict, mitigate, and enhance impacts and to provide enough information to inform the decision-making process, compared to the sulphur processing project for which a full EIA was undertaken.

### **1.7 Limitations and assumptions of the study**

There is a need to mention the dynamism of natural systems. Morgan (1998: p.185) points out the attention that should be paid to prediction of changes in dynamic systems as follows:

*“We are interested in the change in the environment at some stage in the future as a result of the effects of a proposed activity. Nevertheless, we need also to recognize the dynamic nature of the environment; it will change anyway, with or without the proposed activity. Moreover that change will be a product of change in the natural system which may be unavoidable, and change brought about by the social-economic activities of local people, which may be avoidable to a certain degree”.*

To study EIA effectiveness, using case studies may be the best way of assessing performance on the ground. Nevertheless, using only two case studies, it is not possible to generalize. Similar studies of EIA should be carried out on other sectors of development such as housing, coastal management, golf courses, and others to more comprehensively analyse the way this tool is performing in the promotion of sustainable development in the Western Cape.

### **1.8 Conclusion**

Even if many studies have been conducted on this matter of EIA effectiveness, it is very important to note the importance of this study done at local level. Within the jurisdiction of the Western Cape, it is necessary to note the performance and

challenges of EIA as a tool to promote sustainable development. Case studies were selected based on criteria such as locality, environmental improvement aspects of the projects, and others. DEA&DP as an EIA relevant authority in the Western Cape provided assistance in choosing the two case studies. In addition, the travel requirements and the timeframe allocated to the research influenced the selection of case studies within the City of Cape Town.

An evaluation framework was established from the EIA literature to inform a comparative analysis of the two case studies, of which one is a scoping process and the other one is a full EIA process. Prior to the comparative analysis of case studies, a better understanding of the projects was achieved through a thorough study of the EIA reports, which was followed by site visits and stakeholders' interviews. The informants within this study were the key EIA role-players who have been involved in the assessment process. Such an approach helps to learn about the EIA process-related difficulties, factors contributing to these problems, and the way they can be tackled, which are the objectives of chapters 3 and 4. Chapter 2 summarizes the work done by the group of three Masters students in developing the evaluation framework.

## **CHAPTER 2: THEORETICAL FRAMEWORK, INSTITUTIONAL ARRANGEMENT, AND PROBLEMS OF EIA IN SOUTH AFRICA**

### **2.1 Introduction**

EIA has become a widely used tool for identifying the potential impacts of new developments and promoting sustainable developments (Harmer, 2005 citing Glasson *et al.*, 1999). It is now being used in many countries worldwide (Wood, 2003). Since it emerged, there has been a growing interest in examining the effectiveness of this environmental management tool (Harmer, 2005). This chapter presents the concept of EIA effectiveness, the institutional arrangement for EIA in the Western Cape, and general EIA problems in South Africa. It provides a summary of the research done by the group of three students, which is covered in detail in Annexures 1 and 2.

### **2.2 EIA and sustainable development**

EIA has been promoted as an important tool that society is using to achieve sustainability by directing development away from unsustainable alternatives (Hill, 2004). EIA contributes to a project's design, development control, and planning process (Morgan, 1998). It does this through its procedure, which involves screening, scoping, impact analysis, mitigation, reporting of EIA and report review, decision-making, post-decision implementation, and control. Details on the EIA procedure and its advantages are provided in Annexure 1.

Public participation in EIA is mandatory in South Africa, leading public awareness of the projects and allowing the public to express concerns about the projects and thereby reducing the potential for public controversy, confrontation, and

delay. This reflects the role of EIA in balancing the three pillars of sustainable development, which are social, economic, and environmental dimensions. To examine EIA effectiveness in a country, it is necessary to understand the historical evolution of the EIA system as it may be one of the factors underpinning its achievement.

### 2.3 EIA evolution in South Africa

EIA was undertaken in South Africa as early as the mid -70s. During the late 70s and 80s, numerous articles regarding EIA in South Africa were published, mainly due to the work of a handful of dedicated academics and professionals (Staerdahl *et al.*, 2003, citing Sowman *et al.*, 1995).

DEA&DP (2006) gives the EIA historical evolution of South Africa as follows:

- a) 1970s. EIA was performed voluntarily
- b) 1980s. Introduction of first EIA legislation
- c) 1989. Process of Integrated Environmental Management (IEM) which involves pro-active planning, social benefits, informed decision making, participatory approach, and accountability
- d) 1989. ECA / Act No. 108 of 1998 which came out with a framework for mandatory EIAs
- e) 1997. ECA-EIA Regulations (activities requiring EIA before commencement)
- f) 1998. National Environmental Management Act (NEMA), 1998.  
This stipulates environmental management principles and minimum requirements for investigation, assessment, and communication of potential impacts of activities
- g) 2006. NEMA EIA Regulations

Although South Africa's EIA system has been subject to many changes over the years, the performance of this tool in terms of its expected outcomes requires critical examination.

## 2.4 EIA effectiveness

Information needed prior to decision-making includes different elements such as the project proposal description, baseline environmental conditions, impact identification, quantification and evaluation, alternatives identification and evaluation, and mitigation measures descriptions. In addition, quality control is required to ensure the adequacy of information (DEAT, 2004). Quality control is an approach to lead EIA to its expected outcomes, which is one aspect of effectiveness. Sadler (1996) describes the study of EIA effectiveness in terms of whether EIA works as intended and meets the purpose for which it was designed. Different authors have expressed their interest in the study of EIA effectiveness and have different positions on effective EIA. However, in common, they define effective EIA as promoting sustainable development.

Wood (2003) describes effective EIA as altering the nature of decisions and implementing actions to reduce their environmental cost and render them more sustainable. Glasson *et al.* (1999) note that effective EIA must be an aid to decision making and the developer and help to achieve sustainable development. Therefore, there is a need for EIA to be done properly to avoid inappropriate decisions and controversial developments. Lee *et al.*, (1999) state that, to be effective, EIA should achieve environmental protection and be cost effective. On the issue of EIA effectiveness, Sadler (1996) provides ingredients for effective application of EIA. These include appropriate timing in initiating the assessment, quality information, and receptivity of decision makers and the proponent to the results of environmental assessment. He also mentions the factors underlying the achievement of EIA, such as the integrity of EIA and its policy role in promoting sustainable development.

In the middle 1990s, an international study on the effectiveness of environmental impact assessment was conducted and the results identified several areas where improvements needed to be made. These are scoping, evaluating significance,

review of environmental statement, and post-decision monitoring and auditing (Sadler, 1996). Wood (2003) provides a comparative study of EIA systems of seven countries and also identifies potential shortcomings of EIA. These are related to EIA coverage, integration of EIA into decision making, EIA reporting, EIA report review, impact monitoring and enforcement, and others. As Wood's 1995 study did not consider South Africa, Annexure 1 provides more details on this matter in regard to the South African EIA system.

In order to learn more about the effectiveness of EIA, it is necessary to identify the problems that EIA is facing in South Africa which undermine its performance.

## **2.5 Problems related to EIA in South Africa**

Duthie (2001) mentions the problems that EIA is subject to in different countries and in South Africa. They include, among others, staff shortages, unqualified and inexperienced staff, exclusive public participation, capacity constraints, deficiencies of EIA legislation, lack of an effective planning tool at the strategic level to complement EIA, and weak follow-up enforcement and compliance monitoring.

According to the studies of different researchers, there are various EIA problems in South Africa and these are described below.

### **a) Economic pressure and political intervention**

Some leaders describe EIA as useful and obstructive in the same time and as protectionist tools in the hands of frenzied environmentalists eager to block development (Fakir, 2006). As a result of political pressure, the decision to grant authorization of a proposed action or development is sometimes made by overwhelmed provincial staff, rather than through comprehensive consideration of the full range of factors internationally recognized as good EIA practice (Wood, 1999). In this regard, the Record of Decision (ROD) for the Green Point stadium

project was influenced by politics and economic pressure. No thorough alternatives of other stadiums such as Newlands and Athlone were considered.

**b) Institutional fragmentation**

Glazewski (2005) mentions the lack of coordination of environmental laws at different levels of government which affect EIA effectiveness.

**c) Constraints related to the capacity**

Lack of EIA experience among government staff has been affecting the implementation of EIA regulations at different levels of government. This affects the EIA report review process and others (Kula, 2008, personal communication).

**d) Poor terms of reference for specialist studies.**

Little instruction is given to specialists on why the study is being commissioned, what questions it needs to answer, the way the result is to be used, and the information to be presented (Brownlie and Wynberg, 2001 citing Raimondo, personal communication).

**e) Inadequate mitigation**

Even if mitigation is mandatory in South Africa, a lack of follow-up by the authorities to ensure the effective implementation of mitigation measures that are part of the authorisation conditions undermines the effectiveness of EIA (Brownlie and Wynberg, 2001). In South Africa, the EIA problems relating to the stages of EIA are described in Annexure 1.

There is a need to understand EIA legal and institutional contexts in order to better define the source of the EIA weaknesses and strengths.

## **2.6 EIA legal and institutional context in South Africa**

In the Western Cape, the DEA&DP manages EIA-related applications. The Constitution of South Africa (Act No 108 of 1996) provides an environmental right to citizens. This right consists of having an environment that is not harmful to their health and having the environment protected for the benefit of the present and future generations and others (section 24). The Constitution also provides for the management of the environment by both provincial and local governments and mentions the role of local government, such as promoting a safe and healthy environment and encouraging the involvement of communities and community organisations in the matter of local governance (section 152 (1) (d)-(e)). In order to address the shortcomings of the ECA in terms of EIA requirements and procedure, the NEMA (Act no. 107 of 1998) EIA regulations mention the obligation of ensuring that the environmental consequences of listed activities are considered in decision making (Van Der Linde, 2006).

The Directorate to manage EIA in Western Cape is divided into four main regions which reflect the geographical coordination and control of development. The staff in this section deal with applications according to the legal and time framework allocated to EIA. Annexure 2 provides details in this regard.

## **2.7 Evaluation framework**

The following framework provides a list of key questions structured according to the EIA stages, which was used to guide interviews with stakeholders. In the beginning of research, the framework was developed within our group of three students. As our case studies are different, there was a need to adopt the group framework to the case studies, which resulted in developing the specific performance evaluation framework covering in this study, compliance with EIA's procedures, EIA influence on projects and others. The framework is established as follows:

### **Project design**

- To what extent is EIA contributing to the project design?

### **Scoping**

The main purpose of scoping is to define the scope of the assessment (Department of Environmental Affairs and Tourism (DEAT), 2004).

- To what extent does the process distinguish between the issues that are going to be assessed and those that will not?
- Were reasonable alternatives identified?
- Were the Terms of Reference (TOR) for specialist study prepared and were they relevant to the study required?

### **Analysis, evaluation, and mitigation**

The main purpose of assessment is to provide comprehensive coverage of the impacts identified in scoping, including social, economic and physical, positive and negative, large and small, long-term and short-term, reversible and irreversible and others (Morgan, 1998). Specialist study may be required for detailed investigation of specific impacts. Further aspects to be considered include:

- Are baseline conditions described?
- To what extent were impacts assessed?
- Was the significance of impacts determined (scope, duration)?
- To what extent were residual impacts reduced through mitigation?

### **Stakeholder engagement**

The need to improve the quality of decisions requires participation between all stakeholders. This participation is not limited to the act of providing information, but there should be an interaction between the organisation making a decision and people who want to participate (Creighton, 2005). Further aspects to be considered include:

- Were stakeholders given the opportunity to participate throughout the process?
- To what extent did stakeholders participate in the process and were their concerns considered?

### **Reporting, report review and decision making**

Beyond the legal requirements concerning EIA report contents, DEAT (2004 citing IAIA, 1999) provides best-practice operating principles guiding report preparation. They involve the requirement to document clearly and impartially the impacts of the proposal, the proposed measures for mitigation, the significance of effects, and the concerns of the interested public and the communities affected by the proposal. The report is submitted to a reviewer for quality control. According to DEAT (2004, citing United Nations Environmental Program (UNEP), 2002) the key objectives of EIA review are to assess the adequacy and quality of an EIA report, take account of public comment, determine whether the information is sufficient for a final decision to be made, and identify the deficiencies in the EIA report. Further aspects to be considered include:

- Does the report contain the requirements to inform decision making?
- To what extent was the report quality controlled?
- Are the decision and the conditions of approval based on the results of the assessment?

### **Follow-up**

Follow-up has been defined as the “monitoring and auditing of the impacts of a project or plan (that has been subject to an EIA) for management of, and communication about, the environmental performance of that project or plan. Without it, the usefulness of the process and the environmental outcomes of development activities will remain unknown” (Morrison-Saunders and Arts, 2004: p.4).

Follow-up involves four elements (Harmer, 2005 citing Arts *et al.*, 2001):

- a) *Monitoring and Auditing* – the collection of data and comparison with standards, predictions, or expectations.

- b) *Evaluation* – the appraisal of the conformance with standards, predictions, or expectations as well as the environmental performance of the activity.
- c) *Management* – making decisions and taking appropriate action in response to issues arising from monitoring and evaluation activities.
- d) *Communication* – informing the stakeholders as well as the general public about the results of EIA follow-up.

Further aspects to be considered include:

- To what extent has follow-up been done?
- To what extent are EIA role-players involved?

### **Time and Cost**

EIA should deliver environmental and other benefits in a cost- and time-effective manner.

- Was EIA time and cost effective?

## **2.8 Conclusion**

From its beginning, the performance of EIA has been a topic of ongoing research. Even if EIA legislation and institutions are established in order to lead EIA to its intended outcomes, this tool still faces various challenges in different areas. Therefore, there is a need to understand the extent to which these problems are occurring in the Western Cape.

Analysis of case studies of projects that aim to achieve environmental improvement would give an idea of the strengths and weaknesses of EIA in this sector. In chapter 3 and 4, the role of different stakeholders in the process, levels of governance, and other aspects related to EIA are evaluated, in addition to the factors underlying the performance of EIA.

## **CHAPTER 3: EIA PERFORMANCE: A COMPARATIVE ANALYSIS OF CASE STUDIES**

### **3.1 Introduction**

The closure of the Kynoch Fertilizer Factory at Milnerton involved the implementation of remediation measures to protect the neighboring vulnerable ecosystem (DJEC, 2005). Within the same area, many tonnes of sulphur produced at the Caltex Refinery in Milnerton each day as a by-product of the production process had to find another processing option, as AECI in Somerset West, which was using this sulphur as raw material, closed down at the end of 2000 (CCA, 2001). In both case studies, prior to the commencement of activities, an environmental authorization had to be issued by the competent authority based on the information provided by EIA. This chapter comparatively describes the extent to which both processes informed the environmental decision maker in pursuit of sustainable development.

### **3.2 Proposed projects' background**

Kynoch Fertilizer is an AECI factory which was operating in Milnerton for many years. On the site of approximately 66 hectares, the factory decided to close its doors towards the end of 2000 (DJEC, 2005). Due to the nature of its activities, the Duikersvlei stream transecting the old Kynoch factory site was polluted and exits the site on the Koeberg Road boundary until its confluence with the Montague Gardens storm water canal (DJEC, 2005). Thereafter, it joins an earth-lined canal which runs parallel to Rietvlei and finally discharges into the Milnerton Lagoon near the Otto du Plessis Bridge (DJEC, 2005). During the rainy season in winter, the canal overflows and discharges directly into Rietvlei (Burr, 2008, personal communication). This situation reveals the way the polluted Duikersvlei

was affecting neighboring ecosystems. Symptoms of this pollution were clear, including the presence of dense alien vegetation, low biotic diversity, and the occurrence of pollution-indicating oligochaete worms (*Tubifex*) and midge larvae (*Chironomus*) (DJEC, 2005).

To deal with this problem, an EIA was undertaken to assess the feasibility of preventing groundwater contamination of the stream, starting on the factory site, the origin of contamination.

Sulphur is a by-product of the refinery process. Options for processing this chemical were the object of the EIA. Prior to the proposed project, Caltex Refinery used to transport thirty to forty tonnes of sulphur in a molten form every day to AECI in Somerset West. At this site, sulphur was solidified in a process known as slating and then transported via rail to Potchefstroom for use in the manufacture of fertilizer (CCA, 2001).

The AECI plant closed down at the end of December 2000 and Caltex was looking for an alternative method of solidifying the sulphur it produces. Due to the time an EIA takes to get authorization, Caltex had, in the interim, disposed of the sulphur at the Vissershok Municipal Waste Facility as a legally alternative available (CCA, 2001). Therefore, future treatment methods for processing and disposing of the sulphur were needed. For implementation of any option, there is a legal requirement of undertaking an EIA to get a permit from the competent authority.

Table 1 summarizes the context in which there is a need for impact assessment in both case studies.

<b>Proposed Development</b>	<b>Nature of the activity</b>	<b>Type of industry</b>
Prevention of groundwater contamination of the Duikersvlei stream at the Old Kynoch Factory site	Cleaning the polluted environment	Fertilizer plant
The proposed processing and disposal of sulphur produced at the Caltex Oil Refinery in Cape Town	Treatment of sulphur extracted from refinery products to reduce pollution from cars exhausts, chimneys on site and others	Oil Refinery plant

**Table 2: Background of proposed projects**

### **3.3 Environmental legislation**

The ECA provides for control of identified activities, which may have a detrimental effect on the environment, and prohibits such activities until written authorization is obtained from the relevant authority (DJEC, 2005). This authorization, which may be issued with conditions, is only released once a full EIA or an EIA in the form of an expanded scoping study has been undertaken. The EIA for the processing and disposal of sulphur had been processed under ECA, as it is a listed activity in terms of activity 1(c):

*“construction or upgrading of processing facilities for any substance which is considered as dangerous or hazardous and is controlled by national legislation”* (CCA, 2001: p.4).

Under activity 9, these include scheduled processes under the second schedule to the Atmospheric Pollution Prevention Act (CCA, 2001). Both hydrocarbon-refining processes are listed in this schedule. Thus alternatives or upgrades at the refinery site or a solidification process situated elsewhere are both activities for which EIA is required (CCA, 2001).

The Duikersvlei activity is identified in EIA regulations promulgated under ECA (Act no. 73 of 1989) as it consists of construction, erection, or upgrading of canals and channels, including structures causing disturbances to the flow of water in a river bed, and water transfer schemes between water catchments and impoundments (DJEC, 2005). In addition, Chapter 3 of the NWA (Act no. 36 of 1998) focuses on protection of water resources. Pollution prevention is covered in part 4 (section 19) and states that any person who owns, controls, occupies, or uses land is deemed responsible for taking measures to prevent pollution of water resources. If these measures are not taken, the responsible authority may do whatever is necessary to prevent the pollution or remedy its effects and to recover all reasonable costs from the responsible person (DJEC, 2005). Non-compliance with this provision constitutes a criminal offence. As the activity involved diverting the flow of water in a watercourse, AECI had to obtain a Water Use License prior to commencing the proposed realignment of the Duikersvlei stream in terms of sections 21 and 22 of NWA (Act no. 36 of 1998) (DJEC, 2005).

In both studies, the principles of Integrated Environmental Management (IEM) were adopted, involving accountability, an open and participatory approach, and the mainstreaming of socio-economic concerns and biophysical aspects into the decision making. The clause regarding environmental rights in the Constitution of the Republic of South Africa (Act no. and NEMA No 107/1998) is also relevant. The competent authority in sulphur treatment EIA was the Department of Environment, Culture and Sport (DECAS) and DEA&DP in the study of Duikersvlei stream. DECAS was a department in charge of environment towards early 2000s, and DEA&DP is the current department responsible for the environment and was established for the purpose of marrying environment and development planning (Kula, 2008, personal communication). For sulphur treatment, other regulations were applicable. These include regulations governing the transport of liquid or solid sulphur, stockpiling of sulphur,

processing of sulphur, air pollution regulation, and others (CCA, 2001). Table 1 summarizes the legal and administrative context for both case studies.

Proposed Development	Proponent	Consultant	Main Legislation	Competent authority
Prevention of groundwater contamination of the Duikersvlei stream at the Old Kynoch Factory site	AECI	DJEC	<ul style="list-style-type: none"> <li>▪ Constitution/ 1998</li> <li>▪ ECA no 73/1989</li> <li>▪ NWA no. 36 of 1998</li> <li>▪ NEMA (for IEM)</li> </ul>	DEADP
The proposed processing and disposal of sulphur produced at the Caltex Oil Refinery in Cape Town	CALTEX	CCA	<ul style="list-style-type: none"> <li>▪ Constitution/ 1998</li> <li>▪ ECA no 73/1989</li> <li>▪ NEMA (for IEM)</li> <li>▪ Atmospheric Pollution Act</li> <li>▪ Hazardous Substances Act of 1973</li> <li>▪ Others</li> </ul>	DECAS

**Table 3: Legal context of proposed activities**

### 3.4 Process description

The Duikersvlei study was limited to scoping. However, this process involved specialist study, integration, and assessment. For this project, the final scoping report was used for the issue of the decision (DJEC, 2005). Given the short process, one can query the extent to which the process was able to predict and mitigate impacts and to provide enough information to the decision maker.

For the sulphur treatment project, a full EIA including scoping, specialist studies, and impact assessment was conducted (CCA, 2001). It is important to see the outcomes of both processes and the extent to which they managed to predict, mitigate, or minimize impacts in order to promote sustainable development.

The comparative study evaluating the performance of EIA was carried out on the different stages and activities involved within the processes and is presented in the text below.

### **3.4.1 Scoping process within case studies**

Scoping is a very important phase of EIA as it begins with identifying the impacts and the issues to consider during impact assessment (Annexure 1).

Scoping involves different activities such as:

- a) Identification of impacts and issues to consider
- b) Description of the project
- c) Description of the environmental baseline
- d) Identification of alternatives
- e) Identification of I&AP.

Many shortcomings of EIA are attributed to weak scoping processes (Morgan, 1998). Scoping is used to narrow the scope of an assessment and ensure that the assessment remains focused on the significant impacts.

For scoping, the evaluation criteria included the provision of baseline information, I&AP identification, impacts and alternatives identification, identification of specialist studies needed and preparation of Terms of Reference (TOR), and timelines for the EIA process. The need to know about a project has been recognized as fundamental to the prediction process (Morgan, 1998).

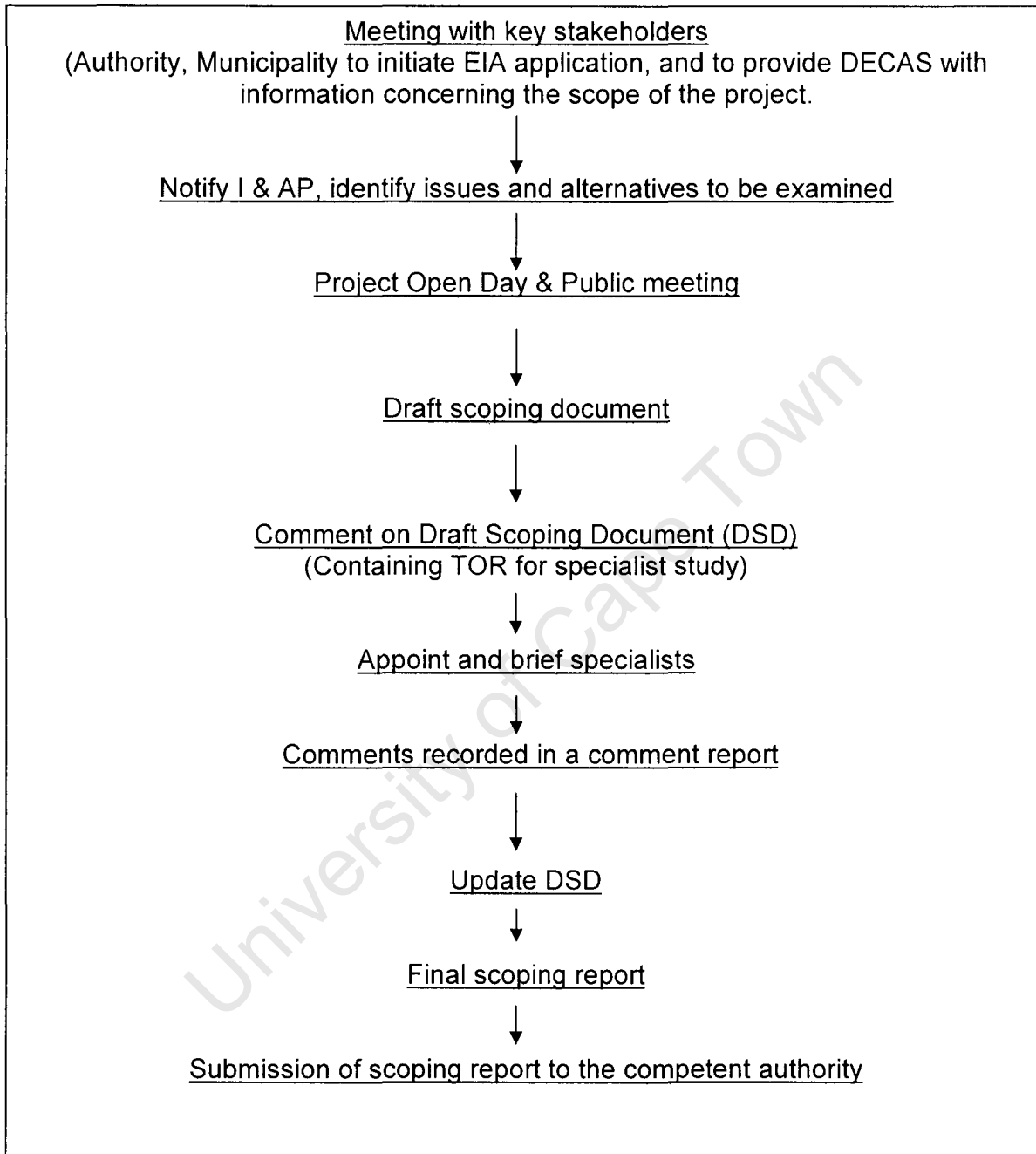
The Duikersvlei project started by identifying I&AP and introducing the project to the relevant authorities. A DEA&DP environmental officer was appointed for this project and the Blaauwberg Municipality informed.

For the sulphur treatment project, I&AP were identified so that they could be informed about the project, participate, and raise their concerns. CCA had a pre-

scoping meeting with the Blaauwberg Municipality and the Environmental Impact Management Unit of DECAS for general information about the feasibility of the project. This reflects the role of providing information on consequences as basic to the process of seeking for project alternatives, and for raising related and other relevant issues.

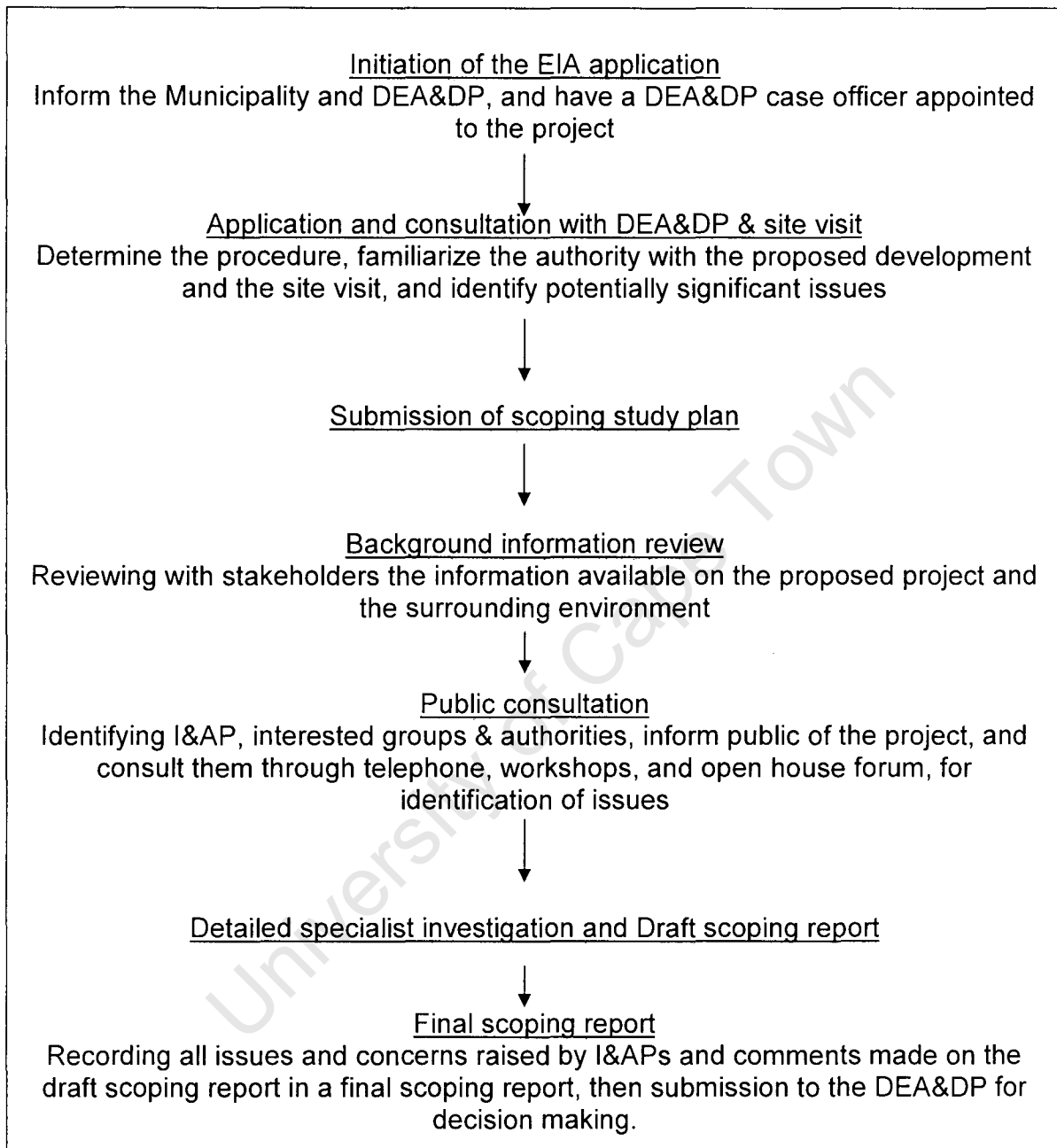
In both case studies, a Background Information Document (BID) was prepared by the EAP and distributed to I&AP to inform them about the proposed development. The BID contained information on the proposed project, the applicability of the EIA regulations, and other relevant information such as the project description and an invitation to the general public to comment. During scoping, the environmental system likely to be affected in some way by the proposed activity was described in both case studies.

For both scoping processes, other activities were undertaken such as identification of alternatives, TOR for specialist study, publication of draft scoping report for comments, and elaboration of the final scoping document. The scoping study for both case studies is separately portrayed within Figures 1 and 2 below.



**Figure 2: Scoping procedure for the sulphur treatment study**  
(Source: adapted from CCA, 2001)

For the sulphur treatment study, specialists were appointed as there were some impacts requiring further investigation; namely, air pollution, odour, risk, and noise. In addition, a full EIA process had to be undertaken.



**Figure 3: Scoping procedure for the Duikersvlei project**  
(Source: adapted from DJEC, 2005)

For the Duikersvlei scoping procedure, one specialist study on aquatic ecology was undertaken. As there were no potential impacts requiring further investigation, a decision concerning this activity was therefore made without undertaking a full EIA (Steitler, 2008, personal communication). This scoping

study involved as many processes as the sulphur treatment EIA. These included public participation, consideration of alternatives, mitigation, follow-up, and others. This is the reason why the headings below concerning these issues include the Duikersvlei study, for comparative purposes.

Issues identified throughout the scoping processes are comparatively summarized in Table 4. This comparison reflects the need for further impact investigation on the sulphur treatment project. To understand the table, the letter A was used to mean applicable and NA to mean non-applicable.

<b>Impacts identified during scoping</b>	<b>Case study (1)</b>	<b>Case study (2)</b>
	The proposed processing and disposal of sulphur produced at the Caltex Oil Refinery in Cape Town	Prevention of groundwater contamination of the Duikersvlei stream at the Old Kynoch Factory site
<b>Pollution (odour and toxicity)</b>	A	A
<b>Dust</b>	A	NA
<b>Fire risk</b>	A	NA
<b>Hazards and health risk</b>	A	A
<b>Transport risks</b>	A	NA
<b>Visual impact</b>	A	NA
<b>Spill risk</b>	A	A
<b>Noise</b>	A	NA
<b><i>Possible affected groups</i></b>		
<b>Workers</b>	A	A
<b>Surrounding communities</b>	A	A
<b>Spill into water- body</b>	A	NA
<b>Ground water</b>	NA	A
<b>Regional hydrology and aquatic ecology</b>	NA	A
<b>Spill into land</b>	A	NA
<b>Specialist studies</b>	Required	Required (aquatic ecological investigation)

**Table 4: Context of issues identified during scoping processes**  
(A: applicable, NA: Non Applicable)

From table 3, it is clear that the Duikersvlei scoping revealed that the significant impacts are pollution, which was affecting regional hydrology and aquatic

ecology, thus impacting on the surrounding community and workers. The situation triggered a special investigation of the aquatic ecological system. In regard to sulphur treatment, scoping identified impacts ranging from pollution, dust, fire risk, hazards and health risk, visual impacts, and spill risk to the impact on workers and surrounding communities, hence the need for five specialist studies and a full EIA process.

### **3.4.3 The performance of scoping**

In both case studies, the scoping studies were satisfactorily conducted as highlighted above. The following are the main results:

- a) the applicable legislative and institutional frameworks were identified
- b) various alternatives to the project were identified for further assessment
- c) the key stakeholders and their concerns were identified
- d) in both case studies, the key environmental aspects and project-environment interactions to be addressed were described
- e) the geographical area to be considered in the environmental baseline and in the identification of impacts was described and considered for key impacts identification. For the sulphur treatment study, both the location of a plant within the vicinity of Caltex refinery and the area of Vissershok for the disposal of waste were described
- f) recommendations were made on evaluation methodologies
- g) other elements such as time frames needed for assessment were also defined.

Due to their significance in the process, some of the achievements of the scoping process, namely alternatives generation and public participation, are discussed below.

### **3.4.4 Generation of alternatives**

Alternatives are options, choices, or courses of action; they are means to accomplish ends which include not only the developer's goals but also social goals such as the protection and the promotion of environmental quality (Steinemann, 2001). For the sulphur processing project, at the beginning, the EAP identified four alternatives, and others were identified in the Draft Scoping Document (DSD) publication, identified by the members of the public (Crowther, 2008, personal communication).

For each alternative raised by members of the public, the consultant in both case studies and developer-appointed technicians were tasked with assessing whether generated alternatives were worth being studied. The technicians referred mainly to safety principles on the sulphur processing options (for Caltex project) and to the legal requirement of detoxifying the environment (for Duikersvlei project) (Burr, 2008, personal communication).

#### **3.4.4.1 Types of alternatives generated**

According to DEA&DP (2007), there are different types of alternatives in EIA. These include location alternatives, activity alternatives, design or layout alternatives, technology alternatives to be used in the activity/process, and demand alternatives.

For the sulphur treatment EIA, according to CCA (2001), the following alternatives were identified:

- a) transport of molten sulphur direct to Potchefstroom
- b) solidification inside the refinery (Caltex preferred alternative)
- c) solidification plant outside Caltex Refinery
- d) permanent disposal at a waste site

- e) temporary storage and subsequent transportation
- f) solidification by slabbing
- g) solidification by slating
- h) solidification into blocks or barrels.

For the Duikersvlei study, the alternatives generated concerned the stream realignment options. Thus, in technical terms, the following alternatives were considered (DJEC, 2005):

- a) non–realignment alternatives
- b) three stream realignment alternatives (this is the developer’s preferred alternative to minimize contact with contaminated groundwater at the factory site)
- c) stream channel cross-section alternative.

#### **3.4.3.2 Consideration of sulphur safe principles**

In general, many criteria are used to evaluate alternatives, such as the feasibility of the alternatives being implemented, associated risks, social impacts, business criteria and others. In addition to these criteria, for the sulphur treatment study, risks associated with handling sulphur were considered. The following are some of the sulphur safe principles considered (CCA, 2001):

- a) the production of dust should be avoided due to the risk of explosion
- b) sulphur should be handled in an environment free of fire, frictional sparks, or situations where static electricity is present

In addition, the risk of sulphur to catch alight, which results into sulphur dioxide gas extremely irritating and toxic was considered.

Consequently, some alternatives were not eligible for further assessment. For the preferred alternative (solidification inside the refinery), the Caltex administration advanced a set of reasons including provision of best environment and health

safeguards, 24 hours operation to ensure security, availability of necessary infrastructures and utilities and others (Maclean, 2008, personal communication).

#### **3.4.3.3 Difficulties in alternatives identifications**

Generation of the no-go option and relocation of the factory are two options generated by the public in regard to the Caltex project. Such alternatives were not evaluated by the consultant as they were considered unreasonable. While commenting on the final report, people who raised these alternatives complained of not being heard prior to decision making. The generation of such alternatives would have many implications, as the purpose of the proposed development is to clean the environment by treating the sulphur. In addition, this refinery has an invaluable economic place within the Western Cape as it provides crude oil, fuel and other materials. Thus, relocation of the factory would require significant financial resources and could even generate further impacts on another site, as well as adverse socio-economic impacts in present area.

#### **3.4.5 Impact assessment and specialist study**

Information is fundamental to prediction. Morgan (1998: p.186) describes the nature of this information as follows:

- a) information about the proposed activity and associated process
- b) information about the environmental system that is likely to be affected in some way by the proposed activity.

He identifies the reasons for obtaining baseline information in the following way:

*“we can detect changes by comparing the future state of environment with the state of environment as it was before the proposed activity took place”.*

A full impact assessment was undertaken for further investigation of impacts on different options for processing sulphur as per the scoping study. Specialist studies were undertaken to provide information in regard to focused areas of impact. The EIA assessed both the positive and negative impacts on the

biophysical and socioeconomic environment. During the process, the consideration of two main noxious sulphur gases that may be generated as a form of sulphur (sulphur dioxide, hydrogen sulphide) were assessed on each option of processing and at different stages in the installation of the options. This was done at both localities proposed for development, within the Caltex Refinery and at Vissershok. Impacts were assessed for sulphur processing, storage, transport and for a combination of these activities involved in this process. The assessed impacts were for noise, odour, air pollution, dust, disaster risk evaluation, traffic, and visual impact generation (CCA, 2001).

For the Duikersvlei stream, the project involved addressing the contamination of the watercourse via groundwater (DJEC, 2005). Important information on the biophysical environment including hydrology, hydrogeology, and aquatic ecology was considered fundamental to prediction. The level of nitrogen contamination in groundwater was known as ranging from 500 to 27000 mg/l, and, depending on variability in rainfall, the groundwater confirmed seasonal fluctuations in nitrogen concentration (DJEC, 2005). In regard to regional hydrology and aquatic ecology, the stream forms part of the Diep River catchment which includes the ecologically important Rietvlei wetland which is a proposed RAMSAR site (DJEC, 2005). The potential biophysical and socio economic impacts associated with the proposed project, the long-term impact (as a result of the proposed development's operational phase), and short-term impacts (project construction related impacts), and negative and positive impacts were identified. Primarily, the aquatic ecological impacts and construction phase related impacts involving technical feasibility and storm water management were assessed. The assessment of significant impacts required specialist study to address the key concerns, namely the project's potential impacts on the aquatic ecosystems in the Duikersvlei and downstream surface water bodies. For the Duikersvlei EIA, a specialist study was undertaken on updating aquatic ecology (DJEC, 2005).

In the sulphur processing project, the independent specialists appointed by CCA did the detailed investigation on identified impacts. Specialist studies were conducted on each alternative for activities including construction, operation of the processing plant, transport of solid or liquid sulphur via road or rail and the loading of transporting vehicles, stock piling of sulphur awaiting transport, and also on accident management related to any of above activities (CCA, 2001).

### **3.4.6 Evaluation of impacts and mitigation**

The evaluation stage comes after impact identification and prediction and tests the significance of impacts. Based on the results of impact evaluation, it can be decided whether a proposal is acceptable or not. For the sulphur processing project, after assessing impacts, they were classified according to their magnitude, and this was done with regard to two forms of sulphur compound, namely, sulphur dioxide and hydrogen sulphide. The results obtained in the assessment of impacts of generating sulphur dioxide were evaluated comparatively to the guideline stipulated by DEAT (CCA, 2001).

For hydrogen sulphide, the predictions applied to different methods of processing sulphur were compared to the standards to evaluate their significance, resulting in a finding of low impact significance (CCA, 2001). On the other hand, significant benefits to the ecology of the Duikersvlei stream and to the neighboring sensitive aquatic ecosystems (Rietvlei and Milnerton lagoon) were evaluated.

In both case studies, impact significance was evaluated both with mitigation and without mitigation measures. According to Harmer (2005, citing the Council on Environmental Quality, 1978), mitigation is defined as follows:

- a) avoiding the impacts altogether by not taking certain action or parts of an action
- b) minimizing impacts by limiting the degree or magnitude of the action and implementation

- c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment
- d) reducing or eliminating the impact overtime by preservation and maintenance operations during the life of the action
- e) compensating for the impact by replacing or providing substitute resources or environments.

Mitigation measures have been identified to lessen the residual impacts and to enhance benefits. Sulphur is a well known chemical compound, and precise measures and principles had to be followed during its treatment. The Department of Labour (New Zealand) provides a document entitled "Approved code of practice for the prevention of sulphur fires and explosions" which was used to provide mitigation measures with regard to sulphur processing (CCA, 2001). Referring to the document, the specialist study suggested mitigation measures to lessen the impact. These were, amongst others (CCA, 2001):

- a) allow no free ventilation of gasses to the atmosphere by ensuring that all processes pass through gas capturing hoods
- b) close liquid sulphur tanks to the atmosphere
- c) install detection monitors for the two sulphur components to protect against fire hazards
- d) ensure adequate provision of fire fighting equipment and proper training of emergency response staff.

The findings of the Duikersvlei study showed that the proposed realignment would expedite improvement in the health of Duikersvlei's aquatic ecosystems involving the stream, Rietvlei, and the Milnerton lagoon environment. Therefore, mitigation measures were provided to enhance this benefit.

### **3.5 Participation of interested and affected parties**

The involvement of interested parties and key authorities is an important part of the assessment, and this continues throughout the whole process (CCA, 2001). Public participation processes empower citizens to be more responsible. According to Morgan (1998: citing Kastenzholz and Renn, 1995), this process reflects social learning which refers to the process by which change in social conditions occurs, particularly change in awareness and changes in how individuals see their private interests linked with the shared interests of their fellow citizens. This is the product of individuals learning how to solve their shared problems in a manner that incorporates both factual correctness and normative consent (Morgan, 1998).

It is imperative for a proponent to be aware of the attitude of the people potentially affected by a project (Creighton, 2005). This may be of great importance for project feasibility and design. Within the public participation process, the values of the community to be affected are further made clear so that the decision maker can consider them. For these purposes, participation must be integral to the whole EIA process rather than a stage.

#### **3.5.1 Different I&AP**

Within the sulphur-treatment EIA process, CCA identified the following interested and affected parties:

##### **a) Authorities**

These involved the Department of Water Affairs and Forestry, concerned with water pollution and permits for Vissershok Landfill, the Cape Metropolitan Council Air Pollution Department, the Department of Environmental Affairs and Tourism concerned with air pollution, the Blaauwberg Administration with interest in air pollution and the ecology of Rietvlei, and the Environmental Impact

Management Unit of the Department of Environment, Cultural Affairs and Sport (DECAS) in the Western Cape.

- b) Residents
- c) Civic and political associations
- d) Environmental groups
- e) Media
- f) Business and economic development groups
- g) Others

For the Duikersvlei project, very few public members were interested in attending, probably due to the nature of the project. However, the authorities (DEA&DP, Council of Cape Town, Department of Water Affairs and Forestry (DWAF), and the local municipality) were involved and consulted.

### **3.5.2 Involvement of I&AP**

The public should have a say in decisions that affect their lives (Creighton, 2005). For this purpose, the I&APs should be given an opportunity to acquire information about a project so that they can participate in a meaningful way. According to Creighton (2005), public participation should be better understood as a continuum which consecutively involves informing the public, listening to the public, engaging in problem solving, and developing agreements.

Table 4 shows activities reflecting the continuum of public participation in both projects.

Stage of the continuum	Sulphur processing EIA	Duikersvlei EIA
Inform the public	<ul style="list-style-type: none"> <li>- Pre-application consultation with authorities</li> <li>- Public receive Background Information Document (BID)</li> <li>- Various media to inform the public (5 different newspapers)</li> <li>- Proponent and EAP present the project through an Open House</li> </ul>	<ul style="list-style-type: none"> <li>- Pre-application consultation with authorities</li> <li>- Advertisement of the process in the "Die Burger", "Cape Times" and "Table Talk"</li> <li>- BID distribution</li> </ul>
Listen to the public	<ul style="list-style-type: none"> <li>- Open House promoting discussion about the project between the proponent and public members</li> <li>- Discussion on impacts and alternatives of the project</li> </ul>	<ul style="list-style-type: none"> <li>- Open House promoting discussion about the project between the proponent and public members</li> <li>- Discussion on impacts and alternatives of the project</li> </ul>
Engage in problem solving	<ul style="list-style-type: none"> <li>- Mitigation measures to lessen impacts</li> </ul>	<ul style="list-style-type: none"> <li>- Measures to enhance benefits and minimize impacts</li> </ul>
Develop agreements	<ul style="list-style-type: none"> <li>- No appeal on decision.</li> </ul>	<ul style="list-style-type: none"> <li>- No appeal on decision.</li> </ul>

**Table 5: Continuum of public participation within both case studies**

Different methodologies were used in both case studies to call for public participation and to collect their concerns and comments. These included:

- a) Advertisements of the study in the regional or local newspapers
- b) An Open day, during which people were invited to learn about the new development and to provide their concerns
- c) Public meeting
- d) Telephone hotline
- e) E-mails.

### **3.5.3 Problems identified during public participation**

EIA is a learning process, which should involve effective communication. Although the public involvement was of great value, the following are some of the problems identified in both processes. Most of the activities involved in the projects required a scientific understanding. Although there was intervention by experts, there is a need to consider the time and effort public participation took. In this regard, technical skills were required to understand the realignment of Duikersvlei stream on one hand and to understand the safe procedure for processing sulphur on the other hand, which affected the use of time in the process (Burr, 2008, personal communication).

Few public members participated in the project assessment for the realignment of the Duikersvlei. The matter of environmental remediation may not be as interesting as other developments, such as the construction of a road, and others, which may provide more opportunities for employment and great changes in the physical environment. Titmuss (2008, personal communication) mentions the factors which were behind this situation. The site to remedy is located in an industrial area. It is rare to see the busy owners of and workers in an industry getting interested in what happens next door. In addition, Table View and Dunoon are the two nearest residential areas, but the fact that the factory zone covers a big area makes the factory isolated from both areas. Figure 1 reflects the geographical situation of the factory and its neighbours. This is in contrast to the Caltex project where people showed interest in the daily refinery emissions rather than the sulphur treatment project.

### **3.6 Reporting and report review**

In both case studies, information was presented in the form of a report. Both reports involve different elements; namely, baseline information on the

environmental, social, and economic conditions in the project area; potential impacts of the projects and their characteristics, e.g., magnitude; who will be affected; information on potential mitigation measures; and assessment of the best alternative with the most benefits and least cost in financial, social, and environmental terms. In addition, basic information and recommendations for formulating an environmental management plan were provided. As appendices, the reports included BID. Appendices describing the public participation process followed, including a list of IA&P and their comments, newspaper advertisements, specialist study reports, and other relevant information.

Prior to the finalization of the EIA report, a process of integration was done for the sulphur processing EIA. This refers to the integration of the results of the specialist studies to produce a draft report, which contains key information from each of the studies, including the description and assessment of the likely impacts and mitigation measures proposed and recommendations (CCA, 2001). Similarly, in the case of the Duikersvlei study, the assessment and integration were done prior to the draft scoping report.

With regard to review of the EIA, DEAT (1998) suggests that the EIA should be evaluated on the basis of legal requirements, quality of scoping, quality of impact predictions, quality of determining impact significance, assessment of alternatives, quality of mitigation proposed, and the public participation process. DEAT (1998) recognizes the following reviewers: authority, specialists, all interested parties, and the public. For the present case studies, different stakeholders did the review. In the Caltex project, CCA submitted the specialist work and the final EIR to other specialists to ensure that all relevant aspects of impacts and the environment were assessed within the context of best practice and legal compliance (Crowther, 2008, personal communication).

For the Duikersvlei project, the experienced EAP mentioned:

*“In my case, I have been doing EIAs for more than 10 years and I believe I have developed into a good EIA practitioner who adds value to both parties – the applicant through molding their development into something which is more sustainable and the authorities, by providing them with information which focuses on the critical issues and assists in decision making” (Steitler, 2008, personal communication).*

The interested and affected parties had opportunities to comment on the draft documents. The documents were made available in the Blaauwberg Municipality library and, on request, individuals were given copies by the EAP (Thurgood, 2008, personal communication, Steitler, 2008, personal communication).

Thus, this practice reflects the will of both EAPs in these case studies to provide sufficient, relevant information through understandable and communicative reports.

### **3.7 Decision and post-decision implementation**

Decision making was based on an Environmental Impact Report for the sulphur processing project and based on a final scoping report for the Duikersvlei project. For both projects, authorization was released with conditions for mitigating negative impacts and enhancing positive impacts, in the document issued by the competent authority known as the Record of Decision (ROD). Although EIA involves many stakeholders, the post decision implementation is mainly the responsibility of the proponent. Steitler (2008, personal communication) mentioned: *“As an EAP I am not really involved in implementation of measures post decision”*.

Both proponents appointed an environmental officer to implement the conditions of the decision which were incorporated into a detailed Environmental Management Plan (EMP) (Burr, 2008, personal communication; Maclean, 2008,

personal communication). Both EMPs define targets and priorities with indicators and responsibilities for monitoring and management of the projects in an environmentally sustainable way. In addition, the mechanisms to monitor, evaluate, and audit are established. This is reflected by periodic internal monitoring and evaluation and external auditing adopted by both proponents (Burr, 2008, personal communication, Maclean, 2008, personal communication). Beyond this internal follow up, the competent authority was also involved in the implementation stage. This involvement is highlighted in paragraphs below.

The EMP for the sulphur processing project was submitted by order of DECAS to the Cape Metropolitan Administration: Air Pollution Control, Blaauwberg Administration, and City of Cape Town: Fire and Disaster Management as well as the DEAT: Chief Air Pollution Control Officer (CAPCO) (Western Region) for information (DECAS, 2002). In addition, an independent environmental consultant was appointed to audit the sulphur-processing project within 3 weeks of the start of operations (DECAS, 2002). It is clear that, due to the magnitude of impacts related to the proposed development, the sulphur-processing project required specific follow up by a number of different authorities. The environmental officer for the sulphur-processing project mentioned:

*“The follow up of this project would be to meet all the action items from the ROD. These action items will then form part of the DEAT environmental compliance audit done in May which included the sulphur solidification plant. So, yes, the competent authority knows about the progress of this project and has audited it”.* (Nathmi, 2008, personal communication).

For the Duikersvlei project, audits on the ecosystem are done by independent environmental consultants, reports are sent to the DEA&DP, and water monitoring results are sent to DWAF covering a three month period on a regular basis (Burr, 2008, personal communication).

### 3.8 Observations on the process

Generally, two processes were done successfully, but one event in which a fine was issued against the Caltex Refinery would be a symptom of EIA weakness. The context of this fine is detailed in section 3.8.4. The following sections highlight the main achievements and others.

#### 3.8.1 Successful detoxification of Duikersvlei stream

The Duikersvlei study has been acknowledged as providing a successful plan for detoxifying the site by DEADP, DWAF and others (Kula, 2008, personal communication). The implementation of the plan has reached the satisfactory results. Steitler (2008, personal communication) said:

*“For my own interest, I am still visiting the site and I can say that impact predictions were very accurate, particularly the management of floods/high flows. The re-aligned stream has handled the past high rain period exactly how engineers predicted it would. Regarding the aquatic ecology, the stream is a much improved functional aquatic ecological system that requires minimal maintenance”.*

The figures below show the situation before the remediation (Figure 4) and after the remediation (Figure 5).



**Figure 4: Duikersvlei stream before remediation**  
(Source: AECl)



**Figure 5: Duikersvlei stream after remediation**  
(Photo taken on 27 June 2008)

### 3.8.2 Environmentally attractive features for the Duikersvlei project

Prior to the EIA, the Duikersvlei stream and neighboring environment were not vital as the stream was a highly polluted channel, and it was clear that the Kynoch site was the source of contamination. Today, this stream and the neighboring sensitive ecosystems have improved their biophysical value and specifically the stream has proved to be a valuable resource in terms of the clean water it provides and as a green ecosystem for living organisms. The study of Duikersvlei was successful in that the groundwater concentrations of nitrogen are at the lower level (Kula, 2008, personal communication). The current developers are planning their development around this now attractive feature (Burr, 2008, personal communication).

### 3.8.3 Prosecutor fine prior to the issue of a permit

Prior to the ROD granted on April 16<sup>th</sup>, 2002, the court issued a fine against Caltex in regard to this proposed project (March 25<sup>th</sup>, 2002). The accused, Caltex, had been charged with a contravention of Section 22(1) of the ECA 73 of 1989. Using the letter of the law, the court said:

*“The accused is a company duly incorporated in terms of the Company Laws of the Republic of South Africa. Between the period of December 2000 and June 2001, the accused constructed a pastillation plant and a slating plant on its premises situated at Milnerton within the area of jurisdiction of the court. The aforesaid plants constitute processing facilities for sulphur which is a hazardous substance and controlled by national legislation and the erection thereof constitutes an activity identified as one which may have a substantial detrimental effect on the environment. The aforesaid actions were wrongful and unlawful”.*

For this reason a fine of R 50 000 was issued (Maclean, 2008, personal communication). The plant had not yet been erected but had been ordered and

arrived at the refinery before the decision was taken about the option of treating sulphur. A Caltex engineer explained as follows:

*“No plant was constructed before the issue of the permit; the plant was ordered from overseas and arrived before the issue of authorization, and Caltex administration had to settle the plant while waiting for a decision”*  
(Macleay, 2008, personal communication).

This situation suggests two points:

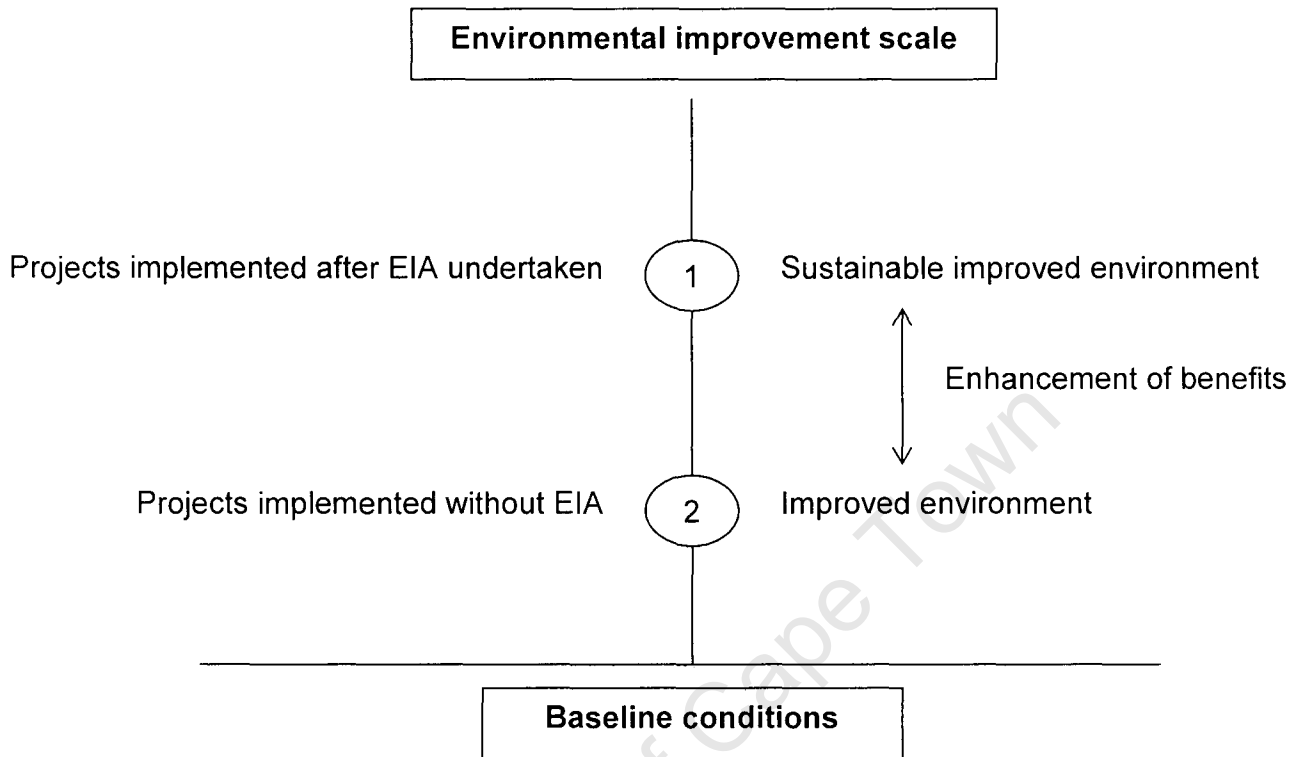
- a) It may be that the proponent had identified the option to implement, regardless of the input of other role players in the EIA process.
- b) The competent authority may investigate the behaviour of the proponent and other role-players in regard to a proposed development in order to bring this process to a transparent end, which is very important for effective EIA.

#### **3.8.4 EIA in environmental improvement projects**

At this level, there is a need to analyse the benefits of EIA on projects aiming to improve the environment.

On one hand, Caltex intended to reduce air emissions by finding out another environmentally friendly option for processing sulphur as a by-product of the production process. On the other hand, the Duikersvlei stream project aimed to remedy the stream after a long period of contamination from a fertiliser factory. This problem had been affecting the neighbouring ecosystems including Rietvlei and Milnerton lagoon.

From the findings discussed above, the EIA provided added value to environmental improvement in terms of sustainability. Figure 6 illustrates the added value of EIA on the top of a project seeking to improve environment.



**Figure 6: EIA in environmental improvement projects**

From the figure, the baseline conditions for the projects reflect the following situation:

- a) contaminated Duikersvlei stream
- b) the need for processing sulphur

In conditions where EIA should happen but without EIA, there would be a certain level of improvement on the environment. However with EIA undertaken, the benefits of remedying ground water and treating sulphur have been enhanced towards sustainability.

### **3.9 Conclusions**

With regard to the performance of EIA, there is a need to evaluate what the EIA and the scoping processes achieved, the links to the decision-making process,

and efforts to implement the mitigation measures. From the analysis above, the impacts assessment in both case studies was done satisfactorily. All the major stages/components of the EIA process, such as scoping, baseline studies, preparation and review of the EIA/scoping report, and post-EIA monitoring and audit were done. There are many exemplary practices to highlight from the studies. These include:

- a) Both processes were focused, and concentrated on significant environmental effects and key issues to be considered in decision making
- b) Both processes assessed impacts related to different options and classified impacts according to their significance at different phases of the project
- c) For some areas, detailed investigation was undertaken
- d) Both processes addressed the interrelationships of social, economic, and biophysical considerations
- e) Measures to lessen negative impacts and increase benefits of the proposed developments were highlighted in the reports
- f) The IA&Ps received enough opportunities to be informed and get involved in the processes, and their concerns were considered in the documents
- g) Decisions were taken with stipulated conditions in order to minimize negative impacts
- h) Post-decision follow-up has been done in order to ensure sustainable development.

On the issue of time and cost, both proponents agree on the idea that EIA can consume financial resources, but these are held to be much less than the cost of a development implemented without EIA, which may take a long time to rectify mistakes. They both consider the outcomes of EIA as invaluable (Burr, 2008, personal communication, Maclean, 2008, personal communication). However, there is a need to mention the lack of public involvement in post-decision

implementation. Even if the local municipality is actively involved, it is important for the public to know the extent to which the consent decision is implemented in ensuring that the development is appropriately managed to minimise adverse effects.

In both the scoping and full EIA processes, it is important to mention the level to which EIA has contributed to the project design. For example, in the Duikersvlei project, EIA provides measures to green the ecosystem in terms of choosing suitable indigenous plants; in the Caltex project, the plant was designed and installed in a suitable place to lessen visual impacts.

Although there were some difficulties, especially for the sulphur processing study, it is clear that EIA is an effective tool in terms of planning and implementing sustainable development. It managed to attain adequate measures for detoxifying ecosystems and alternatives for managing sulphur in order to provide a clean environment. Therefore, it is important to mention the factors that underpin this performance, either enhancing or detracting from EIA performance. The following chapter considers various factors behind the performance of EIA in both of these case studies.

## **CHAPTER 4: FACTORS ENHANCING OR DETRACTING FROM EIA PERFORMANCE**

### **4.1 Introduction**

EIA is a process of identifying, predicting, evaluating, and mitigating environmental impacts and communicating that information to decision makers and the public (Morgan, 1998). As seen in Chapter 1, EIA, through its stages, has been able to provide essential information for decision making. The study of Duikersvlei was successful in that the vulnerable ecosystems appear to have been remedied and the groundwater concentrations of nitrogen are reasonable (Kula, 2008, personal communication). The predictions for the sulphur-processing project were exact, and the mitigation measures have been implemented to build environmental sustainability (Maclean, 2008, personal communication). This situation reflects the performance of EIA as a planning and regulatory tool. The list of achievements is comprehensive; some of the achievements are mentioned below. This chapter discusses further the achievements and shortcomings of these two EIA processes and discusses a number of factors underlying the EIA performance.

### **4.2 EIA performances in case studies**

Before discussing the underlying factors that enhance or detract from EIA performance, the following are some of the achievements from both case studies.

#### 4.2.1 Prediction of impacts

In most situations, the predictions have some elements of uncertainty about the social, physical, and economic environment that usually affect the accuracy of prediction in the EIA process (www.unescap.org). However, in both case studies, EIA managed to predict impacts and provided information for decision making. The EIA and scoping reports from the case studies are results of the work mainly focused on prediction.

The EAP for the Duikersvlei project mentioned his own visit to the site and, according to his observation, he concluded that the impact predictions were accurate, particularly the management of floods and high flows. He argues that *“the realigned stream has handled the past high rain period exactly how the engineers predicted it would”* (Steitler, 2008, personal communication). Regarding the aquatic ecology, the stream is a much-improved, functional aquatic ecological system that requires minimal maintenance. The Rietvlei is in good condition after a long period of pollution, and Duikersvlei is reconstructed and appears as anticipated (Titmuss, 2008, personal communication).

For the sulphur processing plant, EIA has been successful in predicting impacts. Maclean (2008, personal communication) said: “fortunately, the plant and its operations are progressing as anticipated”.

#### 4.2.2 Information and communication

It is imperative within EIA processes to inform the public about the proposed development and, through the exchange of information, a process of learning happens, especially about the new technologies to be used and their impact.

In this way, public members took responsibility by raising their voices for their preferred alternatives and identifying their concerns. Within both studies, the public learnt about different issues. These include:

- a) The activities involved in the concerned projects.

- b) The noxious sulphur components which may result from the refinery processes.
- c) The reasons for maximizing the removal of sulphur from Caltex's products.
- d) The level of Duikersvlei stream's contamination with nitrogen.
- e) The need to realign the stream, the processes involved, and the advantages.

The opportunity to be informed is important throughout the process. Not only can the public learn from the developer, but the developer also learns about the views of the public regarding his/her project. Caltex learnt a lot from the public regarding their activities, especially the public's disapproval of the smoke emitted from their plant and their wish for Caltex to be relocated. It is important to know how people consider you, what they need from you, and their expectations for improved environmental performance. In addition, the DEA&DP and other relevant authorities were informed about the public's concerns pertaining to the proposed projects and received information on the environment likely to be affected. This can serve as the basis for future environmental planning, especially at strategic level.

#### **4.2.3 Positive changes to the design process**

In both case studies, after impacts were identified, the process identified mitigation measures to lessen the negative impacts. In this way, EIA has been recognized as contributing to the design of the project. For Duikersvlei, the following activities testify to the way EIA has contributed to the project design:

- a) Designing the stream to be more natural
- c) Planting suitable indigenous plants
- d) Adopting the best mechanism to manage storm water and soil erosion
- e) Adopting mechanisms to stop contaminants from being washed out of the soil by water.

For the sulphur processing plant, the following are some of activities reflecting the way the EIA contributed to the design of the project:

- a) Design of the processing plant to be environmentally safe in processing sulphur
- b) The installation of a plant to minimise impacts. Nathmi (2008, personal communication) recognizes the role played by EIA in designing the project. She said: *“before, we did think design is a technical issue, we had our own way to see a design, however with EIA, we realized visual impacts which helped to sharpen our design”*.

#### **4.2.4 Protection of designated sites**

The old Kynoch Fertilizer Factory site is approximately 66 hectares and was zoned for general industrial purposes (DJEC, 2005). This area was seriously contaminated, and there were symptoms reflecting the need for remediation. The groundwater across the site was showing various levels of nitrogen contamination as a direct result of the activities of the fertilizer factory (DJEC, 2005). The level of nitrogen contamination in the groundwater ranges from 500 to 27000 mg/l with the factory area being the most contaminated zone, and this was affecting Duikersvlei stream and the Rietvlei ecosystem (DJEC, 2005). As illustrated in Figure 4 and 5, the stream is now in good ecological condition.

For both case studies, the list of impact assessment achievements is comprehensive. Therefore, there is a need to mention the factors behind this performance.

### **4.3 Factors underpinning the performance of EIA**

#### **a) Commitment of the proponent**

It is important to mention the commitment of the Kynoch Fertilizer Factory administration to not exposing people or the environment to unnecessary health

risks. The DWAF fixes at 200mg/l the maximum acceptable concentration of nitrogen in groundwater (Kula, 2008, personal communication). After implementation of the Duikersvlei project, the proponent has reached this level of acceptable nitrogen in groundwater, but still feels the need to further reduce it. The site has been sold to another developer, and the Kynoch technicians have established a plan to continue to monitor the groundwater, which reflects the acceptance of responsibility for further clean up.

#### **b) Expertise of the EAP**

In both case studies, the EAPs are both experienced in conducting EIA, and, according to both proponents, the experience was a material factor in them being selected to undertake the EIA.

#### **c) EIA management**

Concerning the specialist studies, the EAPs carefully examined and critically evaluated specialist studies. CCA and DJEC reviewed the work of their specialists in order to ensure high quality EIA studies that add value.

#### **d) Ethics**

EAPs recognize their role in the EIA process. Crowther (2008, personal communication), the EAP in the Caltex case study, mentioned: *“the developer is our client; the public is another client; however the environment is our client in as much as it needs to be better served”*. Steitler (2008, personal communication), the EAP in the Duikersvlei project said: *“I understand the reasons of being independent and to provide relevant information from a transparent process more than making a lot of money”*.

#### **e) Good performance of institutional and regulatory mechanisms**

As mentioned in Annexure 2, the institutions involved play an important role. The institutions have been described as one of the factors that influence the efficiency and effectiveness of EIA. In the sulphur-processing project, the fine reflects the

enforcement mechanism that shapes the behaviour of individuals and organisations in the Western Cape.

In addition, environmental coordination from the provincial to the municipal level is a key factor in promoting EIA performance. Where the provincial department is not able to be involved, the local municipality is present. This is the case in the Duikersvlei project which the municipality has direct involvement in auditing (Titmuss, 2008, personal communication).

There will inevitably be difficulties associated with EIA processes. A number of constraints and challenges facing EIA that impact on its performance in promoting sustainable development are outlined below.

#### **4.4 Constraints on EIA performance**

EIA is aimed at promoting sustainable development. Although analysis of case studies reflects the performance of EIA, there is a need to highlight the difficulties that EIA is experiencing. In South Africa, there are many problems associated with EIA which are described in Annexure 1; therefore, it is important to mention the difficulties and challenges found in these case studies so that they can be handled efficiently.

##### **a) Capacity constraints**

Lack of capacity among officials in various government departments (DEA&DP, DWAF, etc) is a big problem. In this regard, Steitler (2008, personal communication) states:

*"Inability to think critically results in unwarranted requirements which cost the developers time and money. For example, an official will require a specialist assessment when one is clearly not required".* Some authorities concentrate on the process rather than the content in making decisions that lead to the issuing of permits.

**b) Accuracy of predictions**

Prediction of odours and dust may be exact. However, the assessment of some risks such as fire may involve uncertainty. Maclean (2008, personal communication) points out the limitations of science. He said: "*the science may help to predict impacts but the experience (exposure) of specific companies in dealing with sulphur is of great importance*".

**c) Different authorities**

For its proposed projects, Caltex mentioned the issue of dealing with different and many authorities. For one small project, Caltex had engaged with authorities in charge of energy, the local municipality, DECAS, Air Pollution Control, and others (Maclean, 2008, personal communication). In the Kynoch project, protection of groundwater is the responsibility of DWAF, while remediation requires the involvement of DEA&DP. "*It would be much easier to deal with one department*", mentioned Burr (2008, personal communication).

**d) Poverty and illiteracy**

There is a need to mention the situation of the poor who are looking for work. The poor will be unlikely to raise their voices against a proposed development that they see as a potential source of employment. In addition, in the Western Cape, Xhosa and Afrikaans are commonly spoken languages. These language speakers, particularly those who are less educated, have difficulties in understanding English. The advertisements were done in English, which may explain the limited number of public comments. The EIA reports were all prepared in English, which militates against effective involvement by other language speakers.

**e) The right level of participation**

The alternative of closing down and relocating the Caltex refinery was raised by the I&APs. This alternative was not considered due to the economic role of this refinery in the Western Cape. The I&AP complaints of not being heard reflect the

way some public members consider their involvement in the planning process. It is clear that EIA can transform the wrong plan or project into a sustainable one; however, the extent to which public participation is involved to ensure that the I&AP are satisfied and the proponent motivated to ensure sustainability remains critical.

#### **4.5 Conclusion**

From both case studies, there are many EIA achievements to highlight. Among others, EIA managed to provide a solution to the flooding and high flows at the Kynoch site which triggered the contamination of sensitive ecosystems neighbouring the site (Figure 1). It contributed to finding the solution for treating sulphur and the management of operations. The processes involved opportunities for communication and sharing information. In addition, EIA introduced positive change into project design and led people to protect designed sites. There are factors underpinning these achievements. These include the commitment of the proponent, the expertise of EAP, ethical behaviour, and the EIA regulatory and institutional context.

In general, the South African EIA system has problems, and they are discussed in Annexure 1. Among others, there is economic pressure, political intervention, institutional fragmentation, poor TOR for specialist studies, and inadequate mitigation measures. These issues were not found to be significant constraints in either case study. However, problems such as capacity constraints, poverty, illiteracy, and accuracy of prediction are commonly found in South Africa, and they were identified as the main constraints in these case studies.

Since EIA was introduced, measures have been taken to improve practices in order to enhance EIA performance. No one can deny the improvement achieved so far in South Africa, especially at regulatory and institutional level. However, the responsibility of all stakeholders is required in terms of changing behaviour towards the environment.

## CHAPTER 5. GENERAL CONCLUSION AND RECOMMENDATIONS

Many studies have been carried out on EIA effectiveness. Amongst others, an international study on the effectiveness of environmental assessment was conducted and determined several areas where improvements needed to be made. These areas include: scoping, evaluating significance, review of environmental statements, and EIA follow-up (Sadler, 1996). The current study aimed to assess the performance evaluation of two EIAs undertaken in the Western Cape. The extent to which EIA is informing decision making and promoting sustainable development and the factors underpinning or undermining the performance of this tool were the core of this study.

From this study, there are clear advantages that result from these EIAs. These include pollution control and protection of environmental quality, an opportunity to be heard, implementation of environmental rights, and knowledge of environmentally related issues. Both impact assessments have achieved the expected outcomes, and the neighbouring ecosystems have been improved. The Duikersvlei stream and connected sensitive ecosystems have recovered from nitrogen contamination, and the pollution that should result from sulphur emissions has been minimized by Caltex.

EIA is a participatory tool for environmental planning, not a method to be mechanistically applied. The consciousness of all stakeholders of the usage and potentials of EIA is of great importance. Therefore, the responsibility of EIA role-players to inform environmental decision making and a commitment from DEA&DP to cover all areas in the Western Cape with effective follow-up are some of the measures needed to bring about more effective EIA. Steitler (2008, personal communication) mentioned: *"I believe that EIA is essentially a tool that*

*takes a development concept forward from its feasibility stage planning through to detailed planning and in the process eliminates undesirable aspects (those that cause significant negative impacts) and brings in measures to enhance positive aspects".* In so doing, without doubt, EIA will contribute to sustainable development.

To enable better performance of the EIA system, a number of recommendations follow.

**a) Auditing and reporting on the EIA system**

There should be an annual audit and report on EIA performance in all sectors subject to EIA, such as industrial development, waste management, housing, and general infrastructures projects to consider the respective performance in different localities in the Western Cape. Such reports can be used to develop a database on specific impacts and issues related to the matter of EIA performance. Auditing could improve the methods and procedures for specific impact assessments and their mitigation measures by contributing to the environmental planning process for the following period.

**b) Post project database**

After a proposal has been authorized, implemented, and then decommissioned, there is a need to analyze and evaluate the EIA process as implemented. This will help in collecting data on a case-by-case basis and provide records of the specific impacts of a particular project. For example, the Duikersvlei Stream project may be typical for environmental remediation projects.

**c) Performance criteria and indicators**

Within the Western Cape, a particular area should have environmental protection indicators. If it is an industrial area, there should be standards for livable air, water, soil, and other environmental components. Once an activity is found to exceed the standards, action should be taken to reduce impacts.

#### **d) Strategic planning**

A strategic plan is very important for the Milnerton industrial area. Then impact assessment can be done for the activities which would typically be involved in the area, and relevant acceptable standards can be adopted for project level EIAs in future.

#### **e) About poverty and illiteracy**

There should be incentive measures to motivate poor and illiterate people to participate in the decisions that affect their lives. It has been shown in this study that these categories of people are experiencing various constraints. They have difficulties in reading and understanding English, it is very hard for them to understand the technical words used during assessment, they do not have money to buy newspapers, nor are they motivated to read those provided free of charge by local municipalities. Finally, they need to feel integrated in the rich and educated community. This is the case for the two residential areas of Dunoon (former township) and Table View (middle class rich people) which are neighbouring communities in the study area (See Figure 1). Table View residents were represented during the processes whereas Dunoon residents were not.

There is a need for the authorities at all levels of governance and other EIA stakeholders to work on behalf of the disadvantaged people.

#### **f) Local environmental officers and DEA&DP**

Environmental legislation requires the provincial government to take decisions on most EIAs. However, environmental officers appointed in the City of Cape Town get directly involved in the project assessment and implementation. Therefore, there is a need for DEA&DP to consider their views on the proposed development prior to the decision.

**g) EIA for responsible business**

From the ECA to the NEMA EIA regulations, the list of activities subject to EIA has been changed. It is often said that in this shift from ECA to NEMA, EIA shifted from “not enough” to “too much” in terms of the stipulated requirements. However, for the benefit of EIA, proponents should not necessarily limit their responsibility to compliance but also to undertaking a responsible business. For people who are conscious of the advantages of this tool, EIA should be used as an internal tool in both big industries and other companies for improvement in terms of responsible business practice.

Studying EIA performance using only two case studies may not be enough to generalize. Therefore, many case studies on various sectors of development such as housing, golf courses and others may provide enough information to improve the usage of EIA by different stakeholders in the Western Cape.

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## **ANNEXURES**

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# **ANNEXURE 1**

## **EIA Effectiveness and problems in South Africa**

**Alex Maina, Norman Mathebula and Sophie Nyirabakwiye**

**Mini Dissertation Presented for Partial Fulfilment of the  
Requirements for the Degree of Master of Philosophy in  
Environmental Management**

**Department of Environmental and Geographical Science  
Faculty of science**

**UNIVERSITY OF CAPE TOWN**

**SEPTEMBER 2008**

## Declaration

1. We know that plagiarism is wrong. Plagiarism is to use another's work and pretend that it is one's own.

2. We have used the **Harvard convention** for citation and referencing. Each contribution to, and quotation in, this **Essay** from the work(s) of other people has been attributed, and has been cited and referenced.

3. This **Annexure** is our own work.

4. We have not allowed, and will not allow, anyone to copy our work with the intention of passing it off as his or her own work.

On behalf of the group,

**Signature** \_\_\_\_\_

**Date** \_\_\_\_\_

## Abbreviations

<b>CBO</b>	Community Based Organization
<b>CMC</b>	Cape Metropolitan Council
<b>CMA</b>	Cape Metropolitan Area
<b>IEM</b>	Integrated Environmental Management
<b>ECA</b>	Environmental Conservation Act
<b>SABC</b>	South African Broadcasting Corporation
<b>DEAT</b>	Department of Environmental Affairs and Tourism
<b>EAPs</b>	Environmental Assessment Practitioners
<b>EIA</b>	Environmental Impact Assessment
<b>EIR</b>	Environmental Impact Report
<b>EMP</b>	Environmental Management Plan
<b>I&amp;AP</b>	Interested and Affected Parties
<b>IOPP</b>	International Organisation for Public Participation
<b>NEAS</b>	National Environmental Authorizations System
<b>NEMA</b>	National Environmental Management Act
<b>NEPA</b>	National Environmental Policy Act
<b>NGO</b>	Non Governmental Organization
<b>ENPATs</b>	Environmental Potentials Atlases
<b>TOR</b>	Terms of Reference
<b>USA</b>	United States of America
<b>WESSA</b>	Wildlife and Environment Society of South Africa
<b>WCD</b>	World Commission on Dams
<b>IAIA</b>	International Association for Impact Assessment
<b>EIS</b>	Environmental Impact Statement
<b>ROD</b>	Record of Decision
<b>SEA</b>	Strategic Environmental Assessment
<b>UK</b>	United Kingdom

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## **1. Introduction**

Sustainable development refers to the development which meets the needs of the present generation without compromising the ability of future generations to meet their own needs (Brundtland, 1987). The idea of managing environment for sustainable development and integrating it into planning was emphasized in the 1992 United Nations Conference on Environment and Development at Rio which established the principle of integrating sustainable development considerations into Strategic Development Planning and Policy (George and Kirkpatrick, 2007). Therefore environmental assessment has been recognised as a collective term for forms of appraisal that address the environmental consequences of policies, programmes, plans and projects (Cashmore, 2007).

This section provides the aspects of Environmental Impact Assessment (EIA) as a process, its objectives and describes the concept of EIA effectiveness. It also discusses strengths and weaknesses of EIA in South Africa.

### **1.1 Context of Environmental Impact assessment**

Several authors have written much on EIA and its advancement. Most of the literature is from the developed countries.

EIA is one of the major tools relied upon by governments and societies worldwide to help them to achieve more effective environmental management (Nitz and Holland, 2000). This process is applicable to the project EIA and took its origin from the United State of America (USA) National Environment Policy Act in 1970 (Morgan, 1998). It has been defined as the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of proposed projects and physical activities, and from the information this process provides decision is taken by a relevant authority (Sadler, 1996; Morgan, 1998). The fundamental question is to know the reason why development activities necessitate an EIA. The EIA process

informs the decision maker and the general public about the consequences of environmental impacts of a given developmental activities thus the decision can be taken with the go or no go option to the proposed development implementation. The Department of Environmental Affairs and Tourism ([DEAT], 2004a) explains the purpose of an EIA which is to provide decision-makers – be they governmental authorities, the project proponent or financial institutions – with adequate and appropriate information about the potential positive and negative impacts of a proposed development, associated management actions in order to make an informed decision whether or not to approve, proceed with or finance the development.

EIA has been promoted as an important tool, through which society is seeking to achieve sustainability, by directing development away from unsustainable alternatives (Hill, 2004).

## **1.2 Aims and objectives of EIA**

EIA contributes in the following:

- Informs developers as early as possible about possible environmental implications of a proposed development, thus plans and designs can then be modified to avoid adverse effects and maximize potential benefits (Morgan, 1998).
- Provides information on which a decision taker can rely for purposes of licenses and permits. Before a development is implemented there are many things to consider. These include pollution control, the use of the resources, quality of life considerations and others depending on the emphasis of particular legislation. EIA is thus trying to assess the impact of development. It can be seen as a fine-tuning of a proposal mechanism to a particular environment, to avoid the worst excesses of development (Morgan, 1998).

- Informs the planning process. EIA does not only scrutinise individual projects, it can also be useful to inform the planning process itself. The EIA information can be useful to modify a plan, implementation, or development control process. It is a process which aids in achieving sustainable development since it enables a country to foresee the negative and positive impacts of human activity on the environment. It is an aid towards sustainable development.

Hill (2004, citing Brown and Hill, 1995, Sadler 1996, Lawrence, 1997a, Brown and Thérivel. 2000 and Sadler, 2001) enumerates categories of environmental assessment objectives as follows:

#### ***Environmental planning and design objectives***

EIA contributes to the integration of projects into an environmental and social setting, through better planning and siting. It contributes to the identification of alternatives and mitigation measures with an aim to minimise or avoid negative environmental and social impacts during proposal implementation. It also contributes to the restoration of a disturbed environment and human community.

#### ***Decision making objectives***

EIA contributes to the justification of a proposal, involves the stakeholders in proposal design, provides information on large scale and cumulative impacts of a proposal and contributes to the management of conflicts. This process combines sustainability dimensions into decision making.

#### ***Societal objectives***

EIA enhances environmental understanding and develops the environmental ethics of the participants in the EIA process; it empowers individuals and communities participating in EIA and reduces the cost that the proponents impose on society.

EIA is an anticipatory, participatory, integrative environmental management tool which has the ultimate objective of providing decision-makers with an

indication of the likely consequences of their decisions relating to new projects (Wood, 2003).

## **2. EIA Procedure in South Africa**

At its beginning, EIA has been structured to collect useful information and to respond to its aims. Therefore, each step has been given its irreplaceable place for its contribution to the overall aims.

### **2.1 Screening**

In South Africa, the classification of the proposal is undertaken by the proponent, or appointed consultant, in consultation with the relevant authority. A list of scheduled activities for which compliance with the EIA Regulations is mandatory has been produced. On application, the relevant authority may grant exemption from these Regulations if, in their opinion, the proposed activity would not have substantial detrimental impacts.

Projects or activities not listed in this schedule may also require an EIA in terms of the National Environmental Management Act (NEMA) if it is felt that they may result in significant adverse impacts. In practice, however, the list of scheduled activities effectively pre-empts the screening process and, to date, no EIAs have been called for in terms of NEMA. In some instances where the activity is not included in the EIA Regulations (such as mining and mining-related activities), and is likely to have significant environmental impacts, DEAT has not required an EIA in addition to authorization by other government agencies (Brownlie and Wynberg, 2001, p. 20).

### **2.2 Scoping**

Scoping is a stage in the EIA process following screening in EIA process and it involves the identification of the key issues of concern at an early stage in the planning process (Morrison-Saunders and Arts, 2004). Parties to be consulted are identified such as communities, local authorities and statutory agencies, Interested and Affected Parties (I&AP) and others. Scoping carried

out at an early stage may contribute to the site selection and identify possible alternatives. All I&AP are expected to get involved and these may include among others the proponent, planning or environmental agencies and the general public. The expected results from scoping include determining the scope, depth and terms of reference to be addressed within the EIA process (Morrison-Saunders and Arts, 2004).

There are many things to be identified during scoping; among others the environmental study baseline condition is done at this stage and should include, present and the possible future state of the environment.

### **2.3 Impact Analysis**

During this stage issues identified through scoping are analysed. The identification of the impact magnitude and/or significance and other dimensions of identified change in the environment with or without the project, based on the baseline information gathered during the scoping stage are done during impact analysis (Morgan, 1998; Sadler, 1996). The impacts identified may be direct, indirect or cumulative, short or long run, adverse or beneficial, reversible or irreversible, etc. During this phase, there is a need to determine the ways in which impacts are to be avoided, mitigated or compensated. Mitigation consists of measures to avoid, reduce and if possible to remedy severe environmental effects (Morrison-Saunders and Arts, 2004).

### **2.4 Reporting and EIA Report review**

The information collected from the environmental analysis is presented in the form of a report which is submitted to the competent authority together with an Environmental Management Plan (EMP) (DEAT, 2006). This plan describes the processes that an organization will follow to maximize its compliance and minimize harm to the environment (DEAT, 2006). The EIA report is submitted to the environmental authorities and the public for their information and to obtain their comments. Review has been described by DEAT (2004) as a mechanism to judge the adequacy of the process and the quality of EIA report

with reference to legal conformity and good practice. Its main purpose is to check whether information is sufficient for decision making. On the basis of an Environmental Impact Report (EIR), a decision is taken and it either allows the proponent to carry on with the development or rejects the application.

## **2.5 Post decision implementation and control**

The post-decision stage as opposed to pre-decision stages incorporates the early stages of EIA and is generally known as EIA follow-up. It is simply defined as the monitoring and evaluation of the impacts of a project for management of and communication about the environmental performance of the project (Morrison-Saunders and Arts, 2004).

According to Morrison-Saunders and Arts, (2004) citing Arts *et al.* (2001), EIA follow-up comprises four elements. Monitoring is one of them and consists of the collection of data and comparison with standards and predictions. During the pre-decision phase, baseline monitoring would be done to measure the initial state of environmental indicators. In the post decision stages, monitoring is concerned with compliance and the effect of that decision.

Evaluation is another element of follow-up and consists of the appraisal of the conformance with standards, expectations as well as the environmental performance of the activity. In general, this activity is concerned with evaluating the situations arising after a particular decision is made.

Within the follow up stage, there is a need to make decisions and undertake appropriate actions to face the issues arising from monitoring and evaluation activities, which is generally regarded as the ongoing management.

At this level comes a need to inform the stakeholders about the results of follow-up. Monitoring is important as it provides the feedback on EIA process and on project implementation. This highlights the need of accountability.

The importance of follow up has been highlighted by the International Association of Impact Assessment (1999) as this stage works to:

- ensure the implementation of terms and conditions of approval;
- monitor the impact of development;
- monitor the effectiveness of mitigation measures;
- strengthen future EIA applications;
- undertake environmental audit and evaluation.

EIA process follows different steps from pre-feasibility to follow-up. Figure 1 demonstrates the process.

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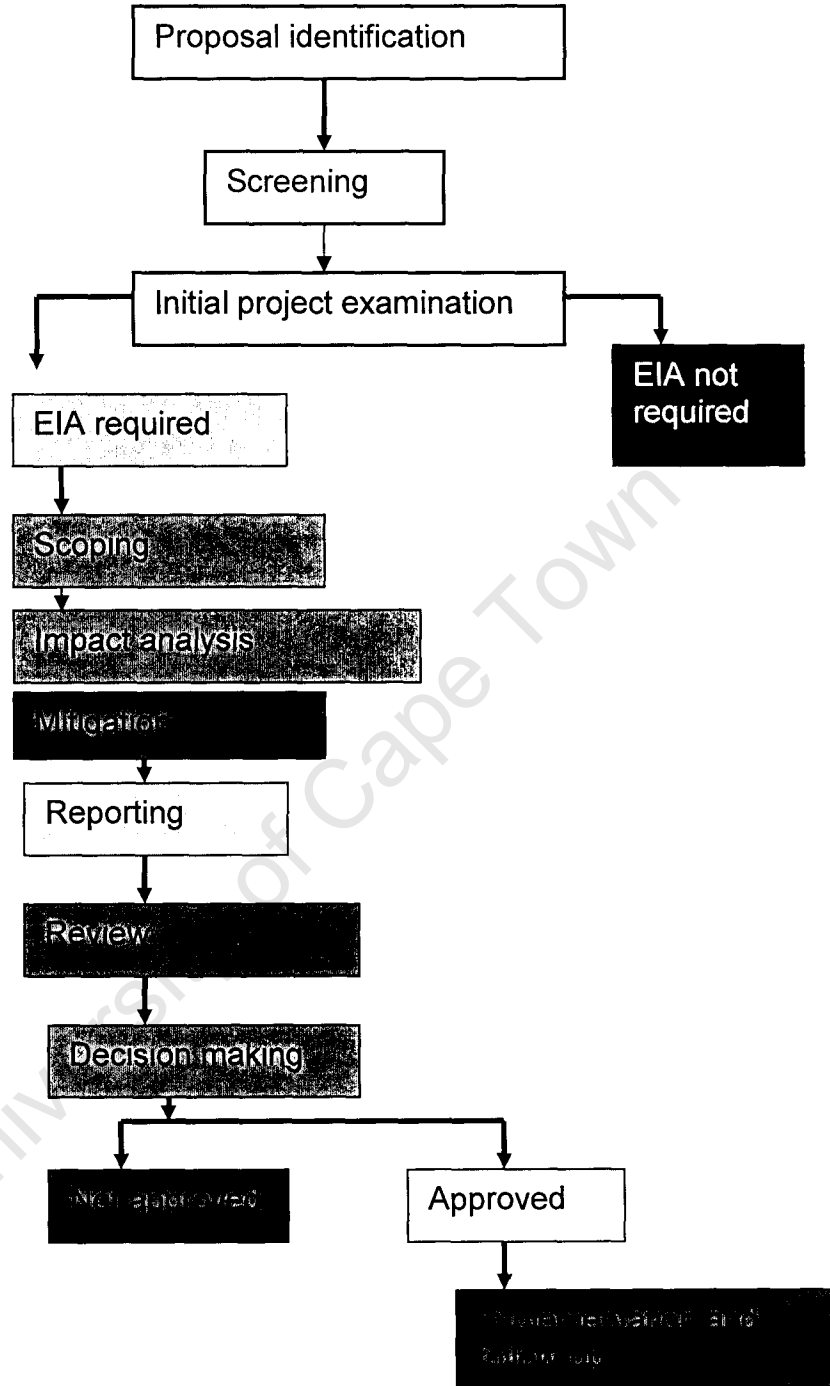


Figure 1: EIA process

(adapted from Sadler, 1996)

### 3. Public participation

The process of public participation has gained increasing attention to the assessment of environmental impacts of developmental proposal. It refers to a process in which public concerns, needs and values on a proposed development get considered prior to decision making (Creighton, 2005).

As part of quality of decisions, it requires the participation of all stakeholders. This participation is not limited to the act of providing information, but there should be an interaction between the organisation making a decision and people who want to participate (Creighton, 2005). To be more effective, this process calls for a proper organisation. Creighton (2005) citing the International Organisation for Public Participation (IOPP) (n.d.) enumerates the values for the practice of public participation as follows:

- The public should have a say in decisions about actions that have impact on their life;
- This process includes allowance for public's concerns to influence the decision;
- The public participation process communicates the interests and meets the process needs of all participants;
- This process seeks out and facilitates the involvement of those potentially affected;
- In this process participants define how they participate;
- Participants get needed information to participate meaningfully.

Creighton (2005) describes public participation as a continuum as at the beginning, public should get informed of the project as they cannot participate effectively unless they get complete information on which to base their judgement. They get listened to, and engaged in problem solving, and this process ends by development of a consensus. Respectively this continuum is made of four main actions including to inform the public, to listen to the public, to engage in problem solving and develop agreements.

Beyond the improvement of decision quality, the same author enumerates other benefits of public participation. These include minimization of cost and delay as the implementation of a unilateral decision may take long or even lapse or be revised as it may become tied up in controversy, delays or litigation. Other benefits are to prevent worst-case confrontations, maintaining credibility and legitimacy and increased ease of implementation.

#### **4. The concept of effectiveness**

Before describing the South African EIA system, it is very important to discuss briefly the concept of effectiveness. The world has been facing changes, and nowadays environmental problems persist such as climate change, natural calamities, and poverty and its consequences. In advancing efforts to build sustainable development, environmental tools have been thought to bring a considerable contribution to an appropriate development and EIA is a formal process used in many countries and by different organizations to help decision makers to consider the environmental impacts of a proposed development before taking a decision.

According to DEAT (2004) to take a decision, information regarding the following items must be provided:

- Project proposal description;
- Baseline environmental conditions;
- Impact identification, quantification and evaluation;
- Alternatives identification and evaluation;
- Mitigation measures description.

At this level, EIA review ensures that the information is adequate, communicative enough to the stakeholders and for relevant authorities to take a decision.

## 4.1 Defining EIA effectiveness

Different terminologies have been associated with the study of effectiveness. Some of the commonly use terms are review, evaluation, assessment or even post project analysis.

Effectiveness has been defined as “*whether something works well as intended and meets the purpose(s) for which it was designed*” (Sadler, 1996: p. 37). Effective EIA alters the nature of decisions or of the actions implemented to reduce their environmental costs and render them more sustainable. If it fails to do this, EIA is a waste of time and money (Wood, 2003).

Wood (2003) points out that an EIA system is judged not so much on whether it can be viewed as effective but on the factors that explain its effectiveness and on which evaluation criteria are appropriate in judging that effectiveness and how it can be improved.

According to Glasson *et al.* (1999), effective EIA must be an aid to the decision making and the developer, and help to achieve sustainable development. This process should provide decision makers with information on the likely environmental effects of their actions (Wood, 2003). The EIA process should also be an opportunity for a proponent to find out more options to maximize his/her benefits from project planning to implementation, without compromising the well being and interests of other stakeholders. Therefore, there is a need for EIA to be done properly to avoid inadequate decisions. In this regard in various countries, laws and guidelines have been provided to guide all stakeholders to fulfil their responsibility in a process of taking a better decision and building a sustainable development. Lee *et al.*, (1994) state that, to be effective, EIA must achieve environmental protection and be cost effective.

Sadler (1996) suggests some ingredients for the effective application of EIA:

- appropriate timing in initiating the assessment;
- Clear and specific directions;
- Quality information and products;
- Receptivity of decision makers and
- Others.

EIA is important tool for giving effect to sustainable development objectives in planning and decision making (Sadler, 1996). The achievement of EIA outcomes depends on different factors namely the integrity of EIA, degree of policy concerns with sustainable development and others. The idea of integrating sustainable development dimension was raised from the 1992 United Nations Conference on Environment and Development, the Rio Conference, which established the principle of integrating sustainable development concerns into planning (George and Kirkpatrick, 2007). Due to many factors which influence the EIA procedure and achievement of its aims, Sadler (1996) suggests a four step examination of environmental assessment effectiveness. These are the analysis of policy, the contribution of EIA to development decision making, application of EIA methods, procedures and components, and guidelines for sound practice. EIA review is a practice of improving the quality of EIA and can be regarded as bringing EIA to meet its effectiveness. Sadler (1996) defines EIA review as a problem solving opportunity, as during EIA review, gaps and weaknesses of the process can be resolved before decision making.

## **4.2 Purpose of EIA effectiveness evaluation**

It is important to examine the scientific and administrative aspects of the EIA process (Munro *et al.*, 1986). The reason behind this is a growing concern about the effectiveness and efficiency of EIA at the technical and administrative levels about its role in the broader processes of planning and undertaking development (Devuyst, n.d). The author feels that in order to measure the EIA effectiveness, first of all, the goals of EIA should be understood. First, as an instrument which is introduced to ensure that

preventive environmental policy is considered during the decision making process. Secondly, EIA has to improve the environmental sensitivity of society. Thirdly, it has to improve the open and transparent character of decision making and make it open to external inspection. Thus, the evaluation criteria can be developed based on these goals.

Although Annandale (2001) explains that the issue of examining or evaluating the EIA process has been done for different intentions, Sadler (1996) feels that the purpose of EIA effectiveness review is problem solving rather than fault finding. By looking at the effectiveness, one would seek to find ways of improving its stated goals (Devuyst , n.d). The author continues by explaining that the purpose of evaluation research is to measure the effects of a policy, program or procedure against the goals it set out to accomplish as a means of contributing to subsequent decision-making about improving the situation in the future.

An evaluation framework for assessing the case studies is shown in Table 1.

### Evaluation framework

#### 1. Project Design

*To what extent has the EIA contributed to project design or redesign?*

Aspects to consider

- EIA influence on the project planning and design process

#### 2. Scoping

*To what extent did scoping achieve its purpose in focusing the EIA on relevant issues and alternatives?*

Aspects to consider

- Provision of baseline information
- Identification of, and contact with, I&APs
- Identification of key impacts
- Identification of reasonable alternatives
- Identification of specialist studies needed and preparation of the TOR for these studies

- Timelines for EIA process including approval
- Establishment of criteria and methods to be used for impact prediction, assessment and evaluation

### 3. Identification of Alternatives

*To what extent, and how, were alternatives identified and considered?*

Aspects to consider

- Timeline in identification of alternatives
- Extent of stakeholder involvement in the identification of alternatives
- Type of alternatives considered: location alternatives, activity alternatives, design or layout alternatives, technology alternatives to be used in the activity/ process, demand alternatives, input alternatives, routing alternatives, scale alternatives, and no-go option

### 4. Impact Assessment

*How was impact assessment undertaken and did this meet the requirements of good practice?*

Aspects to consider

- Description of positive and negative impacts for reasonable alternatives
- Comprehensive impacts – e.g consideration of social, economic and biophysical impacts
- Cumulative impacts considered
- Systematic analysis of impacts (e.g. competent authority, I&APs as part of impact assessment process)
- Methodology used for impact assessment
- Preparation of Draft Environmental Impact Report (EIR) for circulation and comment

### 5. Impact Evaluation

*How was the significance of impacts and alternatives evaluated and did this meet the requirements of good practice?*

Aspects to consider

- Evaluation methodology
- Systematic evaluation
- I&AP involvement

## 6. Mitigation of Impacts

*How was monitoring of impact did the EIA deal with mitigation measures?*

Aspects to consider

- Impact significance after mitigation/residual impacts
- Types of mitigation measures
- Enhancing positive impacts
- Dealing with unexpected impacts
- Local communities involvement in identification of mitigation measures

## 7. Environmental Impact Report (EIR) and Decision Making

*How and to what extent did the EIA contribute to decision making?*

Aspects to consider

- Reporting
- Consideration of public concerns
- Peer review
- Objectivity in decision making
- Conditions of approval in authorisation (Record of Decision)
- Appeal

## 8. Implementation and Follow Up

*How was impact assessment undertaken and did this meet the requirements of good practice?*

Aspects to consider

- Compliance and enforcement to conditions attached to ROD
- Environmental Management Plans
- Lessons learnt (to improve EIA practice and amend regulations where necessary)

Table 1. Evaluation framework

### 4.3 Rationale in evaluating EIA effectiveness

From the initiation of EIA in 1970, until today, there have been important changes to EIA systems. As long as the world changes there is a need to upgrade EIA processes and activities to meet expected outcomes.

It is important to know to what degree EIA contributes to the improvement of decision making. What is working well, constraints and their cause. Although EIA has been used as a tool expected to achieve sustainable development, to arrive at this end there is a need of continuously monitoring EIA performance. These are some of the questions one can ask explaining the needs of evaluating EIA procedure and outcomes to improve its effectiveness.

The study of EIA effectiveness aims to improve the EIA outcomes. Wood (2003) provides an important comparative review of seven different national EIA systems, and mentions the way EIA is falling short of its potential. Different stakeholders have various experiences on EIA that is why there is a need to involve as many as different EIA stakeholders to the evaluation of EIA performance. The information or experience from EIA should be regarded as assuring sustainability not limiting on impact minimization.

## **5. Lessons from the developed countries**

The discussion on EIA cannot be complete without drawing some lessons from the developed countries. Some of the countries which have good lessons include the USA, Finland, Netherlands, and Canada.

### **5.1 United States of America**

EIA originated in the USA. According to Wood (2003) citing Wandesforde-smith and Kerbavaz, (1988), EIA at the federal government level works. It influences project selection and design and most importantly mitigates the predicted environmental impacts. Wood (2003) citing Taylor (1984) explains that EIA works effectively because it was an administrative reform in tune with the time and had supportive forces both inside and outside the government. This circumstances ensure effective implementation of EIA, and the changes in organizational behaviour associated with it.

Several projects have been cancelled as a result of the adverse impacts revealed in preparing an Environmental Impact Statement (EIS) and the

majority of projects are modified as a result of the assessed impacts. The modification of the projects which is about impact mitigation, appears to be acknowledged as one of the main justification of the process. To a large extent, EIA has been assimilated into federal decision making processes and is meeting many (but not all) goals of the objectives of its proponents (Wood, 2003). As far as the effectiveness question is concerned in the USA EIA system, it can be concluded according to Sadler (1995, p. 6) that it is certainly effective. Sadler on the same page says '*EIA effectiveness can be judged by how successful the process is in performing the purpose(s) it was established to serve*'. Some of the National Environmental Policy Act's (NEPA) success is that it was directed at government agencies, particularly those responsible for the undertaking of development activities of potential environmental significance, rather than at private developers. However the USA EIA system meets 10 of the 14 evaluation criteria (Wood, 2003) and partially meets three for EISs. One of its major weaknesses is lack of monitoring provision (Wood, 2003, p. 254). Because the system is operated by federal agencies, the general level of expertise is high but agencies often do not assign their most effective and efficient personnel to NEPA tasks (Wood, 2003, p. 357-359 citing Offringa, 1997).

## 5.2 Finland

One of the primary challenges of the Finnish EIA system concerns the quality assurance of the EIS (Wood, 2003). The quality of the statement has consequences in the decision-making process and it is one of the key elements of an effective EIA. The directive does not prescribe how assessments should be completed, or at what level of detail their outcomes should be reported. In addition, there is no provision in the directive for checking the completeness of the information that has been submitted. Some of the problems facing the Finland EIA system include:

- Lack of linkage between EIA and decision-making;
- Lack of efficient access to a judicial procedure to challenge the quality and completeness of an EIS;

- Difficulties in permitting process where in certain permit procedures, environmental consideration is so limited that only a minor part of the EIA can be taken into account.

EIA legislation in Finland does not guarantee that the assessment results filter into decision-making.

### **5.3 Netherlands**

The EIA system in the Netherlands is recognized as one of the most effective and strong EIA systems. It is generally acknowledged as having a sophisticated system of environmental controls, regarded by many observers as the most effective in Europe (Wood, 2003). According to Sadler (1995) the strength of the Dutch EIA system lies in the following:-

- Law and applicable to all jurisdictions;
- Flexibility which allows for innovation;
- Provides for independent review;
- Guidelines to establish a framework for review;
- Produces an adequate set of alternatives, including a requirement to consider the most environmentally friendly option, and
- Results in the application of mitigation measures.

### **5.4 Canada**

Canadian EIA system is distinguishable, for its provision on monitoring. The Canadian Environmental Assessment Act contains an extensive impact monitoring (follow-up) which is however not effective because of poor implementation (Wood, 2003).

## **6. Case Studies in the EIA effectiveness study**

Sources of information for evaluation of EIA effectiveness are not usually readily available, and considerable investment of time and effort is required to purpose-build approaches (Sadler, 1996). However, several authors have come up with different ways of evaluating the EIA systems. These authors

include Annandale (2001), (Wood, 2003), Androulidakis *et al* (2006), Sandham and Pretorius (2008), Baker and McLelland (2003) and Duthie (2001).

Annandale (2001) explains that the interactive dealing with the effectiveness of EIA is still young. He notes that most of the research is on the outcomes as people want to know whether the public and private time and money invested in the EIA process would lead to improved environmental quality. The bias takes away the focus on the organizational conditions for success. Baker and McLelland (2003) note that measuring of environmental assessment policy effectiveness gained attention in the mid-1980. However, there is still no realizable quantification of the EIA effectiveness, something that creates some difficulties in reaching the overall judgment about any EIA system (Wood, 2003).

In the evaluation of EIA criteria, Annandale (2001) explains that the starting point is to look at Emmelin (1998) who has given four categories of evaluation criteria. The author continues to explain that the criteria form a two dimensional format. The first format is the difference between EIA systems structures and the implementation structure. This means differentiating evaluation of the EIA by the administrative process on one hand and by outcomes on the actual environment. The second dimension is the difference between theory and practice.

Using these two dimensions, Emmelin (1998) has come up with four ways of evaluating EIA. The first one is looking at it from the administrative point of view. This is what Wood (2003) has done in the comparative review. In his evaluation of EIA system performance in eight countries, Wood (2003) has noted that a number of factors could influence the quality of the reports. This factor includes,

- The nature of the legal requirements for EIA;
- The experience of the proponent;
- The consultant, and the competent authority;

- The existence of scoping, the length and cost of the EIA, and
- The nature and size of projects.

Following this, Annandale applies the Wood criteria to the Republic of Maldives, which is a small developing country. Though not all of the Wood's criteria would be useful, the positive factors which have contributed to Maldivian EIA system could be added to the Wood's.

While evaluating the EIA system in Greece, Androulidakis *et al* (2006) have developed a checklist which is divided into eight sections. The first one addresses the status of the environment where the project is to be developed. Attention is paid more on the natural environment in areas related to like characteristics such as climatic, bioclimatic, morphological, geological, and tectonic. The second is a detailed description of the project life cycle. This checklist includes the stages of project planning, construction, operation, decommissioning and rehabilitation. The third is the identification and prediction of impacts. The others are mitigation, alternatives, risk management, documentation and reference to public participation.

Here in South Africa, Sandham and Pretorius (2007) reviewed the quality of EIA reports in the North West province of South Africa. They focused on 28 EIRs and using the Lee and Colley review criteria, they measured the weaknesses in the reports as per the international standards. They reckoned that the revised EIA Regulations of 3<sup>rd</sup> July 2006 in South Africa was an effort in trying to improve the EIA effectiveness.

Secondly, one would consider the practical implementation of EIA. This would involve the use of case study analysis. The specific aim would be to measure the effectiveness of EIA. A good example would be the international study of effectiveness by Sadler (1996). The theme of the International Study on EIA effectiveness is '*Evaluating Practice to Improve Performance*'. A generic criterion otherwise referred to as a triangle has been set by Sadler in the international study can be best applied in the framework in a study of EIA effectiveness. This criterion looks at the main distinctions, in terms of the

purpose and yardsticks of evaluation (Sadler, 1995) which are looked in form of questions. The questions asked are:

***Procedural***

*Does the EA process conform to established provisions and principles?*

***Substantive: -***

*does the EA process achieve the objective set like supporting well informed decision making and resulting in environmental protection? And*

***Transactive: -***

*does the EA process deliver these outcomes at least cost in the minimum time possible, i.e., is it effective and efficient?*

In analyzing the Sadler's effectiveness triangle while evaluating the effectiveness of Columbia's Environmental Assessment, Baker *et al.* (2003) expounded the five components against which a framework can be assessed.

***Practice: -***

checking the application of policy and procedures. For example, in public participation - was the public given enough notice as prescribed in the procedures? It would also measure how workable is the present procedure.

***Performance: -***

involves seeking to check the objectives met after the application of the practice. 'When achieved objectives are compared to established objectives for the policy, the result is a measure of substantive efficacy. As a result of the measurement the necessary adjustments can be made to meet the targeted objectives in future'.

***Overall policy effectiveness:-***

when all the above components work well, then the policy is said to be working. Understanding the functioning of EIA: - An attempt to understand the functioning of EIA, and the quality of the process and documents in the context of professional culture. An example is the EIA in South Africa, a

review of provincial environmental impact assessment administrative capacity in South Africa.

Duthie (2001) looks at the regulations governing Environmental Impact Assessment and how they have been administered against the provincial capacity in all the South African provinces. Among the problems cited for effective implementation of the Regulations are staff shortages, high number of applications which cause ineffective screening, inexperienced staff, and poor remuneration. There is also little follow up enforcement and compliance monitoring.

Another good example in South Africa is an evaluation framework, which was developed by de Villiers, Brownlie *et al.* (2000) for reviewing the EIA reports. de Villiers Brownlie Associates were appointed by the Environmental management Department of the Planning, Environment and Housing Directorate of the Cape Metropolitan Council (CMC) to prepare guidelines for reviewing the EIA projects in, or affecting the Cape Metropolitan Area (CMA). The guidelines were prepared in such a way that the decision maker would be able to make the right judgment while reviewing the EIA. The reviewer has a central role to play in improving the consistency of EIA review. Nine areas have been considered in the review guideline:

- Ethics;
- Adequacy of information;
- Clarity of the report;
- Due consideration of alternatives;
- Description of project and affected environment;
- Legislation, policies and plans;
- Scoping and participation by interested and affected parties;
- Assessment and evaluation of impacts and Mitigation, and
- Enhancement, management and monitoring.

## 7. EIA in South Africa

EIA has been practiced on a non-mandatory (voluntary) basis as part of integrated environmental management (IEM) since the mid-1970s (Du Pisan and Sandham *et al.*, 2006 citing Wood, 1999 and Burger 2004). EIA became a legal requirement for a wide range of projects in September 1997 in terms of sections 21, 22 and 26 of the Environmental Conservation Act (ECA) No. 73 of 1989 (Republic of South Africa, 1989). The EIA regulations which provide the relevant authority with considerable discretion are proving to be somewhat ambiguous in application (Wood, 2003).

Looking back in history, one of the problems that show a weakness in the EIA system is exemplified by a case in the Western Cape. In February 2005, SABC news reported that the Cape high court suspended the construction of the nuclear reactor near Cape Town. This was in response to the Earthlife Africa's court challenge in the previous year which needed more time to make their views. In view of this, the DEAT spokesperson expressed the department's concern about the EIA process then which it believed was too cumbersome (Louw, 2005).

Owing to the above mentioned problem, the process of reviewing the Environmental Impact Assessment system of South Africa began in 2000 under the DEAT and the relevant provincial environmental authorities. This review resulted in EIA regulations promulgated in 1998 in April 2006 in terms of the NEMA.

The change made to the EIA in the ECA to the one in the NEMA appears to be a major improvement in environmental management in South Africa. DEAT was concerned in ensuring that both efficiency and effectiveness were not compromised. The Promulgation of the NEMA EIA regulations and especially with their implementation in July 2006 had some problems as the authorities and the stakeholders have identified some gaps. Amendments to the Act has been identified with a Bill introduced in Parliament during July 2007.

The South African Broadcasting Corporation (SABC) news quoted the Environmental Minister on the new regulations as saying that processing of EIA applications has been made “*quicker, simpler and better*” (Van Schalkwyk, 2006). The new regulations were promulgated and took effect in 2006, they makes some fundamental changes to EIA. The changes include delivering within 14 days an administrative action, 45 days for review and decision making on minor reports and between 60 to 105 days for review and decision making on complex reports.

According to minutes of the department, the revised EIA system provided South Africa with four elements:-

- Development of regulations appropriate to the South African context;
- Building and maintaining adequate capacity to implement the regulations;
- Establishing a regulated Environmental Assessment Practitioners (EAP) industry; and
- Developing and implementing a framework of tools and systems to supplement the EIA system.

Some of the expected benefits of the changes include:

- A focus on expediting pending applications;
- Developing strategic spatial systems;
- Building human resource capacity;
- Developing of support tools and capacity.

However, DEAT has noted that there is still much work to be done in an effort to improve the system. This includes what the department calls streamlining the targets, further rationalization of the need for EIA and improvement of governance. However, the department explains that the changes would result from the amendment of both NEMA and the 2006 EIA regulations. According to DEAT it was important to review the EIA system which would need to address the inadequacies of the system established as a result of the 1997

EIA Regulations whilst building on the positive achievements and consequences of EIA.

The changes were made due to inconsistency in the interpretation and inadequate definitions. There was also too many unnecessary processes, inflexibility in procedural requirements and lack of adequate capacity and resources.

The other inadequacies that came before NEMA in the 1997 Regulations and South African EIA system in general were:-

- Lack of legislative clarity results in inconsistent interpretation and application of the Regulations amongst different authorities;
- The wide definition of activities included in the schedules to the regulations resulted in too many unnecessary EIA processes. This in turn overloads administrative systems creating bottlenecks. It also resulted in delays in development that is unlikely to have substantial negative impacts on the environment and should not have been subject to an assessment process in the first place;
- Inflexibility in procedural requirements resulted in cumbersome processes that did not necessarily add any value;
- Public participation requirements were inadequately defined resulting in the abusing of the system by both applicants and interested and affected parties;
- The absence of a mechanism to regulate Environmental Assessment Practitioners resulted in poor/ inadequate information often produced at exorbitant costs; and
- Lack of adequate capacity and resources in some environmental authorities resulting in delays, questionable decisions and vulnerability to legal challenges.

However despite the above problems, the EIA system which came into being as a result of 1997 EIA Regulations had its advantages. These advantages are:-

- Resulted in more sustainable human settlement- through the EIA process, improved low cost housing developments as environmental hazards such as the presence of wetlands, high levels of pollution; unsafe geotechnical conditions and flood plains have been pro-actively identified and accommodated in design and lay-out alternatives;
- Resulted in an increased awareness of environmental rights and obligations; the impact of activities on the environment and the collective responsibility to ensure environmental sustainability;
- Ensured that the voice of affected communities is heard and taken into consideration in developmental processes, project design and decision making;
- Ensured that for both industrial developments and social infrastructure, the adverse impacts on human health and well-being due to environmental degradation or unsafe environmental conditions are proactively identified and prevented or managed.

Among the issues the new EIA regulations were meant to address include:

- Coming up with EIA Regulations that are appropriate to South African situation. The new regulations are meant to make the EIA process much simpler, quicker and cheaper.
- They enable the environmental authorities to easily implement the new regulations. The authorities are then enabled to deal with the projects with ease while seeking to avoid creating backlog. At the same time, they are able to come up with tools like Environmental Management Frameworks, sector policies and guidelines and mapping of sensitive areas.
- They are meant to come with regulated EAPs; there is the development of the EAPs association which is the process of formation. This association will be appointed by registration authority to help in ensuring that the provisions of the NEMA are followed. The self regulation of EAPs is to ensure accountability through the code of conduct, incentives and penalties and maintaining the quality of Environmental reports.

The current Regulations came up with tools and systems to supplement and complement an EIA system. The previous EIA regulations were seen to be working in isolation. The new Regulations are complimented with some tools from the Integrated Environment Management (IEM) toolkit which are more strategic in nature.

One of the successes of the new Regulations has been seen with the quicker processing of the applications at 95% of the EIA applications (Kula, 2008, pers. comm.)

Other measures that have been introduced to make EIA more effective are the introduction of decision support tools, the National Environmental Authorizations System (NEAS) which is being rolled out to provinces after its completion. It is a web based system which enables the registration and tracking of the applications. In addition, it provides some information which helps the authorities analyze and assess the efficiency of EIA administration.

## **7.1 History of EIA in South Africa**

South African EIA dates to the mid-1970s, and was done voluntarily as a part of IEM from 1989 onward (Wood, 1999). IEM resulted from South Africa's Council for the Environment meeting in 1984 when the council wanted ways to ensure the integration of environmental concerns into development planning. IEM was recommended as a solution to the growing awareness of the complex, and often negative, environmental effects of development projects and policies (DEAT, 1992).

South Africa has a proud history of EIA, despite an historical lack of awareness of the need to consider environmental issues and a subsequent lack of political will to implement controls (Sowman *et al.*, 1995).

In 1997 EIA became a legal requirement in terms of section 21, 22, and 26 of ECA no 73 of 1989. Until today, EIA regulations continue to function under NEMA of 1998 and a number of subsequent amendments.

In South Africa, the establishment of EIA procedural requirements and the way it have been constituted is a result of many discussions, interviews with Governmental officials, consultants and Non Governmental Organisation (NGO) (Wood, 1999).

The development of EIA came in 1989 when South African legislation recognized specifically for development to be sustainable, some regulatory mechanisms were needed. EIA Regulations (R1182 and R 1183) of September 1997 in terms of ECA 1989 gave the procedures as to how the reports were supposed to be prepared.

White Paper on environmental management policy, released in 1998 explained the development of EIA in South Africa. The white paper was only a coordinating tool on the environmental matters but had no substantive provisions. A compulsory requirement for EIA was initiated through draft legislation and published for comments in 1994 and then amended in 1997. Thus, EIA in South Africa was made mandatory.

In terms of administration EIA has been delegated to the provinces. There are challenges in any EIA systems and South Africa is no exception. Duthie (2001) mentions the problems that EIA is subject to in different countries and in South Africa they include among others, staff shortages, qualified but inexperienced staff, exclusive public participation, capacity constraints, deficiencies of EIA legislation, lack of a higher level planning EA to complement EIA, poor salary of government staff which causes the loss of experienced staff, and a very weak follow up enforcement and compliance monitoring.

However international scholars and South African strong research institutions have been significantly crucial on giving inputs that evaluate EIA for improving effectiveness. Amongst others Wood (1999) and Brownlie and Wynberg (2001) explicated the deficiencies and strengths within EIA process in South Africa. All these deficiencies and strengths are as follows. The sections below explains the problems that EIA in South Africa face.

## **7.2 EIA Problems in South Africa**

In South Africa a number of problems that hinder and affect of the effectiveness of EIA are identified and among others they include:

### **7.2.1 Economic pressure and political intervention**

Political views and interests are major constraints in the effectiveness of EIA in South Africa (Wood, 2003, p 84 citing Sowman *at el.*, 1995). There is a lack of political will which is illustrated by the following comment made by a cabinet member “the housing provision cannot wait for butterfly-studies” (Macleod, 2006, p. 11) the later statement was made by a Minister of Housing, it is a clear picture of the attitude towards EIA as a hurdle in the development agenda. The Minister further showed dissatisfaction in the environmental world that the construction industry housing delivery would no longer be “held hostage by butterfly eggs” (Wray, 2006). EIA is described by the politicians as a “double-edged sword: both useful and obstructive and as a protectionist tools in the hands of frenzied environmentalist eager to block anything that comes their way” (Fakir, 2006). As a result of political pressure, decision to grant authorization of a proposed action or development is sometimes made by overwhelmed provincial staff, rather than through comprehensive consideration of the full range of factors internationally recognized as good EIA practice (Wood, 1999). Giving empirical evidence on this, the Record of Decision (ROD) for the Green Point stadium project was influenced by politics and economic pressure. No thorough alternatives of other stadiums such as Newlands and Athlone were executed.

### **7.2.2 Institutional fragmentation**

Institutional fragmentation is one of the principal causes of reduced efficiency and effectiveness of EIA. The lack of co-ordination of environmental laws at different levels of government is an old problem inherited from the apartheid regime; while environmental management embraces a spectrum of concerns

which by nature is cross sectoral, government administration is divided into narrow functional areas (Brownlie and Wynberg 2001, p. 15 citing Glazewski 2000). Different government institutions have different mandates which sometimes contradict each other. Lack of cooperation and coordination between government institutions is a serious challenge standing the way for EIA effectiveness despite the attempts by the NEMA EIA regulations to address this problem. The environment knows no sectors and environmental management too should be crosscutting. Departmental coordination as enshrined on NEMA should be occurring everywhere.

### **7.2.3 Capacity shortage and constraints**

Siphungu *et al.*, (2005) in the case study findings of the Limpopo explains that from the practitioners' side, EAP as EIA consultants have a natural sciences background, and that EIA information are more quantitative nature. The roots of environmental management in ecological issues are still exerting a "green" bias with a resultant emphasis on the biophysical aspects of the environment, often at the cost of human aspects (Siphugu *et al.*, 2005). Watham (1999) reached a similar conclusion that ecological baseline information was most common in EIAs surveyed in the United Kingdom (UK). The findings on this information are in broad agreement with the review of EIA procedural compliance in the North West Province (Sandham *et al.*, 2002).

Effective implementation of EIA Regulations at provincial level has been limited in a number of instances by a lack of formal EIA experience, combined with an unfunded mandate for this responsibility. Most provincial authorities implementing the Regulations have insufficient experience to review EIAs adequately and this is believed to be a significant constraint. Many EAPs gain experience as fresh graduates in government departments responsible for implementing EA legislation, and then move into private practice or the private sector. This means that those tasked to review and make decisions on proposed projects are often less competent than the proponents' consultants; a situation which is problematic and could undermine soundness of decision-making (Brownlie and Wynberg, 2001, p.18). DEAT is well aware of these

constraints and had taken an initiative by 2007 to promote the study of environmental modules in tertiary institutions nationwide.

#### **7.2.4 Inadequate biodiversity impact assessment**

With specific regard to biodiversity in EIA, a national case study which examined 22 EIAs and 35 specialist studies from 7 EIAs concluded that biodiversity is not adequately addressed in EIAs in South Africa (Brownlie and Wynberg, 2001, p. 24 citing Le Maitre and Gelderblom, 1998). These authors further reports that EIA often fails to integrate various specialist studies; and poor integration and coordination of specialist studies contributes to inadequate assessment of biodiversity impacts and their significance

Moreover, lack of understanding of biodiversity hampers the effectiveness of integrating biodiversity considerations in EIA in South Africa. Developers often regard biodiversity as academic and esoteric, not as something real or pertinent, and there is resistance to funding related studies as part of EIA. This situation is aggravated by lack of clarity on acceptable levels of disturbance of ecosystems and loss of biodiversity (interpretation of the NEMA principles arguably allows for a gradual erosion of natural capital given the statement that, '*where loss of biodiversity and disturbance of ecosystems can't be avoided, they should be minimized and remedied*' (Brownlie and Wynberg, 2001).

#### **7.2.5 Terms of Reference for specialist studies**

Terms of Reference (TOR) forming part of EIAs in South Africa are frequently absent, inadequate or limited in focus. TOR for biodiversity studies in EIAs are largely limited to listing Red Data Book species (the "rare and endangered" species). There is little instruction to specialists on why the study is being commissioned, what questions it needs to answer, how the results of the study are to be used and how information is to be presented (Brownlie and Wynberg, 2001, p. 22 citing Raimondo, 1997, pers. comm.). Specialist TORs are too general and ambiguously phrased, and are not sufficiently explicit as

to specific tasks to be undertaken or aspects to be addressed. Such TORs additionally emphasize compositional aspects of biodiversity and, to a lesser extent, the structural aspects. The functional component of biodiversity is often ignored. Time and budget constraints often dictate TORs, with inadequate attention being given to the details of biodiversity assessment, for instance the need for seasonal sampling (Brownlie & Wynberg, 2001, p. 22).

There is a general need for improving the guidelines within which expert studies are carried out. This problem is widely cited in the South African EIA literature and therefore reflects the significance of the TOR problems and the need for revisiting the existing guidelines in order to improve EIA effectiveness in directing specialist studies.

### **7.2.7 Mitigation**

Although measures to mitigate potential impacts are legally binding when stipulated as conditions of authorization in terms of the EIA Regulations, lack of follow-up to ensure effective implementation undermine the effectiveness of environmental assessment (Brownlie and Wynberg, 2001, p. 19).

Inadequate follow-up affects the integrity of EIA as the primary purpose is to minimize developmental adverse impacts as opposed to stopping development. So if impacts are not minimized then EIA certainly becomes a pro forma for license acquisition. Wood (2003, p. xvi) concurs with the statement as he states that, "if EIA fails to reduce the environmental impacts it is therefore a waste of time".

Certainly mitigation is one of the major components in EIA as it is where identified negative impacts are minimized. Therefore legally binding measures to mitigate negative impacts that are not enforced turn out to be just ideas or just paperwork.

### **7.2.8 Limited time and budgets.**

Time and budgets for EIAs are typically limited and this results in insufficient time being allocated for specialist studies. Money for biological expertise or studies is especially limited for small projects (Brownlie and Wynberg, 2001).

### **7.2.9 Poor EIA review**

The principal weaknesses of EIA in South Africa relate to poor EIA report review, impact monitoring, EIA system monitoring and lack SEA (Brownlie & Wynberg 2001 p 18 citing Wood 1999). Sandham and Pretorius (2007, p. 13 ) in their review of EIA in the North West Province corroborate these weaknesses, that despite some important aspects of an EIR not being thoroughly addressed, the EIAs were all approved and therefore the question arises as to the contribution made to environmental protection and sustainable development. EIA quality review is one of the quality control functions contributing to EIA effectiveness within the EIA system (Sandham *et al.*, 2007).

On the other hand, the South African EIA 1997 Regulations were silent about EIA report review, beyond dictating that the relevant authorities consider the application after it has received an EIR that complies with the regulations. A number of guidelines for reviewing EIAs have been produced in South Africa: The DEAT's Review Guideline (Volume 4 of the IEM Guideline Series, 1992) and the guideline document for implementing the EIA Regulations (1998), the Western Cape's Department of Environmental and Cultural Affairs and Sport's Environmental Impact Unit's Guidelines for Scoping Report Review (1999), and the Gauteng Department of Agriculture, Conservation and Environment's Draft EIA Review Manual (1998). None of these documents, however, provides detailed guidelines on weighing economic and social impacts other than superficial guidance on the review of biodiversity assessment. The Guidelines for implementing the EIA Regulations provide considerable detail on the criteria for reviewing EIA applications. However, no mention is made of

biodiversity impacts or of evaluating the significance of impacts on biodiversity. The degree to which impacts are irreversible, impacts occurring in “ecologically sensitive areas” or in “rare undisturbed areas” are, however, given as likely to be of “key concern” (Brownie and Wynberg, 2001, p. 26). The occurring of development on an ecological sensitive areas is one of the major costing weaknesses of EIA practice in South Africa because it is through review of EIRs that decision making is done for a project implementation or gaps are detected for further consideration by the applicant. Thus if the review is inadequate then the entire EIA system is likewise ineffective too. If an ROD is given for implementation of a particularly environmentally unacceptable project, it follows that sustainable development will not be achieved, thus frustrating the goal of EIA.

#### **7.2.10 Lack of EIA at the level of planning**

The South African EIA system applies to most and private environmentally significant projects, but not currently to programmes, plans and policies. The term EIA is not defined in the EIA Regulations (Wood, 1999, p. 122 citing DEAT, 1997). However NEMA recognizes the need for EA at planning level. Also the Minister of Environmental Affairs and Tourism has emphasized that other tools at planning level to complement EIA are required.

#### **7.2.11 Disparities in economic situations and opportunities between provinces**

Disparities in economic situations and opportunities not only affect demand for services, but also have a strong impact on the personnel capacity available to provincial government to administer the EIA regulations. The retention of staff becomes a challenge from those provinces with limited opportunities. Many South African adults with tertiary qualification reside in Gauteng and Western Cape provinces. Consequently, the provinces with limited resources and opportunities suffer from ‘brain drain’ (Stevens, 2002, p. 10)

### **7.2.12 Corruption**

Government officials in positions of influence place pressure on competent authorities to give authorization for certain high profile projects. In return for expedient authorization these high-ranking officials would receive remuneration of some form from the companies involved. For example there have been raids (Stevens, 2002) on the offices of the Department of Minerals and Energy in Limpopo province by the Scorpions (South Africans anti-corruption unit), to investigate charges of bribes and corruption.

### **7.2.13 Regulatory shortcomings of EIA methods**

Details of methods used for prediction and evaluation of impact significance are often not provided, although the guidance clearly states the standard method of determining significance in terms of the nature, extent, duration, intensity and probability of the impact. Similarly, it is explicitly required that where possible, predictions of impact magnitude should be expressed in measurable quantities. These two issues reflect the regulatory requirements for EIA in South Africa, and it is a matter of concern that there is relatively poor performance in such a key area (Sandham *et al.*, 2003).

## **7.3 Problems at each stage in the South African EIA process**

The group study research of current performance study also focused on problems at each stage in the South African EIA process. The reason was to investigate strengths and gaps of the EIA processes based on each stage which were to be compared with the findings of the case study analysis.

### **7.3.1 Screening**

In South Africa, the classification of the proposal is undertaken by the proponent, or appointed consultant, in consultation with the relevant authority. A list of scheduled activities for which compliance with the EIA Regulations is mandatory has been produced. On application, the relevant authority may grant exemption from these Regulations if, in their opinion, the proposed activity would not have substantial detrimental impacts.

Projects or activities not listed in this schedule may also require an EIA in terms of the NEMA if it is felt that they may result in significant adverse impacts. In practice, however, the list of scheduled activities effectively pre-empts the screening process and, to date, no EIAs have been called for in terms of NEMA. In some instances where the activity is not included in the EIA Regulations (such as mining and mining-related activities), and is likely to have significant environmental impacts, DEAT has not required an EIA in addition to authorisation by other government agencies (Brownlie and Wynberg, 2001, p. 20).

### **7.3.2 Scoping**

Scoping is generally carried out satisfactorily. Scoping in South Africa has become predominantly issues-based, relying heavily on the public, authorities, specialists and interest groups to identify potentially significant impacts. That is, the scope and scale of studies contributing to the EIA are largely defined through such consultation. This "issues-based" approach in South Africa has some weakness, in that it places some onus on interested and affected parties (I&APs) to identify and raise issues. Since the public, NGOs, and Community Based Organizations (CBOs) as well as many specialists don't fully understand biodiversity and the impacts of development on it, biodiversity issues are often not identified (Brownlie and Wynberg, 2001 citing Le Maitre *et al.*, 1997). These shortcomings are particularly pertinent where development is proposed in relatively remote areas where I&APs are few and

far between, areas not previously targeted by specialist studies or surveys, and in areas where NGO groupings with an interest in biodiversity are either not well-represented or are overstretched.

Given the strength of a number of NGOs dealing with biodiversity issues such as the Botanical Society of South Africa, Wildlife and Environment Society of South Africa (WESSA), many issues relating to biodiversity are identified, particularly near major towns and cities. Shortages of funds and capacity are, however, likely to curtail inputs by both NGOs and provincial conservation authorities in future and could lead to biodiversity issues being overlooked.

Scoping often focuses on a particular development site, rather than taking a more holistic perspective in the context of a wider area. Relevant experts often from research institutions do not typically respond to general calls for input to scoping and focused efforts are required to draw them into a process (Brownlie and Wynberg, 2001, p. 20).

Scoping has historically been a strong feature of EIA in South Africa. Such heavy emphasis is placed on this stage that the EIA regulations permit the relevant authority to request a plan of study for scoping. As a result the scoping stage has often involved elements that belong to the EIA report preparation phase elsewhere. Many scoping reports have not only identified impacts but incorporated the evaluation of impacts and included specialist studies.

Research in the North West province by academics at Potchefstroom University indicated that specialist studies were used in 34 per cent of scoping reports. This research also revealed that 50 percent of the scoping reports contained no reference to the consideration of alternatives and in 10 percent of cases the only alternative to the project proposal to be considered was the no-project option (Wood, 2003). Scoping has not always resulted in the elimination of irrelevant impacts. In a study of 28 EIAs undertaken between 1971 and 1986, it was found that scoping was documented in nearly 80 per cent of the cases but only in four cases was this comprehensive and inclusive (Mafune *et al.*, 1997). Consultants often provide more information than

required in scoping and decision making. In other words scoping replaces full EIA.

Despite scoping being conducted general well in South Africa the following shortcomings reflect the need for scoping improvement

- Scoping focuses on a particular development site
- Poor biodiversity knowledge by the public and CBOs lead to ineffective participation during scoping
- Heavy emphasis placed on Scoping and replaces full EIA
- Shortage of funds and capacity affect the fully participation of NGOs and provincial conservation authorities

### **7.3.3 Impact Assessment**

According to Brownlie and Wynberg, (2001, p. 89) citing Wood (1999), South Africa has a relatively large and competent EA consultancy sector. However, consultants have in some cases been appointed too late, with insufficient budgets or inappropriate expertise.

On occasion, specialists having little knowledge of an area are brought in to carry out specialist' studies, rather than using people with local knowledge. This often led to questionable findings. Where there has been little endorsement of the choice of, and TOR for a particular specialist to give input to an EIA by key I&AP, particularly where the proposed activity is contentious, the findings of such studies are frequently disputed.

Most assessors lack appreciation of the spatial components of processes and do not consider the landscape in its entirety. Frequently consultants have little or no understanding of ecological patterns or processes important for biodiversity conservation. The EAP needs a good grasp of the big picture and this is not always the case (Brownlie and Wynberg, 2001 citing Cowling, 1997, pers. comm.).

#### **7.3.4 Mitigation**

Mitigation, monitoring and management assurance rather academic and unrealistic recommendations for mitigating adverse impacts are seldom fully implemented. Improved evaluations of the likelihood of implementation are needed, as well as assurances or guarantees if these goals are not attained (Brownlie and Wynberg 2001, p. 24).

#### **7.3.5 Evaluation of impacts**

Assigning significance to biodiversity is contentious. Biodiversity Assessments have been conducted in the absence of national and provincial biodiversity conservation plans, clear targets for protection and/or defined limits of acceptable change in different veld types or ecosystems, so it is difficult to contextualize and evaluate the potential significance of impacts (Brownlie and Wynberg, 2001, p. 28).

#### **7.3.6 Decision-Making**

The guidelines for implementing the EIA Regulations give no detail on the factors which need to be considered in reaching a decision or about the relative weighting of different social, economic, and environmental issues. NEMA through its environmental management principles provides some guidance on decision-making. However, no clarity is given as to what would constitute acceptable losses of biodiversity and disturbance to ecosystems, or to ways in which social and/or economic gains can be weighed up against such losses; the NEMA principles could in fact be seen to allow for a continual erosion of biodiversity.

South Africa's history of discrimination and inequity, combined with high levels of poverty and unemployment, has resulted in a situation whereby the potential socioeconomic benefits of a proposed development are frequently

seen to outweigh possible irreversible negative impacts on biodiversity. Weighing up socio-economic versus biodiversity considerations is problematic. For example: What is the loss of a species worth? Do species differ in conservation value? The basis for weighing up such issues is neither explicit nor transparent, and there are no clear criteria which are consistently applied. The outcome of decision-making is thus heavily influenced by diverse societal values, particularly in a society such as that in South Africa, which is multi-cultural with widely divergent priorities. Given the absence of clear guidelines regarding appropriate and acceptable trade-offs in the interests of sustainability, biodiversity issues often emerge as “losers” in decision-making. Political factors, too, may have a substantial influence on decision-making even when biodiversity impacts could be significant (Brownlie and Wynberg 2001, p. 28).

In some projects decision making has been made by overwhelmed provincial staff on narrow nature conservation or other grounds, rather than a full range of factors normally considered in internationally recognized good EIA practice (Wood, 1999, p. 237 citing Granger, 1998).

Review and decision making are related. As EIA review is done for decision making, this is the cornerstone for effective EIA.

In summing up the decision making stage, it is clear that decision is made in incomprehensive guidelines leaving gaps in the process for examples,

- There are no guidelines details for weighting social, economic and environmental issues
- No clarity of what constitutes acceptable losses of biodiversity and disturbances to ecosystem.

### **7.3.7 Implementation**

The 1997 EIA Regulations focus exclusively on the role of EIA in decision-making and provide little guidance on post-decision implementation of

projects, including management, monitoring and auditing. Inadequate follow up and monitoring of environmental impacts in the construction, operation and decommissioning stages of a project is seen to be one of the most significant shortcomings of EIA in South Africa. In practice, authorization of projects is often conditional on preparation and approval of an environmental management plan or programme. However, the checking and enforcement of implementation of such plans and programmes is rare. There is a need to formalize environmental audits after project implementation. The need for and commitment to such audits is often lacking (Brownlie and Wynberg, 2001, p 28 citing Porter and Raimondo, 1997, pers. comm.).

#### **7.3.8. Follow up**

As has already been touched under different headings, inadequate follow up is one of the general problems in the EIA industry, even in the jurisdictions in the developed world such as Netherlands and others, and not unique to South Africa. Once the Record of Decision has been given developers continue with development without monitoring and auditing to ensure that the predicted impacts are kept to a minimum level. The monitoring and compliance unit means in South Africa are not enough to fulfil the task. More resources should be invested for monitoring and compliance. The site visit by the government official during EIA is carried out randomly and certain projects are not visited due to shortage of staff (Kula, 2008, pers.comm.). On the other hand consultants sometime produce a 'sweetheart report' that is irrelevant to the actual project and are able to get away with it (Fuggle, 2007, pers. Comm.). So effective site visits by the government for regular checks will discourage 'sweetheart reports'.

## 7.4 Other EIA problems based on case studies

### 7.4.1 Public participation is still exclusive

Despite strong emphasis in EIA in South Africa on public participation, there is a severe limitation upon the participation of disadvantage sections of society in the country. The reasons being *inter alia*, illiteracy, the legacy of apartheid, the use of technical language, the holding of formal public meetings in an unfamiliar language, and suspicion of consultants, relevant authorities and certain developers (Wood, 2003, p. 297 citing Goudie and Kilian, 1996; Burger and McCallum, 1997; Khan, 1998). Very few inputs on social impacts are made at public participation meetings, revealing the almost complete lack of interest in the EIA process amongst certain publics. The low interest levels in public participation can be attributed to poverty, low levels of education, and the fact that the environmental agenda is seen in some circles as an obstruction to wealth creation and poverty eradication (Sandham *et al.*, 2006 citing Kruger and Chapman, 2005). Public participation is one of the major processes for any effective EIA as it is able to earn legitimacy for the project as all stakeholders have a chance to air the concerns or interests. According to Sandham *et al.*, (2006) citing Harris *et al.*, (2003) effective public participation is regarded as a key to more valid social assessment, without which it would be meaningless

There is a problem of inadequate public participation. This was seen in the nuclear waste smelter plant at Pelindaba where some interested groups voiced their concern over short period of time that was allocated for comments on the EIA. According to Gilbert (2007) from Earth Life Africa, an environmental lobby group, the group came to know of the deadline for public comments one day before it closed. The group said this was a distortion of a public participation process and did not provide them with a fair chance for all of them to interact in the process.

### **7.4.2 Environmental Assessment Practitioners**

The requirement that EAP be independent of the developer in SA is another constraint on improving the EIR quality. In reality, the developer pays the practitioner and some practitioners may lack objectivity, failing to live up to their professional ethics. If this requirement would be removed, the EIA practitioner would be less constrained to find any favor with the developer and be capable of greater degree of objectivity (Sandham *et al.*, 2007, p.12).

### **7.4.3 EIA as a mere formality**

EIA in South Africa is carried out predominantly to satisfy legal requirements. That is, rather than being carried out to optimize the proposed development and ensure that it meets the objectives of sustainable development, proponents are asking 'must I do an EIA?' The environmental impact assessment is seen as a tool for rubber stamping the decision instead of being used to make decisions. According to King (2007), the implementation of South Africa's environmental rights is a public relation exercise.

### **7.4.4 Delaying the development**

In 2007, Eskom saw the delay in environmental approvals as a hindrance to its service provision. It cited the outstanding record of decision on the Medupi coal-fired power station in Limpopo (near Lephalale) and project Gas 1 in Western Cape (in Atlantis). The delays were also cited in the environmental appeals. However, the company decided to continue with its construction plans awaiting the environmental approvals. Later the minutes of the DEAT meeting informed that Eskom had retracted its claim that EIA had delayed the Medupi Power Station and that there was no delay (City of Cape Town, 2007).

In this regard, one of the reasons advanced for the delay in the authorization is the large number of EIAs creating a backlog.

## 7.5 EIA strengths in South Africa

Despite the EIA deficiencies discussed above, the South African EIA system has some strength on which the need for more effective EIA can be built and achieved. EIA legislation is one of them.

Chapter two of the South African Constitution Act, entitled *Bill of rights*, in its section 24 titled Environment and which states that:

Everyone has the right,

- To an environment that is not harmful to their health or wellbeing;
- To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures ;that prevent pollution and ecological degradation, promote conservation and secure ecological sustainable development and use of natural resources while promoting justifiable economic and social development.

The Constitution of South Africa provides for the management of the environment by both the provincial government and local government. However, the relevant authority for managing EIAs is the provincial government. Chapter 7 entitled local government in section 152 states:

*“Both the national and provincial environment departments have a role of setting specific regulatory norms and standards for the management of environmental impacts”.*

NEMA also emphasizes the need of EIA at a planning level. This is a strong legal basis for which Strategic Environmental Assessment (SEA) can be widely carried out. Also different provincial governments are required to carry out geographic studies for Environmental Management Frameworks (EMFs) which are seen as one of the solutions for improving EIA practice (Fakir, 2006). EMF is a tool designed to address sensitive environments nationally based on the provincial Environmental Potential Atlases (ENPATs), to identify areas of environmental sensitivity (outside of protected areas) and to provide

environmental management parameters for these areas based on their sensitivity to development (Mangold and Tladi, 2002). According to Wood (2003) the scoping process is conducted fairly well and due to the strength of scoping in EIA practice in South Africa many of the EIAs are “beefed-up” scoping reports with comprehensive information. EIA in South Africa undoubtedly has its strengths and has legal recognition unlike the situation in many African countries which do not have EIA legislation or it is rather weak.

South Africa is credited for good policies in seeking to protect the environment. This is seen from the protective legislation. An example is given of large dams which do not produce the anticipated electricity capacity or control floods as envisaged. This has been supported by the World Commission on Dams (WCD) which has found the large dams to have adverse effects on environment which constitutes political decisions on a project in an information vacuum (King, 2007). He cites the case where a provincial minister stated that the proposed monorail between Soweto and Johannesburg was going to start in September of 2007 and just needed an EIA. Thus, a decision to construct the monorail had already been reached before the EIA was conducted. The EIA was then seen to be only there to help mitigate adverse effects.

## 8. Conclusion

In countries where EIA is adopted, it has been used as a tool to ensure sustainable development. In South Africa, the EIA system is one of the best in Africa. It has strengths in some of its components and processes that may even be better than those of some developed countries' EIA systems such as strong public participation, legal standing for court appeal, to mention a few. These are crucial for EIA effectiveness in any systems. However as it is a common factor in developing countries where poverty reduction, economic development are national priorities dominating the development agenda, EIA in South Africa is considered as a hurdle to fast tracking development to achieve these goals. Also there are regulatory gaps that undermine EIA effectiveness in South Africa at large: these include lack of systematic monitoring, capacity shortages, no coverage of GMOs, vague TORs, overlapping of scoping to EIA, lack of environmental awareness, exclusive public participation, poor understanding of biodiversity, lack of the enforceable accreditation body for EAP and others.

Although EIA has sustainability aspects, it relies on legal and institutional arrangements put in the place by the different tiers of government to provide expected outcomes. To illustrate, some of the legal and institutional arrangements for EIA in the Western Cape are described in Annexure 2.

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## ANNEXURE 2

Legal and Institutional Arrangements for EIA in the Western  
Cape, South Africa

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Requirements of the Degree of Master of Philosophy in  
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In the Department of Environmental and Geographical  
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Faculty of Science

UNIVERSITY OF CAPE TOWN

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## Declaration

1. We know that plagiarism is wrong. Plagiarism is to use another's work and pretend that it is one's own.

2. We have used the **Harvard convention** for citation and referencing. Each contribution to, and quotation in, this **Annexure 2** from the work(s) of other people has been attributed, and has been cited and referenced.

3. This **Annexure** is our own work.

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On behalf of the group,

**Signature** \_\_\_\_\_

**Date** \_\_\_\_\_

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## **1.1 Introduction**

Institutions may be defined by formal and informal rules. In South Africa, institutions are considered to be of a great importance for Environmental Impact Assessment (EIA) implementation. In the context of the Western Cape Province, the Department of Environmental Affairs and Development Planning (DEA&DP) is one of the factors underlying the effectiveness of EIA. It serves to define the behaviour and roles of different stakeholders in EIA practice.

DEA&DP has environmental management policies of which their main goals are to build an effective and harmonized institutional framework; integrated legislative system and institutional capacity (Republic of South Africa, 1997). Based on the assumption that EIA practices can be improved through a better understanding of the arrangements provided for its procedure and achievement, this Annexure describes the institutional context for EIA in South Africa and particularly in the Western Cape province. Therefore, the aspects such as EIA legislation and administration are highlighted below.

## **1.2 National legislation for EIA**

The EIA process is guided by many principles. Amongst others, public participation, transparency, certainty, accountability, integrity, cost effectiveness, flexibility, practicality, and adopting a precautionary stance (Sadler, 1999). In addition EIA as a tool was designed to advance sustainable development (Bruntland, 1987). Adequate national legislation is necessary to implement and enforce the above principles. In South Africa, there are many laws providing for EIA. The following are some of the most relevant acts to EIA practice.

### **1.2.1 Constitutional Law / Act No 108 of 1996**

This Constitution is the basis of laws including the acts pertaining to the Environment. In its second chapter known as the Bill of Rights, Section 24, the

Constitution provides for environmental rights for all South African citizens. It states that *“everyone has the right to an environment that is not harmful to their health or well-being; and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development”* (Republic of South Africa, 1996: section 24).

The need for co-operative governance is highlighted under this Act. The national, provincial and local government must ensure that these rights are protected (Western Cape Department of Environmental Affairs & Development Planning, 2006). EIA is one of the major environmental tools to ensure the realization of environmental sustainability as promoted by the Constitution and EIA is a mandatory process in South African. Following the constitution as the supreme law there are Acts that are specific to environmental management and protection. They have been enacted to provide rules and regulations that help to translate this right into actions.

### **1.2.2 Environmental Conservation Act (ECA) No 73 of 1989**

A number of sections of this Act relate directly to EIA and its implementation. Part 5 of this Act headed “Control of activities which may have detrimental effect on environment” defines the role of EIA. This part has three main sections.

The first section deals with the identification of activities having potential negative impacts on environment. For this process the Minister may identify activities which have detrimental effect on the environment generally or in respect of certain areas (Section 21 (1)).

The second section of the act is on the prohibition of undertaking of identified activities. In this Act there is a prohibition on undertaking the activities identified

as having a detrimental effect on environment except by virtue of a written authorization. The authorization is issued by a competent authority on the basis of reports concerning the impacts of proposed activities on the environment. In this regard, the competent authority may at his or her discretion refuse or grant authorization for a proposed activity, or an alternative proposed activity, on particular conditions, if any, as he/she may deem necessary. If a condition imposed is not being complied with, the Minister, any competent authority or any local authority or officer may withdraw the authorization in respect of which such condition was imposed, after at least 30 days' written notice was given to the person concerned (Section 22, 1- 4).

The third section deals with limited development areas. In this regard, a competent authority may by notice in the Official Gazette declare any area defined by him or her, as a limited development area. In this area "no person shall undertake developmental activity prohibited by the competent authority unless he or she has on application been authorized thereto" by the competent authority (Section 23, 1-3).

The following aspects describe the problems inherent in the ECA (1989) EIA regulations (Western Cape Department of Environmental Affairs & Development Planning, 2006):

- containing too many small scale applications;
- excluding some activities with significant impacts;
- having lengthy and inflexible processes - too many "authority stops" and "decision points";
- limited requirement for public participation;
- no supporting strategic planning tools;
- having weak enforcement measures;
- concerns that EIAs are cumbersome - no quick processing of applications;
- high administrative load on officials;

- not always ensuring that all the necessary information for decision making was submitted;
- causing unnecessary delays in development and
- focusing on the type and scale of activities - not the receiving environment

Due to the difficulties experienced under this Act, the EIA regulations were amended and promulgated under a new Act known as the National Environmental Management Act (NEMA), Act 107 of 1998.

### **1.2.3 National Environmental Management Act (NEMA) No 107 of 1998**

Development must be socially, environmentally and economically sustainable (NEMA Principle (3), therefore, for development to be sustainable, it requires consideration of many factors including that the negative impact on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied (NEMA Principle (4) (a) (viii)). Based on this Act, EIA is designed to ensure that the environmental consequences of development proposals are understood and adequately considered in the planning, implementation and management of all developments. It is intended to guide, rather than impede the development process by providing an approach to gathering and analysing information, and ensuring that it can be easily understood by all interested and affected parties in the development (Van der Linde, 2006).

In Chapter 5, headed "Integrated Environmental Management", the general objective is stated as "to identify, predict, evaluate the potential impact on the environment, social economic and cultural heritage, the risks, consequences and alternatives and options for mitigation activities" (Van der Linde, 2006 Section 23(b)). This is done with a view to minimizing negative impacts and maximizing positive impacts and promoting compliance with the principles of environmental management (S22, (2) (b)).

Regulation 387 provides for listed activities which refer to the activities identified in terms of section 24(2)(a) and (d) of the Act, which may not commence without environmental authorization from the competent authority and in respect of which the investigation, assessment and communication of potential impacts of activities must follow the procedure as described in regulations 27 to 36 of the EIA Regulations, 2006, promulgated in terms of section 24(5) of the Act (Republic of South Africa, 2006). The following are the key role players within the process:

#### **(a) Interested and Affected Parties**

Public participation in the EIA process is mandatory. Interested and affected parties (I&APs) must be identified, informed and consulted about the proposed development. Their knowledge should contribute to the identification and evaluation of impacts and alternatives. Their involvement and collaboration during the EIA process is a step towards project sustainability. I&APs play a significant role in all the stages of the process.

#### **(b) The Competent Authority**

In respect of a listed activity or specified activity, the competent authority means the organ of state charged by the NEMA (Act 107 of 1998) with evaluating the EIA report of an activity and the granting or refusing of an environmental authorisation based on environmental grounds.

The regulations clearly stipulate that a competent authority decides the application for environmental authorization. The environmental departments of the various provincial governments are responsible for evaluating applications that have been submitted in terms of the EIA regulations. In the Western Cape province the application is submitted to the DEA&DP. But, if an application is for a project which has national significance, it is sent to the DEAT and decided by the Minister as competent authority. However, the Minister can delegate the power to decide on an application to the provincial authority.

The competent authority may assist the Environmental Assessment Practitioners (EAPs) by giving them access to any guidelines and information on practices that have been developed or to any other information relevant to the application; or advise them (in writing or by discussions) of the nature and extent of any of the processes that must be followed in order to comply with the Act and these Regulations (Republic of South Africa, 1998).

The written decision known as a Record of Decision (RoD) under ECA 1997 EIA Regulations is no longer called this but an environmental authorization in NEMA 2006. This is a legal document setting out the conditions of the authorization and the actions required to protect human health and the environment. Any affected party may appeal against the decision contained in an environmental authorization. Appeals must be lodged with the provincial Minister, who considers appeals in terms of the relevant provisions of NEMA and the Environmental Regulations (Western Cape Department of Environmental Affairs and Development Planning, 2006).

### **(c) The Environment Assessment Practitioner**

This is the person who is appointed by the proponent at own cost to manage the application for environmental authorisation. The EAP must be independent and have expertise in conducting environmental assessments including knowledge of the act, regulations and any guidelines that have relevance to the proposed activity (Reg18 (a) (b)).

Moreover, the EAP, must perform the work in an objective manner without favouring the proponent and must disclose to the proponent and competent authority all material information that may have the potential of influencing any decision or objectivity of any report or plan (Reg 18 (c)-(f)).

According to these Regulations, all the applications for environmental authorization must be made in an official application form. There has to be a written consent from the owner in submitting the application if the applicant is not the owner of the land.

## **1.3 Administrative aspects of EIA in Western Cape Province**

### **1.3.1 EIA administrative regions**

In the Western Cape, the Directorate responsible for EIAs is Integrated Environmental Management (Region A and Region B). Each region is further subdivided into smaller regions.

#### Region A

Consists of the following: George Boland; Eden and Central Karoo; Breede River/Winelands; City of Cape Town; Tygerberg and Oosternberg.

#### Region B

Consist of Overberg, City of Cape Town; Helderberg; South Peninsula, West Coast, and Blaauwberg

### **1.3.2. Responsibilities of the Department of Environmental Affairs and Development Planning**

According to the Western Cape Department of Environmental Affairs and Development Planning (2006), their responsibilities as a decision making authority are the following, to:

- consider all applications received bearing in mind its mandate of sustainable development
- grant or refuse an environmental authorisation based on criteria from NEMA or NEMA EIA regulations,
- take steps to enter into a written agreement with another authority to avoid duplication if an application requiring an environmental authorisation in terms of the NEMA EIA Regulations also requires that an application be made in terms of other legislation (for example, Land Use Planning Ordinance) that require substantially similar information or procedures
- strive to meet timeframes as laid out in the NEMA EIA Regulations
- ensure that, once an authorisation is granted, it must contain all relevant information specifying the conditions and other details

- provide reasons if an environmental authorisation is refused
- withdraw or amend any environmental authorisation, if necessary
- investigate compliance should the authority suspect that the applicant is not complying with the conditions stipulated in the environmental authorisation
- assist the people who need to appeal a decision or lodge an objection against the application.

### **1.3.3 Application procedure and time-frame**

Three types of applications are highlighted within the NEMA EIA regulations (Western Cape Department of Environmental Affairs and Development Planning, 2006). These are:

- Application for environmental authorisation for which either a Basic; Assessment or Scoping and EIA process must be followed;
- Application for exemption from certain provisions of the regulations and
- Applications for amendment of an environmental authorisation

There are activities that are subjected to Scoping and EIA, and these are activities associated with high levels of pollution, waste or environmental degradation, activities nature and extent are likely to have significant impacts, impacts are not easily recognisable and they are higher risk activities (Western Cape Department of Environmental Affairs and Development Planning, 2006).

The following diagram (2) summarizes the scoping and EIA procedure under NEMA, 1998 (Act No. 107 of 1998).

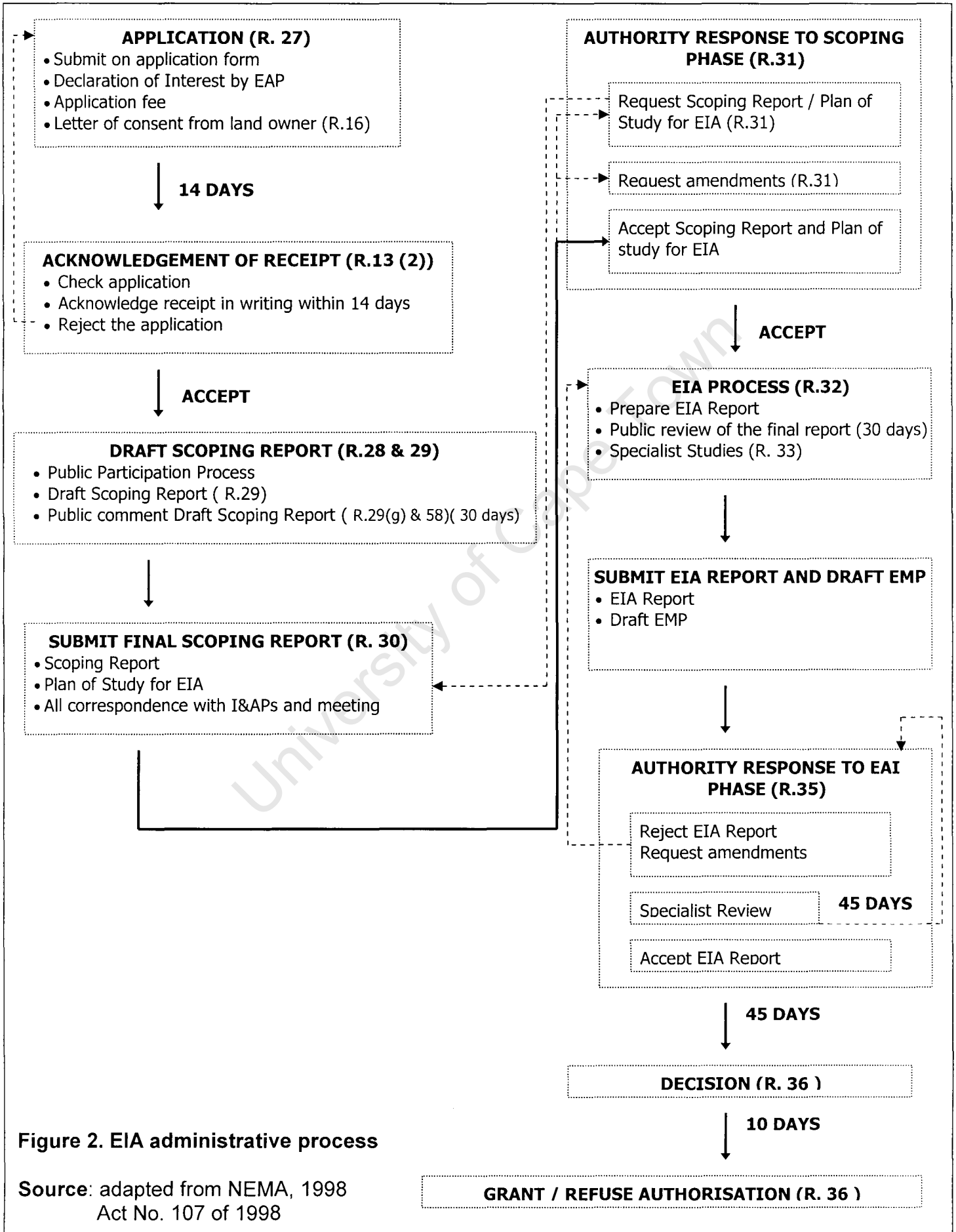


Figure 2. EIA administrative process

Source: adapted from NEMA, 1998 Act No. 107 of 1998

related cases and personal fields of expertise are also taken into account (Western Cape province, 2008).

#### **1.3.4 EIA personnel structure and role**

EIA in South Africa is conducted within the Department of Environmental Affairs and Tourism. In terms of the personnel structure, at the top is the Minister of Environmental Affairs and Tourism. In this case, the Minister plays an important role of creating a supporting environment that enhances the ability of both the public and private sector to sustain and effectively manage the natural environment alongside responsible tourism development so as to contribute to socio-economic growth that will benefit all the people of South Africa. He/she is rarely involved in decision making for projects. He/she solely gets involved when there are appeals for large and controversial projects. Here he/she is able to exercise his discretion either in support for such a project or against and his/her decision is final.

In the Western Cape provincial Department of Environmental Affairs and Development Planning, the Head of Department (HOD) is in charge of the EIA section. The HOD's duty in EIA is to review and ensure Environmental Impact Reports (EIR) meet all the requirements and conditions as stipulated in the NEMA regulations. In case the EIR does not contain all the necessary requirements, the HOD refers it back to junior staff, i.e., an environmental officer. In brief, the head of department's role is quality assurance based on the EIR and decision making. If a report is judged satisfactory, the HOD can sign it in 30 days.

Below the head of the department is the deputy director, and below the deputy director there is assistant director. Their duties relate to quality assurance through scrutinizing the work of the environmental officers. There is a principal environmental officer who is followed by the environmental officers.

The environmental officer is at the lowest rank. This is the person who actively interacts with the EIA applicants, consultants and other stakeholders. All the

EIA applications and other related documents are received by the environmental officer. These include basic assessment reports, scoping reports, EIA reports, exemption requests and appeals against decisions. The environmental officer primarily deals with acknowledgement of these applications, requests for amendments and corrections. The officer then assesses all applications through checking them against the NEMA regulations, other requirements and conditions as may be deemed necessary by the competent authority. Peer review is also done, where other environmental officers of equal rank are afforded an opportunity to peer review an application for quality assurance. This is done to ensure objectivity and correcting mistakes the other officer might have committed.

Applications that meet the requirement of the Regulations are signed by the environmental officer's seniors who are mentioned above, including assistant director/supervisors, deputy director and the HOD.

There are internal deadlines within which all the personnel (from the environmental officers to the HOD) involved have to operate. However, it should be emphasized that these are just deadlines that the personnel strive to achieve on their duties.

### **1.3.5 Number of applications received per region**

There is no precise number of applications received every month. The environmental officer estimated that applications received on monthly basis fluctuate around 30 per region (Kula, 2008, pers.comm.).

## 1.4 Conclusion

In the Western Cape, it is clear that there is a dedicated institutional arrangement for EIA process. Although DEA&DP is experiencing challenges of staff turnover after gaining EIA-related skills and moving to better paying jobs elsewhere, the objective of the department remains to promote sustainable development and transparency in environmental decisions.

The performance of this institution to promote EIA effectiveness may be judged, in part, on the findings of the research on case studies that forms the individual dissertation to which this appendix is attached. The findings also describe the extent to which co-operation and coordination among relevant organs of the provincial government are ensured.

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