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AN ASSESSMENT OF THE STATUS OF ENVIRONMENTAL IMPACT ASSESSMENT FOLLOW-UP IN KWAZULU-NATAL

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AN ASSESSMENT OF THE STATUS OF ENVIRONMENTAL IMPACT ASSESSMENT FOLLOW-UP IN KWAZULU-NATAL

by

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ABSTRACT

Environmental Impact Assessment (EIA) is a formal process, which provides valuable information concerning the potential environmental consequences or impacts of proposed development plans and actions. EIA, therefore, plays an important role in aiding the decision-making process and has been adopted worldwide as a predictive evaluation tool. Once the EIA has been conducted and the possible environmental impacts established, thorough recommendations for mitigation are usually made. However, there is often no EIA follow-up (monitoring, post-auditing, evaluation and communication) to ensure that the mitigation measures or the recommendations revealed by the EIA are put into practice. EIA follow-up is a vital procedure, which if effectively conducted, ensures that negative environmental impacts are kept to a minimum and facilitates sustainable development.

The main objectives of this research were to assess the status of EIA follow-up in KwaZulu-Natal (KZN), to establish possible reasons for shortcomings in the area of EIA follow-up in KZN and to develop and discuss a number of potential models of EIA follow-up, in order to make recommendations for future practice. This dissertation includes a theoretical review of the concepts of sustainable development and Integrated Environmental Management (IEM), together with a comprehensive assessment of the role of EIA follow-up.

Fifteen environmental consultants from KZN, together with five consultants from the remainder of South Africa, and a number of other leading EIA practitioners were formally interviewed in order to ascertain a greater understanding of the current status of EIA follow-up in KZN. The results from these interviews revealed that EIA follow-up is a neglected component of EIA and IEM. There are, at present, a number of barriers or constraints to effective EIA follow-up practice in KZN, which were thoroughly examined in this dissertation. There is also an apparent confusion as to who is responsible for conducting and policing EIA follow-up in KZN. The KZN regulatory authority and leading conservation body were also interviewed in order to gauge their understanding of EIA follow-up and its status in KZN.

From the research four potential models of EIA follow-up were presented, each highlighting a different way in which EIA follow-up may be conducted, especially in the different sectors of development. This dissertation recommends that although there is no one comprehensive model or way in which EIA follow-up should be undertaken, the partnership approach to EIA follow-up is the most effective way of ensuring follow-up and facilitating sustainable development in KZN.

PREFACE

The work described in this dissertation was carried out in the School of Life and Environmental Sciences, University of Natal, Durban, from January 2000 to April 2001, under the supervision of Professor R.D. Diab.

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

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List of Acronyms

DAEA	-	The Department of Agriculture and Environmental Affairs
DEAT	-	The Department of Environmental Affairs and Tourism
DME	-	The Department of Minerals and Energy
DWAF	-	The Department of Water Affairs and Forestry
ECA	-	The Environment Conservation Act 73 of 1989
ECO	-	Environmental Control Officer
EIA	-	Environmental Impact Assessment
EMP	-	Environmental Management Plan
EMPR	-	Environmental Management Programme Report
EMS	-	Environmental Management System
IAIA-SA	-	International Association for Impact Assessment (SA)
I&APs	-	Interested and Affected Parties
IEM	-	Integrated Environmental Management
ISO	-	International Standards Association
IUCN	-	World Conservation Union
KZN	-	KwaZulu-Natal
NEMA	-	National Environmental Management Act 107 of 1998
NEPA	-	National Environmental Policy Act
NGO	-	Non Governmental Organisations
PAP	-	Permit Advisory Panel
RE	-	Resident Engineer
ROD	-	Record of Decision
SEA	-	Strategic Environmental Assessment
SEC	-	Site Evaluation Committee
SIA	-	Social Impact Assessment
SLC	-	Site Liaison Committee
UNEP	-	United Nations Environmental Programme
WWF	-	World Wide Fund for Nature

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I also wish to acknowledge the University of Natal (Durban) for their financial assistance, which enabled me to attend the annual IAIA-SA Conference (2000) in the Western Cape. The Conference proved to be very relevant to this research and facilitated the collection of significant information.

The financial assistance of the National Research Foundation (NRF) towards this research is also hereby acknowledged. Opinions expressed and conclusions arrived at, are those of the author and are not necessarily to be attributed to the National Research Foundation.

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CHAPTER ONE
INTRODUCTION

1.1 Background

Environmental Impact Assessment (EIA) is a formal process that has been adopted by many countries and organisations throughout the world, in order to obtain information and aid decision makers in considering the possible environmental consequences of proposed development plans and actions. This information and knowledge can contribute towards sound environmental management and should ideally promote and facilitate sustainable development. Effective environmental impact assessment is viewed as a process rather than an isolated event and should be part of the broader 'umbrella' process of integrated environmental planning and management (George, 2000).

The EIA procedure is mandatory in a number of countries, including South Africa (EIA Regulations, GNR 1182, GG 18261). This process consists of a number of stages such as screening, scoping, assessing, mitigating, reporting and reviewing that need to be followed (Wood, 1994; Glasson, 1999). Whilst working through each stage, possible negative environmental consequences, associated with a proposed development activity, may arise. These potentially detrimental effects should then be mitigated or reduced as much as possible.

It must be acknowledged, however, that uncertainties and gaps in knowledge will most likely always arise during this process, as the EIA and the subsequent decision-making usually take place within a dynamic environmental context. Uncertainty is intrinsic in the nature of planning and decision-making. The sensitivity of any area to the environmental impacts of new developments will change over time or as the political, social and economic standing of the country or region changes.

1.2 The Problem

Planners and decision-makers have, until recently, always placed greater emphasis and attention upon the predictive or *ex ante evaluation* nature of plans and decisions (Arts, 1998). In many countries EIA plays an important role as an *ex ante evaluation* instrument or tool, by gathering information about the possible environmental effects of proposed developments, as well as considering and evaluating alternatives associated with these potentially detrimental proposals. The EIA is usually undertaken, recommendations for mitigation are made and perhaps even included in an environmental management plan (EMP). However, there is often no monitoring or post-auditing to ensure that the mitigation measures or the conditions and recommendations revealed by the EIA are put into practice, thereby ensuring that the negative environmental impacts are kept to a minimum (Glasson, 1999).

Although a complete pre-decision environmental analysis is necessary, it alone is not an adequate condition for sound and effective environmental management and planning (Arts, 2000). *Ex ante evaluation* techniques and EIAs in particular, will therefore always be subject to a number of criticisms.

In light of these criticisms and potential gaps in knowledge, it is widely recognised that in order to assess planning and development proposals effectively some form of follow-up to the pre-development EIA is essential. Assessing, mitigating and monitoring may be relevant not only to the stages before the consent decision, but also to those stages thereafter. EIA follow-up should therefore be well designed and thorough, in order to alleviate the current criticisms of the EIA process, and to facilitate successful and sustainable environmental planning and management (Arts, 1998).

By following up on an EIA activity, vital information is gained about the actual effects of the development project or plan. This information may be used for the purpose of checking and adjusting the EIA activity and system, if necessary. Such knowledge may also provide valuable insight into the actual effects of different activities and the quality of the predictions in general. This EIA follow-up information can be extremely useful for future planning and decision-making. EIA follow-up is, therefore, a crucial component in the whole EIA system, and if

effectively conducted, should facilitate sound environmental management and sustainable development (George, 2000).

1.3 Aims and Objectives

The aim of this research is to investigate the status of EIA follow-up in KwaZulu-Natal and to make recommendations for the future best practice of EIA follow-up. The specific objectives of this study are:

- to review the historical background of EIA in South Africa and to examine the concepts of Integrated Environmental Management (IEM) and sustainable development;
- to assess the role of EIA follow-up and to briefly highlight the current legal requirements for EIA follow-up in South Africa;
- to assess the current status of EIA follow-up in South Africa, specifically in KwaZulu-Natal, through formal interviews with environmental consultants;
- to establish possible reasons for shortcomings in the area of EIA follow-up in KwaZulu-Natal; and finally
- to develop and discuss a number of possible models of EIA follow-up, thereby making recommendations for the future practice of EIA follow-up.

CHAPTER TWO
METHODOLOGY

2.1 Introduction

A comprehensive literature review on sustainable development and IEM was undertaken in order to provide the broad theoretical framework within which EIA follow-up resides. The field of EIA follow-up is relatively new. However, relevant material was sourced from authors in a number of foreign countries, particularly the Netherlands, Canada and the United Kingdom, where EIA follow-up either forms part of the legislation or is widely practised.

2.2 Interview Process

A number of interviews were conducted during this research. A purposive sampling technique was used in this research, whereby particular interviewees were chosen for specific reasons. The interviewees constituted four different categories or sectors. The first category consisted **of practising consultants** in KwaZulu-Natal who were able to provide insight into the status of EIA follow-up from a practitioner's point of view. The second category consisted of the provincial **regulatory authority**, namely the Department of Agriculture and Environmental Affairs (DAEA). Mr. Harold Thornhill, a representative from the DAEA, was selected as an interviewee, as he was the Assistant Director of the Environmental Impact Management division and was, therefore, directly involved with the processing of EIAs and the subsequent follow-up procedures. The **conservation authority**, namely KZN Wildlife, constituted the third category of interviewees, and was selected as an organisation most widely involved with EIAs in KZN. Mr. Roger Porter, KZN Wildlife's Conservation Planner, was selected as a senior member of the organisation, with many years of experience with EIAs. Finally, three environmental officers were interviewed from two large **parastatal organisations**, namely Portnet and Eskom, as they had been intimately involved with a large number of EIAs. In the analysis of the interviews, the environmental officers' responses were considered together with the environmental consultants', as their answers did not differ considerably.

A comprehensive list of environmental consulting companies was drawn up. This list was based on the List of Environmental Consultants (Appendix A) provided by the DAEA. Consultants based in provinces other than KZN were excluded. From the remaining list, four consulting companies were eliminated, as they were either unwilling or unable to meet, usually due to time constraints. Two further companies were excluded, as they dealt primarily with industrial applications and had no experience with EIAs. From the remaining companies, one consultant from each was selected to interview. This consultant was usually a well-known senior member of the company, or if not available, another consultant was recommended. In the end a total of fifteen consultants from KZN were formally interviewed.

Each interview with the environmental consultants was based on an established set of semi-structured, open-ended questions (Appendix B). These questions were primarily concerned with the interviewees' understanding of EIA follow-up, their views on the barriers or constraints to follow-up at present, their own experience with follow-up, together with a number of other relevant issues. A tape-recorder was used to record the interviewees' responses, which were later transcribed. The interviews took on average thirty to forty-five minutes each.

It must be recognised that the environmental consultants' responses reflected their personal opinions, and not necessarily those of the organisation or company that they represented. However, these consultants are involved in a substantial proportion of the EIAs undertaken in KZN, therefore, their opinions are very likely to influence EIA and EIA follow-up practice. Their views were used to inform a greater understanding of the status of EIA follow-up in KZN, but not to prescribe the recommendations for best practice.

Upon attending the annual IAIA-SA Conference (2-4 October 2000), in the Western Cape, numerous environmental consultants, authority representatives and other environmental practitioners, from all over South Africa, were informally asked about their understanding of and experience with EIA follow-up. Five environmental consultants from the Western Cape and Gauteng were purposively selected, during this conference, according to their willingness to be interviewed. They were also formally interviewed and asked the same set of semi-structured, open-ended questions as the KZN consultants. These interviews were once again tape-recorded

and later transcribed. Their responses provided beneficial information and facilitated a brief comparison with those of the consultants from KZN. Table 2.1 provides a list of all the environmental consultants formally interviewed during this research.

Table 2.1 List of environmental consultants formally interviewed during the research

NAME	ORGANISATION / COMPANY	PROVINCE
Raymond van Rooyen	PORTNET	KZN
Nick Holdcroft	Steffen, Robertson & Kirsten	KZN
Colin Christian	GIBB Africa	KZN
Rob Hounsome	CSIR	KZN
Natasha Williams	Geomeasure Services	KZN
Carl Haycock	Talbot & Talbot Industrial & Environmental Management	KZN
Dr Paul Joslin	Walmsley Environmental Consultants	KZN
Guy Nicholson	Guy Nicholson Consulting cc	KZN
Jenny Davey	Scott Wilson SA (PTY) LTD	KZN
Janice Tooley	Acer Africa	KZN
Bruce Burger	ESKOM	KZN
Ray Lombard	Lombard & Associates	KZN
Gavin Wray	Eyethu Engineers	KZN
Jon Marshall	Environmental Planning & Design	KZN
Edgar Lee	Lee, Walker & Cele	KZN
Brett Lawson	The Environmental Partnership	WC
Michael Mangell	Chand Consultants	WC
Joanne Jackson	Cape Metropolitan Council	WC
Johan Nel	Potchestroom University	NP
John Geeringh	ESKOM	GAUTENG

As the research progressed, a few additional interviews were formally conducted with relevant stakeholders. These interviews also consisted of semi-structured, open-ended questions pertaining to the relevant issues. The interviewees included Dr Dave Everard (SAPPI), Ray Lombard (Lombard & Associates), Harold Thornhill (DAEA) and John Parkin (Durban Solid Waste). The purpose of these interviews was to inform the development of the models of EIA follow-up.

2.3 Analysis of Results

All the transcribed interviews were thoroughly examined, taking note of the various issues raised by the interviewees. A complete summary table highlighting the interviewees' responses to the most pertinent questions was compiled (Appendix C). An analysis of the interviewees' understanding of EIA follow-up, the responsibility for EIA follow-up and an assessment of the current status of EIA follow-up in KZN, from the responses of the consultants, the regulating authority and a conservationist are provided in Chapter Four.

2.4 Construction of Models

One of the objectives of this research was to make recommendations for the best practice of EIA follow-up. One of the *a priori* approaches to EIA follow-up was assumed to be that of partnerships. The interviewees were, therefore, asked their view about partnerships and whether they could prove to be a useful approach to facilitate EIA follow-up. It soon became apparent, however, that there were many other approaches that were operating and that could form the basis of different models of EIA follow-up. Four models of EIA follow-up were, therefore, constructed, one of which was based on *a priori* assumptions, whilst the other three were inductive models based on findings that emerged during the research. The models emphasise different ways in which EIA follow-up may be conducted, in different situations or contexts. Two of the models were presented with specific case studies, in order to highlight the effectiveness of those particular EIA follow-up models. From all of the models a number of recommendations for future EIA follow-up can be ascertained.

CHAPTER THREE
SUSTAINABLE DEVELOPMENT AND INTEGRATED ENVIRONMENTAL MANAGEMENT

3.1 Origins of Sustainable Development

Since the 1960s there has been a growing recognition, throughout the world, of the rapid deterioration of the earth's environment. There is an array of complex interrelated issues to which this environmental degradation may be attributed. Overpopulation, together with its accompanying increase in poverty and decrease in the standard of living; biodiversity depletion and resource degradation due to misuse; global environmental issues such as air and groundwater pollution, global warming and ozone depletion, soil degradation, inadequate waste management and the like, are all contributing to global instability and an unsustainable environment (Clark, 1994; Oelofse, 1998).

Owing to growing environmental awareness, attention became focused on the relationship between development and the accompanying environmental consequences. The environment and development were no longer seen to be independent, mutually exclusive realms, but rather interrelated and dependent upon each other. There was increasing evidence that environmental problems were no longer merely local, but global in scale, and that they were beginning to limit economic development. The Stockholm Conference, of 1972, substantiated this idea, by proposing that in order to achieve economic growth, the environment needed to be effectively managed and people's overall quality of life needed to improve.

The World Conservation Strategy was prepared by the World Conservation Union (IUCN) in 1980. This publication attempted to provide a focused approach to conservation and the management of natural resources (IUCN, 1980). It proposed three integral objectives for conservation, namely, the management of essential ecological processes, the preservation of genetic diversity and the sustainable utilisation of species and ecosystems (Adams, 1990). This publication was, however, greatly criticised for being too focused on the physical environment

and its natural resources. Not enough attention was accorded to the more social or human aspects or components of the environment.

This led to the launching of the World Commission on Environment and Development (WCED), more commonly known as the Brundtland Commission, in 1987. Their report, *Our Common Future*, added a social or psychological dimension to the relationship between the environment and development (WCED, 1987). This report became the defining text for sustainable development, which was proposed as " *development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" (WCED, 1987). This definition clearly highlights the social/human and equity dimensions. The Brundtland Commission also stressed that the main rationale for sustainable development is therefore to increase people's standard of living, whilst simultaneously avoiding possible future costs (Turner, 1993).

The next key event in the evolution of sustainable development took place in 1991, when the IUCN, the World Wide Fund for Nature (WWF) and the United Nations Environmental Programme (UNEP) formulated a document known as *Caring for the Earth: A Strategy for Sustainable Living* (IUCN, WWF, UNEP, 1991). This document proposed and outlined certain action plans and strategies for achieving sustainable development. Nine guiding principles for sustainable living were identified, and have consequently formed the basis for many countries' sustainable development strategies, including South Africa's (Oelofse, 1998).

The follow-up meeting to the Brundtland Commission took the form of the United Nations Conference on Environment and Development, in 1992. This conference, more commonly known as the Rio Earth Summit, attempted to make the principles and aims of sustainable development more realistic and achievable. Agenda 21 was proposed at the Rio Conference as a non-mandatory programme that identified which plans and actions should be adopted in order to promote the actualisation of sustainable development. Agenda 21 is a global strategy, with the slogan of *Act local and Think global.* This slogan encompasses the idea, that sustainable development will only be achieved globally, if it is first implemented and becomes a way of life at the local level.

3.2 The Concepts of Sustainability and Sustainable Development

The preceding overview of the origins of sustainable development and sustainability highlights the fact that the relationship between development and the environment has been a focal point of attention for at least the past thirty years. Sustainability is a broad normative theory, and is often used interchangeably with the phrase sustainable development. This is perhaps slightly incorrect, for sustainability is more of a pathway or transition to a situation whereby the physical and human aspects of the environment are both provided for and interact with each other harmoniously. Sustainable development, on the other hand, is the end point or goal towards which a community or even a country may be striving (O'Riordan *et al.*, 2000).

Despite the fact that the concept of sustainable development is very broad and ambiguous, there are definitive underlying characteristics and principles that may be highlighted. As mentioned, many authors have criticised sustainable development as being too vague and generalized. However it is this generality that makes it applicable to many different contexts and scales (international, national, regional or local) (Oelofse, 1998).

According to Oelofse (1998), there are three facets of individual development within the concept of sustainable development. These three development processes, namely **ecological development**, **social development** and **economic development** need to be integrated in order to achieve the end-point or 'final destination' of sustainable development. The development of the physical or ecological environment should be primarily concerned with reducing the use of natural resources to a level that allows the environment to regenerate or recycle resources. The misuse of resources, via human consumption, should also be reduced or prevented. The amount of waste and pollution emitted into the environment should be minimized, so as to avoid the earth's carrying capacity from being overstrained.

Social or community development should comprise empowerment of the communities to manage and effectively utilise their own environments. Development should incorporate an increased utilisation of appropriate technology, which will minimize the degradation of the natural environment. Community involvement, equity, local self-reliance and social accountability are all vital for community growth and development (Oelofse, 1998).

Development should also be defined in terms of economic growth. As a country experiences increased growth, productive capabilities increase and development follows (Redclift, 1991). Economic growth should ensure that people have access to jobs and necessary resources. However, this is not always the case. As Oelofse (1998; p8) notes, "...private profit and market expansion is not always compatible with sustainable development".

These three development processes are often in conflict with each other. The challenge of integration is therefore to try to manage these three systems effectively, so that the overarching principles and goals of sustainable development can be achieved.

3.3 Key Components and Principles of Sustainable Development

Oelofse (1998) has identified four key components or principles of sustainable development. These components, namely **futurity**, **ecological integrity**, **equity** and **public participation** are the cornerstones of sustainability and should always be considered when working towards sustainable development. **Futurity** refers to a concern for future generations. The current stock of human capital (knowledge and human made resources such as infrastructure) and natural capital (natural resources) should be passed on to future generations. The earth's life support system and resource base should not be exploited, causing future generations to be unable to support their own needs and quality of life. This component is therefore future oriented and focussed on the importance of intergenerational equity. As the future is difficult to predict, the *precautionary principle* is often used. This principle maintains that "*if we do not know what the impacts or implications of our actions will be, then we should rather not carry out that kind of activity, or at least we should proceed with great caution*" (Oelofse, 1998, p6).

Ecological integrity refers to the healthy functioning of the earth's life-support systems. The earth's physical or natural resources need to be self-sustaining, in order for them to perform their various functions and enhance the quality of human life. All ecosystems, global to local, need to be cared for and conserved if they are being exploited. Current levels of biodiversity should be maintained and the impacts of all forms of pollution reduced (Oelofse, 1998).

Social justice or equity refers to meeting the needs of the present generation's poor and disadvantaged. There is no point in aiming towards futurity, if the current generation is unequally impoverished and marginalised. A redistribution of resources is therefore encouraged, yet this concept is highly problematic, especially in a capitalist society, where inequality and uneven distribution of wealth is usually the norm.

Finally, effective **public participation** is seen to be vital in achieving sustainable development. Public participation refers to the active involvement of all interested and affected parties (I & APs) in the decision-making process. This may include the general public, the authorities, academics, local non governmental organisations (NGOs), environmental agencies, or any other stakeholders who may have a concern or interest in the particular area in question. Public participation is usually a voluntary two-way flow of information, informing the decision-making process, whereby the views of all local people are adequately considered and included in the process. "*The development of partnerships between local people, and the private and public sector, is a keystone to sustainable development*" (Oelofse, 1998, p7). Local Agenda 21 has as one of its strategies the encouragement of public participation between all stakeholders, at a local authority level, with the overarching aim of achieving sustainable development.

The key principles of sustainable development, according to the Brundtland Report (1987) are:

- To promote growth, thereby reducing poverty and the pressure on the environment
- To adapt the definition of growth, to include issues such as equity and social values
- To meet basic human needs
- To stabilise and manage the rapidly increasing population
- To conserve and enhance the current resource base
- To integrate economic and environmental concerns in decision-making

There are many other principles and conditions which underlie sustainable development. These principles stem from documents such as *Caring for the Earth: A Strategy for Sustainable Living* (IUCN, WWF, IUCN, 1991) and *Agenda 21* (United Nations Conference on Environment and Development, 1992). They are, however, all concerned with or related to the three facets of development, namely ecological, social and economic.

3.4 Sustainable Development in South Africa

South Africa is emerging from a fairly unique situation in terms of the social, physical and economic environment. This is largely a result of the apartheid era, and the accompanying disparities it created, together with a diverse, sometimes even contradictory legal framework, which is often inadequately implemented and enforced. This situation has resulted in vast inequality and environmental deterioration throughout the country.

According to O'Riordan *et al.* (2000), the concept of sustainable development is particularly appropriate to South Africa. The principles of sustainable development call for the healthy functioning of all within the earth's natural life-support systems, together with the continuous striving for social justice, equality, economic security and an overall enhanced standard of living. These are constitutionally enshrined values and ideals in South Africa. "The distinctive picture here is one where a myriad of existing policies, programmes and initiatives encompass the economic, social and environmental realms in a progressive and challenging manner" (O'Riordan *et al.*, 2000, p2).

The challenge of sustainable development has therefore provided a common goal or vision for South African decision-makers and the principles of sustainability have been incorporated into much of South Africa's large, if not rather loose legislative framework. It is evident that all development managers and decision makers in development organisations, government departments, community based programmes and local businesses need to align themselves within the emerging paradigm of sustainable development (Munslow *et al.*, 1995).

South Africa has also committed itself to State of the Environment Reporting, which is often used as a stepping-stone in the formation of plans and policies, in the pursuit of achieving sustainable development. Yeld (1997) has produced a document *Caring for the Earth, South Africa: A Guide to Sustainable Living.* This document is based on the original international *Caring for the Earth: A Strategy for Sustainable Living* (IUCN, WWF, IUCN, 1991), and highlights the guiding principles of sustainable development, towards which South Africa is striving. The national Department of Environmental Affairs and Tourism (DEAT) has also produced a guiding document *Agenda 21: an agenda for sustainable development into the 21st*

century (DEAT, 1998). This document is based on the global Agenda 21 programme, indicating which actions should be taken to achieve sustainable development.

Although a rather glowing account has been given here of South Africa's commitment and potential to embrace the principles of sustainable living, it must be acknowledged that in reality the situation is far more complex, with numerous barriers or impediments to effectively achieving sustainable development. As O'Riordan *et al.* (2000, p1) succinctly state, "...South Africa is constitutionally, politically and socially poised to embrace sustainable development through a myriad of initiatives that have never heard of that phrase". Although there is a vast array of new legislation written within the broad, overarching framework of sustainable development, there is a general lack of capacity within governmental departments to effectively implement and enforce these policies and plans. Although South Africa has conducted a large number of impact studies and produced a number of guidance and training manuals, there are usually insufficient funds for co-ordinated action to see these through to fruition (O'Riordan *et al.*, 2000).

3.5 Environmental Management in South Africa

The theory of sustainable development forms the overarching framework, which guides the environmental management discourse in South Africa. Environmental management could be simplistically seen as the way in which the impacts of human induced activities on the environment are controlled or managed (Fuggle and Rabie, 1992). In essence, environmental management is the continual striving towards the promotion or actualisation of the principles and characteristics of sustainable development. Various tools of environmental management have been adopted, all with the underlying intention of enhancing the fragile relationship between the environment and development, thereby furthering the ideals of sustainability.

Some of the environmental management and sustainability tools or mechanisms currently being used and researched in South Africa are:

- Integrated Environmental Management (IEM)
- Environmental Impact Assessment (EIA)
- Social Impact Assessment (SIA)

- Strategic Impact Assessment (SEA)
- Environmental Management Systems (EMS)
- Cumulative Impact Assessment

The procedures and principles of IEM and EIA, in a South African context, will be examined in further detail, highlighting their effectiveness and shortcomings in the pursuit of sustainable development.

3.6 Integrated Environmental Management and Environmental Impact Assessment

In many less-developed countries, including South Africa, the approach to development needs to be reflective of the countries' conditions, taking into account their limitations and requirements. Their choice of environmental evaluation should be different from First World countries, where the stop/go approach is usually appropriate (Preston *et al.*, 1992). Rather, a more holistic and integrated approach should be adopted by decision-makers, one that allows a compromise and choice between options. This way of thinking led the Council for the Environment, in 1984, to establish a committee who proposed a national strategy to ensure the integration of environmental matters and concerns into the development process. A comprehensive process of guiding and reporting development decisions was recommended. This process was known as Integrated Environmental Management (IEM) (Preston *et al.*, 1992). A set of six IEM guiding documents were published by the Department of Environmental Affairs in 1992, and continue to be the defining text for IEM in South Africa (DEAT, 1992).

The approach and principles of IEM have been fairly well accepted and have become entrenched in the discourse of environmental management in South Africa. "The 1992 IEM documents can be regarded as a milestone in the evolution of environmental management in South Africa" (Heydenrych and Claassen, 1998, p9).

IEM is a procedure designed to ensure that the environmental consequences of development actions are understood and adequately taken into account in the planning process. IEM guides development in such a way that the benefits of development are realised without enforcing

unnecessary environmental costs. IEM shadows the development process, providing a positive, interactive approach to gathering useful data, analysing it and then presenting findings in an understandable report. IEM aims to enhance policies, plans and programmes, which are inextricably linked to the development process. IEM is intended to complement existing environmental legislation.

The basic principles underlying the IEM philosophy are:

- A broad understanding of the term 'environment';
- Informed and accountable decision-making;
- An open participatory approach to planning and decision-making;
- Pro-active and positive planning

(Preston *et al.*, 1992)

Heydenrych and Claassen (1998) have also highlighted a number of other principles of IEM. These include issues such as open access to information, equity, environmental justice, restrictions on the overuse of resources, adherence to the precautionary principle and the polluter pays principle, proactively determined goals of environmental quality and due consideration of alternatives. The IEM procedure therefore promotes a 'cradle-to-grave' approach requiring that all environmental considerations be integrated into each stage of the development process. It is also evident that IEM echoes many of the principles and objectives of sustainable development.

3.6.1 Enabling Legislation

The National Environmental Management Act 107 of 1998 (NEMA) aims to provide a framework for integrating environmental management into all development activities. NEMA (1998) establishes procedures and institutions to facilitate and promote IEM and sustainable development (DEAT, 1998). NEMA (1998) identifies sustainable development as being an integral environmental management principle. Development should ideally be socially, environmentally and economically sustainable (DEAT, 1998). NEMA (1998) mirrors many of the sustainability principles highlighted earlier in this chapter (Section 3.3), such as public participation, environmental justice and equity, ecological integrity and futurity.

NEMA (1998) also refers to the fact that "environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated..." (Section 1 (2)(4b)). Chapter 5 of NEMA (1998) promotes the application of environmental management tools in order to ensure the integrated management of development activities. In order to give effect to the general objectives of IEM highlighted in this chapter, the potential impact on the environment, socio-economic conditions and cultural heritage of activities that require permission by law, authorisation, or may significantly affect the environment, must be examined and assessed before their implementation (DEAT, 1998).

NEMA (1998) therefore acts as the defining piece of legislation for IEM and sustainable development. Although the IEM guiding documents (DEAT, 1992) are more comprehensive in terms of IEM and its various management tools, these documents are merely guidelines and do not have the statutory status of NEMA.

3.6.2 The IEM procedure

There are four integral aspects to IEM:

1. Careful environmental planning and design;
2. An ongoing process of proposal assessment and modification;
3. A transparent and accountable decision-making process; and finally
4. Enforceable mitigation programmes (Egan, 1990).

These four aspects are complementary and are linked to the four natural stages in the progression of any development, namely the **proposal development stage**, the **assessment stage**, the **decision stage** and the **implementation stage**. All proposed actions with potentially significant environmental consequences, should be investigated and assessed in some way. However, not all will require a full environmental impact assessment. Figure 3.1 identifies these main stages in the IEM procedure.

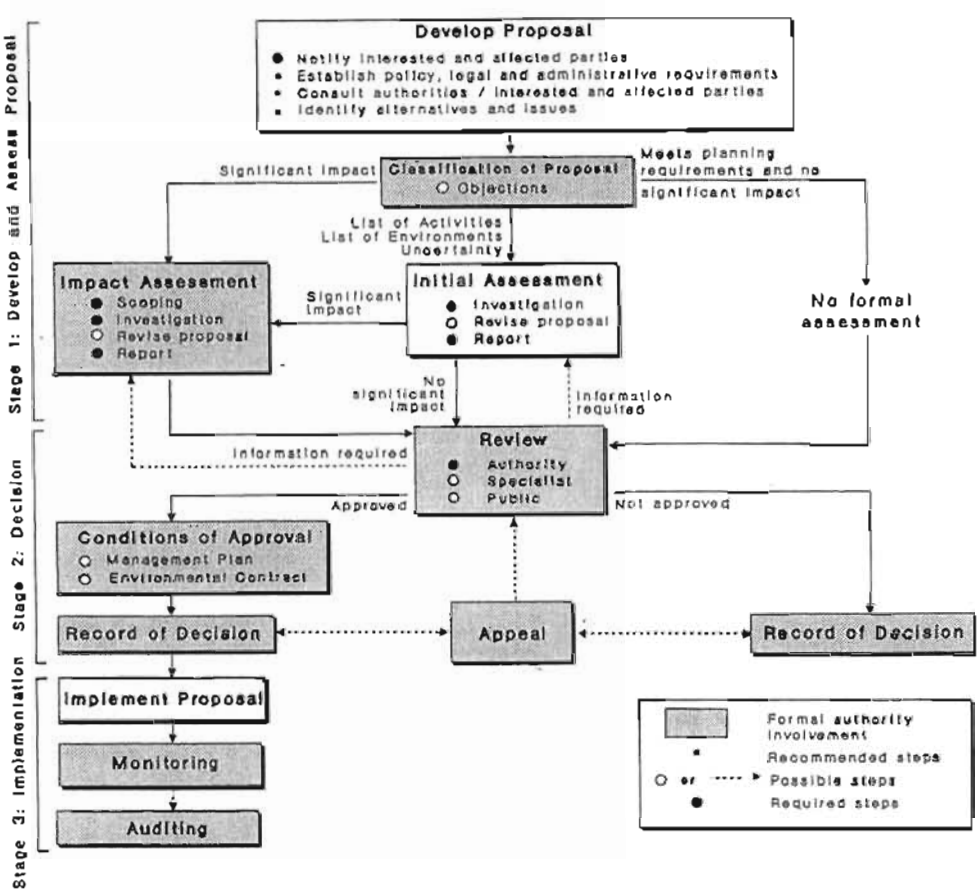

Figure 3.1 Major steps in the IEM procedure (Preston *et al.*, 1992, p750)

At the stage of **assessment**, the IEM objective is to formally and systematically assess the environmental implications of the development alternatives that have been officially submitted. This is where the environmental management tool known as EIA fits in. EIA represents an organized method or set of techniques studying and identifying ways to prevent adverse environmental impacts of development policies, programmes and projects, be they biophysical or socio-economic. EIA has become increasingly recognized as a mechanism for promoting the integration of environmental aspects with all social and economic development decisions, through an open, participatory and comprehensive process (Clark, 1994).

The process of EIA was first institutionalised as a formal procedure in 1969, through the introduction of the National Environmental Policy Act (NEPA) in the United States. This prompted countries all over the world, including South Africa, to also adopt environmental assessment regulations and processes.

In South Africa, the Environmental Conservation Act (73 of 1989) made provisions for certain EIA requirements. However, this Act was rather limited, merely giving the relevant authority the power to demand an EIA when deemed necessary. Real impetus was only accorded to EIAs, when sections 21, 22 and 26 of the Environmental Conservation Act were legalized, with the promulgation of the EIA Regulations in September 1997. These regulations are effective, as they make it mandatory for developers to report on all the possible environmental consequences of their development proposal, before they are given permission and allowed to proceed with their project (Naidoo, 2000).

EIA is a mechanism that has proved to be a valuable environmental management tool for the proponents of development and the relevant authorities involved. If effectively conducted, EIA may reduce costs and the time taken for a consent decision to be reached. In order to do so, however, EIA should be implemented at an early stage in the project planning and design. Within the framework of IEM, there must be continuous interaction and feedback between EIA findings, project design and the possible alternatives EIAs may also have long-term financial benefits. If a problem is identified early enough through the EIA, it may allow considerable future savings (Clark, 1994).

EIA would therefore appear to play a pivotal role in the process of IEM and environmental decision-making. EIA does not provide a solution, but has great potential to assist rational or sound development, for those in the planning and development field. "*If sustainable development is to be achieved...environmental assessment will be a key element in the process. As a tool EIA can attempt to balance the legitimate desire to achieve economic growth whilst at the same time protect the environment*" (Clark, 1994, p12).

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	Done	Do Later
- Work on Proposal	○	○
- Wak on main questionnaire	○	○
- Create diff. questionnaire & diff stakeholders	○	○
- Finish consent form	○	○
- Work on Literature Review.	○	○

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From this examination of IEM and EIA it is evident that IEM is a holistic overarching framework aimed at facilitating effective and sustainable environmental management. IEM emphasises the importance of a cradle-to-grave management approach, when dealing with projects, plans or developments, which may have environmental consequences. EIA is an IEM tool, developed essentially to identify ways to prevent adverse environmental impacts from these plans or projects, thereby promoting sustainable development.

3.7 Critical Evaluation of IEM and EIA

The discussion presented above suggests that IEM and EIA should be able to make a useful contribution, especially towards the attainment of sustainable development. However IEM and especially EIA are seen as having a wider definition and function than is unfortunately the case when implemented in many countries worldwide, including South Africa. The theory of IEM and EIA appears very sound and creditable, yet as the following critique reveals, in practice this is not always the case.

This section will cover some of the shortcomings and criticisms of the IEM and EIA processes in South Africa.

- EIA has played a rather limited and often disruptive role in the development process, whereas IEM is intended to play a more comprehensive and positive, guiding role within this framework. EIAs are often regarded, by development proponents and practitioners, as being obstructive rather than constructive in nature (Egan, 1990). EIAs are often more reactive in nature then intended, frequently being implemented in response to planning problems, crises or regulatory requirements and demands. They are intended to be more proactive and 'forward-looking', than is typical practice.

- EIAs also have a sector-specific focus and are often very project specific. This does not allow for continuity and holism within the framework of IEM. EIAs do not currently focus on cumulative or synergistic effects, or policy and planning impacts at a strategic level. (Preston *et al.*, 1992).

- The concept of public participation is seen as a vital component within both the IEM and EIA procedures. In practice, however, public participation is rather limited and doesn't seem to really empower local people. This is especially the case in rural and disadvantaged areas in the country. Another problem could be the reluctance of the development proponents to involve I&APs sufficiently in the EIA process (Oelofse, 1998).

- From a more technical point of view, the preparation of EIA reports is often done inadequately by consultants with little experience and/or poor budgets. The report review stage is also often inadequately conducted. This is substantiated by the fact that the number of refusals of proposed developments is extremely low throughout the country (Thornhill, *pers. comm.*, 2000). There is also a major lack of capacity and resources in the government departments dealing with EIAs and environmental management, thereby slowing down the EIA process considerably.

- Another problem is the tendency for reports to be biased. The notion of 'sweetheart' reports may result when clients tend to place restrictions on the scope of the study when indicating the consultants' terms of reference. (Preston *et al.*, 1992).

- There is often a tendency, in South Africa, to keep development proposals confidential, in order to maintain a competitive advantage of a developer. This often results in only a few people being involved in the planning process, and sometimes even the authorities are excluded. This leads to inadequate review periods, possibly with poor decisions being made, due to a lack of relevant information (Preston *et al.*, 1992).

- One of the major criticisms to be made is that although the Environmental Conservation Act 73 of 1989 makes provision for the legal enforcement of IEM procedures, IEM itself is not mandatory in South Africa. Despite the significant role that IEM is said to play in ensuring long-term environmental sustainability, it is not legally binding. IEM procedures are therefore undertaken on a voluntary basis, rather than because of appropriate enabling legislation.

3.8 Environmental Impact Assessment Follow-up

The final and perhaps most important criticism of the EIA procedure in particular, is that concerning the apparent lack of EIA follow-up. Much of the focus and attention of EIA activity is attributed to the 'front end' of the development process: the assessment and review of proposed projects. Only a limited amount of attention, however, is paid to the implementation of projects, that is, the ways in which to follow through on the conditions, recommendations, commitments and issues raised during the assessment and review stages of the EIA process. One of the primary reasons for this apparent lack of EIA follow-up may be attributed to the lack of enabling legislation.

The IEM guidelines identify compliance monitoring, environmental monitoring and environmental auditing to be vital components of the EIA implementation stage (Heydenrych and Claassen, 1998). Although the IEM guidelines make the importance of EIA follow-up very clear, as mentioned above they are not legally binding, thereby leaving the issue of follow-up to be undertaken on a voluntary basis. The issue of EIA follow-up is completely neglected in the Environment Conservation Act. The National Environmental Management Act (107 of 1998) only provides partial consideration of follow-up, by requiring the "*investigation and formulation of arrangements for the monitoring and management of environmental impacts*" (Section 24(7)(f)).

Hill (2000, p52) succinctly encapsulates the situation by stating, "*This lack of regulations on EIA follow-up constitute a retrograde step for environmental management in South Africa*".

3.9 Conclusion

In conclusion, it can be stated that at present EIA is an ineffectual tool or mechanism of environmental management, as it is not carrying out the basic principles of sustainable development. An EIA cannot possibly be effective if it stops short in its overall purpose of achieving IEM and therefore sustainable development. This research will endeavor to confirm or refute these statements, by thoroughly examining the issue of EIA follow-up. The present situation in South Africa and specifically in KwaZulu-Natal will be considered, thereby establishing whether EIA follow-up is being conducted, whether it is effective and finally

whether it is facilitating a process of bringing the principles of sustainable development to fruition.

CHAPTER FOUR
ENVIRONMENTAL IMPACT ASSESSMENT FOLLOW-UP

4.1 Introduction

As the previous chapter briefly highlighted, EIA follow-up is a vital, yet poorly neglected part of the EIA and IEM processes. This chapter attempts to examine the concept of EIA follow-up in greater detail, providing an understanding of its various components and the rationale underlying follow-up. International experience with EIA follow-up will also be briefly considered.

EIA follow-up should be seen as the *culmination* of any EIA. In light of this, EIA should be viewed as a form of pre-decision investigation, with EIA follow-up its post-decision analysis complement. EIA relates directly to the planning and development of certain strategies or projects, identifying potential impacts and proposing possible solutions to remedy or mitigate the detrimental consequences. EIA follow-up, on the other hand, relates more specifically to the actual implementation of the projects themselves (i.e. their construction, operation and maintenance). EIA follow-up, therefore, relates to the various stages of the project life cycle after the consent decision has been given (Arts *et al.*, 2000).

According to Arts *et al.* (2000), EIA follow-up may be viewed as having an **objective component** and a **subjective component**. The objective component usually comprises the collection of data (monitoring) and the comparison of these data with norms, predictions and expectations (auditing). The subjective or *normative* component involves the evaluation of the performance of the activity with predictions, expectations and present standards. EIA follow-up also includes a **management component**, whereby decisions are made based on the results from the monitoring, auditing and evaluation of the study. In addition, EIA follow-up should incorporate a **communication or participation component**, which entails informing all the interested and affected parties (I&APs) about the results of the EIA follow-up.

In light of the above, an appropriate definition for EIA follow-up may be that of Arts (1998, p75) who views follow-up as:

> *" The collection of data, structuring, analysis and the appraisal of information about the impacts of a project or plan that has been subject to EIA. It also involves decision-making on remedial action and communication of the results of this process".*

EIA follow-up consists of many different components and should not be treated in isolation from the other aspects of environmental management. An EIA and its subsequent follow-up activities should not be perceived as isolated or 'one-off' events. Rather they should be seen as vital constituents of the whole ongoing process of IEM, with the overarching goal of achieving environmentally sustainable development.

The aim of EIA is to ensure that before a development or project receives authorisation to commence, the environmental impacts which it is likely to generate during its entire life-cycle are understood and considered. This means that it is essential that EIA follow-up be carried out throughout the development's life cycle. Obviously the life cycle will vary for each project, but generally the main stages of the life cycle that need to be monitored or checked are implementation, operation and decommissioning. To be fully effective, the EIA needs to provide follow-up throughout each of these stages (George, 2000). Figure 4.1 shows how this may be achieved, in principle, in a fully integrated system.

Project Stage	Design	Implementation	Operation & Decommissioning
Action by Proponent	Environmental Impact Assessment →	Environmental Management Plan →	Environmental Management System
Action by Responsible Person	EIA review & approval (Approval of the EIA, EMP & EMS)	Implementation monitoring and EIA follow-up (Monitor & audit during and after implementation)	Periodic environmental audit (Inspect, monitor and audit throughout operation and decommissioning)

Figure 4.1 Integrated Environmental Management (after George, 2000).

The concepts of monitoring, auditing, Environmental Management Plans (EMPs) and Environmental Management Systems (EMS) as they relate to EIA follow-up and environmental management, will be examined in greater detail.

4.1.1 Monitoring

Monitoring entails the measurement and collection of data, and in so doing, providing information regarding the relevant biophysical and socio-economic variables associated with development impacts (Modak and Biswas, 1999). This information may reveal the characteristics and functioning of these variables, and more importantly the occurrence and magnitude of environmental impacts.

In the case of EIA follow-up, monitoring may take the form of **effects monitoring** or **compliance monitoring**. Effects monitoring refers to the actual measurement of the impacts of the implemented project on the surrounding environment. This may be done, *inter alia*, by measuring environmental quality (via indicators) and assessing public complaints. Effects monitoring ensures that environmental impacts are kept within predicted levels, unanticipated

impacts are identified, and information is provided for mitigation and remedial action (Modak and Biswas, 1999).

EIA compliance monitoring or regulatory monitoring are terms used when checking a particular environmental parameter for compliance with laws, regulations, standards or guidelines (Hill, 2000). Compliance monitoring therefore provides the verification as to whether the project or strategy, and associated developers are complying with the conditions of approval and recommendations originally established by the decision-maker (Arts and Nooteboom, 1999). Compliance monitoring consists of collecting and analyzing information on the compliance status of the development area.

EIA compliance monitoring is a continuous and systematic process to ensure that the conditions in the Record of Decision (ROD) and the EMP are adhered to. All relevant environmental legislation pertaining to the development also needs to be monitored for compliance. As the conditions of the ROD, the EMP and the relevant legislation all play an integral role in the overall IEM procedure, effective compliance monitoring is vital to the efficient management of environmental impacts (Heydenrych and Claassen, 1998).

Another special type of monitoring is **baseline monitoring.** This is the measurement of environmental indicators to ascertain the initial state of the environment before the project began. Such monitoring is important as it forms the basis for prediction and evaluation in the EIA and the follow-up process.

Monitoring needs to provide meaningful information. It is however important that monitoring is selective, because of limited funds, shortages of manpower and the need for environmental effectiveness. It is because of these limitations that Arts and Nooteboom (1999) recommend that monitoring plans be specified for each environmental indicator. Each monitoring plan should include the measuring technique, responsibilities, locations, time frames, data storage and reporting techniques. These will all depend on the type of activity, the biophysical environment, the duration of the project and the type of indicator chosen for the monitoring.

4.1.2 Auditing

Environmental conditions may be monitored by adopting environmental management and auditing systems. Monitoring is only beneficial if the observations are recorded, evaluated and reported, so that appropriate actions can then be taken. Environmental auditing ensures that the results from the monitoring are compared with standards and set criteria of acceptability, so that decisions may be taken as to whether further action is needed. By making value judgements, a subjective component is added into the auditing process (Arts and Nooteboom, 1999).

In contrast to the continuous nature of monitoring, auditing is a periodic activity, depending on the sensitivity of the project. Environmental impact auditing or follow-up auditing involves comparing the impacts predicted in the EIA, with those that have actually occurred after implementation of the project. In this way it may be ascertained whether the impact prediction has performed satisfactorily. The audit may be of both the EIA impact predictions and of the conditions and mitigation measures attached to the EMP. As indicated in Figure 4.1, auditing should take place during and after implementation. It is also important to audit periodically throughout the operation and decommissioning phases. In this way it is ensured that follow-up continues throughout the project's life cycle, and that all the recommendations and mitigation measures are brought to fruition.

However, it is important to note that the auditing specifications will be different for each development or project. A less sensitive project may only call for a once-off audit, whereas a more sensitive development may necessitate very frequent audits. This is the case with waste management and landfill sites. Once the EIA has been approved and a hazardous landfill site is established, the *Minimum Requirements for Waste Disposal by Landfill* (DWAF, 1998) state that stringent audits have to take place every three months, in order to continuously assess the situation (R. Lombard, *pers. comm.*, 2001).

4.1.3 Environmental Management Plans

According to the World Bank (1999, p1), EMPs "*provide an essential link between the impacts predicted and mitigation measures specified within the Environmental Assessment (EA) report,*

and implementation and operational activities". Having examined two important components of an EMP, monitoring and auditing, it is necessary to consider the broader framework.

The results or outcomes of an EIA are usually implemented through an environmental management plan. Typically, an environmental management plan or programme should include a summary of the impacts, a description of appropriate mitigation measures, inspection procedures, institutional responsibilities, a monitoring plan, an auditing schedule, a time frame and a breakdown of costs. An EMP will lay the basis for all the environmental actions associated with the proposed development, including management systems (The World Bank, 1999).

Before a project is approved, the competent authority for EIA may ensure that the developer makes appropriate provisions for EIA follow-up during all the later stages of the project's life cycle, by requiring an EMP to be submitted with the EIA. It may either be included in the actual EIA report, or as an additional report. The competent authority should then not approve the proposal until the EIA and EMP are considered acceptable. This is, however, ideal in theory, but in practice there are many problems associated with EMPs and their implementation. These problems will be highlighted in Chapter Five.

There are, however, numerous benefits associated with EMPs. They ensure that the conditions of approval imposed by the relevant authority are adhered to and implemented. EMPs also help to ensure that resources are allocated effectively, so that the scale of the EIA follow-up activity is consistent with the significance of the environmental impacts. Through the process of monitoring, an EMP will identify and respond to unforeseen impacts and changes in project implementation (Hill, 2000).

It is evident that EIA follow-up would be highly successful if an effective EMP was implemented and thoroughly enforced. However, there are many barriers impeding the success of EMPs, especially in South Africa. The crucial problem is that in most countries, EMPs are not mandatory and hence their EIA follow-up activities are often sorely neglected or inefficient (Hill, 2000).

4.1.4 Environmental Management Systems

An EMS is a broad overarching system that involves the implementation of all the initial assessment measures, whilst integrating an effective follow-up system to ensure compliance with these measures (Arts *et al.*, 2000). According to George (2000), most serious environmental impacts result not from development projects being poorly designed, or implemented, but rather from them being badly managed during the operational stage. An EMS attempts to avoid this and should be a key feature of any organisation committed to effective environmental management (Heydenrych and Claassen, 1998).

An EMS could be seen simply as a system that attempts to ensure that the operator's normal management procedures prevent significant detrimental environmental impacts. By implication, an EMP should include some type of environmental management system. There may be a clause or specification within the EMP, which calls for an ongoing integrated management system to be established by the company that will function throughout the development project's life cycle (George, 2000).

To be effective an EMS needs to be monitored and audited internally by the operator, who will confirm the implementation of certain procedures and their effectiveness. Independent audits should also be carried out on the system, usually by the relevant authority or an independent consultant.

Environmental management systems have been developed and applied primarily in industrial, chemical and other polluting industries (George, 2000). The International Standards Organisation (ISO) developed the international standard ISO 14001 to define what a sound EMS should comprise and to allow operators of EMS's to obtain certification if their system meets the requirements of the standard.

This whole concept of environmental management systems, the ISO 14001 series and how they relate to EIA follow-up will be examined further in Chapter Six.

4.1.5 Summary

This section has attempted to clarify the concept of EIA follow-up and its components. As has been shown, EIA follow-up consists of an objective component, which consists of monitoring and auditing in order to obtain relevant data relating to the incurred environmental impacts. EIA follow-up should also contain a subjective aspect, whereby the results from the monitoring and auditing are evaluated. This is a crucial part of follow-up, because it is from these judgements that decisions will be made. Ideally EIA follow-up should be promoting sustainable development. It is for this reason that it is imperative that the general public, and other I&APs, are kept informed of the results from the follow-up and the decisions to be taken.

An EMP and EMS were briefly discussed, as they are important components within the EIA follow-up framework. These two concepts could be highly effective if properly implemented and enforced. An EMP could be a way of ensuring that EIA follow-up is correctly and successfully executed. In other words, a comprehensive EMP could be said to be a catalyst for effective EIA follow-up and consequently sustainable development.

4.2 Rationale for EIA Follow-up

Having outlined the basic definitions and terms of EIA follow-up, it is necessary to establish why follow-up is so important and what function it fulfills in the whole framework of IEM and sustainable development.

The reasons for conducting EIA follow-up seem to be similar to that of EIA itself: highlighting environmental uncertainties intrinsic to a prospective activity such as project planning and decision-making (Arts *et al.*, 2000). Although a comprehensive EIA is a necessary prerequisite, it alone is not a sufficient condition for integrated environmental management and sustainable planning, decision-making and implementation of projects. According to Arts *et al.* (2000), at present there appears to be an *'implementation gap'*; meaning that there may be a considerable difference between the EIA's plans (and recommendations) and the actual implementation. For, in essence, the real impacts of the project on the environment are what are important, not the predicted impacts.

EIA follow-up provides vital information about the impacts or consequences of a development project as they occur, and also allows the responsible parties the opportunity to take appropriate measures to prevent or mitigate detrimental environmental impacts. In light of this, EIA follow-up may be seen as the *'missing link'* between the EIA and the actual implementation of the activity (Fig. 4.2).

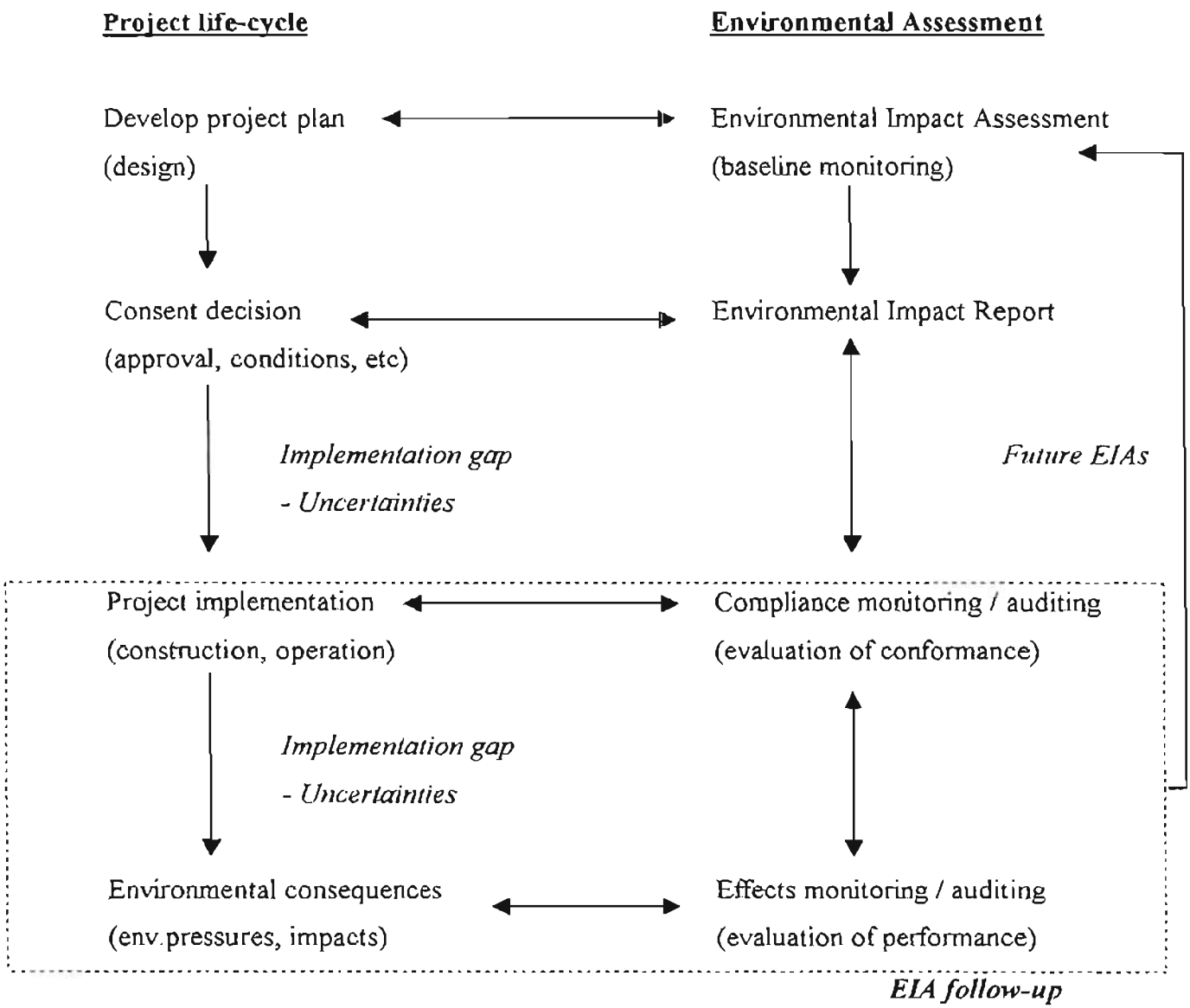

Figure 4.2 EIA follow-up as a link between EIA and project implementation (after Arts *et al.*, 2000, p3).

According to Arts (1998,1999), there are four main reasons for carrying out EIA follow-up. These are:

1) Control of the activity – this may be broken down into two functions, namely checking and adjusting. Checking consists of making sure that the consent decision has been implemented properly, checking for post-decision changes and developments, and monitoring the activity's actual environmental impacts. EIA follow-up may ensure that the conditions of approval and other stipulations and terms are taken into account properly during implementation. If necessary, adjustments to the original consent decision may be made in order to prevent unforeseen and unacceptable environmental impacts.

2) Knowledge enhancement – EIA follow-up may contribute to the further enhancement of information and knowledge. EIA follow-up can provide information about the effectiveness of the EIA system as a whole. The validity of predictions and the accuracy of methodologies and techniques involved in data collection can be assessed. EIA practitioners can learn from experience by conducting follow-up activities, and thereby help to fill in gaps in knowledge and improve current predictions and mitigation measures. This feedback of knowledge and experience will contribute to the enhancement of the EIA process and the future of planning and effective environmental management.

3) Public participation – EIA follow-up should serve to enhance communication about the environmental performance of an activity, especially in the implementation, operation and decommissioning stages. Follow-up will also help to strengthen the transparency and accountability of the planning and decision-making processes, whilst increasing the public and I&APs involvement. Because of this, the project should be more justified and acceptable to the general public and I&APs.

4) Integrating environmental information and instruments – EIA follow-up may act as an 'umbrella' by integrating and managing various monitoring, auditing and evaluative techniques. Follow-up allows for an overview of the ongoing monitoring, evaluation and decision-making activities that constitute the EIA. As mentioned, EIA follow-up is important as it incorporates tools for environmental management, such as monitoring and

auditing procedures, which may even be performed under environmental management systems. Finally, EIA follow-up may also be incorporated into the even broader framework of IEM.

To conclude, EIA follow-up is essential if EIA is to receive its appropriate status as an important and beneficial environmental management tool. As has been shown, EIA follow-up should commence once approval has been given for a specific project, plan or development to proceed. EIA follow-up plays a vital part in integrated environmental management and sustainable development, for it fills the implementation gap that often occurs after an EIA.

4.3 International Experience with EIA Follow-up

As mentioned earlier, EIA originated in the USA in 1970. Initially EIA was seen to be an unnecessary practice and a disturbance, and was generally ignored. However, people began to learn from experience and the process of EIA became more refined and acceptable. EIA has consequently grown rapidly over the last thirty years and is now established and accepted around the world as a vital environmental management tool (Wood, 1994).

Throughout the world EIA systems all have similar processes to the cyclical EIA procedure, emanating from the US National Environmental Policy Act 1969 (NEPA). It is however, apparent that there are still many shortcomings in current EIA practice, especially in the area of EIA follow-up. The status of EIA follow-up in a number of international countries will be briefly examined to provide insight into practice that could be relevant to the South African situation.

At present, EIA follow-up is not a mandatory step in most EIA procedures. European Union regulations do not specifically require monitoring or any other form of follow-up. The Commission of the European Countries, however, is very proactive in their approach to EIAs and is attempting to make a formal monitoring programme a mandatory procedure in EIA (Glasson, 1994). The lack of effective legislation however, has not deterred some European countries from conducting EIA follow-up activities.

The Dutch and the Canadian EIA systems both contain several provisions for monitoring and auditing, yet these provisions are often not implemented or enforced in practice. The Netherlands has adopted a system whereby the relevant authority is required to monitor project implementation and to include an effective public participation process. If the actual impacts are more severe than the predicted environmental impacts, then the relevant authority may adopt appropriate measures to prevent or mitigate these impacts (Glasson *et al.*, 1994).

The Canadian Government has prepared guidelines for post-project EIA follow-up, stressing the importance of the relationship between the EIA and post-decision monitoring and auditing. Attention is therefore given to relevant aspects such as the design of baseline monitoring, impact prediction, screening of projects for auditing, establishing effects monitoring, collection of data, analysis and presentation of the audit and monitoring results. Further guidance, training and research on EIA follow-up is seen as necessary for the effectiveness of follow-up to become fully apparent (Arts, 1998).

Wood (1994) undertook a comparative study of leading international EIA systems. Hong Kong's EIA system has for a long time required that environmental monitoring be included as a condition of approval. This requirement has subsequently been strengthened by stipulating that an environmental monitoring and auditing manual needs to be submitted as part of the EIA report (Wood and Coppell, 1999).

According to Wood (1994), only the Netherlands and Western Australia have EIA systems that almost fully meet his requirements for an effective EIA system. When examining the issue of EIA follow-up and more specifically impact monitoring and system monitoring, Wood (1994) found that only one of the international EIA systems, namely that of Western Australia, fully meets the follow-up criteria. Western Australia's EIA follow-up activities seem to be effective as an environmental management programme is often required, which links monitoring directly to the EIA and provides for its enforcement (Wood, 1994).

Although the above-mentioned countries appear to be giving EIA follow-up considerable attention, there are a number of countries that are still lacking in terms of effective follow-up

procedures. There is no provision for EIA follow-up in the United Kingdom EIA system and monitoring is acknowledged to be decidedly weak in the USA. The California EIA system only stipulates monitoring where mitigation measures are agreed upon. The monitoring of the EIA system as a whole, in order to learn from experience, also appears to be a general weakness in some of the countries conducting EIAs. The USA, the Netherlands, Canada and Western Australia do however, all have a monitoring body, with the overall responsibility to assess or review the EIA system (Wood, 1994).

Arts (1998) stated that his overview of international experience in EIA follow-up has revealed a number of limiting factors that have to be taken into account when undertaking follow-up activities. These limiting factors include issues such as:

- Inadequate EIAs
  - assessments incorrect or incomplete
  - changes following the assessment not considered
  - EIA predictions too vague and untestable
- Limitations of follow-up techniques
  - follow-up data inadequate
  - inadequacies in baseline data
  - limited scientific models
- Resource limitations
  - monitoring expensive
  - much manpower and time needed
  - involvement of many parties
- Lack of clarity
  - unclear responsibilities
  - little guidance in EIA follow-up activities
  - lack of funding
  - lack of legal pressure
  - lack of staff training
- Other drawbacks
  - mandate limitations

- limited appreciation by management
- low priority awarded to EIA follow-up activities

This brief assessment of the various countries' EIA systems has shown that there are still weaknesses apparent, even in the most advanced systems. Effective EIA follow-up still appears to be a common shortcoming in many countries. The above-mentioned constraints will need to be thoroughly examined and overcome if EIA follow-up is to be effective in its attempt to facilitate successful environmental management and sustainable development. The status of EIA follow-up in South Africa, and in particular KwaZulu-Natal, will be assessed in the following chapter. This chapter will shed light on whether South Africa's EIA follow-up practices are similar to their international counterparts.

CHAPTER FIVE
THE CURRENT STATUS OF EIA FOLLOW-UP IN KWAZULU-NATAL

5.1 Introduction

For the purpose of this research, environmental consultants were formally interviewed, in order to establish the current status of EIA follow-up in South Africa, and in particular KwaZulu-Natal (KZN). Fifteen of these consultants practise in KZN, whilst the remaining five live and work in the Western Cape or Gauteng. All the respondents are actively involved in the EIA process and were able to provide some valuable insights into EIA follow-up.

From these twenty interviews, a number of key issues were raised concerning the importance and best practice of EIA follow-up. This chapter will cover initially the respondents' broad understanding of EIA follow-up, and thereafter will examine some of the key issues in greater detail. A brief overview of the status of EIA follow-up nationally will also be provided. Finally, the role of the provincial government in KZN with regard to EIA follow-up will be considered, as will a conservationist's view of EIA follow-up.

5.2 Defining EIA Follow-up

The majority of the respondents in KZN (67%) understood EIA follow-up or ex-post evaluation to be ensuring that the recommendations made in the EIA and the conditions of approval set by the competent authority – be they provincial or national – are being implemented in the design, construction and operation of a particular development. According to this view, follow-up therefore entails the ongoing compliance with the conditions of approval contained in the Record of Decision (ROD). The respondents' understanding of EIA follow-up is therefore essentially framed within the context of the law regarding EIA, implying that if follow-up is to be successful the legally binding ROD should incorporate effective measures for EIA follow-up, to which all relevant role-players have to adhere. A few respondents (27%) did mention, however, that because EIA follow-up conditions are seldom very thoroughly included in the ROD, EIA

consultants and practitioners should conduct follow-up activities regardless of the ROD, in order to facilitate best EIA practice.

Many of the respondents (60%) explained that EIA follow-up should ideally also include post-decision monitoring and auditing. The monitoring should be conducted regularly and provide the relevant data for periodic auditing. Two types of monitoring were identified: monitoring to assess whether the predicted or modeled impacts of certain developments are accurate; and the monitoring of the EIA system as a whole. Audits are seen as a vital component of an EMS. One consultant mentioned that EIA follow-up might also, involve rewriting sections of documents and reports due to legislative changes or changes in environmental standards and updating of documents when necessary. Auditing should be the management tool used to continually assist in this process (Respondent 12, *pers comm.*, 2001). The respondents' understanding of post-decision monitoring and auditing appears to correspond with the explanation of these terms presented earlier in Chapter Four (Arts and Nooteboom, 1999; Modak and Biswas, 1999).

The majority of the consultants (73%) also understood or explained EIA follow-up in terms of EMPs. According to this view, follow-up should ensure that EMPs are executed effectively. However, as many respondents noted, the ROD may not necessarily include an EMP, as EMPs are not mandatory under current legislation. They argued that follow-up should take place regardless of whether there is an EMP or not.

The EMP, however, is seen to be an effective starting point for EIA follow-up. Many of the respondents recommended that an EMP be implemented as part of the EIA. This depends on whether the client is co-operative and on the scope of the project. If the project involves a small development, with no major environmental impacts, the client may then be reluctant to accrue additional costs hiring a consultant to draw up an EMP which is not even mandatory. Each project should therefore be assessed at an early stage regarding the necessity of the EMP. The client will then be able to consolidate these additional costs into the budget.

The way in which the EMP is drawn up is also very important. If the EMP is a specific condition of the ROD, or if it is approved by the competent authority on submission with the

EIA, then whatever is included in the EMP becomes binding and has to be carried out. It should therefore be the responsibility of whoever is drawing up the EMP, to make sure that it is as comprehensive as possible, and that it is approved by the authority, in order to ensure effective and sustainable follow-up.

A further aspect of EIA follow-up, identified by only three of the respondents, was that of following through with the I&APs, who have been involved throughout the process. It is interesting to note that only a small percentage of those interviewed identified this component of EIA follow-up. Not only is public involvement an important part of EIA follow-up, as was highlighted by Arts *et al.* (2000) and Arts (1998), but it is also a component of the IEM procedure and widely accepted as one of the sustainability principles (Oelofse, 1998).

In order for EIA follow-up to be effective and promote sustainable development, it should incorporate a communication or participation element, which entails keeping all the I&APs informed about the results of the EIA and the follow-up activities (Arts, 1998; Arts *et al.*, 2000). According to this view, it is the consultant's responsibility to keep the stakeholders as well as the general public informed and involved at all times, even after the ROD. The EIA follow-up stage will essentially be the stage in which the I&APs have the greatest interest, for it will reveal the actual impacts arising from a development project and the measures taken in order to mitigate these impacts. Clearly this aspect of EIA follow-up is not widely acknowledged as important by the environmental consultants who were interviewed.

It is also interesting to note that only another three out of the fifteen respondents highlighted the importance of conducting follow-up into the decommissioning and rehabilitation stages. Many consultants neglect this vital stage in the management process, a stage where effective follow-up could play a very influential and important role, as was highlighted by Preston *et al.* (1992) and Heydenrych and Claassen (1998).

The majority of the respondents (73%) felt that the EIA follow-up process should begin after the approval for the project has been granted and the appeal stage has lapsed. They argued that the relevant authority should stipulate the conditions of approval, and thereafter follow-up should

commence. Only two of the respondents believed that follow-up should begin earlier in the process, thereby echoing the IEM 'cradle-to-grave' philosophy (Preston *et al.*, 1992; Heydenrych and Claassen, 1998). In their view, consultants and other relevant role players should be thinking about EIA follow-up activities early in the whole process, even while the initial EIA scoping phase is taking place. In this way baseline data may be collected for later comparative assessments during the EIA follow-up stage. The most effective EIA follow-up activities to suit each particular project could then be established.

On the whole, the majority of the respondents stressed the importance and value of conducting EIA follow-up. As one respondent succinctly put it, "EIA follow-up is essential. If there is no follow-up, it just makes a mockery of what goes before" (Respondent 15, *pers. comm.*, 2001). However, it is interesting to note that only nine of the fifteen respondents (60%) have ever proceeded into the follow-up stage. It appears that follow-up is often only undertaken for large-scale or sensitive developments, with many conditions of approval. Very few of the consultants personally conduct follow-up on all of their projects.

In summary, based on the interviews conducted, most of the environmental consultants in KZN emphasised the importance of EIA follow-up. However, they had a fairly limited and simplistic understanding of EIA follow-up and what it embraces. Although they evidently understood the importance and advantages of post-decision monitoring and auditing, very few identified the importance of maintaining an effective public communication or participation process into the EIA follow-up stage. Likewise, only a small percentage (20%) highlighted the importance of conducting follow-up into the decommissioning and rehabilitation stages. It is also interesting to note that despite the respondents highlighting the necessity of EIA follow-up, only 60% of those interviewed had actually proceeded into the EIA follow-up stage themselves. Most environmental consulting firms focus on the actual EIA, with EIA follow-up being given minor consideration, unless the project entails a large-scale or sensitive development, or if it is a specific condition of the ROD.

5.3 Responsibility for EIA Follow-up in KZN

Based on the interviews with the consultants, the responsibilities for EIA follow-up do not appear to be clearly established. Eight respondents (53%), felt that the provincial authority, namely the Department of Agriculture and Environmental Affairs (DAEA) should be the institution responsible for undertaking EIA follow-up procedures throughout KZN. Four respondents (27%) believed that the proponent should ideally be responsible and may appoint an independent consultant if necessary. Three respondents (20%), saw the responsibility falling within the local authority's jurisdiction.

There are two aspects of responsibility for EIA follow-up that require clarification. Firstly, there is the responsibility for actually conducting the EIA follow-up activities: monitoring and auditing environmental impacts, keeping the I&APs involved and making appropriate decisions. The responsible parties should be involved in the EIA process from the initial stages so that they are aware of all the potential impacts or consequences from the project. Environmental consultants or the practitioner who conducted the EIA are ideally suited to continue with the EIA follow-up activities. They will be the most familiar with the project and therefore the best suited. These consultants should however, be completely independent of the proponent and therefore be unbiased and fair.

The Environmental Control Officer (ECO) for construction or development projects also plays an important role in terms of EIA follow-up. The ECO is usually involved with compliance monitoring and auditing, in order to confirm that the contractors are adhering to the environmental specifications within the contractual obligations or the EMP, as well as any other relevant legislation. The ECO should ideally be involved in the development process as early as possible, including the planning and design phases. It must be noted that ECOs are usually independent consultants or representatives from local groups, such as Nature Conservation services (Respondent 8, *pers comm.*, 2000).

Secondly, there is the responsibility for policing or enforcing the follow-up activities. This should ideally fall under the competent authority's responsibility, such as the DAEA. They are the provincial authority involved with EIA approvals and should therefore be able to identify

noncompliance with environmental conditions of the approved ROD or EMP. They would then be able to take appropriate action for non-compliance. The majority of the respondents (60%) felt that the DAEA should be responsible for following up on their EIA approval, by actually policing the EIA follow-up activities. It was felt that they would have the jurisdiction to enforce financial penalties or any other measures they saw fit, for non-compliance with the conditions of the approved EIA.

Ideally, there should be a 'partnership', or at least a constant liaison between the DAEA and the responsible party for the EIA follow-up in order to ensure that the follow-up is being effectively conducted. A number of the respondents supported the idea of the consultants, or the relevant party, having to submit a six-monthly EIA follow-up report to the DAEA or enforcing body, highlighting exactly what follow-up measures had been conducted and the results thereof. In this manner the responsibility is shifted away from the DAEA, who could then merely follow-up or police the instances where there had been transgressions. This may be an effective system, as it would reduce the DAEA's workload, which is already severely exceeded.

5.4 Major Barriers to EIA Follow-up in KZN

The majority of respondents highlighted the general absence of EIA follow-up in KZN and felt that this presented a major problem, as it diluted the effectiveness of the EIA process. This apparent lack of EIA follow-up in KZN was attributed to a number of constraints that function to impede the process of follow-up and reduce its importance within the whole IEM procedure. These constraints are summarized in Figure 5.1.

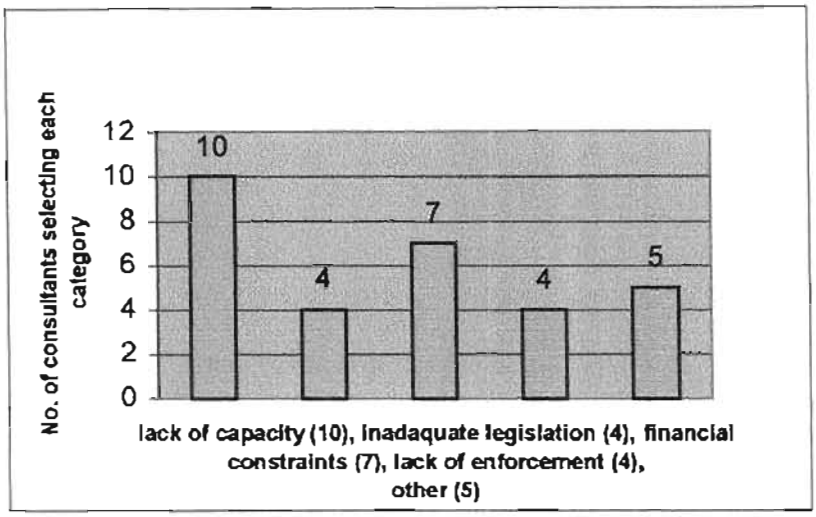

Figure 5.1 Constraints to EIA follow-up according to respondents' views

- **Lack of capacity** – Ten of the respondents identified the DAEA's present lack of capacity as the most important constraint to EIA follow-up in KZN. It is widely acknowledged that the DAEA is understaffed and struggles to deal effectively with the large number of EIA applications, let alone EIA follow-up issues. A study conducted by Duthie (2000) showed that the DAEA in KZN has acute staff shortages. They only have twelve staff members involved with EIA applications, as opposed to Gauteng, which has twenty-five. Duthie (2000) also emphasised that in all the provinces, except Northern and Western Cape and Gauteng, all professional staff time is taken up with EIA application review, leaving no time for any EIA follow-up activities.

- **Inadequate legislation** – Four respondents highlighted the lack of legislation as a barrier to EIA follow-up. It is somewhat surprising that so few mentioned this factor, as countries where EIA follow-up has been successfully implemented have generally had enabling legislation to support this process (Wood, 1994; Wood and Coppell, 1999).

  South African environmental legislation is lacking insofar as EIA follow-up is concerned. Although the IEM guidelines make the importance of EIA follow-up very clear (Heydenrych

and Claassen, 1998), they are not legally binding, thereby leaving the issue of follow-up to be undertaken on a voluntary basis. EIA follow-up is completely neglected in the Environment Conservation Act (73 of 1989) and similarly the EIA Regulations (GNR 1182, GG 18261, 1997) make no reference to the necessity of EIA follow-up. The EIA thus ends after the appeal stage, once the EIA report has been submitted. As mentioned earlier, the National Environmental Management Act (107 of 1998) only provides partial consideration of follow-up, by requiring the "investigation and formulation of arrangements for the monitoring and management of environmental impacts" (Section 24(7)(f)). Another legal constraint, as mentioned earlier, is that EMPs are also not mandatory in South Africa, unless they are specifically stipulated as a binding condition of approval.

- **Financial constraints** – Seven respondents were concerned about the lack of finance to carry out EIA follow-up activities. A number of consultants felt that since clients do not acknowledge the importance of EIA follow-up they do not budget for it. Hence, it would not be financially viable for a consultant to undertake EIA follow-up if there was no budget. As one consultant said, "*Sadly the clients want to spend as little as possible, often to the detriment of the environment*" (Respondent 3, *pers. comm.*, 2000). It was generally felt that the clients and consultants should build EIA follow-up into their costs right from the beginning. As another consultant stated "*Whenever you consider management and maintenance there is always a money tag attached. It has to be sustainable and achievable.*" (Respondent 8, *pers comm.*, 2000).

- **Lack of enforcement** – This constraint is essentially linked to the first barrier of EIA follow-up; that is the lack of institutional capacity. The DAEA's capacity problems have led to an overall lack of enforcement and policing of all environmental matters throughout the province. The DAEA stipulates specific conditions of approval when the ROD is issued, yet it is very seldom and highly unlikely that these conditions are ever followed up by them. This leads to a situation, whereby few of the conditions of approval for development are ever complied with, often to the detriment of the environment (Respondent 5, *pers comm.*, 2000). Only four of the respondents identified this constraint as a major concern.

- **Other** – Five of the respondents also identified other constraints to effective EIA follow-up in KZN. The lack of an effective government hierarchy was seen as a barrier. Different government departments have their own specific jurisdiction in terms of the environment. Depending on the type of activity, different departments may be responsible. For example, waste management activities need to be approved by DAEA and the Department of Water Affairs and Forestry (DWAF). There are many departments at the same level, whilst a government hierarchy would probably be more effective. As one respondent mentioned, "*We are talking about the environment, which is cross-cutting across all the departments, therefore this is a major constraint*" (R. Porter, *pers comm.*, 2001). This links to the earlier issue that the responsibility for EIA follow-up appears to be rather blurred, with no-one understanding who should be fully responsible.

  It could be said that in South Africa there is already a well-documented lack of environmental awareness (Barker and Hill, 2000). Many developers do not yet understand the importance of EIA follow-up. Often the EIA itself is seen as a 'necessary evil', something which has to be done merely because it is a legal requirement. Therefore, the follow-up of the EIA is certainly not perceived as a necessity. It should be the DAEA and the consultants' responsibility to educate clients about the importance of EIA follow-up. It was also mentioned that the DAEA has many staff members who are inexperienced and under-qualified for their huge workload. Finally, the issue was raised that some consultants tend to be rather biased in their work and the final reports they produce. They either tend to be subjective, or sympathetic towards the client. This respondent therefore felt that consultants should not be responsible for EIA follow-up unless they are independently contracted and completely unbiased (Respondent 15, *pers. comm.*, 2000/01).

5.5 The Status of EIA Follow-up in the Remainder of South Africa

From the remaining five formal interviews, together with numerous informal discussions with delegates from the IAIA Conference (2000), it would appear that the rest of South Africa is in a very similar situation to that of KwaZulu-Natal with respect to EIA follow-up. The consultants from the Western Cape and Gauteng who were formally interviewed, all acknowledged the importance of EIA follow-up and realised that it should be a life-cycle approach ('from the

cradle to the grave'). They also identified similar constraints that are preventing effective follow-up at present. They included the fact that the provincial authorities are under-staffed, that there are unclear responsibilities for undertaking and policing EIA follow-up, that follow-up is not legally binding, and finally that many proponents still do not recognise the relevance of EIA follow-up. The respondents also perceived the idea of a partnership as a very worthwhile future avenue, and possible solution to the present problems associated with EIA follow-up. The involvement of independent NGOs and local conservation groups, together with the public and local authority was seen to be important when establishing these partnerships.

From this brief analysis it would appear that EIA follow-up is indeed a national as well as a provincial problem facing environmental practitioners and authorities. There are many barriers hindering its effectiveness and implementation and it is clear that some form of intervention will be necessary to establish meaningful and effective ways of conducting EIA follow-up.

It is also necessary to highlight that these constraints to effective EIA follow-up are very similar to the international limitations of EIA follow-up (Arts, 1998). This shows that South Africa may be in a very similar position to some of its international counterparts in terms of deficiencies in EIA follow-up.

5.6 An Assessment of EIA Follow-up from the Regulator's Point of View

Mr. Harold Thornhill of the DAEA's Impact Management Directorate was formally interviewed, in order to establish the provincial authority's role and responsibilities in terms of EIA, and more specifically, EIA follow-up.

The lack of capacity of the DAEA and the heavy workload of the staff was underscored by Mr. Thornhill. To date, the DAEA has received 2040 EIA applications, which are being processed and approved by a staff of twelve officers. According to Mr. Thornhill, it has taken them over eighteen months to motivate for more staff to be assigned to the EIA division

It was recognised that there is a need for EIA follow-up to become more of a mandatory procedure. One of the reasons cited was that it was not always sufficient to rely on the integrity

and good intentions of the developers and consultants, as "they always have their own stake or agenda in the matter" (H. Thornhill, *pers comm.*, 2000).

One possible way of making EIA follow-up mandatory, would be for the DAEA to issue more RODs with EMPs being a fixed condition. In this way the EIA follow-up components could be incorporated into the EMP, which would become legally binding and have to be implemented. This view accorded with that of many environmental consultants (Section 4.2) who also viewed the EMP as a key factor in the follow-up process. Mr. Thornhill stated that the DAEA is increasingly regarding EMPs as a standard requirement. In the industrial sector in particular, it is becoming a frequent practice to establish the conditions of approval, so that they include EMPs and are linked to the International Standards Organisation (ISO) standards (H. Thornhill, *pers comm.*, 2000).

An interesting innovation of the DAEA is the requirement for a three-phase EMP for projects which warrant it on the basis of their size and scope. This will include a construction EMP, an operational EMP (these two are already standard practice) and finally it is suggested that a third EMP, incorporating monitoring and auditing criteria also be included. As Mr. Thornhill explained, at present with operational EMPs, effects' monitoring is usually a standard criterion, however there is a need for this to be taken one step further. By including a monitoring and auditing EMP, problems and constraints within the whole system should become more evident, allowing them to be corrected or improved. The DAEA has suggested this idea to a particular company and is awaiting their feedback before implementing such a consideration (H. Thornhill, *pers comm.*, 2000). Clearly the DAEA conceptualises EIA follow-up as part of an EMS and its understanding is far closer to the international norm as reflected by George (2000) and Arts (1998), than are the general consultants' views.

The DAEA acknowledges that another viable option, to achieving effective compliance and follow-up, is to progress towards standardised self-regulation. In terms of this concept, the majority of the responsibility is vested in the applicant who operates according to certain environmental standards. According to Mr. Thornhill, co-operative agreements need to be considered within this paradigm. At present the relevant authorities regulate, while the industries

monitor and audit to establish whether they fulfill the regulatory requirements - usually through some form of ISO certification. A large amount of new legislation is moving towards self-regulation and devolution of power. NEMA (107 of 1998) is one example, as it includes a specific chapter on environmental management co-operation agreements as a form of power devolution. Therefore, what is likely to emerge over a period of time, is that the authorities will start regulating less, whilst the companies will engage in greater self-regulation (H. Thornhill, *pers comm.*, 2000). In moving towards self-regulation, the authorities (specifically DAEA) should have greater capacity to deal with monitoring and auditing of EIA activities.

The DAEA believes that there will come a stage when they will only monitor and the companies will regulate. The changeover depends on both sectors. Mr. Thornhill believes that this transition is hampered by the DAEA's lack of capacity and industry's lack of understanding of the value of sound environmental practices. This system of self-regulation appears to contradict the earlier point made by Mr. Thornhill that it is not enough to rely on the integrity and good intentions of developers and consultants. However, it is clear that the self-regulation recommended above, is envisaged as part of an internal regulatory mechanism ensuring compliance with environmental conditions (e.g. ISO certification) and is usually applied to more industrial-based activities.

In support of the views expressed above, it is noted that in April 2000, a 'Compliance' Component was established under the sub-division of Regional Services, and an 'Audit and Rehabilitation' Component was created under the Impact Management sub-division at DAEA. Unfortunately these positions have not yet been filled, due to budgetary and capacity constraints. It is envisaged that when this stage of 'self-regulation' is reached, the majority of staff currently working on EIA assessments will be transferred to the two new components and start focussing primarily on EIA follow-up activities.

It is evident that the DAEA is currently in a state of flux, with severe capacity and budgetary constraints. Notwithstanding these complaints they clearly recognise EIA follow-up as an area that requires attention and steps have been taken in this regard, although the benefits are yet to be realised.

5.7 An Assessment of EIA Follow-up from a Conservation Perspective

A conservation planner, Mr. Roger Porter, from KZN Wildlife, the provincial conservation body, was formally interviewed in order to explore his understanding of the present status of EIA follow-up, particularly in KZN, and to determine whether the views of a conservationist were different from those of the consultants and the relevant authority.

Mr. Porter echoed the consultants' and the regulator's views that EIA follow-up is an essential component of the IEM procedure. He stressed that if follow-up were built into the conditions of approval it would have a greater legal standing. Of interest is that Mr. Porter reported that in most cases the construction stage appears to be the stage of development where the intensity of follow-up is usually adequate. This could be attributed partly to the fact that KZN Wildlife has a district conservation network, with many staff members routinely monitoring construction sites for non-compliance and any other problems. Furthermore, the construction phase usually has a construction EMP, to which developers have to adhere. However, he noted that the operational and decommissioning phases are often poorly neglected in terms of EIA follow-up procedures. Once the development is complete, often no further consideration is given to the potential environmental impacts occurring during operation.

Partnerships between all relevant role-players were viewed by Mr. Porter to be a critical concept. He felt that at present, the greatest obstacle to forging effective partnerships is the manner in which government at all levels is structured. Due to overlapping portfolios and jurisdictions it is easy to negate responsibility "*...while allowing the problem to fall through the cracks*" (R. Porter, *pers comm.*, 2001). He did acknowledge that with the current legislation and memorandums and agreements that are continuously being altered and improved, this particular gap is steadily being bridged.

Mr. Porter felt that insofar as KZN Wildlife is concerned, a number of strong partnerships had already been forged. They are very intent on forming effective partnerships and already have strong alliances with local government, the Town and Regional Planning Commission, DWAF and the DAEA. These current partnerships merely need to be strengthened in order for EIA follow-up to become more entrenched and effective as an environmental management tool.

In general, the conservationists' understanding of EIA follow-up reflected that of the environmental consultants. Similar issues were raised and the same major barriers to effective EIA follow-up at present were highlighted. However, as with the regulating authority, the issue of unethical consultants was raised. It was his view that consultants should be more environmentally ethical and committed, in terms of the Constitution (1996), to a healthy and sound environment for all. By including EIA follow-up in their responsibilities, they would be contributing towards sounder and more sustainable development (R. Porter, *pers comm.*, 2001).

5.8 Partnerships

One of the original assumptions of the research was that EIA follow-up was poorly practised in KZN and partnerships were viewed as a possible mechanism for improving the situation. Respondents were asked their opinion concerning the issue of 'partnerships' and how they may contribute to facilitating or enhancing effective EIA follow-up.

The concept of joint partnerships was definitely seen by the majority of those interviewed as a worthwhile future avenue for the practice of EIA follow-up. Formalized partnerships with regular feedback mechanisms, could be an effective means of conducting EIA follow-up. In this way, an independent consultant or even a monitoring team continuously monitors the necessary stages of the development, regularly reporting to the I&APs and the DAEA. Periodic audits could also be conducted and reported accordingly.

A monitoring committee or forum may also be established as a form of partnership. This committee may consist of environmental consultants, environmental specialists, representatives from the relevant authorities, NGOs and members from the local community. This type of partnership provides a forum whereby local people are given the opportunity to make a contribution. This obviously links to the concept of public participation and the valuable part it can play in achieving sustainable development. One respondent mentioned the importance of educating and informing local communities about EIA and follow-up so that they may continue to play the role of environmental 'watchdogs' when the project is in its operational and maintenance phases (Respondent 10, *pers comm.*, 2000).

These partnerships may therefore also act as a policing team, which may even be able to implement penalties for non-compliance. Ideally the partnerships should be between the developer, the DAEA and the public. However, due to the capacity constraints in the DAEA, it may be necessary to devolve regulatory power down to the local authority level. In this way local authorities as well as local communities would be empowered and may facilitate EIA follow-up to become more practical and achievable. One of the consultants suggested that perhaps NGOs could be registered with the DAEA, and also act as environmental 'watchdogs'.

In summary, it is evident that the majority of the respondents felt that partnerships could prove to be an effective means of facilitating EIA follow-up. There was one dissenting opinion, which felt that partnerships would not be feasible, as they would tend to be biased, with each group trying to protect their own interests (Respondent 14, *pers comm.*, 2001). Partnerships, as a model of EIA follow-up, will be further examined in the following chapter.

5.9 Summary

On the basis of the interviews conducted, it would appear that although most consultants, practitioners and authorities involved in the environmental field, are aware of what EIA follow-up entails and what an important role it may play, their understanding is somewhat simplistic and in reality the practise of EIA follow-up is severely lacking. Although a number of the consultants interviewed do voluntarily conduct EIA follow-up procedures (30%), it would seem that they are in the minority and that follow-up does not take place unless it is an actual mandatory condition of the ROD. It is also evident that in KwaZulu-Natal effective EIA follow-up is only perceived to be taking place for large or very sensitive developments.

This chapter revealed the present constraints to EIA follow-up in KZN and the rest of South Africa. These limitations to effective follow-up appear to be comparable with those identified internationally. It is evident that steps need to be taken to deal with these barriers in order for EIA follow-up to fulfil its function as an effective environmental management tool.

It was shown that through concepts such as joint partnerships, self-regulation and other mandatory requirements, future avenues are being revealed for the best practice of EIA follow-up.

CHAPTER SIX
MODELS OF EIA FOLLOW-UP

6.1 Introduction

A number of different ways of conducting EIA follow-up have emerged throughout this research. There has been a difference of opinion about who should be responsible for EIA follow-up, whether follow-up should be voluntary or mandatory and whether partnerships should be involved. Based on all the interviews and the theoretical overview contained in Chapters Three and Four, four models of EIA follow-up are proposed in this chapter. Key elements of each of these four models and examples of EIA follow-up practice within each of these categories will be presented, highlighting their strengths. Finally an evaluation of each of the models in terms of environmental sustainability criteria will be undertaken in order to propose recommendations for future EIA follow-up processes. This research proposes that there are worthwhile elements in each model and that the different approaches will suit the different sectors of development to a greater or lesser extent.

The four models to be examined include:

1. Legal-based Approach
2. Partnership Approach
3. Self-Regulatory Approach
4. Incentive or Disincentive Approach

6.2 Legal-based Approach

There were some respondents, albeit relatively few, who argued that for EIA follow-up to be successful it had to be based in legislation. As was shown in both Chapter Three and Four, one of the main barriers to effective EIA follow-up at present, both nationally and internationally, is seen to be the lack of enabling legislation. The importance of an effective legislative base in terms of EIA follow-up is therefore evident. Hence, one proposed model of EIA follow-up includes an approach whereby monitoring, auditing and evaluation are conducted in terms of a

legally based document or set of requirements, with which the proponent and developer have to comply. Two examples of legally based EIA follow-up, namely the *Minimum Requirements for Waste Disposal by Landfill* and *Environmental Management Programme Reports* (EMPRs) in the waste management and mining sectors respectively will be considered. Although developed specifically for application in each of the sectors, they have certain similar criteria or standards to which they have to adhere.

6.2.1 Minimum Requirements for Waste Disposal by Landfill

6.2.1.1 Background and Principles

Section 20(1) of the Environment Conservation Act (ECA) 73 of 1989 states that "*(n)o person shall establish, provide or operate any disposal site without a permit issued by the Minister of Water Affairs...*" Within the parameters of its enabling legislation, a management structure was established by DWAF, in the form of a series popularly known as the *Minimum Requirements*, in order to control waste management and permit applications. This series was first published in 1994 and consists of titles such as *Minimum Requirements for Waste Disposal by Landfill*, selected as an example in this study, *Minimum Requirements for the Handling and Disposal of Hazardous Waste* and *Minimum Requirements for Monitoring at Waste Management Facilities* (Barnard, 1999).

The *Minimum Requirements for Waste Disposal by Landfill* deals with both EIAs and their subsequent follow-up activities (DWAF, 1998). This document outlines the procedures that an applicant needs to follow, when applying for a landfill permit. To be eligible for a permit, a landfill needs to meet and maintain certain standards, which are set out in the form of Minimum Requirements and the conditions are usually written into a permit, to be strictly enforced and adhered to. The need for EIA follow-up is also specified in the Minimum Requirements through requirements for ongoing monitoring, auditing and rehabilitation, if necessary, following an EIA for a landfill site.

The Minimum Requirements document (DWAF, 1998) makes reference to two stages in the **assessment** of the environmental impacts of a landfill, namely the actual EIA, and the Assessment of the Environmental Consequences of Failure. The latter is a form of risk

assessment, as it assesses the consequences of the escape of contaminants from a landfill site, if design failure had to occur.

There are also two stages to the **mitigation** of identified impacts or potential risks associated with landfill sites. The first is a Response Action Plan, which outlines the appropriate responses that should be taken in the event of a design failure, operational failure, or even a natural disaster. Secondly, and more relevant to this study, is the Environmental Impact Control Report (EICR), which indicates how the potential impacts of a landfill site are addressed during the design, operation and monitoring stages (DWAF, 1998).

The requirements for landfill operation **monitoring** are set out in a tabular form of minimum requirements, which need to be adhered to. The overarching aim of landfill operation monitoring is to ascertain whether the landfill is complying with the minimum requirements and the specific site permit conditions. One also needs to ensure that the design of the site is being implemented correctly, as mentioned above, so as to avoid any potential negative environmental effects.

According to the *Minimum Requirements for Waste Disposal by Landfill* (DWAF, 1998), at present there are six ways in which landfill sites may be monitored.

- A Landfill Monitoring Committee may be established to assist in monitoring landfill operations, to identify problems and to keep the general public informed of activities or developments taking place on the landfill. The Monitoring Committee will usually include key stakeholders and local, provincial and national government authorities. These committees are a Minimum Requirement at all hazardous and large landfills.
- DWAF may undertake routine inspections of landfill sites throughout the country, identifying and rectifying problems where necessary. They may also have representatives on the Landfill Monitoring Committee as mentioned above.
- Clients may monitor the operation of private sector hazardous landfills, to ensure correct management and disposal of waste. In terms of the Duty of Care principle, they remain responsible for the waste that they generate.
- The Institute of Waste Management may be used by the landfill Permit Holder to monitor the site, for purposes of accreditation.

- Permit holders may use external consultants to monitor their facilities and operations undertaken by contractors on their behalf. The monitoring report is usually prepared and given to the Monitoring Committee, who will meet regularly.
- Permit holders may also undertake internal monitoring or inspections of their own facilities.

In terms of **auditing**, an Auditing Committee may be established, especially at hazardous waste sites, and usually consists of the permit holder, or the responsible person, the regional or national government representative, relevant consultants and even I&APs. Audits should take place every twelve months for small sites, six months for medium sites, three months for large sites and monthly for hazardous waste sites (DWAF, 1998).

A general audit will cover a number of different considerations, such as waste deposition, site access, condition of roads and site security. Operating procedures, based on the Operating Plan also need to be carefully considered, as well as all Permit Conditions specific for each site. An audit programme should include a checklist of items to be audited, a report on the findings of the audit and a record of overall performance. Problems must be identified and actions recommended to rectify the problem. The findings of the audit must be made available to the I&APs through the Landfill Monitoring Committee, to enhance the transparency of the whole process (R. Lombard, *pers comm., 2001).*

It is very important to note that the *Minimum Requirements for Waste Disposal by Landfill* (DWAF, 1998*)* include a specific section on the Minimum Requirements for **closure, rehabilitation and end-use**, a component of EIA follow-up that is often neglected in other sectors (R. Lombard, *pers comm.*, 2001). Closure is the final step in the operation of a landfill, and the site must be rehabilitated in order to ensure that it is environmentally acceptable. There are many steps associated with the closure of a landfill, including ongoing monitoring and inspections, to address long-term environmental impacts, public health and safety and nuisance problems. It also includes ongoing public involvement through the Landfill Monitoring Committee who report any observed problems to the responsible person or authority.

6.2.1.2 Evaluation

It is evident that there are very stringent legally based requirements and specific standards that have to be met when designing, operating and even closing a waste disposal site. There is a clear link between the EIA and the subsequent follow-up. An EIA has to be carried out when applying for a landfill permit. It takes place in conjunction with the preparation of a Response Action Plan and an Environmental Impact Control Report, which then forms the basis of the subsequent monitoring and auditing. Monitoring and auditing, core components of EIA follow-up, are therefore usually specified in a landfill permit which is legally binding, and has to be adhered to.

The Minimum Requirements for Landfill Operation Monitoring are very comprehensive, covering a range of requirements, from basic effects monitoring (water quality monitoring, gas monitoring and control), to auditing (both internal and external) and even the establishment of Landfill Monitoring Committees. It is important to note that ongoing monitoring is seen as a vital part of the whole process.

EIA follow-up is therefore, considered early in the whole development process, commencing with the application for a landfill permit. It is also important to note that the closure and rehabilitation of landfill sites are not neglected and that there are specific Minimum Requirements for these final stages. The *Minimum Requirements for Waste Disposal by Landfill*, therefore, adopts a life-cycle 'cradle-to-grave' approach, based on IEM. The Minimum Requirements also endorse pro-active sustainable management steps to prevent water quality deterioration and overall environmental degradation, and to improve the current standard of waste disposal in South Africa (DWAF, 1998).

The *Minimum Requirements for Waste Disposal by Landfill* fulfills a number of the sustainability principles, explored in Chapter Two. Firstly, public participation is viewed as a very important component in the waste management process. If the public participation process is successful then it is more likely that the whole project will be a success (Respondent 12, *pers comm.*, 2001). Partnerships, in the form of Site Evaluation Committees and Landfill Monitoring Committees, are usually voluntarily formed, except for hazardous and large landfills, where they are a mandatory requirement.

By paying careful attention to each particular stage in the development, operation and closure of a landfill site, the principles of ecological integrity and futurity are being addressed. The whole development process appears to be transparent with clear responsibilities established for the various functions. Ongoing monitoring throughout the process should also expose whether the operational phase has had any effects on the environment, and specifically on the quality of the water regime. The monitoring should also serve as an early warning system, so that any problems may be acknowledged and rectified. Ideally, monitoring should serve as a sustainability indicator and a management tool for the landfill operator (Respondent 12, *pers com.*, 2001).

The whole system of EIA follow-up associated with landfill sites therefore appears to be comprehensive and well formulated, taking every potential effect or possible problem into account. Waste management adopts an approach to EIA follow-up that is in keeping with the detailed understanding of follow-up presented earlier in this research (Arts, 1998; Arts *et al.*, 2000). In theory this system appears to be effective and should assist in leading the way towards ensuring sound and environmentally sustainable developments.

6.2.2 Environmental Management Programme Reports (EMPR)

6.2.2.1 Background and Principles

In the case of mining or prospecting, an EMPR is a legally based document, which incorporates measures for EIA follow-up. The main objective of an EMPR is to meet the mandatory environmental requirements and directives under the Minerals Act 50 of 1991. The EMPR is prepared according to an Aide Memoir (DME, 2000), which assists applicants for, and holders of, prospecting permits or mining authorisations to compile EMPRs, which are acceptable to all the relevant authorities and to ensure the approval thereof. The Aide Memoir is therefore very similar to the Minimum Requirement documents, as they all specify certain procedures and requirements that need to be carried out in order to obtain the relevant development permits. The preparation of the EMPR is the responsibility of the proponent and should ideally be compiled by an independent consultant. The Department of Minerals and Energy (DME) is the relevant authority to whom the EMPR is submitted.

There are essentially six main parts to an EMPR (DME, 2000). These include:

Part 1 – Brief Project Description

Part 2 – Description of the Pre-Mining Environment

Part 3 – Motivation for the Proposed Project

Part 4 – Detailed Description of the Proposed Project

Part 5 – Environmental Impact Assessment

Part 6 – Environmental Management Programme

For the purpose of this research Part 5 and Part 6 will be examined, as the EIA forms the basis for ongoing monitoring and other forms of follow-up.

As mining operations and activities do not fall within the List of Activities in the EIA Regulations as established in terms of Section 21 of the ECA (GNR 1182, GG 18261), it was necessary to include an EIA process as a component of the EMPR. The mining proponent is expected to produce a concise report as part of the EMPR, demonstrating that all the potential or anticipated impacts of the project on the environment, defined in terms of its biophysical, social and economic components, have been considered and are understood. The magnitude, duration, timing and significance of all the potential impacts should be assessed and established for all the phases in the project's life cycle; namely the construction, operational, decommissioning and post-closure phases (DME, 2000). Although not a mandatory requirement, public participation with all I&APs, is an important element of an EMPR and facilitates a smoother and more effective EIA (Respondent 6, *pers comm.*, 2000).

The Environmental Management Programme establishes the base for the EIA follow-up measures. As already established in Chapter Three, the term environmental management programme may be used interchangeably with the term environmental management plan (EMP). Whenever the EIA has identified a significant impact, the proponent must describe how the impact will be effectively managed or reduced and incorporate these mitigation and management measures into an EMP. In order to manage the identified impacts effectively, a strategy for each environmental component should be compiled. The strategy should include objectives, control measures and action plans, all of which must be described in the EMP and may be summarised in a schedule form or checklist (DME, 2000).

The EMP results in site-specific legal obligations on the proponent's part. Once the EMP receives approval from the DME, it becomes binding in the same way as the permit issued by DWAF in the case of landfill sites is binding. If it is not adhered to, fiscal penalties or even closure of the operation may ensue (Respondent 6, *pers comm.*, 2000).

A comprehensive **monitoring programme** forms part of the EMP. It should include:

- A statement of the monitoring objectives
- Identification of the monitoring compliance areas
- A physical description of the monitoring systems, and
- The frequency of the monitoring activities (DWAF, 2000).

Compliance with the EMP in order to evaluate the effectiveness of the EIA follow-up activities, is assessed by an auditing system. The auditing system should be specified in terms of format and frequency. The audits may be carried out internally by the proponent, or by an external consultant (Respondent 6, *pers comm.*, 2000).

6.2.2.2 Evaluation

This brief examination of EMPRs for prospecting and mining operations has highlighted that the mining sector appears to be paying considerable attention to EIAs and their follow-up activities. The EMPR is a dynamic document, which endorses the IEM life-cycle approach in a similar way to the *Minimum Requirements for Waste Disposal by Landfill* (DWAF, 1998). The EMPR considers each development step from the issuing of a mining permit to the final closure stage. The EMPR should be continuously updated throughout the project's life cycle, thereby promoting and enabling environmentally sustainable development.

The EMPR, therefore, adopts the sustainability principles of ecological integrity and futurity, by ensuring that the potential environmental effects resulting from the mining activities are adequately considered and monitored throughout the life of the project. Like the *Minimum Requirements for Waste Disposal by Landfill* (DWAF), the EMPR is very sector-specific, and has included specific EIA follow-up procedures. Follow-up to the mining EIAs should ensure that the best precautions and mitigatory measures are being adopted to prevent the environment

from being degraded for the future generations. Although public participation is not a mandatory condition of the EMPR, it is recognised that it plays a very important role in the sustainable development process and should therefore, be fully encouraged.

The merit of the EMPR system lies in the fact that EMPs are a mandatory requirement. When Environmental Management Programmes or Plans are legally binding, then it naturally follows that if effective monitoring and auditing programmes are included within these plans or programmes, they too will have to be conducted. It is important to note that a successful EMP should play an integral part in the day-to-day functioning and management activities of the mining area, and should again continue from the first day of construction throughout the whole life cycle of the project. In this way, any anticipated - or even unanticipated - impacts from the mining activity may be identified, continuously monitored and controlled (Respondent 6, *pers comm.*, 2000). On the whole, the EMPR system appears to be well developed and should theoretically facilitate the end point of sustainable development.

6.3 Partnership Approach

6.3.1 Background and Principles

The principle of sustainable development embraces the need for a participative approach to environmental management. Public participation was highlighted in Chapter Three as one of the key sustainability principles, in order to promote greater transparency and involvement in the decision-making process (Oelofse, 1998).

From a legal perspective, public participation processes have become a statutory inclusion in many development issues. The EIA regulations established in terms of Section 21 of the ECA (GNR 1182, GG 18261) make particular reference to the inclusion of a public participation process during the scoping phase of an EIA (DEAT, 1998). The National Environmental Management Principles of NEMA (107 of 1998) also make particular reference to the promotion of participation of all interested and affected parties in environmental governance (Section 2(4)(f)). It is envisaged that public participation will essentially facilitate a number of other NEMA principles, such as environmental justice and open and transparent decision-making, thereby promoting sustainable development.

There are a number of different ways in which I&APs can become formally involved in the participatory monitoring and auditing of EIA procedures and subsequent developments. These include **partnerships** or local forums, that are a form of public participation that may be seen as a way in which people, including the disadvantaged or marginalised, come together with the project authorities to share, negotiate and control the decision-making process in the project design, construction and ongoing management (Scott and Oelofse, 1998; Bisset, 2000). This issue of partnerships has been an important focus of attention throughout this research. Section 5.8 presented an overview of the environmental consultants' understanding of the idea of partnerships and of how they can potentially facilitate the effective implementation of EIA follow-up.

Some partnerships are formalised and are developed as statutory requirements of the regulatory authority, whilst other partnerships are more voluntary and emerge due to social movements and/or public pressure (Scott *et al.*, 2000). If these local forums are already in place when an EIA is conducted, then it is assumed that they will be able to include EIA follow-up measures into their existing mandates, thereby reducing some of the pressure currently being placed upon the DAEA to carry out EIA follow-up procedures themselves. Many partnerships adopt an approach of 'bottom-up' participatory monitoring where the local I&APs and other representatives have influence and control over the various monitoring procedures (McPherson and Oelofse, 2000). Table 6.1 illustrates a number of different types of local partnerships currently functioning in KwaZulu-Natal.

The Landfill Monitoring Committee will be evaluated as an example of a semi-voluntary partnership that has been established in order to ensure sustainable EIAs and landfill management operations. The Permit Advisory Panel will also be used as an example to illustrate the influence and advantages that such a partnership may have concerning EIA follow-up.

Table 6.1 Examples of local partnerships in KwaZulu-Natal that are involved in environmental management systems (after Scott & Oelofse, 1998; Scott *et al.*, 2000)

Forum	Voluntary / Mandatory	Function
Landfill Monitoring Committee	Voluntary, except in the case of hazardous landfills	To monitor and evaluate the establishment, operation, closure and rehabilitation of landfill sites.
Permit Advisory Panel (PAP)	Mandatory: DWAF requirement	To monitor and evaluate the disposal of effluent into the marine environment – in alliance with local government and industry.
Catchment Management Committee	Mandatory: DWAF requirement	Joint environmental decision-making around water quality and usage within catchments.
Community Awareness & Emergency Response Committee	Semi-voluntary: requirement of 'Responsible Care'	Broad monitoring of pollution - in partnership with industry and local government.
Conservancy	Voluntary registration with KZN Wildlife	Community-based environmental management and monitoring of significant issues.
Civic Associations E.g. South Durban Community Environmental Alliance (SDCEA)	Non-institutionalised: CBOs and general public alliances	Community/civic involvement in development and environmental management. Involved with monitoring and auditing activties.

6.3.2 The Site Evaluation Committee and the Landfill Monitoring Committee

The waste management sector provides a suitable example of how a local partnership can help to facilitate effective EIA procedures and follow-up activities, thereby promoting sound environmental management and sustainable developments. One may speculate that the partnership approach emerged in the waste management sector as a result of past public opposition to landfill sitings and the well-known 'Not In My Back Yard' (NIMBY) syndrome (Arts, 1998; Connelly and Smith, 1999).

In accordance with the EIA Regulations established in terms of Section 21 of the ECA (GNR 1182, GG 18261) a public participation process should be undertaken as part of the EIA. Stemming from this process, representatives from the I&APs are selected to become members of a Site Evaluation Committee (SEC), also known as a Site Liaison Committee (SLC). These representatives are selected in a democratic manner and essentially become a "voice" for the local community (R. Lombard, *pers comm.*, 2001). At this stage the SEC is a partnership between all the I&APs, relevant authorities and waste management representatives. The SEC is actively involved in the evaluation of potential new landfill sites. This committee is a body with very specific terms of reference. They meet regularly throughout the site evaluation process in order to discuss any problems or relevant issues.

Once the EIA and permit application is complete and submitted to the DAEA and DWAF for approval, the DAEA will then issue a permit incorporating a number of conditions of approval. One of these conditions may be the establishment of a Landfill Monitoring Committee, but this is not always a stipulated requirement (R. Lombard, *pers comm.*, 2001).

The Landfill Monitoring Committee usually originates from the initial SEC and provides a forum for:

- encouraging the community to effectively participate in the ongoing monitoring of the establishment, operation, closure and rehabilitation of the landfill site, in order to assess compliance with all the relevant conditions;
- reviewing and evaluating monitoring and audit results;

- making recommendations to the relevant authorities and ensuring that they are followed through;
- addressing and voicing concerns and suggestions of the surrounding community regarding the landfill site;
- conducting site visits, twice yearly, and participating in external audits; and
- holding meetings at which the Permit holder, the relevant authority and the I&APs can report back (DWAF, 1998).

In KZN, the Landfill Monitoring Committees usually consist of the permit holder, representatives from the local authority, DWAF, the local Health Department, DAEA, Durban Solid Waste and the surrounding community, including any informal settlements if relevant (J. Parkin, *pers comm.*, 2001). The Landfill Monitoring Committee is therefore a true partnership between the relevant role-players, and acts to monitor compliance with the permit conditions and the Minimum Requirements. They conduct the necessary follow-up activities stipulated in the EIA, observing and monitoring the impacts of the site on the environment, thus reducing the DAEA's responsibility for EIA follow-up measures (R. Lombard, *pers comm.*, 2001).

The Landfill Monitoring Committees usually meet every month to discuss problems, present new findings and evaluate current situations. They also hold an annual public workshop to inform all community members and other I&APs of the Committee's activities. Landfill Monitoring Committees have been established for the all of the larger landfills throughout KwaZulu-Natal. Mariannhill Landfill, Bisasar Road Landfill, Buffelsdraai Landfill and Shongweni Landfill, in the Durban region, are all examples of landfills that have this type of partnership in operation, and that are functioning efficiently in terms of EIA follow-up (J. Parkin, *pers comm.*, 2001).

6.3.3 Evaluation

The Landfill Monitoring Committee is therefore a partnership that appears to be facilitating EIA follow-up if the Committee is efficient and committed to their joint responsibility of monitoring, auditing, evaluating and making decisions regarding the various phases of a landfill. This is usually a voluntary partnership consisting of a mix of authority and community representatives. It is a functioning body in that the Committee has specific terms of reference to which they

adhere. The Landfill Monitoring Committee operates in a democratic and transparent manner, allowing all members an equal opportunity to provide their input. They also endorse an IEM approach to waste management by ensuring that all the stages in the life cycle of the landfill sites are correctly planned and continuously monitored and audited.

The sustainability principle of public participation is strongly encouraged by the incorporation of all relevant stakeholders, authority representatives, CBOs and NGOs into the joint Landfill Monitoring Committee. Futurity and ecological integrity are other principles of sustainability that appear to be fully endorsed in their approach to environmental management. Overall, this type of partnership appears to be an effective means of facilitating EIA follow-up and sustainable development and should therefore, be a useful model for other sectors.

6.3.4 The Permit Advisory Panel (PAP)

The second example of a partnership approach is that of a Permit Advisory Panel (PAP) established for Sappi Saiccor mill, situated at Umkomaas on the KwaZulu-Natal South Coast. Effluent from the manufacture of cellulose from wood pulp is discharged into the marine environment, via a 6.5km pipeline. A number of concerns have been raised regarding the marine environmental impacts of this effluent, and in particular the effects of this effluent on human health and diving conditions at a well-known diving site, Aliwal Shoal. In light of these concerns about impacts on the marine environment, and Sappi Saiccor's pending permit application, an EIA and a Social Impact Assessment were commissioned in 1996 (McPherson and Oelofse, 2000). One of the recommendations stemming from these assessments was that a participatory PAP be established.

The PAP is, therefore, a statutory partnership, comprising representatives of all local I&APs, the industry and DWAF. The I&APs comprise, *inter alia*, environmental groups, small businesses, local NGOs, sea users, civic associations. The PAP is committed to sustainable development and has a constitution that guides its operation. The main objective of the PAP is to monitor the industry's compliance with the conditions of the Permit and to attempt to reduce the impact of the effluent on the marine environment (McPhereson and Oelofse, 2000).

The PAP is therefore directly involved with EIA follow-up. They meet every month to present monitoring findings and issues of concern. The monitoring was previously undertaken by Sappi Saiccor. However, due to its scientific nature, it proved difficult for local people to understand and evaluate. The divers felt that, due to their experience, they would be able to continuously monitor and effectively assess the levels of effluent in the water. Follow-up monitoring now consists of the 'subjective' data collected by the divers, as well as the data collected by Sappi Saiccor using conventional scientific techniques. The data are then collated and presented to the PAP, which then regularly informs the local community of the situation (McPherson and Oelofse, 2000).

6.3.5 Evaluation

The PAP is a mandatory participatory partnership or forum that plays a vital role in the monitoring and evaluation of the impact of Sappi Saiccor's effluent release into the marine environment. The PAP appears to be a very effective means of facilitating EIA follow-up through involving local people in the follow-up process. These I&APs are very often aware of the local environmental impacts and are motivated to alter the situation. By involving these I&APs in the PAP, they are empowered to become involved in effective environmental management procedures, thereby promoting sound and environmentally sustainable operations.

The PAP is fully committed to sustainable development and has a constitution guiding its operation. The whole EIA follow-up process appears to be well constructed and is conducted in an open and democratic manner, encouraging public participation and thereby facilitating sustainable environmental management.

6.4 Self-Regulatory Approach

6.4.1 Background and Principles

The third model of EIA follow-up to be examined involves self-regulatory approaches such as EMS and internal auditing systems. The impetus or underlying mechanism encouraging this type of self-regulation appears to be increasing international pressures and certification standards. Due to strengthening global markets and worldwide competitiveness between companies and organisations, many of these companies prefer to trade with other internationally

certified companies. This is especially the case with environmental specifications such as the ISO series and has led to many organisations throughout the world attempting to become ISO certified, in order to promote foreign trade and investment (R.Porter, *pers comm.*, 2001).

The concept of an EMS was considered in Chapter Three, highlighting its relevance to EIA follow-up and sustainable environmental management. An EMS could be defined as the organisational structures, responsibilities, activities, practices and resources for determining, reviewing and maintaining environmental standards (SABS ISO, 1996; Netherwood, 1998). Since 1990 there have been efforts at a national and international level to standardise the EMS by setting out the different elements or components that such a system should contain. Most international standards are produced by the International Organisation for Standardisation. ISO 14001 is a specification standard for an EMS which means that it consists of a detailed set of requirements for establishing and maintaining an EMS that needs to be satisfied by the organisation. It also involves procedures for monitoring conformity to these requirements (Starkey, 1998).

6.4.2 ISO 14001

The elements of ISO 14001 are based on the requirements of EMS and are organised around five integral steps. Figure 6.1 highlights these elements and the definitive steps of the ISO 14001 process.

It is important to note that ISO 14001 also considers the creation and use of one or more Environmental Management Programmes as a vital element in the successful implementation of an EMS (Step 2 – Planning). The Environmental Management Programme will include measures for all the relevant stages of development, such as planning, design, production and even disposal and/or rehabilitation. It will also include measures for continuous monitoring and auditing, as well as appropriate mitigation measures. Environmental Management Programmes therefore enable the organisation to improve its overall environmental performance and sustainability. They should be dynamic programmes that are revised regularly to accommodate and reflect changes in the organisation's objectives and targets (African Environmental Solutions, 1997).

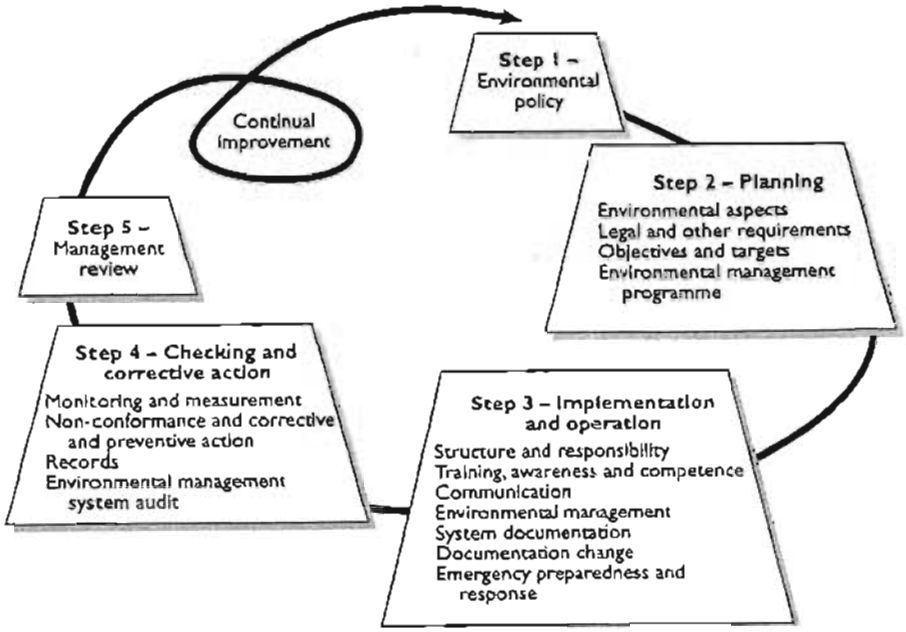

Figure 6.1 The five steps and elements of ISO 14001 (Starkey, 1998, p70).

6.4.2.1 Monitoring and Auditing

For the purpose of this research, Step 4 – checking and corrective action - is the most important stage. Within ISO 14001 it is recognised that there should be a comprehensive system in place for measuring and monitoring the organisation's actual performance against their environmental objectives and targets (African Environmental Solutions, 1997). This could relate to the organisation monitoring their performance against the recommendations or conditions of an EIA, if such is the case.

The organisation should also establish and utilise procedures to monitor and evaluate their own compliance with relevant environmental legislation and regulations. Corrective and preventive action should be taken for non-conformance with environmental specifications, procedures and legislation. This corrective or preventive action should be appropriate to the magnitude of the problems and the subsequent environmental impacts (African Environmental Solutions, 1997).

The EMS audit is a very important element of ISO 14001. These audits should be periodic activities carried out by internal members and/or external parties selected by the organisation. An EMS audit report should be submitted in accordance with an audit plan (Starkey, 1998).

6.4.2.2 EIA Follow-up

ISO 14001 has not been examined in great detail as it is the incorporation of EIA follow-up measures into this certification standard that is more relevant for this research. As it has been shown, ISO 14001 does not make reference to EIAs or even EIA follow-up measures *per se*. However, if the organisation is ISO certified, this will essentially facilitate EIAs and most importantly effective EIA follow-up activities. ISO 14001 will therefore provide the overarching framework within which EIA follow-up may be placed.

As was considered in Chapter Five, according to Mr. Thornhill of DEAT KZN, if the organisation has internal ISO standards to which they are certified, the DAEA will then endeavor to link the conditions of approval from the EIA with the ISO standards. In this way the EIA follow-up measures such as monitoring, auditing and evaluation will be incorporated into an EMP and will become part of the overall ISO 14001 EMS. These EIA follow-up activities should be implemented at each relevant stage of development, throughout the whole life cycle of the project (H. Thornhill, *pers comm.*, 2000).

The EIA follow-up activities will therefore become internally self-regulated, most likely by an operator in the company who will be expected to submit monthly reports to the upper management. The EMS monitoring and audit reports will therefore be evaluated in order to assess whether the conditions and specifications of the EIA and EMP are being effectively adhered to. This will take place at a managerial level, where decisions will be made concerning appropriate corrective action to be taken if non-compliance with the conditions of the EMP is evident (H. Thornhill, *pers comm.*, 2000). External audits, usually conducted periodically by independent consultants, will also reveal whether the EIA follow-up measures are being implemented effectively.

On the whole ISO 14001 certified organisations will facilitate effective EIAs and EIA follow-up activities through self- regulatory mechanisms such as EMS's and EMPs. The merit lies in the fact that ISO 14001 is an environmental standard to which many organisations voluntarily attempt to become certified.

6.4.3 Case Study – SAPPI Forestry

A case study in which EIA follow-up is part of an EMS is presented for the forestry industry. SAPPI Forestry has been certified to the ISO 14001 standard. For the purpose of this research the KwaZulu-Natal branch of SAPPI Forestry will be considered (D. Everard, *pers comm.*, 2001).

SAPPI Forestry has an Environmental Department, which conducts all the necessary EIAs. They carry out an EIA, make recommendations and draw up an EMP as part of their overall EMS. All the conditions of approval and recommendations are included in this EMP, together with time frames, responsibilities and mitigatory or corrective actions for non-compliance (D. Everard, *pers comm.*, 2001). SAPPI Forestry's EMS is based on the cyclical five-step ISO 14001 requirements shown earlier (Fig. 6.2).

SAPPI has a specific environmental policy to which they adhere, committing the company to implementing sustainable forest management. An impact register has been compiled and is continually updated, presenting a comprehensive review of all the activities of the organisation and an assessment of the impacts of these activities on the environment (SAPPI, 1999). From the impact register a set of "best environmental practices" has been developed, which highlight detailed procedures for conducting forestry activities and minimising the identified environmental impacts. This document contains a number of sections, such as planning, roads, natural area management and social impacts, together with the specific procedures for each section. They also have a comprehensive training programme that ensure that all SAPPI Forests staff as well as contractors are fully trained in the EMS and sustainable farming practices (SAPPI, 1999).

Part of SAPPI's EMS includes monitoring and corrective action programmes to help ensure conformance to the procedures as well as to measure the overall success of the EMS. Monitoring takes place continuously by internal practitioners. If there is a situation of non-compliance, corrective action is then taken. This usually entails drawing up an action plan to correct the non-conformance, and a preventative action procedure to ensure that the non-conformance is not repeated (D. Everard, *pers comm.*, 2001).

The monitoring programme essentially consists of four components:

- Continual self-evaluation
- Special monitoring of specific activities and systems, often resulting from an EIA
- An annual internal audit of all the activities to ensure compliance with the EMS
- Twice yearly external audits of selected management units by the SABS.

6.4.4 Evaluation

The SAPPI Forestry case study illustrates the benefits of an effective ISO certified EMS. This case study shows that EIA follow-up activities such as monitoring, auditing and evaluation, can be effectively incorporated into internally regulated management systems such as ISO 14001. The EMS therefore, becomes the overarching framework within which EIA follow-up for a specific project may be conducted. In doing so, not only are follow-up activities considered during the construction phase succeeding the EIA, but they are also implemented throughout the whole life cycle of the project, highlighting any further or cumulative impacts on the environment. The life-cycle approach of IEM is therefore fully endorsed, thereby promoting environmentally sustainable developments.

The self-regulatory approach is based on the need for continual improvement, not only for the specific systems, but also for the organisation as a whole. This approach consists of a closed system with stringent international controls and with little input from outsiders. The merit of this system lies in the fact that becoming certified to an international standard such as ISO, is a voluntary undertaking, which means that the certified organisations will be environmentally aware and fully committed to their particular environmental policy. This approach, therefore, supports the sustainability principles of futurity and ecological integrity by attempting to

promote environmentally sound management practices that should reduce the detrimental environmental impacts for future generations. For, as Roome (1992, p23), cited in Netherwood (1998) suggests, "*only strategies based on an integrated total EMS, and the introduction of environmental thinking and ethics into company practices, offer any real prospect of achieving pathways to environmentally sustainable action*".

6.5 Incentive or Disincentive Approach

6.5.1 Background and Principles

In the absence of a legal-based approach it is often very difficult to ensure compliance with the environmental specifications or conditions of the EMP. It was evident from most of the interviews conducted that the construction sector appears to be the most deficient or weakest sector in terms of EIA follow-up. Contractors' priorities are often very different to environmental practitioners. Their overarching goal is usually to finish a project as soon as possible. Environmental compliance is often seen as a nuisance factor, merely impeding their progress and effectiveness (Respondent 3, *pers comm.*, 2000).

The final model of EIA follow-up is, therefore, one that derives from the construction industry, in which a number of mechanisms have been formulated to enforce EIA follow-up. A study conducted by Barker and Hill (2000), aimed to establish how environmental compliance should be enforced in the construction industry. Three different ways were identified and assessed.

These consist of:

- The bonus-penalty system;
- The environmental deposit; and
- The environmental contract

6.5.1.1 The Bonus-Penalty System

This type of system, also known as the "carrot and stick" method, consists of different bonuses and penalties awarded to the proponent or developer, in order to encourage environmental compliance, with regard to the EMP, EIA follow-up and other environmental specifications. This study revealed that a number of respondents considered a combination of incentives and

fines to be the most effective means of enforcing environmental compliance. Fines ensure that the EMP is taken seriously (Implementation Working Group, 2000).

Other respondents in the study, however, felt that punitive penalties or fines were not effective, due to the difficulty in assigning an actual monetary value to the penalty. This amount should be high enough to dissuade the contractor from causing environmental damage because of consequent savings in engineering and construction costs. Secondly, it was felt that a penalty system would risk the chance of creating inharmonious relationships between the contractor, the Resident Engineer (RE) and the Environmental Control Officer (ECO) (Barker and Hill, 2000).

Alternatively, an effective way of ensuring compliance with the EMP could be to reject the penalty system, and rather only offer bonuses for sound environmental management. Regular awards, in the form of money or even certificates have been shown to be very effective in improving the construction workers' morale and the overall effectiveness of their work. If there is a situation of non-compliance then the bonuses may be removed, rather than penalties applied (Respondent 16, *pers comm.*, 2000).

6.5.1.2 The Environmental Deposit

This system involves an initial environmental deposit or even the retention of a lump sum of money in order to enforce compliance with the EMP. This system would be similar to the engineering retention fee for construction projects, whereby ten percent of the value of the contract is retained until the project is completed, thereafter releasing five percent to the contractor. At the end of the maintenance phase this final five percent is released if all the conditions and specifications have been met. A separate amount of money could be specified as an environmental deposit, prior to the commencement of the project (Barker and Hill, 2000). This option appears to work well, especially if operated in conjunction with a bonus-penalty system.

6.5.1.3 The Environmental Contract

An additional means of enforcing environmental compliance is to couple the EMP to a contractual agreement (Ira *et. al.*, 2000). The incorporation of environmental conditions and

specifications in the Contractual Document of a construction project is an effective way to ensure EIA follow-up. The contract establishes binding responsibilities for follow-up and includes appropriate mitigation measures, environmental conditions and specifications from the EIA, as well as the actual engineering requirements (Respondent 16, *pers comm.*, 2000).

Through an environmental contract, the contractor should become aware at the outset, of all the potential environmental impacts resulting from the development and the ways in which he/she will have to mitigate or accommodate them.

The Cape Metropolitan Council (CMC) has proposed a generic EMP, to be used primarily for construction activities in urban areas, and which is intended to be included in the Contract Document of all environmentally sensitive construction activities (Ira *et. al.*, 2000). The goal is to ensure sound and sustainable development. The CMC EMP comprises a number of standard components, each of which can be adapted to suit a particular project (Ira *et. al.*, 2000).

The main parts of the EMP include:

- Standard and detailed environmental impact considerations
- Standard and detailed revegetation specifications
- Guideline Documents and tools for implementation by the different role players
- An environmental awareness course

The Guideline Documents specify the responsibilities of the different role-players, such as the Resident Engineer, the Contractor and the Environmental Control Officer. These documents also contain a number of effective tools, such as checklists and audit criteria, which will aid the various role-players in overseeing the EMP and ensuring compliance.

6.5.2 Evaluation

This section has briefly examined some important elements or components of the construction sector, in terms of effectively implementing EMPs and facilitating EIA follow-up. There appears to be no pre-set or established way of actually conducting EIA follow-up within this sector. Rather, there are a number of different mechanisms of implementing EMPs, which if

effectively adopted, will promote and ensure the necessary follow-up activities to an EIA. This in turn should result in more successful and environmentally sustainable developments, primarily during the construction phase.

This model does, however, seem to fulfill few of the principles of sustainability. By ensuring EIA follow-up throughout the construction phase of a development project, the detrimental environmental impacts are kept to a minimum, thereby conserving the surrounding environment and fulfilling the principle of ecological integrity. However, this model makes little provision for the attainment of the other sustainability principles, such as futurity, equity or social justice and public participation. The social development facet of sustainable development therefore appears to be neglected by this model. The IEM cradle-to-grave approach is also not adopted by this model, which is mainly focussed on the construction phase of the project, disregarding the other stages of the development's life cycle.

6.6 Summary

A common element of all four models of EIA follow-up appears to be the EMP, yet they differ considerably in the manner in which they facilitate follow-up through the EMP. The models are also quite context or sector-specific, yet each have something unique to offer in terms of how to encourage and ensure EIA follow-up and promote sustainable development. This section will provide a brief comparative summary of the models, highlighting which model may provide the most suitable and sustainable option for future EIA follow-up practice in KZN.

From the four models of EIA follow-up, presented above, it is evident that there are legal and non-legal ways in which EIA follow-up may be facilitated or enforced. The **legally-based approach** to EIA follow-up is shown to be working effectively for specific sectors, such as waste management and mining. The impetus for EIA follow-up is either a set of mandatory requirements or specific permit conditions, to which the applicant has to adhere. This type of EIA follow-up is usually driven and enforced by the department of each particular sector.

The legally-based model should ideally be the ultimate goal towards which KZN environmental authorities and practitioners strive. If EIA follow-up were to be included as a mandatory

condition in current environmental legislation, or as a statutory part of the EIA process, the current status of EIA follow-up in KZN would be improved. At present, however, it is not realistic to attempt to adopt this model of EIA follow-up in a South African or KZN context. It would take far too much time to implement such an approach to EIA follow-up in KZN. Not only would the process be too slow to implement, but it would also require sufficient manpower and finances, which are already severe constraints in KZN.

It would, therefore, be advisable to attempt to incorporate this **legally-based** model into other sectors' permitting processes, such as for transport developments, the establishment of large dams, new forestry plantations and specific industrial or any other activities, where a permit is required in order for the development to commence.

To reiterate, the legal route for EIA follow-up would be the most ideal in terms of ensuring the correct implementation of follow-up measures. However, as mentioned, this route is not a viable option for KZN at present, and a number of interim models are therefore recommended.

The other three models discussed constitute the non-legal approaches to EIA follow-up. The **self-regulatory approach** is shown to be a beneficial way of ensuring effective EIA follow-up that only appears to be applicable to a few specific development projects. This model is primarily concerned with large ISO certified or self-regulated industries or companies, which are usually already environmentally aware. This model is particularly appropriate and useful for these types of companies, as it encourages the incorporation of EIA follow-up activities into existing environmental management systems, thereby facilitating sound and sustainable environmental management practices. It must, however, be recognised that this type of model is sector-specific and would be difficult to relate to other sectors of development throughout KZN.

The **incentive or disincentive approach** to EIA follow-up is shown to be an effective way of enforcing the implementation of monitoring, auditing and evaluation procedures following every EIA. This approach appears to be particularly useful during the construction phase of a development. As mentioned earlier, this model does not adopt the life-cycle approach of IEM ensuring EIA follow-up activities throughout the development. This model is recommended

during the construction phase of all approved EIAs. However, the incentive or disincentive approach could not be a stand-alone model that attempt to facilitate effective and sustainable EIA follow-up practices in KZN.

Although the three aforementioned models of EIA follow-up all have their distinct advantages, they would not, at present, be the most appropriate ways in which to effectively facilitate follow-up practices in KZN. This research, therefore, proposes that the **partnership approach** to EIA follow-up is the most worthwhile model to promote in KZN. This model of EIA follow-up fulfills more of the sustainability principles than the other three models. Public participation, social justice, equity and ecological integrity are four key principles within this approach that facilitate and promote sustainable development.

The National Environmental Management Principles of NEMA (107 of 1998) make particular reference to the promotion of public participation, which should entail the involvement of all I&APs in the decision-making process. The partnership approach is, therefore, a natural extension of the public participation process. This model also echoes the constitutional right of all South Africans, ensuring that environmental decision-making is a fair and transparent process. By allowing the I&APs to be involved and have a 'voice' in all local partnerships or forums, they are empowered to remain environmentally conscious of all potential environmental impacts accompanying development activities.

The partnership model also provides an opportunity for local experience and knowledge to be shared. By promoting this model of EIA follow-up, the DAEA will essentially be devolving responsibility for post-EIA monitoring and auditing activities to the developer and local community. This will serve to reduce the current capacity pressures on the DAEA, whilst still allowing them to play an active role in the overall policing or enforcement procedures.

In conclusion, this research proposes that the partnership approach to EIA follow-up is the most sustainable and effective means of ensuring post-EIA monitoring, auditing and evaluation activities. All environmental practitioners need to encourage this approach to EIA follow-up, by including it as a recommendation, when appropriate, within every submitted EIA report.

CHAPTER SEVEN
CONCLUSION

This research has revealed that although EIA is a highly useful integrated environmental management tool, its full value is reduced if there are no follow-up measures succeeding each EIA. The practice of EIA follow-up appears to be poorly conducted in KwaZulu-Natal and even internationally. In many instances a full EIA is carried out, recommendations for reducing the detrimental environmental impacts are made and may even be incorporated into an EMP, yet there are no monitoring or auditing procedures set in place to ensure that the conditions of approval of the EIA and the EMP are enforced.

EIA follow-up should be seen as the post-decision complement to the EIA and may, therefore, be viewed as the 'missing link' between the EIA and the actual implementation of the activity. As mentioned by Arts *et al.* (2000), EIA follow-up should ideally consist of an objective and a subjective component. The objective component should entail continuous post-decision monitoring and auditing procedures, whilst the subjective component should include an open decision-making process and an adequate communication or participation process, involving all I&APs throughout the life-cycle of the project or development. In light of this, EIA follow-up fulfills a number of the sustainability principles, which together with a thorough pre-decision EIA should encourage a holistic approach to environmental management, thereby ensuring ecological, social and economic sustainability.

The main aim of this dissertation was to assess the status of EIA follow-up in KwaZulu-Natal and to make recommendations for future best practice of EIA follow-up. A number of further objectives were established, namely; to examine the concepts of sustainable development and IEM, to review the historical background of EIA, to establish what the possible barriers or constraints to EIA follow-up may be at present, and finally, to develop and discuss a number of models of EIA follow-up, thereby making recommendations for future EIA practice.

Fifteen environmental consultants from KZN were formally interviewed, regarding the current status of EIA follow-up in the province. They were all asked a set of semi-structured, open-

ended questions relating to issues such as their understanding of EIA follow-up, who should take responsibility for EIA follow-up and what constraints to follow-up existed. They were also asked whether they felt that a partnership approach to EIA follow-up could be a worthwhile avenue for the future practice of follow-up. Five environmental consultants from Gauteng and the Western Province were also interviewed and asked the same set of questions, in order to enable a comparison between KZN and the remainder of the country. A representative from the DAEA, the regulating authority in KZN, together with a representative from the local conservation body, KZN Wildlife were both formally interviewed in order to gauge their understanding of EIA follow-up and its current status in KZN.

The results from the all the interviews were combined into a number of separate issues or concerns. It was revealed that the majority of the consultants interviewed held a rather simplistic and superficial understanding of EIA follow-up and what it entails. The EMP was, however, seen to be a very important aspect of EIA follow-up and the way in which it is drawn up was viewed as being crucial if follow-up is to be an effective environmental management tool. There were differences of opinion among the respondents as to who should be responsible for conducting and policing EIA follow-up. On the whole, the DAEA was seen to be the body responsible for enforcing and policing EIA follow-up, whilst there appeared to be no clearly established responsibility for actually carrying out the follow-up activities.

The major barriers to EIA follow-up at present became evident during the interviews. There are primarily four constraints to effective EIA follow-up; namely lack of capacity, inadequate legislation, financial constraints and lack of enforcement. These areas need attention if the current situation is to be improved.

As the interviews with the consultants, practitioners and leading authorities progressed, it became clear that joint partnerships, self-regulation and other mandatory requirements, future avenues should be part of best practice of EIA follow-up in KZN. In order to make recommendations for the future practice of EIA follow-up, four models or approaches were proposed. Three of these models were based on the findings of this research, while the fourth,

that of joint partnerships, was a prior assumption to which the interviewees were asked to respond.

The four proposed models of EIA follow-up consist of a legal-based approach, a partnership approach, a self-regulatory approach and an incentive or disincentive approach. The **legal-based approach** appears to be a very effective way of ensuring that follow-up activities succeed every EIA. There is usually a pre-determined set of conditions or requirements, which have to be adhered to, according to an established law or regulation. The regulating authority for each case will be responsible for enforcing the follow-up procedures and initiating fines or penalties if necessary. Although this approach to EIA follow-up seems to be a worthwhile option, there are only two sectors of development, namely waste management and mining, which currently have any legal requirements for ensuring EIA follow-up. It is recognised that this approach is not a viable option in KZN at present. However, it is recommended that all other development sectors consider establishing a similar set of legally binding criteria within their permitting processes, in order to facilitate effective EIA follow-up and sound environmental management.

The **self-regulatory approach** to EIA follow-up applies primarily to organisations or companies with certified environmental management systems, which determine, review and maintain their specific environmental policy. Many organisations and companies are faced with international pressure to adopt and promote more environmentally sound activities, products and services. ISO 14001 is an example of an international specification standard for EMS, which consists of a detailed set of requirements for establishing and maintaining an EMS that need to be satisfied by the organisation. The issue of self-regulation was one that was strongly emphasised by Mr. Thornhill, the representative from the DAEA.

Where EIA follow-up is concerned, if the organisation has internal ISO standards to which they are certified, the DAEA will then endeavour to link the EIA's conditions of approval with the ISO standards. In this way EIA follow-up monitoring, auditing and evaluation procedures will be incorporated into an EMP and will become part of the whole ISO 14001 EMS. This model of EIA follow-up appears to be a worthwhile future avenue for all businesses and organisations,

encouraging them to adopt sustainable environmental management procedures, but is, however, not applicable to all sectors or types of activities in KZN.

Throughout this dissertation, the importance of the EMP and the role that it should play in facilitating EIA follow-up has been raised repeatedly. The interviewees viewed the EMP as an integral element in the environmental management process, especially in the construction sector, where EIA follow-up is notably weak. However, as many of the interviewees noted the ROD of the EIA may not necessarily include an EMP, as EMPs are not mandatory under current legislation.

The **incentive or disincentive approach** to EIA follow-up proposes a number of ways to ensure compliance with the EMP, thereby facilitating EIA follow-up measures. Three methods were identified, namely the bonus-penalty system, the environmental deposit and the environmental contract. Each of these three methods have their advantages and disadvantages and should be used differently in various situations to ensure compliance with the EMP and to encourage the adoption of various EIA follow-up techniques where necessary. It must, however, be acknowledged that these methods of ensuring EIA follow-up are particularly relevant to the construction phase of various developments, and may not be appropriate to other development stages.

Finally, the **partnership approach** is recommended as the most sustainable and worthwhile model of EIA follow-up. This approach is based on one of the principles of sustainability, namely public participation. It was felt that due to the fact that KZN's environmental authority, DAEA, is functioning with severe staff shortages, a situation whereby the local stakeholders and I&APs could be directly involved with EIA monitoring and auditing procedures, would greatly facilitate the effectiveness of EIA follow-up activities. These partnerships may be either voluntary or mandatory requirements. However, they should all have specific terms of reference according to which they operate. The partnerships should ideally consist of the I&APs, together with representatives from the local authority and provincial authority, if necessary, who all share the responsibility of EIA follow-up and meet regularly to discuss various issues and make relevant decisions. There are a number of partnerships or forums already in existence in KZN.

Landfill Monitoring Committees and the PAP are two examples of partnerships that are already effective in ensuring that continuous follow-up activities succeeding each EIA take place. These two effective types of partnerships should be used as examples to encourage other forums or partnerships to be established in KZN, in order to facilitate EIA follow-up and sustainable development.

A conclusion of this research is that there is no single way in which to carry out EIA follow-up activities. All four models have important and worthwhile characteristics that are all context-specific and suited to different development situations. The partnership approach is, however, recommended as the most viable and effective means of promoting and ensuring EIA follow-up and sustainable development in KZN.

This research has, therefore, captured the importance of EIA follow-up activities within the framework of IEM and has recommended various models to facilitate EIA follow-up. If effectively conducted, EIA follow-up should fulfill the mutual relationship between the pre-decision EIA and the post-decision follow-up. For, as George (2000, p177) proposes, "*if the road to hell is paved with good intentions, environmental assessments which end at the decision-making stage make costly and misleading paving stones. Their good intentions are likely to come to nothing if they are not monitored*".

In the future EIA follow-up will hopefully become an intrinsic part of EIA practice. This study recommends that further consideration be given to the four models of EIA follow-up presented in this dissertation. Obviously, it is hoped that the process of EIA follow-up will become formally included in environmental legislation. In the interim, however, it is necessary to pursue other avenues in which to encourage and enforce, if necessary, EIA follow-up activities. It is also recommended that a further array of follow-up related tools be developed in order to improve follow-up practices or procedures. These may include standardised tools, such as checklists, best practice guides and manuals, and even computerised tools and databases to keep track of ongoing follow-up activities. Finally, it is recommended that comprehensive training programmes for staff regarding EIA follow-up design and implementation, be developed and delivered.

Hopefully, this research will assist in the further development of an environmental management tool that plays a vital role in the achievement of sustainable development.

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Personal Communications

Dr Dave Everard – SAPPI Forestry

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Mr. John Parkin – Durban Solid Waste

APPENDIX A:

List of Environmental Consultants obtained from the DAEA.

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A.A.Loudon & Partners	P.O.Box 543, Kloof, 3640	031-7640153	0824454813	031-7643143
Africa Gabions Environmental Solutions	P. O Box 15777, Westmead, 3608	031-700 8456		031-700 8469
Aletson Ecologicals	P.O.Box 1129, Hilton, 3245	0331-434972		0331-434972
Anderson Vogt & Partners	P.O. Box 772, Dundee, 3000	0341-23142	0824473421	0341-24437
Bosch & Associates SA (Pty) Ltd	P.O. Box 2009, Durban, 4000	031-207 2093		031-207 3841
C.S.I.R (KZN)	P.O. Box 17001, Congella, 4013	031-2618161?8	0834571923	031-812509
Coastal Research Unit of Zululand (CRUZ)	Private Bag X1001, Kwa Dlangezwa, 3886	0351-93911	0824559197	0351-93162
Crowther Cambell & Associates	P.O. Box 10145, Caledon Square, 7905	021-4611118		021-4611120
David Totmann & Associates	12 Daisy Road, Hilton, 3245	0331-431777	0834540191	0331-431777
Dr. I. J. van der Walt	Personeelbussie 173,Pu vir CHO, Potchefstroom,252	018-2991584		018-2992799
Ecoserv		031-710 1850		
Edgar Lee of D.D.+Lee	P.O. Box 1040, Margate, 4275	03931-72692	0832534536	03931-21574
Enviro-Invelo Projects	P.O. Box 1101, Hillcrest, 3650		083 679 31	031-732483
Envirolink	P.O. Box 61587, Marshall Town, 2104	011-6383172		011-6384636
EnvironDev ,	41 Montgomery Drive, Athlone, PMBurg, 3201	033- 345 0535	0825731234	033- 345 0535
EnvironDev	Postnet X9118, Pietermaritzburg, 3200	033-345 4554	0829583329	033- 3941 053
Environmental Impact Management Services (EIMS)	P.O. Box 2063, Pinegowrie, 2123	011-789 7170		011-787 3059
Ernst Cloete & Asscciates	P.O. Box 2083, Vryheid, 3100	0381-802825		0381-802945
Gibb Africa	22 Church Road, Westville, 3631	031-865 226		031-863 310
Guy Nicholson Consulting cc	6 Indwa Place, Kloof, 3610	031-7642515	0827729941	031-764515
Ideas Environmental Consultants	P.O. Box 50826, Musgrave, 4062	031-235948	0828830779	031-234841
J. Mitchell & Associates	P.O. Box 398, Dundee, 3000	0341-22983	0832896005	0341-22933
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Landscape Architects Uys & White (PTY) Ltd.	P O Box 7001, Centurion, 0046	012-663 1045	0825715396	012 663 5907
Lang Hooyberg-Smuts Asscociates	P.O. Box 1899, Richards Bay, 3900	0351- 533784		0351-533786
Lenehan Consulting	P O Box 13755, Cascades, 3202	033-244 308		
Mark wood Consultants	P.O. Box 2963, Honeydew, 2040	011-958 1858	0824553069	011-958 1858
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Michelle Joan Yates	Cluster Box 2598, Malvern, 4093	031-764 3175	082 825 62	031-764 3186
Occutech	291 Chelmsford Road, Glenwood, Durban, 4001	031-206 1244		031-25 2561
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Pula Strategic Resource Management	P O Box 1803, Brooklyn Square,0075	012-462 777	0824178033	012 - 462 774
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Sineke Developments (Pty) Ltd	P.O. Box 100 479, Scottsville, 3209	0331452 783	0827084512	0331-428567
Steffen Robertson & Kirsten	P.O.Box 1731, Durban, 4000	031-231355	0826006542	031-303387
Stewart Scott Inc	P.O. Box 37602, Overport, 4067	031-287176	0828804595	031-287176
Talbot & Talbot Industrial & Environmental Mngt.	P.O.Box 3391,Pietermaritzburg, 3200	0331-461444	0836301754	0331-461445
Talbot & Talbot Laboratories	P.O.Box 3391,Pietermaritzburg, 3200	0331-461444	0836301754	0331-461445
Terratest	P.O. Box 13009, Cascades, 3202	0331-472992		0331-471845
Urban - Econ Development & Strategy Consultants	P. O. Box 810, Kloof, 3640	031-2077 144		031-2077 143
Walmsley Environmental Consultants	P.O. Box 2116, Link Hills, 3652	031-7655393		031-7655393
Weerts, Butler & Bulman	P.O. Box 30258, Mayville, 4058	031-261 6898	0828830778	031-261 6889

APPENDIX B:

Questions for the Environmental Consultants

General Questions:

1. What is your understanding of EIA follow-up? *(i.e. how would you define EIA follow-up?)*
2. At what stage of the EIA process do you feel that follow-up should begin?
3. Do you feel that EIA follow-up should be a generic process *(set of established procedures)* or rather case-specific?
4. Who do you feel should be responsible for EIA follow-up? *(regulatory approach)*
5. How relevant or useful do you feel that EIA follow-up is? *(especially in a South African context)*
6. Do you think that EIA follow-up is achievable or even possible in South Africa?
7. What do you think are the major barriers or reasons for the lack of EIA follow-up at present in South Africa?
8. Do you feel that only sensitive EIAs should be subject to post-decision monitoring and auditing?
9. Do you think that the concept or idea of partnerships could be a worthwhile future avenue for the practice of EIA follow-up? *(Partnership = the collection and assimilation of information that could involve the developer, the local authority and the community).*
10. If answer to (9) is no, give reasons.
11. What is your own experience with EIA follow-up? *(If they have had experience continue asking specific questions).*

Specific Questions:

1. How do you go about conducting your EIA follow-up?
2. What does your EIA follow-up consist of? *(Only monitoring and auditing, or also evaluation and incorporation into the IEM procedure and public involvement?)*
3. Is it a once-off or periodic exercise or do you carry out long-term monitoring and auditing?
4. Who conducts the follow-up? *(Do you work in a team of specialists, or on your own?)*
5. What types of instruments, methods and sources of information do you make use of? *(i.e. the different types of monitoring, inspection, surveillance etc)*
6. Do you adopt a quantitative or more qualitative approach with your methodologies? *(Do you make use of sustainability indicators etc. or more statistical ones?)*
7. Who is responsible for the funding of the follow-up?
8. Do you keep the DAEA informed of your activities and results?

APPENDIX C:

Table highlighting the interviewees' responses to the most pertinent questions

	Question 2	Question 4	Question 7	Question 9
Respondent 1	Beginning of EIA process	The DAEA. But developer must also make sure follow-up is taking place	Lack of capacity in DAEA. Their method of communication to the public sector is inadequate. Many businesses have not accepted idea of EIAs/ follow-up	Joint partnerships are certainly a thing of the future – as long as their turn around time is sorted out.
Respondent 2	From ROD onwards	The DAEA	The DAEA does not have the capacity. The client may not be aware of follow-up needs. They often don't budget for follow-up.	Theoretically this is how it should be – but many see EIA as an obstacle to development
Respondent 3	Once project is approved	The client	Lack of legislation. The costs of follow-up. Not an effective government hierarchy. The DAEA has inexperienced staff.	
Respondent 4	From the point at which the activity begins	The DAEA. Need to involve I & APs	Our legislation is too lax. Follow-up often not built onto the EIA continuum. Conditions of approval are seldom linked to an EMP.	Formalized partnerships – with regular feedback mechanisms. Report to I&Aps and DAEA.
Respondent 5	After the EIA has been completed	The DAEA should be policing them	Follow-up not in EIA Regs. Costly. DAEA not enforcing or policing follow-up.	Monitoring committees should be established – including people from local community.
Respondent 6	After approval has been granted & appeal stage has lapsed	The DAEA	Lack of legislation. Lack of capacity in DAEA.	Public participation should be part of the process
Respondent 7	After ROD has been issued	Ideally the DAEA. Consultant's responsibility at present	DAEA do not have the resources to police the process. Under capacity. EMPs are not legal.	Very important idea. We educate and inform local communities to continue with the follow-up.

Respondent 8	After certain conditions are set by the DAEA.	Consultant or local I&A groups / societies	The DAEA needs to be more pro-active, yet under capacity	You have to have partnerships. The more co-operation the better. Should be between the developer, the public and DAEA.

Respondent 9	Once the EIA has gone through	The proponent	Institutional – DAEA capacity problem. Financial constraints.	Need to establish monitoring groups e.g. Coastal Working Group – representation from all govt. and local groups
Respondent 10	Once requirements of the ROD have been received	Provincial authority. Could be delegated to local level	Severe capacity constraints. Also a financial constraint.	Partnerships could work very well. The 'watchdog idea'. NGOs should be included.
Respondent 11	After conditions of approval have been received	Personally – ESKOM	Not cost effective to use a consultant for follow-up.	Partnerships between people within the company – DAEA can also be involved.
Respondent 12	After consent decision & ROD	Relevant authority	Lack of enforcement. Lack of institutional capacity	Monitoring committees essential
Respondent 13	Natural follow-on from consent decision	The DAEA	DAEA understaffed. Financial constraints	Public are good watchdogs. DAEA should devolve power to local levels
Respondent 14	When the contractor comes on site	Local government	Lack of enforcement. Decision-making takes too long. Developers do not see importance of follow-up	Partnerships would be very biased – all trying to protect own interests.
Respondent 15	"Cradle to grave" scenario	The consultant	Consultants often biased. Lack of capacity within DAEA. Lack of experience and practice.	Very feasible and important. Empowers local communities & local authorities
Respondent 16	Once the conditions of approval have been received	Anyone – as long as it's a competent practitioner	Dept. under capacity and under staffed. Many proponents don't see the importance of doing follow-up.	A partnership with the proponent and authority depends on building long-term relationships.
Respondent 17	After consent decision has been given	The proponent	No clear responsibilities established. Follow-up not legally binding.	

Respondent 18	From design through to operation. Hopefully during the EIA	The DAEA. Also certain NGOs – 'watchdogs'	DAEA does not have the capacity. Developer often doesn't see the necessity for follow-up.	'Environmental watchdog' idea. Partnerships could extend down to local level.
Respondent 19	Throughout the whole EIA process	Balance between four approaches	Legal problem. Also problem with responsibility	Need partnerships between government departments and civil society
Respondent 20	After the EIA is complete	Personally – ESKOM	Often no time to get an EMP out before construction begins.	Partnerships between people within the company.