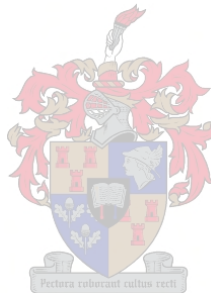


The Evolution , Substance and Application of Environmental Impact Assessments in South Africa.

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Declaration

I, the undersigned, hereby declare that the work contained in this assignment is my own original work and that I have not previously in its entirety or in part submitted it at any university for a degree.

SUMMARY

Environmental impact assessments have become increasingly popular over the past few years, by necessity and due to the general increase in environmental awareness. By definition, environmental impact assessment is a process having the ultimate objective of providing decision makers with an indication of the likely consequences of their intended actions. First popularized in the United States of America in the seventies, environmental impact assessments have since evolved worldwide into an effective decision making tool.

In South Africa , environmental impact assessments became legally enforceable in 1998 under the Environment Conservation Act (Act 73 of 1989) and presently serves as an effective tool in facilitating decision making for sustainable development. A large number of impact assessments are at present being produced for all categories of activities, but questions arise about the effectiveness of these assessments in fulfilling their intended purpose.

The present study aims to answer these questions and provide insight into the nature, content and standard of environmental impact assessment in South Africa by examining the foundations and application of the concept. The main method of research was the analysis of various assessments, already submitted to regional authorities, on the basis of content, methods used, depth of analysis, degree of public input and their overall contribution to the better understanding of the problem at hand.

During the analysis many inadequacies and merits of these impact assessments were revealed. The quality of reports ranged from good (about one third) to average and poor (about one third). Shortcomings identified related inter alia to data collection; ignorance of socio-economic factors; ignorance of cumulative effects; and analysis and evaluation problems.

The benefits that these impact assessments could bring about, were also analysed. It was deduced that there were inherent benefits the most practical being that the good reports assisted the decision making process considerably. Sustainable development was also promoted.

It was found that the implementation of the concept still needs more stringent management and monitoring with improved application and incorporation into the present planning approach

OPSOMMING

In die afgelope paar jaar het omgewingsimpakstudies (OIS) toenemend populêr geword as gevolg van noodsaaklikheid en die algemene toename in omgewingsbewustheid. By definisie is OIS 'n proses met die uiteindelige doel om besluitnemers in te lig oor die waarskynlike gevolge van hul handelinge. OIS het wêreldwyd ontwikkel in 'n effektiewe besluitnemingshulpmiddel sedert dit aanvanklik tydens die sewentiger jare in die Verenigde State van Amerika gepopulariseer is.

Omgewingsimpakstudies is wetlik afdwingbaar in Suid Afrika sedert 1998 onder die Wet op Omgewingsbewing (Wet 73 van 1989). Dit dien as 'n effektiewe middel in die fasilitering van besluitneming oor volhoubare ontwikkeling. 'n Groot aantal impakstudies word tans opgestel vir alle kategorieë van aktiwiteite, maar die effektiwiteit van hierdie studies in die vervulling van hul doelstellings word bevraagteken.

Die doel van hierdie studie is om hierdie vraag te beantwoord en insig te verskaf oor die aard, inhoud en standaard van impakstudies in Suid Afrika deur grondslae en toepassing van die konsep te ondersoek. Die hoof metode van navorsing was die ontleding van verskeie studies reeds ingedien by plaaslike owerhede, op grond van inhoud, metodes gebruik, diepte van ontleding, graad van publieke deelname en hul algehele bydrae tot 'n beter begrip van die probleem.

Tydens die ontleding is verskeie beperkings en meriete van impakstudies ontbloot. Die kwaliteit van verslae het gewissel van goed (omtrek een derde) tot gemiddeld en swak (omtrek een derde). Tekortkominge geïdentifiseer hou verband met o.a. data insameling, onkunde van sosio-ekonomiese faktore, onkunde van kumulatiewe effekte en ontleding- en evalueringsprobleme.

Voordele van impakstudies is ook geanaliseer. Die belangrikste was dat goeie verslae besluitnemingsprosesse aansienlik kan bystaan. Volhoubare ontwikkeling is ook bevorder.

Daar is gevind dat die implementering van die konsep steeds strenger bestuur en beheer benodig, met verbeterde integrasie in die beplanningsproses.

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is good to have an end to journey toward
"It's the journey that matters in the end."
Jules Le Guin.

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1) INTRODUCTION

1.1 Problem statement

It is generally acknowledged that global natural resources are being depleted at an alarming rate, to the extent that many are concerned about the sustainability of human life in the long run. The sheer scale of construction projects, coupled with man's unthinking approach to development and resource exploitation have highlighted the need for a greater awareness of environmental issues and more effective use of tools of environmental preservation.

One of the processes to help to minimise the negative impacts of development projects and to maximise the positive, is an environmental impact assessment (EIA). The assessment acts as both an informative and influential tool in planning, development and conservation. Although quite a number of books have been published on how these environmental impact assessments should be done (especially in other countries) little research has been done on the nature, content and value of actual impact assessments [Fuggle and Rabie (1983 and 1992), Glasson (1995), Vanclay (1995), Smith (1993) and Clark and Herrington (1988)].

Impact assessments were first popularised in the United States of America in 1970 through their National Environmental Policy Act of 1969. They have been utilised in South Africa for many years, but they became legally enforceable only in 1998 when the section 26 regulations under the Environment Conservation Act (Act 73 of 1989) were promulgated. Many types of development (listed under section 21 of the Act) now require a permit from the provincial departments of nature conservation, which can insist on a scoping report or a full environmental impact assessment. (A scoping report can be seen as a preliminary impact assessment.) The new planning legislation, such as the Western Cape Planning and Development Act (Act 7 of 1999), also makes provision for local and provincial authorities to demand impact assessments for specified types of development.

Accordingly the role of impact assessments as a legally required mechanism in planning, development and conservation of the natural environment has increased drastically over the last few years.

1.2 Purpose of the study.

The aim of the study is therefore to ascertain the present nature, content and standard of environmental impact assessment in South Africa and the degree to which these factors facilitate decision making for sustainable development.

1.3 Research method.

In preparation for the research, there has been consultation with several relevant organisations, such as Cape Nature Conservation, the Department of Economic Affairs, Environment and Tourism in the Eastern Cape, the CSIR, as well as many planning firms and environmental consultants. An array of local and international sources on the subject, in particular the works of Fuggle and Rabie (1983 and 1992), Glasson (1995), Vanclay (1995), and of Smith (1993) were scrutinized, as well as relevant environmental laws and regulations. In these preliminary surveys a need was detected for follow up studies to be carried out, to evaluate the outcome of impact assessments.

The main method of research was analysis, using a framework for review, of twenty environmental impact assessments and scoping reports previously submitted to the regional authorities of the Western Cape, Eastern Cape and KwaZulu-Natal. These documents were analysed for content (i.e. the aspects which they analysed), their method of analysis, depth of analysis, degree of public input, and their contribution to the better understanding of the problem at hand. The sequence of research was:

(a) Theoretical research

- * Introduction: Description of problem, defining of purpose, definitions of terms and method of study;
- * Historical development of environmental impact assessment practice, world-wide and in South Africa;

- * Present status, practice and legislation;
- (b) Collection and analysis of data
- * Analysis of actual impact assessments;
 - * Tabulation of findings and analytical description
- (c) Conclusion
- * Assessment of findings.
 - * Future of the field

2) ELEMENTS OF ENVIRONMENTAL IMPACT ASSESSMENT.

2.1 Introduction

In this chapter theoretical aspects of environmental impact assessments are researched, starting with a definition. Of particular importance is the nature of EIA and its influence on projects, plans, policies and administration. EIA and decision making, public participation and planning is also discussed.

2.2 Definition of environmental impact assessment.

There is no universally accepted definition of EIA, because of the diverse field it covers and the variety of definitions encountered. One definition was observed on a notice board at Cape Nature Conservation. Unfortunately the author was anonymous. It stated that:

Environmental Impact Assessment is a process

having the ultimate objective of providing decision makers with an indication

of the likely consequences of their actions

This definition is the most encompassing, conceptualizing the essence of EIA. In addition to this definition there are many other interpretations.

Vanclay (1995:1) defines EIA as: "... the prediction or estimation of the consequences of a current or proposed action (project, policy, technology)." It is Smith's opinion (Smith 1993:16) that impact assessment is linked to a relatively narrow focus, that of information generation. It is also viewed as a technique or method focusing on the development and identification of potential impacts, predicted effects and consequences. Impact assessment spans the full range of human intellectual endeavor, as well as biophysical, economic and social aspects, with a specific but growing number of subfields recognized.

Glasson (1995: 3) describes EIA as a mechanism for environmental protection, a process with emphasis on prevention. It is a systematic, holistic and multi disciplinary process, with clearly defined steps. Although the steps are linear in fashion, it should be emphasized that the whole process be followed in a cyclic manner, with interaction and feedback between phases.

When examining the term EIA, two main components can be identified as, 'environment' and 'impact'.

2.2.1 Definition of 'Environment'

The scope of the term 'environment' is extremely broad. It is defined in Guideline Document 6 of the Integrated Environmental Management Guideline Series (DEA 6) as " The external circumstances, conditions and objects that affect the existence and development of an individual, organism or group. These circumstances include biophysical, social, economic, historical, cultural and political aspects".

The Environment Conservation Act, 1989 (Act 73 of 1989) defines the term 'environment' as meaning "the aggregate of surrounding objects, conditions and influences that influence the life and habits of man or any other organism or collection of organisms." However, in addition to these two definitions, there is a third legal definition. The National Environmental Management Act, 1998 (Act 107 of 1998) states that " Environment means the surroundings within which humans exist and that are made up of-

- the land, water and atmosphere of the earth;
- micro-organisms, plant and animal life;
- any part or combination of the above and the interrelationships among and between them; and
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing".

It can be deduced from the various definitions that 'environment' is meant to be understood and embraced in the broadest sense. The Department of Environmental Affairs and Tourism (DEA 5 1992:3) prescribes an extensive range of aspects that should be analyzed in the process of EIA to make it more inclusive. They are as follows:

- physical characteristics of the site and surrounds;
- ecological characteristics of the site and surrounds;
- current and potential land use and landscape character;
- cultural resources;
- socio-economic characteristics of the affected public;
- infrastructure services;
- social and community services and facilities;
- pollution levels;
- risk and hazard;
- health and safety;
- cumulative and synergistic effects;
- enhancement of positive characteristics.

EIA is a process that recognizes cause and effect (Fuggle and Rabie 1983:488). The cause is often viewed as the development proposal or action and the effect the impact that action may have on the environment. This brings up the second component of EIA, 'impact'.

2.2.2 The meaning of 'Impact' in EIA

The term impact is not defined in the National Environmental Management Act, nor is it defined in the Environment Conservation Act. It is however well defined in the Guideline Document on EIA Regulations: Implementation of Sections 21, 22 and 26 of the Environment Conservation Act 73 of 1998. This document divides impacts into:

- positive impacts, changes that improve the quality of the environment;
- negative impacts, changes that reduce the quality of the environment; and
- significant impacts, impacts that, by their magnitude, duration or intensity alter an important aspect of the environment.

Impacts can be further classified as primary and secondary impacts. Any direct effect resulting from a project is termed a primary or first order impact. Secondary impacts are those that are not linked or caused directly by that project. Secondary impacts are usually a result of the interdependencies between the primary impacts. Induced secondary effects usually occur when new linkages between project components and impacts occur. An example of these components and their interdependencies is when dredging and filling occurs in an estuarine mudflat. The primary impact would be the diminishment of the marsh area, a secondary impact would be a diminished crustacean population due to the lack of food, the induced secondary impact would be the decrease in fish population and associated reduction in fishing catches (Rabie in Fuggle and Rabie 1992:765).

"An important reason for considering the meaning and nature of the impact concept is that it may influence to some extent, the nature and characteristics of EIA methods. The use of these methods will subsequently have an effect on the content of the environmental impact statements produced" (PADC 1983:131). Therefore it is of critical importance that a process of selection be in place to decide which events are to be termed impacts and which will be left out, i.e. a process of classification of activities and effects.

2.3 EIA and planning theory

Environmental impact assessment is conceptualized as a planning tool used to forecast and evaluate the impacts of a proposed project and its alternatives. Engineers and scientists alike hold this perspective and EIA is often viewed as the 'technocratic paradigm'.

According to this paradigm, EIA is an element of the 'rational model' of planning. 'Rational planning' can be linked to the modernist movement, where logic and reason prevails. All phenomena are modeled, and subjected to some form of logical analysis. In EIA this approach to the decision making model requires that objectives and evaluation criteria are identified at the outset of a project, as well as quantitative values being established for the selection parameters used to indicate the environmental quality before, during and after the action (PADC 1983:5). This scientific/ rational view implies that you can predict the outcome of an action.

The 'technocratic paradigm' for EIA is often criticized as it ignores politics and models decision making in an unrealistic manner (Vanclay 1995:3). It has been documented that EIA fails to meet the basic criteria of the 'Rational-scientific model'. Decisions are largely being influenced by non-scientific factors and not logical-rational ones. Departmental politics, corporate power and interest group politics seem to be determining factors, backed by the project sponsor's narrow goals. Outcomes are not predictable, and it is due to this factor that EIA can be viewed from a non rational perspective.

Looking at EIA from a 'process planning' perspective, it can be seen as a form of post modernism . This model is more context specific and perceives all phenomena as being affected by their surroundings. As seen above, EIAs are affected by politics, processes, social conditions and values of those involved and affected. "A more realistic conception of decision making embraces political realities and recognizes that the ultimate process of EIA is not just to assess impacts, but improve the quality of decisions" (Vanclay 1995:4).

From this we can see that perhaps there needs to be a change in planning perspective for EIA to truly fulfill its purpose, in that it can become “..an adaptive, integrative and interactive means of decision making in environmental planning” (Smith 1993:186). This would involve the integration of both the ‘technocratic planning’ and the ‘politicized process’ perspectives. According to Smith (1993; 95) EIA should become “.. A bridge to integrate the science of environmental analysis with the politics of resource management”.

2.4 The nature of EIA

EIAs meet a multitude of objectives, some of which will be discussed in this section. Foremost, according to Glasson (1995: 8) EIA serves as an *aid to decision making* by providing a systematic analysis of the implications of a proposed development or action, by providing objective information on the environmental consequences of the action and its alternatives. It also aims to redress the problem of environmental problems previously being ignored in relation to political and economic considerations (Van Rensburg 1999:13).

Assessments also *aid the formulation of development actions*. They accommodate the parallel consideration of design, location and environmental issues indicating areas that need modification, so as to eliminate negative, irreversible impact on the environment. “ The consideration of environmental impacts early in the planning life of a development can lead to environmentally sensitive development; to improved relations between the developer, the planning authority and the local communities; to a smoother planning permission process; and links such concepts of negotiation and redesign to the current dominant environmental themes ...” (Glasson 1995:8).

EIAs, in addition to aiding decision making on a desired course of action, must weigh alternative means of achieving the same goal. There are several things that are fundamental in achieving this purpose as stated by Fuggle and Rabie (1983:486):

- the E.I.A. must be compiled making use of comparative, relative, equitable and reasonable alternatives as a basis;
- methods used in the evaluation must be capable of addressing alternatives, and not be manipulated to accommodate alternatives, as this will make these comparisons invalid;
- the report must not be a purely technical report, it must consist of objective, comparative information; and
- assessments must be free of personal and institutional bias, and should be compiled making use of techniques considered relevant and reputable.

“ Evaluations are aids to decision making and must contribute to judgements between alternative courses of action being made on the basis of both technical and social criteria. Environmental evaluations are not research projects to discover new knowledge, their aim is rather to assemble and evaluate existing information and to provide sufficient supporting argument to show how technical analyses and social judgements lead to a conclusion about the overall significance of choosing one alternative over another” (Fuggle and Rabie 1983:488).

Environmental evaluations encourage a *multi-disciplinary approach* to decision making. This in turn provides the opportunity for teams to work together and provide cross disciplinary insights into the development process. Impact assessment should become a bridging process between resource management politics and the science of environmental analysis (Smith 1993:12).

EIA also plays a significant role in *changing perspectives* (Glasson 1995: 12). As a sustainable development tool it must unite perspectives and promote a harmonious relationship between development and the environment. Various perspectives on EIA exist at present. Two such perspectives discussed by Glasson (1995:12) are, the minimalist defensive perspective, where developers and government see the process as something that just has to be done, an administrative process that has to be

completed, that might result in minor adjustments to an action that will get the go ahead irrespective! The other perspective is that of the environmentalists, or 'greens', they feel that EIAs cannot provide a foolproof system of protecting the environment and that any risky actions should be abandoned all together.

EIAs serve as a catalyst for *sustainable development*, the preservation of resources, man-made capital, human capital and environmental capital for present and future generations. EIA presents the opportunity for planners to avoid harmful effects of development and action in advance often avoiding certain developments all together.

There are four main steps in EIA, stated by Fuggle and Rabie, to be followed objectively in avoiding confusion and manipulation of the planning process.

- (1) Collection of data on variables relevant to impact prediction.
- (2) Analysis and interpretation of this data. (To determine the significance of impacts.)
- (c) Identification of significant environmental impacts. (The identification of project impacts, timing and duration thereof.)
- (4) Communication of the findings of the analysis. (To be effectively communicated to affected parties.)

Key features of any impact assessment, whether it be a technology assessment, a physical environment assessment or social impact assessment, should be (Smith 1993:14):

- focused on effects;
- future oriented;
- centered around technological development;

- systematic, comprehensive and inter-disciplinary in approach; and
- comparative and policy oriented.

Finally, in addition to the aforementioned, EIA is designed to encourage public participation in decision making processes related to the environment, thus promoting an environmental awareness and education in environmental values (Van Rensburg 1999: 14). If viewed not so much as a technique but more as a constantly changing process it should become a sensitive barometer of environmental values.

2.5 The influence of EIA on projects, plans and policies

Few studies have been done on how EIA has affected the decision making process, or the bodies and organizations that are responsible for such processes. EIA is often done to fulfill administrative requirements, and are often done too late in the design process when important decisions have already been made.

According to Vanclay (1995:8), " While EIAs sometimes amount to nothing more than exercises in *pro forma* compliance with legal requirements, there are many cases where EIA has significantly influenced projects." The range of effects identified by Vanclay reaffirms findings of this study project. There are many positive effects exercised by EIA on projects, some of which are listed below.

- Withdrawal or abandonment of unsound projects. Often during the process of EIA, alternatives reveal more sound options which ultimately lead to more profitable and environmentally suitable developments.
- Legitimation of sound projects. Through EIA procedure often the project's merits are carried over to public and governing bodies, who otherwise would not have been aware of the inherent benefits and details of the specific proposal.
- Improved site selection. In the process of compiling an EIR often the consultant may come up with alternative, or even more appropriate sites for the project. If

the exercise had not been carried out, this improved location may never have been identified.

- Reformulation of plans and redefinition of goals and project specifications. Often the process highlighted the need to go back to the drawing board, reformulate proposals or clarify responsibilities and aspects of dispute. The re-iterative nature of EIA is thus an inherent strength.
- Discouragement of weak proposals. Due to the relatively stringent EIA regulations, developers are sometimes reserved in submitting environmentally injurious proposals, in fear that they will not survive the review process. This factor alone shows the success of EIA regulations in deterring and preventing damaging projects from coming to fruition.
- Suggestion of mitigation. The need for mitigation is often highlighted in EIAs, in doing so adverse effects are often obliterated or minimized either by downscaling, redesigning, reparation or rehabilitation. This factor can be seen as one of the most positive outcomes of the EIA process, due to the fact that often downscaling or relocation is not an option as the project has already commenced.

EIA can be efficient and effective if incorporated into the initial phases of design with continuous feedback between findings, design and location. In so doing the decision making process will become incremental instead of following the present linear trend.

2.6 The assessment of policies

It is generally accepted that influence of EIA could be far greater if it were applied at a level of programmes. Some have even argued that EIAs should be done for proposed policies and legislation (Vanclay 1995:17) .

Vanclay believed that if EIAs were carried out for programmes or policies, the opportunity would arise for mitigation or abandonment of environmentally damaging

concepts before they reach project stage and implementation. Another benefit of this practice would be that if the initial EIA has been done for a programme e.g. a future industrial development zone, any future project consistent with this program could go ahead without having to do another assessment, as the environmental impacts would have already been accounted for. This idea relates to strategic environmental assessment, a concept discussed later in section 4.6.

The role of planning is to ensure a harmonious, multi-purpose land use system free of incompatibilities and in so doing respect human and ecological relations. In order for this to be achieved, and environmental quality not to be compromised, there needs to be an initial awareness of the potential environmental impacts caused by a planning scheme. Plans and policies should be subjected to some form of EIA to foresee their repercussions, since plans and policies form the contextual framework for projects and thus act in inhibiting them " The application of EIA at a plan level becomes important in order to fully comprehend the spatial and cumulative aspects of a development. Equally, as plans are formulated within a policy framework, and as policies also may give rise to significant environmental consequences, it is important that EIA is also applied for certain types of policies" (Monbailliu 1983:97). Many advocate the application of EIAs to the legislation formulation process and drafting of goal oriented policies, as they ultimately affect the products of the planning process, decision making and indirectly the quality of the environment.

2.7 The influence of EIA on Administration.

EIA may serve as an impetus for administrative change. There are many aspects of administrative processes that stand out as being informed by the EIA process such as public decision making reform and enhanced cooperation and organization (Vanclay 1995: 10). This observation by Vanclay has been confirmed in this research project and shall be discussed later in chapters 5 and 6. EIA has reformed public decision making by giving information on project impacts to interested and affected parties. In the smaller scale projects, the public are not actively involved in the process of EIA. Often

they are not informed of the impacts of the projects or the outcomes thereof, that is if they are even informed of the proceedings at all. On the other hand, citizens are possibly not accustomed to taking part, encouraged to take part, or do not have a thorough knowledge of their rights in this regard. Public participation processes are very weak, if at all present, showing a decided lack on the part of the consultant, in that they are not facilitating it adequately. In the larger projects, public participation plays an important role in the EIA process, with public input occurring on an ongoing basis. Because of the scale of these projects, public scrutiny can not be avoided, therefore the public is involved from the outset to avoid any outcry.

Environmental impact assessment also enhances organization, cooperation and administrative processes due to the fact that EIA encourages inter agency coordination. " Many EIA programs require that environmental assessment documents be reviewed by an environmental protection agency and, possibly, other governmental bodies. These reviews help disseminate information about proposed actions and their impacts, which is generally viewed as an administrative improvement" (Vanclay 1995:11). In South Africa the review agencies are usually government departments such as the Department of Economic Affairs, Environment and Tourism or Nature Conservation. Often permits also have to be acquired from different departments before an activity can take place. It is the successful interaction between the various bodies involved in these processes that facilitate good EIA practice.

Environmental impact assessment seems to have more of a reactive nature at present, a more pro-active approach should be adopted in order to facilitate sustainability. This will be discussed further in section 4.5.

2.8 EIA and decision making.

By indicating the environmental consequences of a proposal an EIA does not necessarily ensure that negative impacts are remedied and the positive enhanced. "If EIA is to be effective, it must be related in form and timing to the decision making

process in order that optimum strategies for averting or reducing adverse consequences can be formulated and evaluated" (PADC 1983: 8).

Any decision making process must consider all the determinants. EIA is a tool advocated to safeguard the environment. By including it in the decision making process the natural environment is taken into account alongside economic and social factors, in a scientifically objective manner. If incorporated early in the decision making process, EIA can ensure great cost savings and environmentally sound projects.

Impartiality can be achieved in a number of ways when incorporating EIA into the process of decision making. Clark advocates the following (PADC 1983: 9):

- guidelines or minimum standards for the form and content of an EIA;
- supervision by a reviewing or controlling body with no vested interest in the project;
- mandatory consultation with relevant and competent organizations; and
- publication and provision for public discussion of impact statements.

.2.9 Public participation and the EIA process.

Public participation in EIA is frequently viewed as a time consuming and expensive process, often not being representative of the community. However, active encouragement of public participation may lead to better information formulation, identification of alternatives, enhanced acceptability of a project and minimization of conflict. By obtaining the views of the public, different perceptions of issues are highlighted as well as additional knowledge being accumulated.

Disagreements about the role of citizens in EIA reflect the sentimental differences between expert assessment and public perceptions. Environmental risk means different things to different parties, and this should be accommodated through public involvement. Often public involvement is incorporated in an undemocratic or deflating

nature and amounts to mere tokenism. For example, in the Eastern Cape, when the Coega proposal was being discussed at public meetings, the local people were largely left out of the process due to the fact that they could not understand the proceedings and the technical language used. Explanation of the smelting and zinc refinery processes was given in highly scientific terms, and the only people that could render any contribution were the learned. Although locals were present, the discussions went over their heads due to their illiteracy or limited knowledge. This should be avoided. Citizens are legitimate actors in any decision making process in which they choose to participate.

It was stated by Portney (Carlisle 1991:202) that " Democratically derived decisions, decisions that are a result of the democratic process, are superior to others. Since purely rational analytic methods will in any case never give us indisputably best answers, the only legitimate answers are those derived through a process that incorporates the public will. " This statement strongly advocates democracy in citizen participation. This process however does have immanent problems that should be addressed. Firstly, people participating are not always representative of the general public. Secondly, it is difficult to maintain one's integrity and impartiality in such processes, especially when one is faced with the task of making decisions that go against one's own views. Lastly, the process may cause conflict when no mechanisms may be in place to solve it. This is where mediation and negotiation come into the picture.

The effectiveness of EIA practice and regulation, as with any policy, relies strongly on the degree of political influence, public support and bureaucratic sophistication displayed by authorities. " EIA could be used either as a means for governments to impose greater controls and safeguards on developments and innovations of all kinds or, alternatively as a vehicle for reducing the power and influence of political groups intent on objecting to any new actions which will bring about change in the environment" (Clark 1988: 4).

EIA seems to be a way to overcome political barriers to change. However, scope, techniques and efficacy of EIA will always be affected by the prevailing political climate. Socio-political aspects are also an integral part of EIA (the scope of which is too large to be discussed in this section). Societies are made up of individuals and groups with varying interests, values and levels of awareness, this affects how EIAs are drawn up, and their contribution in the planning process.

2.10 EIA and planning.

The role of EIA in planning has been subject to scrutiny for many years, since its inception. "Some planners view EIA with scepticism whilst others see it as offering an opportunity for a better approach to those types of development which are most likely to have a significant effect on the environment and also to be most controversial to members of the public..." (Mc Donic in Clark 1988:163).

Despite criticism regarding time delays, resources and administrative hassles, EIA has proven itself in its effectiveness to improve the quality of decision making. For EIA to really be of worth in the planning process, it needs to be incorporated into the system, not detached from it. From the development planning perspective, EIA can be instrumental in highlighting the need for assessment of certain high risk activities when drawing up structure plans and policies. In this regard, EIA is instrumental in defining the needs of the community, sensitivity of the environment and responsibilities of prospective developers. For the same reason, EIA should be viewed as an integral part of development control, zoning schemes and change of land use applications.

2.11 Conclusion

As shown in this chapter, 'environment' is taken as meaning the total environment - the natural environment as well as the man made environment, including the social and economic environment. Impact analysis therefore should strive towards analyzing the impact of projects on the total environment. The popular conception that environmental impact analysis is only concerned with the natural environment, is incorrect.

From the analyses in this chapter it became clear that impact analysis affects more than just planning, it influences public participation, administration, decision making, plans, policies and programmes as well.

3) HISTORICAL DEVELOPMENT OF ENVIRONMENTAL IMPACT ASSESSMENTS

3.1 Origins

EIA was first legally established under the National Environmental Policy Act of 1969 in the United States of America, it established the requirement for an environmental impact statement as the principle means of implementing impact assessments. This enduring legacy not only symbolized a new commitment to environmental protection but was an “ affirmation of faith in the use of science for planning and decision making” (Smith 1993:8). The origins and development of EIA is covered extensively by Glasson (1995) and numerous other authors such as Fuggle and Rabie (1983 & 1992), Smith (1993) and Vanclay (1995).

According to Vanclay (1995: 5), by the 90's over 40 countries had EIA programs that reflected the National Environmental Policy Act process with some countries taking it a step further adapting the requirements of the environmental impact statement processes to their political climate, resource base, development actions and inherent locational strengths and weaknesses. Examples of these countries are Canada who established their own process in 1973; Australia in 1974; West Germany in 1975; and France in 1976.

Developing countries have also realized the need for heightened environmental awareness and the importance of relevant, implementable EIA policies. At present many countries are in the throws of developing environmental requirements of their own, whilst in some countries EIA is still carried out in an *ad hoc* manner.

Policy development in various countries shall now be discussed to highlight milestones in the evolution of EIA processes and illustrate which factors stimulated environmental policy formulation in South Africa.

3.2 Development in the United States of America

“ Environmental Impact Assessment” finds its origins in the United States National Environmental Policy Act of 1969. It was realized in the late 60's that significant environmental problems resulted from actions of government and large infrastructure agencies (in charge of energy facilities, highways and water resource projects). Mission statements of the active parties often did not cover the adverse affects of their actions and measures to be taken to overcome these effects. Proposals on the development of a national environmental policy were discussed by the Senate and the House of Representatives and it was concluded that a form of unified policy was necessary, with a high-level committee to administer it. In February 1969, a bill was introduced which proposed a federally funded ecological research program and the establishment of a Council on Environmental Quality . The role of the council was “ To assist the President in preparing an annual report on environmental quality, appraise federal agency performance in implementing the National Environmental Policy Act, conduct research and advise” (Smith 1993:8). The National Environmental Policy Act became operational on 1 January 1970.

The National Environmental Policy Act (NEPA) declared that all federal agencies produce an environmental impact statement for all actions affecting the quality of the human environment. This statement would cover the impacts of their actions on the environment and possible impact inflicted by alternatives. This requirement of the Act ensured that the environmental impacts of a decision be considered and acted upon, not just spoken about. Guidelines were set up in 1978 by the Council and assisted in the Act's interpretation (Glasson 1995:28). They sought to make the process more useful, implementable, easier to document, speedier and focused on environmental issues and alternatives.

The NEPA process (the process of preparing and distributing an environmental impact statement) became formalized by regulation in 1986 and was to include (Ortolando in Vanclay 1995:5):

- preliminary assessments to determine if an impact statement is necessary;
- a scoping process to identify main environmental aspects to be considered;
- provisions for public participation in the EIS process; and
- the opportunity for the public to sue parties that fail to meet their responsibilities under NEPA.

As a result a model for EIA emerged that was product driven, with scientific data collection preceding positivistic analysis and the production of technical reports. NEPA has had significant influence in the United States with over 50 states implementing so called little NEPAs (environmental programmes of their own). These little NEPAs require that EIAs be produced for sensitive development proposals, state actions and actions that require funding or permission from the state.

Internationally NEPA has had the effect of creating widespread environmental awareness. The NEPA based model has set the standard for the rest of impact assessment processes elsewhere in the world. This is due to the fact that other countries could monitor its development and not repeat its faults in their prospective policies and secondly due to the radical nature of the approach.

A series of conferences on NEPA took place in 1990, during this period various amendments were proposed and none passed. The main outcome of the proceedings was the conclusion that the procedural measures of the Act overshadowed their environmental goals. Many laws have since been passed that complement NEPA's substantive qualities in addition to supporting its procedural qualities, however the system is still continually criticized. Inherent difficulties of the system have been highlighted as (Smith 1993:9) :

- lack of data bases;
- time allocations are too short;

- the absence of socially related data; and
- inadequate weighting of findings.

From this it can be understood that the efficiency of a system is always debatable, due to the changing nature of our environment, how information is utilized and the varying political processes involved in resource management. Smith (1993: 9) highlights the fact that the role of impact assessment possibly needs redefinition in the future.

3.3 Development in the European Community.

By the mid 70's the need arose for a uniform EIA system to be implemented in the member states of the European Community, due to concern about the state of the physical environment and the deterioration thereof.

The First Action Program on the Environment of 1973 addressed this concern by focusing on the prevention of harm to the environment through prevention at the source. It stated that environmental impacts were to be considered in the initial planning phases in a holistic manner. During this same period concerns arose over distortion of competition among member states. European Community action was needed to create an even economic playing field among these states. Regulations were needed to transcend territorial boundaries (Glasson 1995:38).

During a ten year period, 1975-1985, research was conducted and the National Environmental Policy Act re-tailored to suit the European context. Issues of practicality and flexibility were addressed, bearing in mind the various institutional arrangements and different interpretations of procedures of the various states. The European Community developed its own environmental policy, formally adopted as an official Directive in June 1985. It incorporated four main aspects (Glasson 1995:39):

- Adequate EIAs had to be completed before any proposal would be considered;

- local planning authorities and developers had to cooperate in the process of gathering and divulging information required in the preparation of abovementioned assessments;
- statutory bodies responsible for environmental issues were to be consulted in the case of all trans-boundary effects; and
- public participation was imperative in the development process.

The Fifth Action Programme of the European Community has since been published entitled 'Towards sustainability'. It outlines the importance of sustainable development and integration of impact assessments into the macro-planning process (Glasson 1995: 40).

3.4 Development in the United Kingdom.

Glasson (1995:35) gives a thorough description of the development of impact assessment in Britain. The salient points shall be discussed here.

Since 1947, the United Kingdom's statutory land-use planning system has acted as a tool for controlling development in an environmentally sensitive manner. This system requires that local planning authorities anticipate likely development pressures, assess significant related factors and allocate land as best they can to accommodate these factors.

In the late 60's impacts of major developments became less controlled under the planning system. Increased environmental awareness among the public sector caused planning control and development to come under the spotlight. The discovery of oil and gas in the North Sea during the 70's sped up the process of development of EIA, as this was the first time that government realized the need for appraisal of large scale developments.

In 1974, the Secretaries of State for the Environment, Scotland and Wales commissioned consultants Catlow and Thirwall to investigate the desirability of

implementing an impact analysis system (Glasson 1995:36). Their report added support to the EIA system. It advocated that local planning authorities require developers to submit EIAs for all significant development proposals.

By the early 80's large developers such as British Petroleum, British Gas and the National Coal Board were preparing comprehensive statements. More than 200 studies had been done on an *ad hoc* basis by that stage. The statements however were not comprehensive enough and limited in scope.

Whilst Britain was not part of the European Community EIA was not legally compelling. It was only on the inclusion of Britain that EIA became legally enforceable. Previously the United Kingdom government felt that the existing planning system was suitable in handling environmentally sensitive development, pressure from the European Commission acted as a catalyst in the legislative process and the United Kingdom subsequently enacted various laws that realize the European Community Directives (Glasson 1995: 34).

3.5 The Netherlands.

Based on the principle of sustainable development, The Netherlands maintain well developed, progressive environmental policies. The system uses a great deal of public participation and an independent EIA commission for scoping and review. This strategy was established by the National Environmental Policy Plan in 1989, and the subsequent updated strategy of 1990 by the Ministry of Housing, Physical Planning and Environment.

At present, assessments are required for most major developments and activities. EIA's must be produced for land-use plans, sectoral plans on waste management, drinking water supply, energy and electricity supply and all proposed actions that are detrimental to the immediate environment (Glasson 1995:260).

3.6 Canada.

With Canada possessing a wealth of natural resources, the country finds itself open to large scale environmental degradation by macro developments and trusts, such as oil, coal and steel works. Prevention of environmental degradation became a key goal for government when they realized that the country lacked the strong planning and land - use legislation necessary to control and prevent environmental harm. As a result of this concern a powerful system of legislation developed as a prevention mechanism.

The Federal and provincial governments in Canada share jurisdiction when it comes to environmental conservation. The Federal Environmental Assessment Review Office administrates the Federal Environmental Assessment and Review Process, a process that provides a framework for assessments required from federal programs and activities. The Federal Environmental Review Office acts on behalf of the Minister of the Environment and is independent to the Federal environmental agency .

At national level, guidelines are laid out for EIA procedures. According to Glasson (1995:262) “ ... it was only in 1979, with the Government Organization Act, that the Federal Environmental Assessment and Review Process was made mandatory. A revised guide which outlines the mechanics of the assessment process was published in 1979,.... and the Environmental Assessment and Review Process guidelines were judged to be legally binding in 1989. ”The system performs in a similar manner at provincial level except that they have separate systems for projects under their jurisdiction.

In general, the country has sound environmental policies, with emphasis placed on the monitoring of actual impacts after construction, public participation and review processes.

3.7 Australia.

Australia has environmental policies not quite as stringent as Canada and the Netherlands, however it does find itself in a similar predicament to Canada, with its

powerful commonwealth of individual states. The responsibility for assessment is shared between the states and national government and there is often a high level of government discretion with an extremely low level of public involvement in decision making. Where a proposal affects both the state and national interests, arrangements have been made to streamline the decision making process.

EIAs are required for all actions by the national government and actions to be approved by them. This is stipulated by the Environmental Protection Act of 1974. " The Act was implemented by Administrative Procedures of 1975 and substantially amended in 1987 by the Environment Protection (Impact of Proposals) Administrative Procedures" (Glasson 1995:267).

The individual states of Australia are also very specific with their EIA requirements, and have been formulating various guideline acts of their own since 1979 (Glasson 1995:267).

3.8 Japan.

Japan has no particular legal requirements in this field, except for guidelines, applicable to national ministries and at local level, to prevent the most harmful developments and actions affecting the environment from taking place. Nearly half of the country's local authorities have established EIA guidelines of their own, often more powerful than the guidelines stipulated at national level.

Japan tends to turn more to technology in handling pollution and energy efficiency. In the 70's they began developing and applying technology as a response to environmental degradation. Unfortunately, present trends have caused environmental concerns to take a back seat to economic gains. Environmental policies that require a change in social behavior also seem to be frowned upon. All efforts to become world leaders in global environmental affairs have been foiled by the larger and more powerful ministries of construction, transport and industry.

According to Glasson (1995:272), efforts to introduce mandatory impact assessments in Japan have largely failed due to the threat of this practice to economic development. Non mandatory guidelines were introduced in 1984. Recently there has been renewed effort in establishing mandatory assessments.

3.9 China.

The Chinese make use of a strictly mathematical system of EIA and policies that are stringently restricted by economic preferences. Harmony with economic development plans, that is the desired balance between economic growth and environmental protection, is of the essence, with little public input and no consideration of alternatives. These factors play an important role in highlighting the need for stronger legislation.

The Environmental Protection Law of the Peoples' Republic of China was adopted in 1979, this made provision for environmentally sensitive site selection, compilation reports on proposed developments and the effects thereof and the stipulation of design approval before commencement of construction.

Subsequently, guidelines for implementation of this law have been prepared in the form of environmental management rules and guidelines. Activities organized or run by the government have EIAs done by the National Environmental Protection Agency, provincial activities are covered within their own jurisdiction, and monitoring and enforcement thereof is carried out by the local community or district agencies (Glasson 1995:277).

3.10 Conclusion

The United States, along with a few other countries (The Netherlands, Canada and Australia) have emerged as world leaders in EIA practice. Their policies especially the National Environmental Policy Act serve as strategy models for other countries wanting to implement environmental policies. Although implementation of environmental policies may vary from place to place, the concept of environmental protection is rapidly becoming established in the conscience of most countries with EIA becoming a

popular environmental protection mechanism and reactive planning tool. EIA over the world has created the opportunity for information to be shared at an international level. Information has been circulated via journals, meetings and professional associations. Often policies are proposed and implemented as experimental programmes, which also serve a dual purpose as educational programmes for other countries. This has augmented the rapid spread of EIA over the globe.

4) ENVIRONMENTAL IMPACT ASSESSMENT IN SOUTH AFRICA

4.1 Introduction

Over the last few decades, environmental conservation has evolved into a concept of environmental management. Many changes have taken place, one of which is the shift from a natural approach to that of a holistic approach to the environment.

Transformations in the perception and definition of the term 'environment' have also occurred. Along with these perceptive changes, has come a change in level of awareness of the natural environment and the obvious modification of policy to accommodate them. Policies have evolved to function as management tools rather than conservation tools. The following section covers these transformations of vision and legislation.

4.2 Early trends and publications.

According to Fuggle and Rabie (1983: 483) during the first part of the 20th century, the notion evolved that the public should exercise some form of control over the use of private land and developments on it. Public responsibility for the protection of wildlife resources was recognized by most members, republics and protectorates of the former colony. Before the Union of South Africa was established in 1910, wildlife resources saw their fair share of protection with the enactment of legislation and formation of game reserves. Many would like to have regarded South Africa as being on the forefront of nature conservation during this era. Environment and conservation thereof, revolved around the protection of the natural environment (plants, trees, animals etc), a holistic approach had not yet been realized.

The following decades saw jurisdiction being divided, nature conservation and inland fisheries fell under the influence of the four provinces, control over natural resources became responsibility of the individual departments of government and land use planning became divided amongst the three tiers of government, national, provincial and local. The result of this division is a multitude of unrelated laws and provincial

ordinances covering aspects of pollution, use of resources, conservation and land use planning. Protection of the environment and those responsible for it, was not yet the focus of the statutory laws at this stage.

Mid century it became accepted that government could control and regulate land use, as well as use of the environment for conservation and social purposes. Town planning ordinances, such as the Cape Province's Townships Ordinance, Ordinance 33 of 1934, were the vehicle for such control. Although this was not the opinion of all parties. Some parties, such as Fuggle and Rabie and green parties, were already exhibiting a lack of faith in the planning system as a control mechanism.

Control mechanisms such as the town planning ordinances and the Physical Planning Act 88 of 1967 did provide for environmental conservation. The Physical Planning Act even made provision for the proclamation of 'natural areas', the problem was that the term 'environment' was still very much perceived as the natural environment. During the 50's and 60's focus shifted from the environment as a whole to specific resources and use thereof. Co-ordinating mechanisms were present, but public authorities were more involved in approaching problems individually when it came to environmental policy. "The relationship between particular environmental problems were ignored and no national facilities were created to concern themselves centrally with policy questions relating to the management of the environment" (Fuggle and Rabie 1983:485).

There was a global turning point in environmental issues with the establishment of the National Environmental Policy Act of 1970 by the United States. At this stage, the government came under increased pressure from the 'greens' to address environmental issues. It was only then that the need for statutory environmental preservation in the form of impact assessment was realized.

During the 1980's there was still no legal requirement for impact analysis to be carried out, there was no law that specifically protected the natural environment, nor was there a legal requirement for planning practice involving environmental matters being

considered in the formulation of development plans and proposals. This was specifically the view of Fuggle and Rabie, and other 'green' parties.

An attempt at environmental awareness creation was made with the 1982 report by the Commission of Enquiry into Environmental Legislation and The Environmental Planning Professions Interdisciplinary Committee published a guide for impact assessment, "Environmental Impact Control", in 1983 to try and pilot the practice of EIA.

At this stage it became a moral obligation of professional planners, designers, engineers and architects to consider assessments of environmental capability/capacity in site and route selection and final assessment of planning proposals and alternatives.

By 1983 there was general consensus in South Africa that environmental considerations were integral in the planning process. Two schools of thought evolved when considering the introduction of the environmental evaluation concept into planning and the requirements for such evaluations. One train of thought was that the introduction of large scale environmental evaluations would stifle economic growth of the country, through administration delays and unnecessary procedures. The other train of thought evolved around the concern for malpractice when it came to the task of compiling assessments. A lack of formal requirements could result in substandard studies being done. This division of opinion will forever be a point of debate especially amongst development professionals and the proverbial greens.

The Environment Conservation Act (Act 100 of 1983) was introduced to address environmental issues, but this Act generally had disappointing results. Consequently, it was replaced by the Environment Conservation Act (Act 73 of 1989) which provided for several conservation alternatives as well as for legally enforceable impact assessment.

4.3 Environment Conservation Act 73 of 1989

In order to sustain thorough and uniform control of the consequences of development projects EIA was concretized in the Environment Conservation Act 73 of 1989. The Act served "*To provide for the effective protection and controlled utilization of the*

environment ...” This was considered a significant step in formalizing conservation of the natural environment in South Africa and indicated the adoption of a utilitarian, anthropocentric approach to conservation. In keeping with international trends, EIA could now be integrated into development activities, although it took almost a decade before formal EIA regulations were implemented.

A general policy for conservation had evolved with “ a view to (Section 2):

the protection of ecological processes, natural systems and the natural beauty as well as the preservation of biotic diversity in the natural environment;

the promotion of sustained utilization of species and ecosystems and the effective application and re-use of natural resources;

the protection of the environment against disturbance, deterioration, defacement, poisoning or destruction as a result of man-made structures, installations, processes or products or human activities; and

the establishment, maintenance and improvement of environments which contribute to a generally acceptable quality of life for the inhabitants of the Republic of South Africa .[»]

The Act defined the ‘environment’ as “ The aggregate of surrounding objects, conditions and influences that influence the life and habits of man or any other organism or collection of organisms.” The term ‘environment’ was now more encompassing, but still ignored social and cumulative aspects. The Act also provided for the identification of activities that posed a detrimental effect to the environment, and for the delineation areas of environmental sensitivity. Section 21, 22 and 26 of the Act were of utmost importance in controlling activities detrimental to the environment. They were the critical sections regarding EIA and its implementation. These sections of the

Act were based on principles of early application, accountability and an open and participatory approach.

Section 21 provided for the identification of activities that would probably have a detrimental effect on the environment. Such activities covered the fields of: Land use and transformation; water use and disposal; resource removal, including natural living resources; resource renewal; agricultural processes; industrial processes; transportation; energy generation and distribution; waste and sewage disposal; chemical treatment; and recreation [Section 21(2)].

Section 22 allows for the prohibition of undertaking of activities identified under Section 21. It stipulates that no person is allowed to undertake an activity listed under Section 21 without written authorization from the Minister or local authority. Authorization was subject to consideration of a report on the impact of the activity in question and of alternative activities on the environment.

Section 26 regulations provide for the drafting of environmental impact reports. This section gives power to the Minister or Administrator to make regulations on any activities identified in terms of section 21. Regulations can be made concerning the scope and content of environmental impact reports; the drafting and evaluation of environmental impact reports and of the effect of the activity in question and alternative activities on the environment; and the procedure to be followed in order to substantiate the findings of the report and to provide for preventative additional actions if necessary.

A higher state of environmental awareness and responsibility was induced by this Act, and it now became more difficult to gain authorization for certain actions without the required environmental impact report, and without following the correct channels.

Rabie (Fuggle and Rabie 1992: 111) made observations on the Act and noted "...it is only in respect of identified activities that the submission of environmental impact reports is obligatory....as far as actions within limited development areas are

concerned, the request for submission of such reports depends on the discession of the administrative body concerned". He also commented on the authorization process, and the process' lack of concurrence between ministries and the public. Although these observations seem negative, Rabie also stated (Fuggle and Rabie1992:110) that the most significant improvement brought about by the Act was that the minister was now empowered to identify and control detrimental actions on the environment.

4.3.1 The integrated environmental management procedure of 1992

Throughout the 80's the concept of 'environmental conservation' was gradually replaced with 'environmental management' and even more popular 'integrated environmental management'. This movement was partially catalyzed by the increasing realization that the total environment is a linked ecosystem. 'Greens' now realized that if they pushed for conservation of the natural environment only, conservation may be perceived as being anti-people or bio-centric rather than anthropocentric.

Integrated environmental management is "... a philosophy which provides guidelines for ensuring that environmental considerations are fully integrated into all stages of the development process in order to achieve a desirable balance between conservation and development" (Harrison 1996:7).

In 1992 the Integrated Environmental Management Guideline Series was published by the Department of Environmental Affairs, through this publication, the Department aimed to formalize procedures and identify the underlying principles of environmental management. The basic principles embodying integrated environmental management are (DEA 1 1992:5) that there be:

- *informed decision making;*
- *accountability for information on which decisions are taken;*
- *accountability for decisions taken;*
- *a broad meaning given to the term environment...*

- *an open, participatory approach in the planning of proposals;*
- *consultation with interested and affected parties;*
- *due consideration of alternative options;*
- *an attempt to mitigate negative impacts and enhance positive aspects of proposals;*
- *an attempt to insure that the social costs of development proposals (those borne by society rather than developers) be outweighed by the social benefits (benefits to society as a result of actions of the developers);*
- *democratic regard for individual rights and obligations;*
- *compliance with these principles during all stages of the planning, implementation and decommissioning of proposals (i.e. from cradle-to-grave) and*
- *the opportunity for public and specialist input in the decision making process.*

“In 1994 The Council for the Environment published a streamlined environmental impact process to support the Reconstruction and Development Programme. It was described as a mechanism based upon the principles of integrated environmental management, enabling environmental issues to be addressed in a low-cost, pragmatic and rapid manner throughout the life cycle of a project or development” (Harrison 1996:8). Other than offering instruction to integrated environmental management, the series also introduced guidelines for scoping, report requirements, review, a checklist for environmental characteristics and a glossary of terms. These documents served well to guide EIA practice. The series interpreted the term ‘environment’ in its broadest sense. Both biophysical and socio-economic aspects are stressed as components of this mitigation oriented approach.

The Integrated Environmental Management Procedure (DEA 1 1992) outlines various stages in integrated environmental management as consisting of the stages illustrated in Figure 4.1:

- 1 **Stage 1: Plan and assess proposal;** Develop proposal; classification of proposal; impact assessment; initial assessment or no assessment.
- 2 **Stage 2: Decision;** Review, by authority; record of decision; and appeal.
- 3 **Stage 3: Implementation;** Implementation of proposal; monitoring; and audits.

They stress in this process that through careful planning, incorporating the necessary assessment, informed decision making will result.

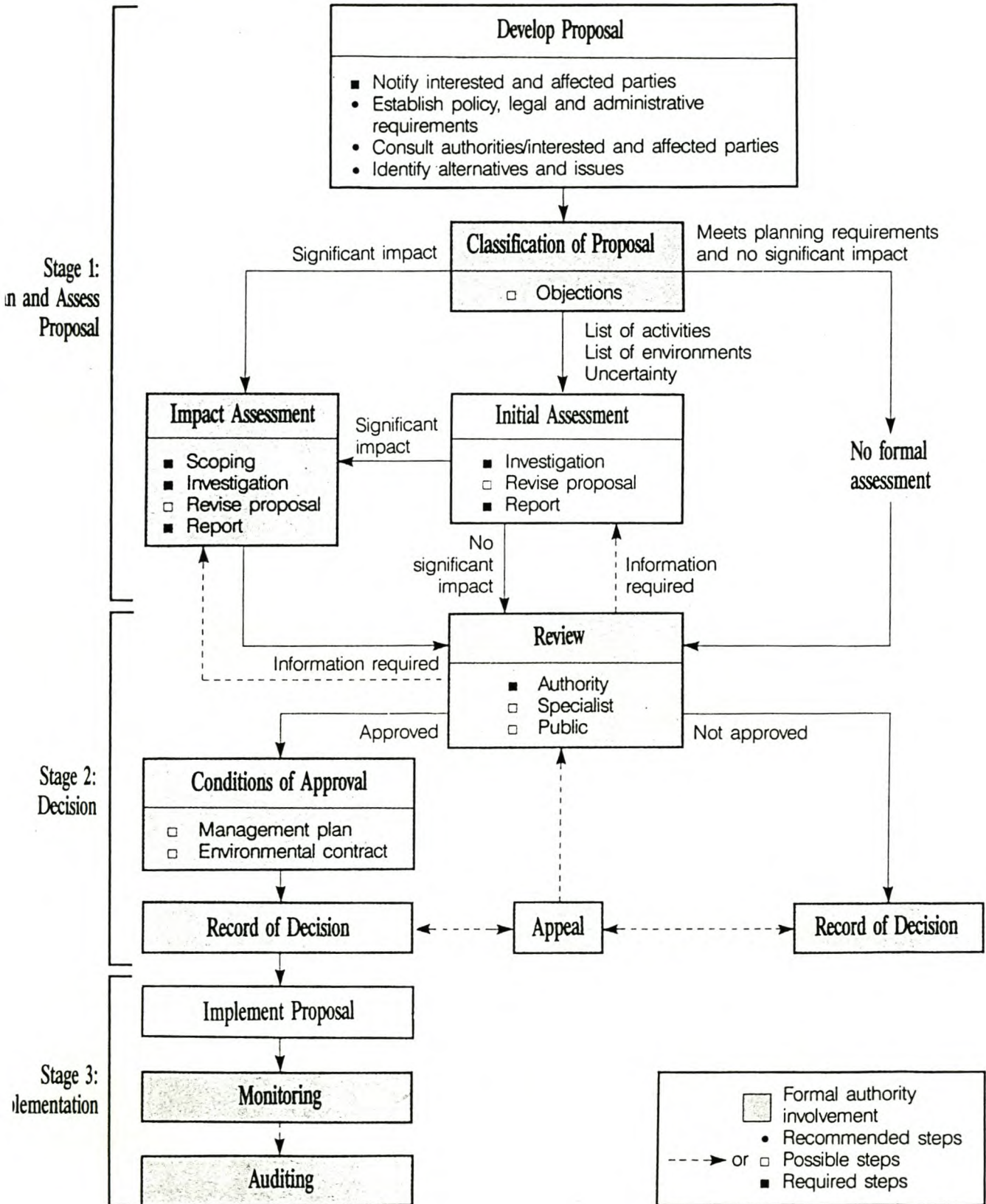
4.3.2 The EIA regulations of 1997

in 1997, eight years after the Environment Conservation Act was passed, regulations under section 21 and 26 were passed (DEAT 1997 A and DEAT 1997 B). These regulations are also given in Appendix 4.

The section 21 regulations list activities that may “have a substantial detrimental effect on the environment”, as discussed in section 4.3 above. These activities are classified in three groups. The first group of 15 activities deal with actual physical work, “1 the construction and upgrading of:”. The list contains activities such as “ 1(a) facilities for commercial electricity generation”, “ 1(d) roads, railways, airfields.....” to “ 1(m) public and private resorts”. The second group involves change of land use: “2 the change of land use from..” It includes land use changes such as: “2 (c) agricultural....to any other land use”, and “2 (d)zoned open space to any other land use.” Two of these activities were temporarily suspended, these are 2(a) and 2(b).

The remaining seven activities deal with agriculture and agricultural products (3 to 6), reclamation of land (7) and disposal of waste and air pollution (8 and 9).

Figure 4.1 The integrated environmental management procedure



Regulations were also made by the Minister under section 26 of the Act regarding activities identified under Section 21(1). These regulations are important as they lay down the legal procedure for integrated environmental management. Section 3 of the regulations outlines the responsibilities of the applicant and the relevant authority as well as interested parties and the public. Section 4 covers the application for authorization to undertake an activity. The plan of study for scoping is covered in section 5, the scoping report in section 6, the plan of study for environmental impact assessment in section 7, submission of the environmental impact report in section 8, consideration of application in section 9, record of decision in section 10, appeals in section 11, and access to information in section. These regulations are listed in Appendix 4.

It is Claassen's opinion however that these regulations have several deficiencies (Claassen 1999: 166). The first is their incompatibility with provincial planning legislation, another is their undemocratic nature, a third is their reactive nature and the absence of pro-active measures. Finally the fact that local governments are largely sidelined in the process.

4.3.3 The guideline document on EIA Regulations of 1998

In April 1998 the Department of Environmental Affairs and Tourism published a guideline document on EIA regulations: Implementation of sections 21, 22 and 26 of the Environment Conservation Act. It defined the objectives of sections 21, 22 and 26 as follows:

-“to ensure that the environmental effects of activities are taken into consideration before decisions in this regard are taken;

-to promote sustainable development, thereby achieving and maintaining an environment which is not harmful to people's health or well-being;

- to ensure that identified activities which are undertaken do not have a substantial detrimental effect on the environment; and*
- to prohibit those activities that will;*
- to ensure public involvement in the undertaking of identified activities; and*
- to regulate the process and reports required to enable the Minister or his designated competent authority to make informed decisions on activities.[]*

The guideline document also offered a description of activities and regulatory procedural guidelines on the roles and responsibilities of various role players in complying with the regulations and the application and EIA process.

4.4 The National Environmental Management Act 107 of 1998

The new Constitution of South Africa, 1996 (Act no. 108 of 1996) made a healthy environment a fundamental right of every citizen. Constitutionally, everyone has a right to an environment that is not harmful to health or wellbeing. This constitutional right accentuated the need for an integrated environmental management approach that would consider both environmental and management principles in a holistic manner. The need for environmental management principles based on the concept of 'sustainability' was of utmost priority to the Government at this stage. Provision of a habitat for flora and fauna, enhanced economic development, improved use of resources and the betterment of quality of life were also top priority.

The National Environmental Management Act 107 of 1998 emerged as a result of these circumstances. The Act supported personal environmental rights and environmental justice as well as principles of sustainability, and social, environmental and economic stability and served "*to provide for co-operative environmental governance by establishing principles for decision making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by organs of state...*" (Preamble to the Act).

The term 'environment' is discussed more thoroughly in this document, as discussed in the aforementioned 2.2. This definition encompasses a more multidimensional view of the environment.

General objectives of integrated environmental management are outlined in section 24 of the Act. One of the tools used to implement this concept is EIA. According to section 24 potential impacts of activities on the environment, socio-economic conditions and cultural heritage must be considered, investigated and assessed prior to their implementation, in the form of a report. Procedures for the investigation, assessment and communication of impacts must insure that [section 24 (7)] the environment and its attributes are adequately investigated; potential effects, cumulative impacts, alternatives, socio-economic conditions, cultural heritage and significance of impacts are investigated; mitigation measures are examined; public information and participation is evident; monitoring measures are implemented; and that there is co-ordination and co-operation between all parties involved.

The Act was more comprehensive than the Environment Conservation Act in specifying the essential elements for application of EIA. "The Act created new possibilities for provincial government to control actions that may have a detrimental effect on the environment" (Claassen 1999:166). The Planning and Development Act of the Western Cape also provides for such measures in section 67. In conjunction with the Integrated Environmental Management Guideline Series (DEA 1992) the EIA regulations (DEAT 1997) induced a more inclusive approach to the implementation of EIA. Along with all its predecessors, the Act has strengthened South Africa's standing in the global field of environmental management.

4.5 Strategic Environmental Assessment

In March 1999, a draft document on Strategic Environmental Assessment was published by the Department of Environmental Affairs and Tourism in conjunction with the CSIR. Strategic environmental assessment, and the need for some form of policy about it, evolved from the limitations of EIA. The guideline document highlighted the

fact that EIA is effective at project level, but fails to address cumulative impacts and widespread planning issues. In reality strategic environmental assessment deals with the evaluation of policy documents, such as structure plans, to determine the impact of policies on the environment.

Strategic environmental assessment can be defined as "a process of integrating the concept of sustainability into strategic decision making" (DEAT 1999: 5), and is guided by principles of integration, sustainability and a context specific approach.

Furthermore, strategic environmental assessment is a flexible, participative process, which begins with the conceptualization of the policy, plan or programme and sets the criteria for levels of environmental quality or limits of acceptable change. It is part of a tiered approach to environmental assessment and management and is based on the principles of precaution and continuous enrichment in achieving sustainability objectives.

This concept which is not entirely unfamiliar and may be ideal in addressing the weaknesses of the present EIA system, but in itself may not be free of fault. Numerous strengths and weaknesses of this concept have been identified in a recent workshop held on Strategic Environmental Assessment.

4.6 Sustainable development

Sustainable development can be defined as, "The ability of an activity to continue indefinitely, at current and projected levels, whilst maintaining or substituting for social, cultural and natural resources required to meet present and future needs" (DEAT 1998: B). The concept of sustainability is not new, it has been reflected in policies of the past, like the Environment Conservation Act 73 of 1989. In the principles of the Environmental Management Act it stipulates that "Development must be environmentally and economically sustainable" [Section 2(3)].

It is all very well that sustainable development be embraced as an intention, but it still remains difficult to implement in practice. The challenge of sustainable development is to ensure that economic, social and political relationships as elements in the system produce economic growth and simultaneously maintain the environment. Four principles should be kept in mind:

- Elimination of poverty and deprivation;
- conservation and enhancement of the resource base;
- economic growth and social and cultural development; and
- unification of economics and ecology at all decision making levels.

Sustainable development will not be further discussed. EIA is however a method to detect actions that will hamper or curtail sustainability.

5) THE SUBSTANCE OF ENVIRONMENTAL IMPACT ASSESSMENTS

Since the introduction of statutory impact assessments, the actual process of scrutinizing and ratifying an impact assessment for section 21 approval has evolved into a clearly defined procedure. In this section, the process, as described in the section 26 regulations, shall be analyzed and compared with the steps advocated by other sources.

5.1 The processes involved in EIA

In South Africa, guidelines have been formulated on the EIA process which recognize the cyclic, iterative nature of EIA. The procedure is summarized in a diagrammatic format in Figure 5.1.

5.1.1 The ratification process

The EIA Regulations (1997: 5) describe the procedure for obtaining section 21 permission. These steps are prescribed in the section 26 regulations of the Environment Conservation Act 73 of 1989. Glasson also prescribes steps that should form a basis for any assessment, these aspects are reflected in the South African EIA process (Glasson 1995: 4):

- *Proposal to undertake an activity* to the 'relevant authority', 'relevant authority' being the party appointed by the Minister in the Department of Nature Conservation of the province in case.
- *Pre-application consultation* between the relevant authority and the applicant. This is purely a screening process.
- *Submission of application to the relevant authority.*
- *Submission of a plan of study for scoping.* This study should include descriptions of project activities, tasks to be performed, time tables and a description of the method to be used in identification of issues and alternatives..

- *Scoping*, to determine, at the earliest stage, impacts, alternatives and key issues to be considered. The scoping report is then reviewed by authorities, specialists and interested and affected parties.
- *Review*. During this phase the proposal can then be accepted by the 'relevant authority', or further investigation can be required.
- *Plan of study for an EIR*. At this stage a document is required to support the information communicated in the scoping report. A description of environmental issues (and the environmental baseline) defined during the scoping stage should be included as well as a description of feasible alternatives, additional information, methods of identification and assessment of impacts. This plan is then reviewed by the relevant authority before the submission of the environmental impact report.
- *EIR*. The environmental impact report should include a description of each feasible alternative, assessment of key impacts according to criteria of extent, nature, duration, intensity, significance and probability, mitigation measures, addressing of key issues and a comparative assessment of alternatives.
- *Review*. The EIA is then either accepted or rejected, and is subject to appeal. If approved the application will be subject to conditions of approval.

Public participation and consultation should be accommodated in the process, to ensure that the public and interested parties are actively involved and educated in the decision making process. Quality, comprehensiveness and effectiveness are thus ensured (Glasson 1995:5).

Glasson also advocates *monitoring* of the project after development has proceeded. This involves the "repetitive and continued observation, measurement and evaluation of environmental data to follow changes over a period of time, to assess the efficiency of control measures" (DEAT 1998 A:7).

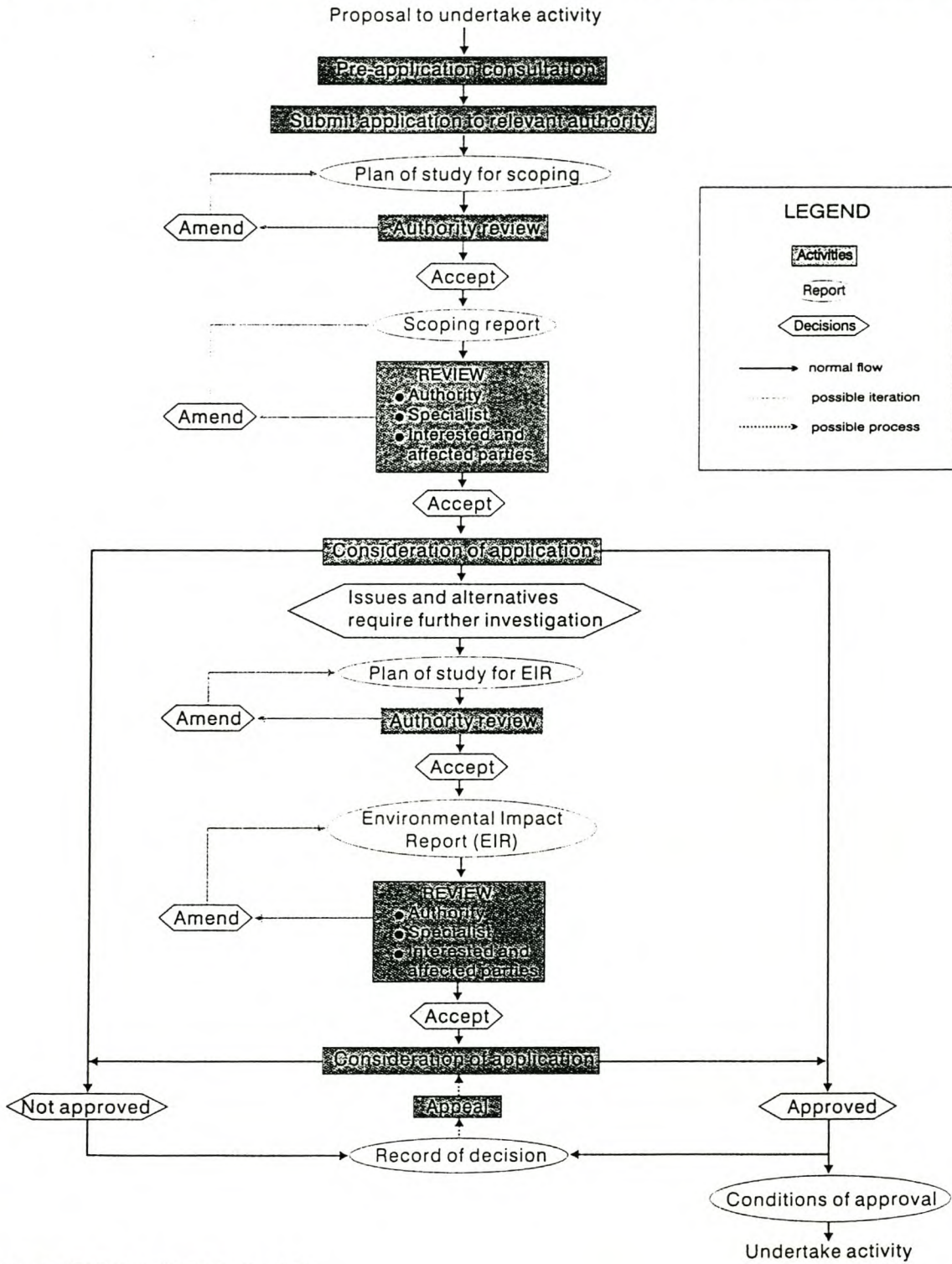
Auditing is also suggested, this is a follow on process to monitoring. It involves the assessment of the quality and validity of predictions, the effectiveness of mitigation and the success of the entire process. This is possibly one of the most important steps, as it highlights merits of the system and errors not to be repeated in the future.

5.1.2 The assessment of impacts of projects received

According to the Guideline Document on EIA regulations the assessment of impacts should be done according to a synthesis of the criteria of nature of impact, extent, duration, intensity and probability (DEAT 1998 A: 27). The following may form the basis of reviewing the technical information received (DEAT 1998 A: 29):

- ▶ Effectiveness: the enhancement of environmental protection and efficient use of resources;
- ▶ Efficiency: the cost implications for parties involved;
- ▶ Equity: impact on the poor, developers and authorities;
- ▶ Administrative implications: capital, legal, technical and capacity limitations;
- ▶ Acceptability: to all;
- ▶ Cost implications: to all; and
- ▶ Macro-economic impact: contribution to economic growth, employment, development and inflation.

Figure 5.1. The application and EIA process to be followed to obtain authorization



Source: DEAT (1998 A: 18)

Impacts can be evaluated, before and after mitigation by the authorities in terms of the factors such as effect on public health; risk; scale, extent, duration and frequency of impacts; reversibility of impacts; context and importance; and degrees of certainty of effects (DEAT 1998 A: 30).

5.2 Methods

There are many methods that have evolved over the years used in assessing the impact of a project. Some of the most widely used techniques are: *Ad hoc* methods; checklists; matrices; overlays; networks; cost benefit studies; and modeling (Biswas 1987:200). Each of these methods shall now be discussed in more detail.

5.2.1 *Ad hoc* methods

Ad hoc methods identify sweeping areas of impact, rather than specific parameters and tend to provide limited guidance for EIA. This method should also give a basic idea of alternatives that should be considered. "A major advantage of *ad hoc* methods is that they can be easily used and prepared since they generally consist of statements of data requirements, without outlining the specific impacts on the environmental parameters which may be caused by a project" (Biswas 1987:201). There are however a few disadvantages to this method. Firstly, there is no assurance of comprehensiveness in identifying impacts. Secondly, due to a lack of guidance, there is a large degree of inconsistency in analysis and lastly, the model proves to be inefficient (Biswas 1987: 201).

5.2.2 Checklists

Checklists provide a list of environmental parameters to be considered for probable impacts ensuring that certain aspects are not overlooked during the analysis. "Checklists contain a set of environmental elements and actions. Since these are determined prior to a study of the area, these questions provide a static picture of the possible relations between a development and its environmental setting" (Fuggle and

Rabie 1992:768). These checklists may be simple checklists, descriptive checklists, scaling, scaling-weighting or questionnaire checklists. The most commonly used checklist is simply a list of environmental parameters with no guidelines on measuring or interpretation of the parameters. “ Limitations of this technique include the following: EIAs depend mainly on the experience and personal judgement of the experts alone. Bias can therefore occur; and the cause-effect relationship between project activities and environmental parameters cannot be identified” (Biswas 1987: 201).

5.2.3 Matrices

Matrix methods, also known as the Leopold matrix, are the most common methods used for analysis, due to the fact that they are based on expert knowledge and require little ecological data. “ The matrix consists of a horizontal list of project activities arranged against a vertical list of environmental parameters. The possible cause-and-effect relationships between particular activities and environmental variables can be identified by placing a mark in the corresponding intersecting cells” (Biswas 1987: 202). Simple interaction matrices or quantified and graded matrices can be used. Matrices can reflect interactive and dynamic characteristics of impacts and are effective in presenting environmental impacts to an audience (due to its graphic nature). Limitations of this method are that matrices do not offer criteria for decision making; monitoring mechanisms; and they assume that all actions and dependancies are of equal status.

5.2.4 Overlays

The overlay method makes use of a series of maps depicting the characteristics of the site over which transparent overlays are placed. Overlays are prepared for each feature to be assessed, and the degree of intensity of impact of each feature is indicated by different intensities of shading. A representation of the collective impact of the features can be obtained by combining the overlays on a base map. This simple graphic method of depicting impacts is very effective due to the fact that it reflects the

spatial distribution of impacts and acts as a search mechanism (Biswas 1987:203). The only limitation is that when a large number of impacts are considered the interpretation of overlays becomes difficult.

5.2.5 Networks

Networks are effective in analyzing a series of impacts triggered by an activity. A list of project activities is prepared to identify cause-condition relationships. Advantages of this method are that pathways by which direct and indirect impacts are produced can be identified as well as mitigation measures being introduced early in the project course. The method however does not accommodate public input or assign weightings to any impacts.

5.2.6 Cost benefit studies

Cost benefit analysis is discussed extensively by Biswas (1987:204). The three types of cost benefit analyses adopted for EIA application are: The UNEP Test Model of extended cost-benefit analysis; the cost-benefit analysis of natural system assessment; and the extended cost-benefit analysis graph.

5.2.7 Modeling

Modeling attempts to simulate a real life situation, with the objective of experimenting with the model to gain insight into the real-world situation. Representation of the real-world system is done by means of mathematical equations or expressions. The parameters that affect the system are included as well as the elements that affect the parameters. This mathematical model is dependant on thorough knowledge and understanding and due to this fact its application to EIA has been limited. It demands time, money, expertise and data (Biswas 1987: 209).

5.3 Limitations and merits of EIA

In developing countries, EIA processes suffer several shortcomings. Van Rensburg (1999: 35) highlights these shortcomings as:

- “lack of political commitment to environmental priorities in general and EIA in particular;
- weak or non existent legal basis for EIA;
- weak institutional frameworks of EIA systems;
- lack of experienced personnel with managerial and technical skills for EIA implementation;
- unavailability or inadequacy of baseline data and scientific information on the environment;
- fragmentation of authority among various government agencies, coupled with entrenched power positions of main development sectors; lack of awareness of EIA at both national and local levels.”

However, the main strengths of EIA still emerge. EIA is a planning tool to encourage environmentally sound development (Van Rensburg 1999: 27). Through suggestion of design improvements or in the most degrading cases recommending abandonment, EIA serves to protect the environment. Secondly, EIA is a means to effectively communicate information.

In South Africa the EIA process exhibits these strengths and weaknesses in conjunction with other more specific weaknesses and merits.

5.3.1 Procedural aspects

Procedural aspects are the procedural and legislative aspects involved in the ratification and analysis process.

Capacity limitations

The effectiveness of EIA is determined by a county's capacity to implement the concept. Certain capacity limitations have been identified and are apparent in South Africa at present, namely "political backing, including allocation of funding; an appropriate institutional framework and administrative arrangements; guidelines for implementation; the context of an environmental policy; coordination across sectors; personnel, including EIA systems managers, EIA report reviewers and EIA study team members; research; databases of environmental conditions and indicators; awareness and interest of the media; training and inclusion of EIA training modules in relevant tertiary education courses." (Bisset et al in Van Rensburg 1999: 36). Other problems in this regard, highlighted by Van Rensburg are; authorization of projects is delayed due to weak management of the process; study phased last too long and studies are poorly organized.

Legislative requirements

In South Africa at present, it is left to the review authority's discretion as to whether a full EIA has to be conducted or not. It is a legislative requirement that a scoping report be submitted prior to the granting of authorization for a project. The problem arises when the authority decides, on the basis of content of the scoping report, whether the process should reach full-blown EIA stages. Often, in scoping reports, the environmental impacts are not fully represented, this leads to the scenario where full EIAs are not conducted even though the significance of the impacts actually warrant one. In conjunction with this problem, most consultants see EIA as a hurdle to getting a project approved. It is viewed as a time consuming exercise, not as contributing to the process of gathering environmental information to improve decision making.

Integration into the planning system

Past experience shows that EIA is not integrative enough. EIAs are often carried out for a project, once the project has been well defined, funded and just about approved with alternatives being ignored in favor of the generally advocated project proposal.

Vanclay (1995:14) outlines the cause of the integration problem: " many projects do not give the same weight to environmental objectives as they give to economic performance measures such as the internal rate of return. If project proponents gave environmental impacts the attention they give to economic performance measures, the integration problem might not exist."

The concept of strategic environmental analysis provides for the integration of EIA at plan, program and policy level.

Public participation

At present the South African system of EIA makes provision for the involvement of the public during the scoping phase of the project. At this point, the project has already been conceived, with scale and location decisions already been made. The only other time the public can comment is after the publication of the draft EIA or once the final report has been produced. Provision is also made for appeal, if the project is approved and there are still objections. The problem with this system is that public participation is limited. Usually by the time the public is given the opportunity to get involved, developers are attached to their proposal and are reluctant to accommodate change. Citizen participation at this point is mere tokenism. What people forget, is that public opinion is critical in selecting what functions are considered compatible with their environment.

Short circuiting of the public participation processes at present in this country is still possible, this is detrimental to the entire EIA process, as it is a break down in communication. Vanclay (1995: 58) identifies five key goals of public participation that should be accommodated in the EIA process, namely:

- “to identify public concerns and values;
- to gather economic, environmental and social information from the public;
- to inform the public about potential actions or alternatives, and the potential consequences of these actions;
- to develop and maintain credibility; and
- ultimately, to improve the overall decision making of the agency.”

These goals can be achieved by making EIA documents more accessible to citizens. In South Africa in particular, a more elaborate participation programme should be adopted, with facilitators being trained in this specific field. Public participation and how it can be facilitated is an entirely separate topic, beyond the scope of this assignment.

A positive aspect of EIA is that public awareness can be increased through participation and consultation. In this way the public has better access to the bureaucratic decision making workings. Public participation strengthens the EIA process through utilization of knowledge and expertise of the locals, ensuring political accountability and affirming democracy.

Impact evaluation

Often methods used to evaluate impacts are not sufficient in accomplishing the intended purpose. “ EIA methods tend not to evaluate impacts but simply describe them, expert judgements are not balanced with public contributions, and the actual performance methods in practice have not been researched” (Van Rensburg 1999: 32).

Consensus seeking procedures

As with any process involving citizen participation, multidisciplinary interest, debate and decision, there has to be a procedure in place to attain consensus. Negotiation techniques and models aimed at aiding decision making, for example the Delphi technique, are still not being used to their full potential. As a result, consensus seeking

procedures are weak. This aspect of debate forms an entire field on its own, beyond the scope of this project.

Cost implications

EIA aims to quantify and identify primary and secondary impacts at the outset of a project, in doing so it may avoid the necessity of introducing expensive remedial measures to eliminate or reduce these impacts at a later stage (Clark 1983:6). EIA can also reduce project costs by ensuring that repetition of efforts and bias is minimized in the process. Developers save handsomely when it comes to time and money, in that development decisions are reached quicker, more subjectively and with less duplication of processes. At present the cost implications of EIA vary from project to project.

5.3.2 Scope aspects

Scope here refers to the actual content of EIAs

The term 'environment'

At present there is a weakness in the use of the term 'environment'. Impact assessment reports are often affected by the consultants' perception of the environment. This perception is affected by prior knowledge and expertise e.g. an engineer compiling a report will have a different approach to that of an ecologist. This aspect is suggested by the fact that there are different definitions of the environment taken into account by the different authors, and thus content differences in reports. The various environmental laws also give a range of definitions of the term 'environment'.

The forecasting of probable impacts.

EIA can benefit the process of development and decision making due to the fact that the EIA process predicts likely impacts before they occur. This allows for the alteration of infrastructure, optimization of processes and formulation of mitigating measures to overcome or restrict these impacts.

Impact investigation

EIA should ensure that significant impacts have been investigated and mitigation measures introduced. In projects however there is no safeguard that all impacts have in fact been considered. Most EIAs are descriptive and non analytical and tend to provide little more than tables of effluents or “ laundry lists of species” that are impacted upon (Enk 1984: 313).

Significance

The goal of EIA is to analyze significant impacts rather than potential impacts. Because EIA guidelines and regulations are not precise enough in defining significance, the practice of EIA becomes subjective, not objective (Van Rensburg 1999: 49). The inclusion of significance in reports leads to better decision making.

Unifying concepts

Many reports lack consistency and a fundamental concept that binds the report. The task of the unifying concept is to facilitate easy reading, and communicate the generating concept, this is largely lacking in current EIA practice.

Temporal and spatial aspects

Consultants tend to forget that impacts are dynamic in nature and this needs to be considered in EIA.

Social impacts

Social aspects are largely omitted in most EIAs. According to the National Environmental Management Act (107 of 1998) the environment consists of the natural environment and the physical, chemical, aesthetic and cultural properties of it that influence human health and well-being. The term ‘social’ is not defined here, therefore confusion results. Social aspects do however affect human health and well being. The Integrated Environmental Guideline Series, gives a Checklist of Environmental

Characteristics , in this list, socio-economic characteristics of the affected public are mentioned as being an essential component of an EIA.

Risk assessment

Risk assessment seems to constitute a research area on its own, especially with recent development in this regard. Despite this fact, risk assessment does not seem to be carried out in most projects. Risk assessment seems to be inadequately treated in most projects that exhibit possible impacts on human health and well being.

Perhaps risk assessment should be focused on more specifically in the EIA process.

“ Although there are challenges in integrating risk assessments into EIAs, the benefits can be substantial. In addition to alerting decision makers of possible dangers, a risk assessment can focus attention on risk reduction activities such as minimizing the amount of waste generated in production processes, and it can also lead to the delineation of emergency response procedures in the event of accidents” (Vanclay 1995:23).

Cumulative impacts

Cumulative impacts are the result of collective and aggregative actions that cause a build up of impacts over time. The activities causing these actions could be of a similar or dissimilar nature. The problem involved with envisioning these impacts is the type of method employed to determine the effects, there are few workable approaches for dealing with them. A second problem, in addition to methodological difficulties, is that there are few institutional arrangements that address these impacts (Vanclay 1995:19). Due to the linear nature of decision making, in many cases, cumulative effects of a series of decision are not addressed. Review authorities approve projects in isolation without realizing the combined effects of such projects. This is where the importance of strategic environmental analysis for programmes and policies comes in.

Alternatives

Alternatives are sometimes downplayed in EIAs. " EIA studies usually lack clearly articulated goals for community development against which to compare development alternatives. Alternatives to development proposals, especially the no-action option, do not always receive adequate attention since the EIA can be seen as a means to assist development" (Van Rensburg 1999: 33).

EIA may have significant financial advantages in its effectiveness to indicate alternatives early in the development process. Capital costs can also be saved if all alternatives are deemed unsuitable, this may lead to the proposed project being discontinued.

The investigation of alternatives however may apply to projects where public funds are being spent or the decision to develop is in the public interest (e.g government projects). A private developer has already looked at all the options and decided on the best course of action, the consideration of alternatives is of no public interest at this stage, as his money has already been spent. Is the research of alternatives then compulsory for him?

Potential for reversing impacts

Often mitigation measures are implemented, but these measures merely reduce the impact of a project. Reversing impacts is largely ignored as an option.

5.3.3 Implementation aspects

Implementation aspects refer to the application of the concept of EIA in practice.

Knowledge is limited

Often, due to reluctance of the analysts and their lack of understanding of social and environmental dynamics, the amount of information contained in the report and amount

of analysis needed is limited. Therefore the analysis is clouded by uncertainty, this leads to obscure decision making (Van Rensburg 1999: 49).

Environmentally sound projects are not always ensured

EIA has generally been embraced as a tool for ensuring sustainable development. Practice however may disprove this theory as it is often proven deficient in attaining sound environmental policy goals. Officials approve or promote projects that may be environmentally damaging, because the economic benefits outweigh the adverse natural environmental effects. “ EIA does not ensure that projects with significant adverse effects will be stopped” (Vanclay 1995:15).

To enrich the function of EIA in attaining the goals of sustainability and to improve environmental quality, the concept of sustainability should be defined at the outset in clear, unambiguous terms. This definition should then be translated into operationally meaningful criteria for evaluation of projects and to aid the task of decision making. This could even be achieved at government level, by the compilation of guidelines setting out criteria for the evaluation of EIAs, judging the significance of adverse effects and the legitimacy of projects (Vanclay 1995:17). At present there are various documents available to aid the decision making process . The Integrated Environmental Management Guideline Series, Guideline document 4 -Guidelines for Review is particularly helpful in this regard. Although these documents are readily available, they seem to benefit the consultant more in his task of compiling the report than aid the decision maker.

Control of the process

Due to the fact that there is a lack of policing or quality control, EIAs become variable and inconsistent.

Integration of projects

EIA integrates proposals with their environmental and socio- economic surroundings (Van Rensburg 1999: 28). Integration of EIA at plan, policy and programme level has been discussed previously in section 4.5.

Monitoring and mitigation measures

At present there are no systems in place to check that remedial measures are being carried out, no guidelines and no enforcing mechanisms. This is an area of weakness because aspects of monitoring, mediation and management are not carried forward into the implementation and operational phases of the project. Solution to this problem would be the formulation of an action plan, similar to that of the United States Department of Energy's mitigation action plan (Vanclay 1995:21). " The essence of the plan is that if a programme promises in an environmental impact statement to carry out a mitigation, the Department of Energy will carry out a tracking programme to ensure that the mitigation is, in fact, carried out." The EIA process can effectively influence development through its monitoring programme. The benefits of environmental monitoring are that techniques of impact prediction are validated, mitigation effectiveness is ascertained, changes in trends can be predicted and warning can be raised when impacts are reaching excessively detrimental levels.

Risk of abuse

EIAs often get used to justify a project and to appease the public rather than to influence decision making (Van Rensburg 1999: 34).

Decision making

The efficiency of decision making can be improved through the application of EIA to a project during the initial design phase. Integration of EIA at an early stage in the project aids the incremental decision making process, application of EIA after the design is

complete often leads to design changes and remedial measures which otherwise could have been accommodated in the original design inception. EIA improves decision making by providing a more accurate and comprehensive basis for decision making; providing essential information; improving compliance of all proposed projects with regulations; providing opportunities to incorporate conditions of approval to ensure that mitigation of harmful environmental impacts, monitoring, post-project analyses; and auditing.

Environmental management

Improvement of environmental management is afforded by EIA through avoiding environmental degeneration, encouraging investment in development, providing sound, and implementable environmental policy, and the creation of environmental values (Van Rensburg 1999: 28).

Siting of projects

When planning for future development there is always an air of uncertainty about future growth, trends and limitations. The process of EIA identifies those areas that might be susceptible to adverse impacts in the future, thus guiding the process of site selection. "EIA can, nevertheless, aid the identification of the most suitable site in terms of benefit maximization and reduction of harmful effects" (Clark 1983:7).

Sustainable development

EIA is a tool of sustainable development, ensuring that all environmental aspects be incorporated into decision making and provide a guarantee that, through mitigation and monitoring, these projects unfold in a sustainable manner.

6) THE ANALYSIS OF ACTUAL ENVIRONMENTAL IMPACT ASSESSMENTS

6.1 Introduction

The purpose of this section is to evaluate the content and effectiveness of past EIAs, measured against a number of criteria. To this end twenty impact assessments were evaluated. These are listed in Appendix 2. To evaluate these reports objectively, an analytical framework was constructed listing the aspects to be examined, as well as the criteria against which each aspect was evaluated. Appendix 1 lists the aspects and relevant criteria, the actual framework used is given in Appendix 3. The results of the evaluation are listed in Tables 6.1 - 6.9.

Twenty reports were reviewed during the analysis. Two of the reports compiled in the Kwazulu-Natal area were rezoning applications for light industry. Three reports covered road construction in the form of a haul road between a quarry and the Coega port, an interchange on a highway and a standard road in an ecologically sensitive area. A crematorium was investigated as well as a medical waste incinerator. Two proposed hotels were scrutinized, one of which was declined authorization due to the poor standard of the report and public outrage. Two residential development reports were reviewed, one of which included a golf course. One lower order shopping mall was surveyed, as well as a light house in a nature reserve in the Eastern Cape. The report on the proposed cargo quay at Saldanha was reviewed and two aluminum smelters were analyzed. The EIA for a landing strip on Marion Island was also studied, this report was an excellent example of good EIA practice. Two farm dams were examined as well as the Eastern shores of lake St Lucia report. By analyzing this array of reports, from different areas in the country, a broad representation of the quality of work was obtained.

The observations are summarized in Tables 6.1 - 6.9, and are further discussed in this chapter.

The rating and evaluation criteria were employed to indicate how well the various reports complied in certain aspects. Stars were used to indicate the degree of compliance in table 6.1. Three stars indicated excellent compliance, two stars average and one star poor. No stars indicated that the report did not comply at all.

The remaining tables adopted stars to indicate whether certain aspects were present in the reports analyzed. The absence of a star indicated that the aspect in question was not considered.

TABLE 6.1: OBSERVATIONS ON COMPLIANCE

ASPECT ANALYZED	REPORT NUMBERS																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
DATA COLLECTION																				
Does report indicate:																				
data type	**	**	**	**	***	**	**	**	**	**	**	**	*	**	*	**	*	*	**	**
collection method	**	*	*	**	***	**	**	*	**	**	**	**	*	*	*	***	*	**	**	*
quality assurances	*	*			***				*				*	*		***	*	*	*	*
limitations	**	*	*	*	***	*		**	*			**	**	*	*	***	*	**	*	*
sources	***		**	**	***	**	**	**	**	**	**	**	**	**	**	**			**	**
contributors particulars	***	***	**	**	**	*	**	***	**	**	**	***	*	**	**	**			**	***
sampling method	**				***	**	**	*	**		**		**			***				
sample size	**				**	**	**		**		**		*			***				
measurement method											***		**			***				
IMPACT ID																				
Does report indicate:																				
technique of id	***	*	*	**	*	*	***	**	**	**	**	**	*	*	**	***	**	*	**	*
tech comprehensiveness	***	*	*	**	**	*	***	**	**	**	**	**	*	*	*	**	*	*	**	*
precise actions & elements	***	**	**	***	***	*	***	***	***	***	***	***	*	**	**	**	**	***	**	**
project suitability	***	**	**	**	**	*	**	**	***	***	**	**	*	*	**	**	***	*	**	*
locational accuracy	**	***	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
timing accuracy	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
consistency of tech	***	**	**	**	**	*	***	**	**	**	**	**	*	*	**	**	**	*	**	*
adaptability of tech	***	**	*	**	**	*	***	**	***	***	**	**	*	**	*	**	*	*	**	*
ANALYSIS PROCEDURE																				
Does report indicate:																				
analysis procedure	***		*	**	*		***	**	***	***	***	***	*	**	*	**			**	**
significance rating	***	*	*	**	*	*	**	**	***	***	***	***	**	**		***	*	**	**	**
criteria of significance	***	*	*	*	*	*	**	**	***	***	***	***	**	**		***	*	**	**	**
consistency of criteria	***	*	*				**	**	***	***	***	***	**	**		***	*	**	**	
clarity of criteria	***	*	*	*			**	***	**	***	***	**	*	**		***	*	**	**	
validity of criteria	***	**	*	*			**	**	**	***	***	**	**	**		***	*	**	**	
context & implications	***	**	**	**	**	**	***	***	***	***	***	**	**	**	**	**	*	***	**	**
SITE CONSIDERATIONS	***	*	**	**	***	**	**	**	**	**	***	**	***	***	*	**	*	***	**	*
ALTERNATIVES																				
Does report indicate:																				
alts & their appropriateness	**	**	*			**	**	**	***	***	**	**	**				**		*	
no-action option		**					**		***											*
impact of alts	*	**				**	*	**	***	**	*	**	**				**		**	
EVALUATION																				
does report exhibit:																				
rating, ranking or weighting	***						**			**		***	**					**	**	
ambiguity				*																
bias																				
public involvement	***	**	**	**	**	**	*	**	***	***	***	**	*	**	*	**			*	*
reference to ext opinions	***	**	***	**	**	**		**	***		***		*	**	**	*		*	*	
all costs	***		*	***	**	**	***	*	***	***	**	***	**	**	**	*	**	*	**	**
all benefits	***	**	**	***	**	**	***	**	***	***	**	***	*	***	**	*	**	**	*	**
COMMUNICATION																				
Does report indicate:																				
affected parties	***	*		**	**	*	**	***	***	**	***	*	***		**	*		***	**	
enhancement of site attrib	***	**	*	**	*		**	***	**	**	***	**	***	***	**	*	**	*	*	*
degrees of certainty	***		**		*	*		***		***	***	**	*	*			*	*		
overemphasis of risks																	*			
overemphasis of benefits														***			*			

reason for development	**	**	*	**	**	*	***	***	***	***	**	***	***	**	**	**	*	***	**	
TABLE 6.1 CONTINUED.....																				
goals	*	***		**	**	*	**	***	***	***	***	***	*	*	***	**	**	*	***	
are there signs of	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
impact reduction	**	**	*	**	**	**	*	**	**	*	**	**		*	*	**	**			*
jargon & padding																				***
graphic application	***	***	***	**	**	**	**	*	***	***	***	*	**	**	**	*	*		*	*
sustainability	**			**	**	**	**	**	***	***	**	**	**	**		**	**	*	*	*
management suggestions	*	**		**	***	**	**	***	***	**	***		**	**	*	**	**	*	**	*
relation to PPP	**	*		**	**	**	**	***	***	***	***		*	**	*	**	*	*	**	
holistic approach	**	***	*	*	**	**	**	**	***	*	**	*	*	**	*	*	*	*	**	
pro-active approach	*	**	*		**	*	**	**	***	**	***		*	**	*	***	*	*	**	**
multi-disciplinary approach	***		**	***		**	***	**	***	**	***	**	**	**	**	*	*	*	**	
follow ups																				

COMPLIANCE

EXCELLENT	***
AVERAGE	**
POOR	*

TABLE 6.2: METHOD OF DATA COLLECTION

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
SAMPLING	*				*	*	*	*	*		*		*			*				
FIELD OBSERVATIONS	*	*	*	*	*	*	*		*	*	*	*	*	*	*	*	*	*	*	*
MODELING																*				
LITERATURE	*	*	*	*	*	*	*	*	*	*	*	*	*	*		*	*		*	*

TABLE 6.3: METHOD OF IDENTIFYING LIST OF COSTS AND BENEFITS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CHECKLIST	*	*	*		*	*			*			*	*	*	*			*		
OVERLAY MAPPING																				
NETWORKS	*						*													
SYSTEMS DIAGRAMS																				
SIMULATION MODELING																*				
NOMINAL GROUP TECH																				
ITERATIVE PROCEDURE				*				*		*	*					*	*		*	*

TABLE 6.4: PROCEDURE OF ANALYSIS OF COSTS AND BENEFITS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
INTERACTION	*	~		*		~			*		*	*		*			~	~		*
CONSULTATION	*	~	*	*	*	~	*	*	*	*	*		*		*	*	~	~	*	*

TABLE 6.5: CRITERIA USED TO ASSESS SIGNIFICANCE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
NATURE OF IMPACT	*	*	*	*	*	*	*	*	*	*	*	*	*	*	~	*	*	*	*	*	*
MAGNITUDE	*				*			*	*	*	*	*	*	*	~	*			*	*	*
PROBABILITY					*			*	*	*	*	*			~	*					*
POTENTIAL EFFECTS	*	*	*	*	*	*	*	*	*	*	*	*	*	*	~	*	*	*	*	*	*
TIMING	*		*								*		*		~	*					
DURATION	*		*	*			*	*	*	*	*	*	*	*	~	*				*	*
REVERSIBILITY								*	*	*			*	*	~					*	
MITIGATION	*	*	*	*	*	*	*	*	*	*	*	*	*	*	~		*	*	*	*	*

TABLE 6.6: CASES THAT CONSIDERED CONTEXT AND IMPLICATIONS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
NATIONAL SCALE	*						*		*	*	*										
REGIONAL SCALE	*	*		*	*	*	*	*	*	*	*	*		*					*		*
LOCAL SCALE	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SHORT TERM	*		*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
LONG TERM	*					*	*	*	*	*	*	*	*	*		*				*	
INTENSITY	*		*	*	*			*	*	*	*	*	*	*		*				*	*

TABLE 6.7: ASPECTS OF THE ENVIRONMENT ASSESSED

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
PHYSICAL ASPECTS	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
BIOLOGICAL	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SOCIAL SERVICE			*	*	*					*		*	*							*	*
ECONOMIC	*				*		*	*	*	*	*	*	*	*		*			*	*	
CULTURAL RESOURCES	*			*								*		*						*	*
POLITICAL	*			*				*	*	*	*									*	*
INFRASTRUCTURE	*	*	*	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*	*	*

TABLE 6.8: CONTRIBUTION TO THE PROCESS OF DECISION MAKING

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
EXCELLENT	*								*												
GOOD		*			*		*				*	*								*	
AVERAGE			*	*				*		*											
POOR													*	*	*	*					
WASTE OF TIME						*											*	*			*

TABLE 6.9: ASPECTS OF THE SITE ANALYZED AND AFFECTED

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
PHYSICAL ASPECTS	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
geomorphology	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
fresh water	*	*			*	*		*	*	*		*	*	*		*	*	*			
marine systems	*			*	*		*		*		*	*			*				*		
estuarine systems	*					*		*	*		*	*							*		
climate	*	*	*		*	*	*	*	*	*	*	*		*	*	*	*	*			
ECOLOGICAL ASPECTS	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
flora	*	*	*	*	*	*	*	*	*	*		*	*	*	*	*	*	*	*	*	*
fauna	*		*		*	*	*	*	*	*	*	*	*	*		*			*	*	*
communities	*				*		*		*		*	*									
LAND USE ASPECTS	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
current landuse	*	*	*	*	*	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*
potential landuse	*	*	*		*			*	*	*	*	*	*	*	*			*	*	*	*
CULTURAL RESOURCES	*			*								*		*						*	*
SOCIO-ECONOMIC ASP..	*				*		*	*	*	*	*	*	*			*		*	*	*	*
demographics	*						*		*	*	*										
economics	*				*		*	*		*	*	*				*					
employment	*				*		*	*	*	*	*		*	*		*		*	*	*	*
welfare	*				*			*	*	*	*	*		*		*		*	*	*	*
health					*						*					*					
INFRASTRUCTURE	*	*	*	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*	*	*
energy	*	*	*	*			*		*		*		*	*							
water		*		*	*	*	*		*		*		*	*						*	*
waste			*	*	*	*	*		*		*		*			*				*	*
transport	*		*	*			*		*	*	*	*	*			*	*	*	*	*	*
education								*	*	*											
housing				*			*	*	*	*		*	*		*						
finance	*				*	*		*		*											*
SOCIAL SERVICE			*	*	*					*		*	*							*	*
services				*						*											*
facilities			*	*	*					*		*	*							*	*
POLLUTION	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
air	*		*		*		*		*		*		*		*		*			*	*
water			*		*	*	*		*		*		*		*		*			*	*
noise				*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
visual			*	*	*		*	*		*	*	*	*	*	*	*	*	*	*	*	*
waste			*	*			*		*	*	*	*	*	*	*	*	*	*	*	*	*
RISK/ HAZARD	*	*	*			*		*	*	*	*	*	*	*	*	*	*	*	*	*	*
CUMULATIVE EFFECTS		*				*		*	*	*	*				*						

6.2 Paradoxes and problems with EIA.

Over the years there have been various problems associated with the EIA process. They may be problems inherent to the system itself, or just the fact that EIA is viewed as a legislative hurdle. The following problems with the current system of EIA were identified during the analysis, in addition to those already mentioned in section 5.4.

6.2.1 Legislative requirements are often evaded.

Analysis of various EIAs and scoping reports, revealed that consultants were inclined to elaborate a bit on the scoping reports in the hope that the need for an EIA would be eliminated. The result was that authorities did not require an EIA from them, and made decisions on the basis of the information supplied by the scoping reports, this was the case in reports no 4, 5, 6 and 13. The reports were not detailed enough to use as a decision making tool and the information supplied was often not representative enough. It was also stated by one of the review authorities that they preferred it when a scoping report was detailed, avoiding the need for wading through an EIA report.

Perhaps a solution to this problem would be the threat of prosecution if EIA requirements are not met (prosecution of developers, consultants or even review authorities). Although regulations state that one can be prosecuted, there are no controlling bodies around to enforce them (due to lack of funds and manpower). Stricter regulatory measures are therefore necessary, with policing of the entire process.

6.2.2 EIA does not necessarily ensure environmentally sound projects.

In several of cases the environment was assessed relatively well, but when considering aspects such as suitability and sustainability, sound projects were not always guaranteed. E.g. the crematorium was given the go-ahead because it fulfilled a need. The fact that it was located adjacent to a residential area was ignored.

6.2.3 Inadequate public participation

During analyses it was noted that there was an insufficient degree of public involvement in some projects. This phenomenon seemed to manifest in the smaller projects, considered insignificant. Larger projects, with more extensive impacts seemed to be quite high profile. Because of the high degree of publicity, the correct public involvement procedures were followed. Reports no. 3, 6, 15, and 18 did not indicate if interested and affected parties were involved or not, even though their participation was evident. Reports 17, 19 and 20 did not involve the public at all.

6.2.4 Data collection problems

Often when examining the various reports it was noted that the type of the data employed was not stated (12, 13 & 17). With quality being unknown, as well as the limitations of the data not being specified it is difficult to make quality decisions. Reports 5 and 16 were good in that they made statements on the quality of data used. They also stated the limitations of the relevant data.

Another factor that affected data collection negatively was that methods of data collection were not always stated. Sampling methods, sizes and methods of measurement were omitted. Reports 2, 3, 4, 10, 12, 14, 15, 17 - 20 lacked in this regard, although one could deduce from the report which methods they employed. This directly affected the reports due to the fact that credibility was at stake. Legitimacy and representativeness of the data was questionable.

6.2.5 Impact identification errors

It was a common fault that the consultant did not describe how impacts were identified, and whether any method was employed at all. Applicability of methods was questionable. Often the consultant employed an identification method he was familiar with, a method that may not necessarily be suited to the specific project. This is where the quality of the report was compromised. Reports 2, 3, 5, 6, 13, 14, 18 and 20 did not give details on impact identification. It was also noted that the same method, namely

the checklist, was used in most reports. Situation modeling was only carried out for one report, no. 16.

6.2.6 Cost implications

In two cases consultants handed in a poor initial report, and after recommendation from the review authority, found themselves having to go back and redo the entire report because it did not meet the requirements (as was the case with the Milnerton hotel and the dam on the farm Doringrug). This repetition of efforts lead to a waste of time and money.

6.2.7 Procedural problems with analysis of costs and benefits

A common flaw noted during analysis, was that significance ratings were applied, but no explanation was given on how they did this, what the relevant weighings reflected and what criteria were employed to assess the significance. Criteria of significance were omitted in reports 2, 3, 4, 5, 6 and 17. Report 5 did not even allocate a significance rating. Reports no 15 and 20 were very unclear on significance.

This aspect of the EIA process is the most important. In order for objective judgement to be passed, this aspect needs to become more clear, precise and bear more focus in the process of compilation of reports.

6.2.8 Implications on a national and regional scale are ignored

When considering the context of a proposal, it was noted that the large scale implications were often ignored. National scale implications were ignored in reports 2 - 6, 8, and 12-20. Regional considerations were only taken into account in twelve of the reports. Local implications were always focused on as they are the direct implications of a project, but the reader is never given the broad scale implications. The problem surfaces when there are in fact broader implications, but they are ignored, to the detriment of the environment. The developer often benefits due to the mis-guidance of the decision maker. The question of whether to include the national implications is at

the discession of the consultant, however if he chooses to ignore them he should state the reasons why he did so.

6.2.9 Ignorance of time frames

Short term implications of a project were always focused on in an EIA, except in reports 2, 5 and 19, but the long term implications of an action were often ignored (2, 3, 4, 5, 15, 17, 18 & 20). Impacts of construction activities were always discussed, but operational impacts over the long run were omitted. To be fair to the consultant, it is not always possible to investigate the long term effects, however, this should always be stated in the report.

6.2.10 Intensity and duration of impacts are ignored.

Intensity and duration of impacts is an important aspect of EIA as it indicates how long an environment is going to endure or sustain change. In reports 2, 5, 6, 15, 17 and 18, duration of impacts was ignored. Reports 2, 6, 7, 15, 17 and 18 omitted the intensity of impacts.

6.2.11 Impact of actions on ecological communities is omitted

It was noted that impacts on flora and fauna were investigated well, but never the impact on the communities of organisms and their interaction. This was evident in reports 2, 3, 4, 6, 8, 10, and 13-20. Another factor that was omitted was, how the action affects the various life cycles and food chains in the environment.

6.2.12 Cultural, historical and archeological aspects are omitted

Cultural, historical and archeological aspects were ignored in the majority of the reports reviewed (2, 3, 5-11, 13 and 15-18).

Past experience, as stated in a recent article in an archeological magazine the details of which could not be obtained, shows that often, during excavations, historical artifacts were unearthed. If the EIA had investigated cultural, historical and archeological factors

adequately, damage to these valuable sites could have been avoided and possible construction delays averted.

6.2.13 Socio-economic impacts are omitted from reports.

Often the term environment was narrowly defined in EIAs, as was discussed in chapters 2 and 5, with the biophysical component receiving all of the attention. Social impacts were regularly left out of impact assessments or given limited attention, as the consultant often felt that this was not within the scope of the report. Demographics, health and welfare aspects were regularly ignored. Reports no 1, 2, 6 - 9, 11, 14-18 and 19 were guilty of this flaw. Another weak aspect was that few of the reports mentioned social services and facilities.

6.2.14 Risk and hazard is often ignored.

Risk and hazard was frequently ignored in the EIAs. This is one of the important components of an EIA. Even if a full risk assessment is not carried out, the inherent threats of the activity should be addressed. Reports 4, 5, 6, 8, 12, 15, 17 and 18 did not consider the risks.

6.2.15 Financial aspects were omitted.

In most reports no mention was made of budget or finances, costs or savings. The only reports to contemplate these aspects were no. 1, 6, 7, 9, 11 and 20.

6.2.16 Cumulative impacts are ignored.

The collective and aggregative actions that cause a build up of impacts over time were overlooked in reports 1, 3, 4, 5, 6, 8, 11-15 and 17-20.

6.2.17 Political aspects are ignored

Political aspects and aspects of sensitivity were ignored in all of the reports. When referring to politics, aspects such as internal politics, the current political arena and any

facets that could cause conflict are concerned. It is difficult to comment on these aspects, however conflict of interests should be mentioned.

6.2.18 Evaluation procedure errors

It was noted that very few reports employed an evaluation procedure, other than that of intuition when evaluating impacts. Reports 1, 7, 10, 12, 13, 18 and 19 were the only reports to refer to a weighting procedure of sorts. Another error in the evaluation procedure was that external opinions or those of the consultant were not referred to.

6.2.19 Problems with timing and duration

The EIAs considered failed to recognize the fact that the process only occurred at a set point in time, it was often forgotten that a project changes over time. The process failed to recognize the changing nature of the environment and the iterative nature of design. Reports 2,4 - 10, 12, 14, 15 and 17-20 lacked in this regard.

6.2.20 Degrees of certainty of results were not indicated.

Degrees of certainty were frequently left out of the reports reviewed. Reports 2, 4, 7, 8, 10,16, 19 and 20 made no mention of certainty , reports 5, 6, 14, 15 and 18 were poor in indicating this aspect. Degrees of certainty are important in indicating how accurate the predictions are, or how convinced the consultant is that impacts will occur. Without this assurance decision makers cannot be secure in passing judgement.

6.2.21 Benefits are sometimes incomplete

In most cases, consultants were so absorbed in covering the negative impacts of a project sufficiently, that they forgot to mention the benefits. Possibly they worked on the assumption that decision makers already knew the compelling advantages, or that need was a dominant enough factor that the benefits were self explanatory.

6.2.22 Costs and benefits are not stated or communicated in clear terms.

As a reader of any EIA, specialist or layman, one expects that the costs and benefits of a project would be highlighted clearly. Most reports did not have a section summarizing these factors, one had to wade through endless pages to find any indication of advantages and disadvantages. The costs and benefits are the crux of the report and should be stated clearly in either the introduction or the conclusion of the report, as these are the factors that influence public acceptance and decision making.

6.2.23 The no-action option was ignored.

Only four of the reports considered the no action option (2, 7, 9 & 20).

6.2.24 Impact of alternatives was neglected.

Reports 3, 4, 5, 14, 15, 16, 18, and 20 were the only reports to consider the impacts of the alternatives significantly. Consideration of the impact of alternatives is vital in selecting the best alternative.

6.2.25 Remedial measures are not being implemented.

In every single EIA reviewed various measures were recommended to mitigate impacts, the problem arises in that there are no certainties that these measures will in fact be implemented.

6.2.26 No monitoring.

Provision is not made in environmental legislation for post project environmental impact monitoring. Consequently, projects are reaching completion and developers are moving on to the next project, leaving behind no mechanism to monitor the ongoing impacts, dysfunction or efficiency of the product. Some of the EIAs of the projects reviewed made reference to monitoring of some sort, in the form of annual environmental monitoring, but once again, this was only evident in the larger projects. It is

understandable that small projects may not need monitoring, but who decides which projects are small enough to forfeit this prerequisite?

6.2.27 Mitigatory measures did not always reduce impacts to insignificant/ acceptable levels

In the majority of the reports, mitigation measures were mentioned because the guidelines stated it imperative. Several of these measures were not practical, and would possibly not ameliorate the impacts. Often it was not indicated to what level the impact would be reduced, another negative factor evident was that it was not indicated whether impacts were evaluated before or after mitigation.

6.2.28 Sustainability is not implied.

Reports 2, 3 and 15 made no mention of sustainability in principle or as a ideal.

6.2.29 Scope of the report is limited to the project level, not plans and policies.

Reports 2, 3, 17 and 18 showed poor integration into plans and policies. No. 3, 12 and 20 did not state this fact at all.

6.2.30 No follow up reports are carried out.

None of the reports included any follow up information. Some made mention of their intention to do follow up reports, audits or monitoring programs, but due to the fact that no proposed activity had yet commenced, reports were not forthcoming.

6.3 The advantages of EIA.

EIA is an effective decision making tool, if conducted correctly, according to the various guidelines. Review of the various reports revealed the inherent strengths of this practice in addition to the merits of EIA already mentioned in section 5.5. The additional advantages noted during the review were:

6.3.1 Cost benefits.

Cost implications picked up during the analysis were, that if EIA regulations and the guideline document were adhered to when compiling the draft EIA, the need to reinvestigate or redo an entire report was eliminated. This was the case with all reports except the Woodbridge Island hotel and Doringrug dam reports.

6.3.2 Efficient use of resources.

Eight of the reports investigated revealed a relatively efficient use of resources (No. 1, 2, 5, 7, 9, 11, 12, & 19). Reports no 1 and 9 were extremely good examples of the efficient use of assets at ones disposal, such as the natural resources and utilization thereof.

6.3.3 The improvement of decision making.

By analyzing all the reports it was concluded that on the basis of efficiency, equity, sustainability, quality, administrative implications, acceptability, cost implications, impact and methods employed, eight of the reports made a worthwhile contribution to the decision making process(No.1, 2, 5, 7, 9, 11, 12 and 19). Reports 1 and 9 made an excellent contribution.

6.3.4 The examination of potential effects

All of the reports evaluated investigated the potential effects and nature of probable impacts as well as the significance of those impacts (except 15).

6.3.5 The identification of more suitable alternatives.

In the reports examined, the majority considered alternatives (No.1, 2, 3, 6, 7, 8, 9, 10, 11, 12, 13, 17 & 19). This is considered a benefit, as it may reveal the most appropriate course of action.

6.3.6 Thorough analysis of physical aspects

All of the reports assessed the physical aspects, as well as the biological aspects of the site.

6.3.7 Identification of pollutants

Pollutants emitted by the prospective developments were investigated in all of the reports excluding no. 2, 17 and 18.

6.3.8 Mitigation measures are included

Mitigation measures were considered in all cases except reports 15 and 16. These mitigation measures may not, in every case, have reduced the impacts to insignificant levels, but they did curtail their effect considerably.

6.3.9 Public participation benefits

Citizen participation was accommodated in reports 1-16 As well as report 19. This inclusion of the public in the EIA process afforded the opportunity for a multidisciplinary and representative approach. This preferred approach also heightened the awareness of environmental issues in certain areas such as the Eastern Cape (Coega project) and the Natal area (St Lucia) as well as the Western Cape (Saldanha and Struisbaai).

6.3.10 Multidisciplinary approach

A multidisciplinary approach was adopted in most of the reports. External opinions were employed in specialist reports and consultation and interaction with interested and

affected parties. Reports 1, 2 - 6, 8, 9, 11, 13 - 16, 18 & 19 made reference to these external opinions.

6.3.10 Enhancement of site attributes

All of the reports made an attempt to enhance the present site attributes. Reports 9, 12, 14 and 15 made excellent attempts to do so.

6.3.11 Degrees of certainty of predictions

All predictions made on probable impacts were given with some degree of certainty. Degrees of certainty were indicated in reports 1, 3, 5, 6, 9, 11, 12, 13, 14, 15, 17 & 18. Reports 1, 9, 11 and 12 complied well in this regard.

6.3.12 Better environmental management

Management suggestions were made in reports 1, 2, 4, 5, 6, 7, 8, 9, 10, 11 & 13-20. Reports 5, 8, 9 & 11 made sound management proposals that were relevant and implementable. These suggestions may lead to enhance environmental management especially due to the fact that most of the suggestions were linked to sustainable development principles.

6.3.13 Relation to plans, policies and programmes

A few of the proposals analyzed related to plans, policies and programmes and were integrated into such policies at some level. Reports 1 - 6, 12 - 18 and 20 referred to proposals at plan level i.e. change in zoning, or application for a land use. Other reports related to plans, policies and programmes. More specifically: The environmental impact report for a proposed emergency landing facility on Marion Island related to a land use plan and formed part of a research programme; the Alusaf smelter projects appertained precisely to structure plans and a management programme; the Lake St Lucia project formed part of an environmental management and education programme; the Coega report identified with a structure plan and an environmental

management programme and the Saldanha cargo quay report referred to a structure plan and an environmental management programme.

6.3.14 Interaction and consultation

Cooperation between the various parties involved in compiling the reports were facilitated through interaction and consultation. These two techniques create the opportunity for mutual learning, understanding, sharing and collaboration. Reports 1, 4, 9, 11, 12, 14 & 20 made use of interaction in their procedure of analysis, whereas consultation was used in 1, 3, 4, 5, 7 - 11, 13, 15, 16, 19 & 20.

6.3.15 Proactive, holistic approach

Reports 2 and 9 displayed integrity in their proactive and holistic approach. All of the reports showed some degree of scope and enterprise, however the Woodbridge report displayed a reactive approach.

6.4 Further observations

6.4.1 Presentation

First impressions are the lasting ones, and this expression applied to many of the reports. By looking at the title page or cover of many reports, the quality of the report could be gauged. Reports that gave a good first impression due to their professional, neat appearance were no. 1, 2, 7, 8, 9, 10, 11 and 19. These reports were bright, easily read, had lots of diagrams and were informative. Special mention can be made of the Alusaf smelter project EIA which was distributed as a leather bound edition. Others reports were published in a book format, with many glossy diagrams and an attractive, graphic cover. The rest of the reports were either bound or stapled together and made use of simple computer graphics. Reports 3, 4, 5, 12 and 16 were average. The remaining reports (no. 6, 13, 14, 15, 17, 18 and 20) were poorly presented.

6.4.2 Methods of data collection favoured (Table 6.2)

Field observation was the favoured method of data collection (no.1-7, 9, 10-20), followed by literature (used by all except 15 and 18), sampling (no.1, 5, 6, 7, 8, 9, 11, 13, 16 & 20) and finally situation modeling (no.16).

6.4.3 Methods of impact identification favoured (Table 6.3)

Checklists were used the most in identifying impacts (no. 1, 2, 3, 5, 6, 9, 12, 13, 14, 15 & 18). Iterative procedure (no.4, 8, 10, 11, 16, 17, 19 & 20) was next favorite followed by networks (no.1 & 7) and simulation modeling (no.16).

6.4.4 Criteria of significance used (Table 6.5)

Most EIAs employed criteria of significance, but did not always state what they were. Probability of occurrence, duration and reversibility were ignored, whereas nature of impact, potential effects and mitigatory ability were favored as criteria of significance.

6.4.5 Procedure of analysis (Table 6.4)

When it came to analyzing the costs and benefits, consultation between parties was the favored method (no. 1, 3, 4, 5, 7, 8, 9, 10, 11, 13, 15, 16, 19 & 20), followed by interaction or a combination of the two. Four reports did not even mention the procedure employed (no.2, 6, 17 & 18).

6.4.6 Site aspects considered (Tables 6.7 and 6.9)

Physical aspects seemed to receive the most attention in reports, together with ecological characteristics these two often formed the bulk of the report. Land use was also one of the aspects receiving much of attention, due to the fact that most of the reports stated present land use and the intention to alter it.

When socio-economic aspects were considered, it was found that employment opportunities were focused on, maybe due to the fact that unemployment is a tremendous social evil at present.

Infrastructure always received a decent amount of attention with energy, waste, water resources and transport receiving the most attention. Education, housing and finance seemed to get little attention and were grossly ignored.

Pollution aspects were always considered, as this was the perceived direct effect of an action. Visual pollution received the most recognition out of all pollutants.

6.4.7 Risk and hazard considerations (Table 6.9)

Only twelve of the reports considered the potential for risk and hazard (no.1, 2, 3, 7, 9, 10, 11, 13, 14, 16, 19 & 20).

6.4.8 Cumulative effects (Table 6.9)

Only six of the reports investigated considered the cumulative effects of an action (no.2, 7, 9, 10, 11 & 16).

6.4.9 Alternatives

Thirteen of the reports reviewed considered alternatives (no.1, 2, 3, 6- 13, 17 & 19). Alternatives were possibly considered in the scoping stage and ruled out, but this was not stated, nor could one determine whether they were omitted unnecessarily at this stage. Impact of the alternatives was considered by twelve of the reports (no.1, 2, 6-13, 17 & 19), but not to any large extent and level of detail.

Four of the reports considered the no-action option (no. 2, 7, 9 & 20).

6.4.10 Evaluation of impacts

Seven of the reports employed some system of weighting, ranking or evaluation procedure (no.1, 7, 10, 12, 13, 18 & 19), although details thereof were always omitted.

6.5 Evaluation of findings and recommendations

Having evaluated the findings, it was found that EIAs can contribute significantly to the process of decision making. Even though the problems highlighted during the evaluation outweigh the merits observed, EIA is still a worthwhile practice.

A quick overview of the various results of the study show that (Table 6.8), eight of the twenty reports analyzed made an above average contribution (no.1, 2, 5, 7, 9, 11, 12 & 19). However eight of the reports fell in the category of poor/waste of time (no.6, 13, 14, 15, 16, 17, 18 & 19). Four of them were relatively average (no.3, 4, 8 & 10). It can be observed that contributions to decision making processes vary from report to report, but as a process EIA definitely contributes and aids decision making. Significance of contribution is project specific, and consultant specific. Those who formulate the documents regularly display bias in the document due to internal politics and their level of benefit from the project even though they are supposedly neutral parties.

Most reports produced in the past were of a scoping nature, but were labeled EIAs, and given the respective status, a comprehensive view of the reports show that only half of the consultants achieved the task of producing informative, conclusive documents that facilitate decision making.

In conclusion, for the EIAs to fulfill requirements and enhance utility to both the decision maker and interested parties, the following recommendations were formulated:

- ❑ Always give the reader enough information to be able to make judgements on the impartiality of the report.
- ❑ Be careful in constructing the table of contents, a reader always refers to this first. If the most controversial impacts are left till the end, one always gets the impression that the report is full of padding or trying to bury vital information.
- ❑ If the knowledge of the consultant is limited, employ specialists in the respective fields. To ensure that quality data is represented, not data that is subject to

error. In this way quality reports will be produced. Make sure the input from specialists is presented in a way that is usable, if the input is not understood, the expert's contribution is irrelevant.

- ❑ Remember who the audience is, not all interested parties will be experts or specialists. The EIA should be tailored to accommodate the “layman”. In general, the person compiling the report is specialized in his field, in compiling the report, give the reader an insight into the logic of the field (Enk 1984:272).
- ❑ An EIA is a technical report, giving explanations of highly technical aspects to non technical people. Jargon and terminology that can confuse people in the task of decision making should not be used.
- ❑ Costs and benefits should be explored to a greater extent, after all, they are the deciding factors that are considered in trade-offs and decision making.
- ❑ Reflect controversy in document organization (Enk 1984: 275). “ If you give enough information about issues that are controversial in the affected community and present it well, you will turn the vague, unfocussed EIS comments into more specific comments on the analysis of specific impacts these are much easier to answer and constructively add to the dialogue about the project” (Selina Bendix in Enk 1984: 277).
- ❑ EIAs should be action specific.
- ❑ Graphics should be employed more often. It enhances the presentation and facilitates a greater understanding of complicated matters. Avoid bad graphics that carry irrelevant or excessive detail, they detract rather than inform.
- ❑ Mitigation measures should receive a greater focus. EIAs may highlight environmental impacts, but it is the mitigation measures and the efficiency thereof that will limit the impacts to within acceptable limits. Assurances on how well actions will be mitigated should also be included . “ Do not present

mitigation measures as a wish list. 'Could's' and 'might's' use up a lot of space and leave the reader in limbo" (Selina Bendix in Enk 1984: 281). Always indicate who is responsible and how the measures will be implemented.

- ❑ Avoid focusing too narrowly on certain aspects in the study. Often this results in the collection of too much information on certain aspects to the exclusion of others.
- ❑ Alternatives, both site and activity should be included, subject to their relevance. Most EIAs eliminate alternatives early in the process. It is these alternatives that often reveal more suitable options. When discarding an alternative, reasons should be given. In your exploration of alternatives, worst case scenarios should be analyzed.
- ❑ Brainstorming should always occur. Through group efforts, hopefully all factors can be identified and considered. It is always the case that when only one opinion is considered, the report becomes subject to inaccuracy and bias. Respond to the concerns of the public, as they too have a vote in the decision making process.
- ❑ A multi-disciplinary approach should be employed. Which should lead to holistic, representative reports.
- ❑ Avoid piecemealing or over fragmentation in an EIA. Often when projects are broken up into separate sections without a program for the whole, sight of the bigger problem is lost, due to preoccupation with the bits.
- ❑ Degrees of certainty should always be applied to predictions in order for decision makers to pass judgement with some degree of confidence. Another factor to be stated is statistical validity (How good are you at reading tea leaves?).

- ❑ Those compiling the reports should not have the opinion that EIAs are a hurdle. If this is the attitude of the author, it will compromise integrity and credibility.
- ❑ Always maintain neutrality and objectivity.
- ❑ Finally do not expect the reader to accept statements on faith alone, by expressing the reliability of information through facts, the reader can come to his own conclusion. Facts speak for themselves.

6.6 In conclusion

The evolution, substance and application of EIAs in South Africa has been analyzed in both the theoretical and analytical sections of this research project. Environmental impact assessment with its predictive, evaluative, mitigatory and monitoring properties has been widely accepted as a mechanism for assessing the consequences of development projects and as a source of information for environmental decision making. Although quality may vary among reports, EIA still fulfills its role in improving decision making.

Over the years its scope has evolved from that of focusing on the physical environment to a wider concern embracing social and economic effects as well. However it was noted in the analysis that EIA still fails to achieve its ultimate goal of leveling the playing field between environmental, economic and social aspects. Another drawback is the reactive nature of impact assessments. Although EIA succeeded in eliminating or controlling the most environmentally degrading practices it still has to become more integrative in bridging the gap between the science of environmental planning and resource decision making. Rather than being a check, it should become more of a navigator on the path to achieving environmentally sound development.

It has been shown in practice that EIA is an invaluable tool drawn upon to promote sustainable development. The next step in embracing a more proactive approach is the introduction of strategic environmental assessment in the evaluation of the impacts of plans, programs and policies on the environment.

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APPENDIX 1

Description of
review objectives

ASPECT	DESCRIPTION	REVIEW OBJECTIVE
1. FORMAT	Layout	<p>-To establish if the bulk of the information complies with the requirements of the Integrated Environmental Management Guideline Series.</p> <p>-To indicate the level of readability and understanding of content.</p>
2. DATA COLLECTION	<p>Data type</p> <p>Data collection method</p> <p>Sources</p> <p>Contributors</p> <p>Sampling method</p> <p>Method of measurement</p>	<p>-To assess the quality and adequacy of data collected and used as a basis for the report, as well as the limitations of this data.</p> <p>-To assess if the sampling method used will produce representative results, and if these can be reproduced.</p> <p>-To ascertain if acceptable and sound methods of measurement are used.</p>
3.METHOD OF IDENTIFICATION OF IMPACTS.	<p>Technique used</p> <p>Comprehension</p> <p>Locational accuracy</p> <p>Timing and duration</p> <p>Accountability for info</p>	<p>-To see which methods used to identify costs and benefits are most popular.</p> <p>-To ascertain if the method used is comprehensive in its id of impacts.</p> <p>-To ascertain precision and consistency.</p> <p>-To see if the method used is too generalized.</p> <p>-To establish suitability of the method to the project specifically and to see if it can be adapted to different scenarios.</p>

		-To ascertain if lateral thinking is encouraged.
4. PROCEDURE OF ANALYSIS OF IMPACTS.	<p>Procedure used</p> <p>Procedure of assessment of significance of direct, indirect and cumulative impacts.</p> <p>Criteria of significance</p> <p>Mitigation inclusion</p> <p>Context</p> <p>Implications</p>	<p>-To ascertain if the procedure used was applicable to the scenario, that is if any procedure was in fact followed.</p> <p>-To see if impacts were assigned any significance or value, to aid in the evaluation of the costs and benefits, and according to what criteria.</p> <p>-To judge consistency, clarity and validity of the significance allocation.</p> <p>-To establish context.</p>
5. ENVIRONMENTAL ASPECTS CONSIDERED.	<p>Effects</p> <p>Site considerations</p> <p>Physical characteristics</p> <p>Ecological characteristics</p> <p>Land use characteristics</p>	<p>-To provide the reader with a feeling of the context of the project and also highlight key environmental issues.</p> <p>-To ascertain which aspects were intentionally omitted or need extra attention.</p> <p>-To see if any indication was given of impacts on these aspects.</p>

	<p>Cultural resources</p> <p>Socio-economic factors</p> <p>Infrastructure</p> <p>Services</p> <p>Nature and pollution</p> <p>Risk and hazard</p> <p>Cumulative and synergistic effects.</p>	
<p>6. ALTERNATIVES</p>	<p>Listing</p> <p>Description</p> <p>No- action option</p>	<p>-To ascertain if appropriate alternatives were considered.</p> <p>-To see if the impacts of these alternatives were considered.</p> <p>-To ascertain if attention was given to alternatives in the scoping stage, or if they were omitted unnecessarily at this stage.</p>
<p>7. RATING, RANKING, WEIGHTING AND EVALUATION PROCEDURE.</p>	<p>Procedure description</p> <p>Public involvement</p> <p>Indication of costs.</p>	<p>-To establish if there was a procedure in place to aid in the evaluation of the impacts.</p> <p>-To see if there is a system in place to improve decision making under uncertainty and in situations where values are in conflict.</p> <p>To ascertain levels of bias and ambiguity.</p>

	<p>Indication of benefits.</p> <p>Record of decision.</p>	<p>-To see if the public view has been accommodated and referred to in the record of decision.</p>
<p>8. REPORT AND COMMUNICATION</p>	<p>Format</p> <p>Id of interested and affected parties.</p> <p>Degrees of certainty of predictions.</p> <p>Project setting details.</p> <p>Reason for development.</p> <p>Goals</p> <p>Mitigation measures.</p> <p>Graphics</p> <p>Management plan</p> <p>Holistic approach.</p>	<p>-To see if key issues and impacts are highlighted in an appropriate format indicating degrees of certainty and identifying all those affected.</p> <p>-To see if positive characteristics of the site have been enhanced.</p> <p>-To get an indication of emphasis on the costs and benefits.</p> <p>-To see if the environment has been assessed adequately with all aspects receiving adequate attention.</p> <p>-To see if mitigation measures are practical ,clear and effective and do not disguise the adverse effects of the project.</p> <p>-To see if the report is free of jargon and bias.</p> <p>-To ascertain levels of participation in the report.</p> <p>-To ascertain the report relation to plans, policies and programs.</p>

	<p>Pro-activity</p> <p>Multi disciplinary approach.</p>	
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APPENDIX 2

List of reports analyzed.

7. *Technical Advisory Report* for the re zoning of lot 107 Westmead Extension from residential to light industrial

Area in which it was compiled: Kwazulu Natal

Date: Sept 1994

Consultant: Guy Nicholson (Afroprop)

8. *Environmental Evaluation Report* for the proposed road no28 from Die Dam to Struisbaai.

Area: Western Cape

Date: Feb 1984

Consultant: School of Environmental Studies , University of Cape Town..

9. *Scoping Report* for the establishment of a crematorium on portion A of remainder erf 700, Despatch.

Area: Eastern Cape

Date: Nov 1998

Consultant: Anton Bok

10. *Scoping Report* for the Yzerfontein hotel site.

Area: Western Cape

Date: Feb 1999

Consultant: Common Ground Consulting.

11. *Scoping Report* for Kuyga 8 light industrial park.

Area: Eastern Cape

Date: Jan 1999

Consultant: Blue Horizon Consulting Engineers and Environmental Geologists.

12. Scoping Report for the construction of a weir in the Sanddrift River, Tsitsikamma Region.

Area: Eastern Cape

Date: Mar 1999

Consultant: Anton Bok

13. *Environmental Impact Report* for a proposed emergency landing facility on Marion Island.

Area: Gauteng.

Date: 1987

Consultant: CSIR

14. *Environmental Impact Assessment* for the Alusaf smelter expansion project, Richards Bay.

Area: Western Cape

Date: 1992

Consultant: Pelican Joint Venture (CSIR & UCT EEU)

15. *Environmental Impact report* for the Eastern Shores of Lake St Lucia.

Area: Western Cape

Date: Jan 1993

Consultant: CSIR

16. *Environmental Impact Assessment* for Alusaf's 466000 TPA hillside smelter, Richards Bay.

Area: Western Cape

Date: 1993

Consultant: Pelican Joint Venture

17. *Environmental Impact Assessment* for the proposed extension of the general cargo quay, Port of Saldanha

Area: Western Cape

Date: Jan 1996

Consultant: CSIR

18. *Environmental Impact Assessment* for the proposed lighthouse workshop at Cape Reciefe.

Area: Eastern Cape

Date: 1996

Consultant: Portnet and Coastal & Environmental Services.

19. *Environmental Impact Assessment* for the residential complex Biviaans Rest 3144 and Heartsease 3291.

Area: Kwazulu Natal

Date: 1999

Consultant: Alletson Ecologicals

20. *Environmental Impact Assessment* for the proposed Sakabula golf course and housing development, Howick.

Area: Kwazulu Natal

Date: May 1997

Consultant: Walmsley Environmental Consultants

21. *Environmental Impact Assessment* for the proposed development of a low order shopping and office node, lot 1278, Port Shepston.

Area: Kwazulu Natal

Date: 1997

Consultant: Environmental Assessments cc

22. *Environmental Impact Assessment* for a proposed medical waste incinerator, New Brighton.

Area: Eastern Cape

Date: Oct 1997

Consultant: SRK Consulting

23. *Environmental Impact Assessment* for the Engen 1 stop interchange, Rowallan Park.

Area: Eastern Cape

Date: Nov 1997

Consultant: VKE Engineers

24. *Environmental Impact Assessment* for the construction of a farm dam on the Doringrug farm, Humansdorp district.

Area: Eastern Cape

Date: Jun 1998

Consultant: CODEV. (Chris Gaigher)

25. *Environmental Impact Assessment* for the proposed haul road linking Coega quarry to the proposed Coega port.

Area: Western Cape

Date: Aug 1998

Consultant: African Environmental solutions

26. *Environmental Impact Assessment* for the proposed hotel in Woodbridge Island, Milnerton.

Area: Western Cape

Date: 1998

Consultant: The Planning Partnership

APPENDIX 3

FRAMEWORK FOR REVIEW

1. Format

Is the bulk of the information presented in a suitable/ required format?

2. Data collection

2.1 does the EIA indicate the **type** of data collected ?

2.2 what **method** of collection of data is employed?

2.3 is the **quality** of data stated?

2.4 what are the **limitations** of the data ?

2.5 does the EIA identify the **sources** of data used ?

2.6 does the EIA state the names, qualifications and contact numbers/addresses of contributors?

2.7 does it employ a systematic sampling method capable of producing the same results if repeated, which **sampling method** is employed?

2.8 is the **sample size** representative?

2.9 does it use acceptable and sound methods of measurement (providing objective not subjective results), which **method of measurement** is employed?

Conclusion:

3. Method of impact identification, analysis and interpretation

3.1 Is the method of identification of impacts used **comprehensive**?

3.2 Does the method encourage lateral thinking?

3.3 Is the method of EIA **precise** on particular actions and environmental elements?

3.4 Is the method of EIA too **generalized**?

3.5 Is the method of EIA **project specific** ?

3.6 Is the method of EIA **accurate** with respect to

- location
- Time
- Duration

3.7 Is the method of EIA **consistent** ?

3.8 Is the method of EIA adaptable for **different scenarios**?

3.9 Is it clear who is accountable for info?

3.10 Does the EIA assess the **significance** of direct impacts ,indirect impacts and cumulative impacts ?

3.10.1 How does it assess the significance?

3.10.2 According to what **criteria**?

3.10.3 Does the EIA state the criteria/assumptions used to determine significance?

3.10.4 Are these criteria **consistent**?

3.10.5 Are these criteria **clear**?

3.10.6 Are the criteria **valid** or "thumb-suck"?

3.11 Are the **judgements** made on significance reasonable and valid?

3.12 Are impacts and the significance thereof considered with or without **mitigation**?

3.13 Depending on individual case scenarios, are the following considered and how?

3.13.1 **context** on a national scale

3.13.2 **context** on a regional scale

3.13.3 **context** on a local scale

3.13.4 short term **implications**

3.13.5 long term **implications**

3.13.6 **intensity and duration**

3.14 Does the assessment consider the following wrt the site and it's surroundings, how does it do this and why does it include or exclude these aspects in the analysis?

-**physical site characteristics** (land, fresh water, marine and estuarine systems and climate)

-**ecological characteristics** (vegetation, animals and communities)

-**current and potential land use** and landscape characteristics

-**cultural resources**

-**socio-economic characteristics** of those affected (demographics, economics, employment, welfare and health)

-**infrastructure** services (energy, water, waste management, transport, education, housing and finance)

-**social and community services and facilities**

-**nature and pollution** levels both present and anticipated (air, water, noise, visual and waste)

-**risk and hazard**

-cumulative and synergistic effects

3.14 Does the EIA consider **alternatives**?

3.15 Does the EIA consider the '**no-action option**'?

3.16 Are alternatives **appropriate**?

3.17 Is attention given to alternatives during scoping, are issues eliminated unnecessarily at this stage?

3.18 Is a **weighting system** used to evaluate impacts?

3.19 Is the weighting system clear and **free of ambiguity**?

3.20 Are certain impacts weighted so as to **distract** from others?

3.21 Is the info **unbiased**?

3.22 Does the EIA process allow for the **involvement** of other parties and the public?

3.23 Are **external opinions** clearly referenced

3.24 Are there statements **lobbying** for a particular point of view?

3.25 Are all **costs** indicated (social and financial)

Conclusion:

4. Report and Communication

4.1 Does the EIA highlight key issues and impacts in an appropriate **format** and how?

4.2 Does it identify all **affected parties** and the extent to which they will **benefit** or be affected?

4.3 Does the proposal **enhance the positive characteristics** of the site and the immediate environment?

4.4 Does the EIA indicate **degrees of certainty** or confidence and uncertainty of predictions?

4.5 Are the **risks overemphasized** or **under-emphasized**?

4.6 Are the **benefits overemphasized** or **under-emphasized**?

4.7 Does the EIA provide details of the project setting?

4.8 Has the '**environment**' been assessed adequately (physical, biological, social, economic, cultural, historical and political aspects)

4.9 Is the **reason** for development outlined?

4.10 Are the **goals** adequately communicated?

4.11 Does the report form the bulk of information required to formulate educated, informed views and **decisions**?

4.12 Does the EIA indicate **mitigation** measures?

4.13 Are they specific and practical?

4.14 Are they adequate to reduce impacts to **insignificant** levels?

4.15 Are the adverse effects **disguised** by vague remedial measures?

4.16 Is the body of information communicated in clear terms, free of **jargon**?(Is there padding)

4.17 Are **graphics** used adequately to communicate information, and how?

4.18 Was the process open and **participatory**?

4.19 Do decisions support **sustainability**?

4.20 Was a **management plan** advised?

4.21 Does the EIA relate to **plans, policies** and **programs**?

4.22 Was the project tackled in a **holistic** manner?

4.23 Was the project tackled in a **pro-active** manner?

4.24 Were expertise employed from a **multi-disciplinary** field?

4.25 Has any follow up study been done....?

Conclusion:

APPENDIX 4

The EIA regulations

of

5 September 1997

GOVERNMENT GAZETTE 18261
Regul. Gazette No 5999 Vol 387 Gazette Date 19970905
DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND TOURISM
GOVERNMENT NOTICES No. R. 1182 5 September 1997

ENVIRONMENT CONSERVATION ACT, 1989 (ACT No. 73 of 1989)

**THE IDENTIFICATION UNDER SECTION 21 OF ACTIVITIES WHICH MAY
HAVE A SUBSTANTIAL DETRIMENTAL EFFECT ON THE ENVIRONMENT**

I, Zweledinga Pallo Jordan, Minister of Environmental Affairs and Tourism, after consultation with the Minister of each department of State responsible for the execution, approval or control of such activities, the Minister of Finance and the competent authorities of the provinces, hereby under section 21 of the Environment Conservation Act, 1989 (Act No. 73 of 1989), identify the activities in Schedule I in general as activities which may have a substantial detrimental effect on the environment.

Z P JORDAN

Minister of Environmental Affairs and Tourism

SCHEDULE 1

1 The construction or upgrading of -

- (a) facilities for commercial electricity generation and supply;
- (b) nuclear reactors and installations for the production, enrichment, reprocessing and disposal of nuclear fuels and wastes;
- (c) transportation routes and structures, and manufacturing, storage, handling or processing facilities for any substance which is dangerous or hazardous and is controlled by national legislation;
- (d) roads, railways, airfields and associated structures outside the borders of town planning schemes;
- (e) marinas, harbours and all structures below the high-water mark of the sea;
- (f) cableways and associated structures;
- (g) structures associated with communication networks, other than telecommunication lines and cables, as well as access roads leading to these structures;
- (h) racing tracks for motor-powered vehicles and horse racing, excluding indoor tracks;
- (i) canals and channels, including diversions of the normal flow of water in a river bed and water transfer schemes between water catchments and impoundments;
- (j) dams, levees or weirs affecting the flow of a river;
- (k) reservoirs for public water supply
- (l) schemes for the abstraction or utilisation of ground or surface water for bulk supply purposes;
- (m) public and private resorts and associated infrastructure;
- (n) age treatment plants and associated infrastructure; and
- (o) buildings and structures for industrial and military manufacturing and storage of explosives or ammunition or for testing disposal of such explosives or ammunition.

2 The change of land use from-

- (a) residential use to industrial or commercial use;
- (b) light industrial use to heavy industrial use
- (c) agricultural or undetermined use to any other land use;
- (d) use for grazing to any other form of agricultural use; and
- (d) use for nature conservation or zoned open space to any other land use.

3 The concentration of livestock in a confined structure for the purpose of mass commercial production.

4 The intensive husbandry of, or importation of, any plant or animal that has been declared a weed or an invasive alien species.

- 5 The release of any organism outside its natural are of distribution that is to be used for biological pest control.
- 6 The genetic modification of any organism with the purpose of fundamentally changing the inherent characteristics of that organism.
- 7 The reclamation of land below the high-water mark of the sea and in inland water including wetlands.
- 8 The disposal of waste in terms of section 20 of the Environment Conservation Act, 1989.
- 9 Scheduled processes listed in the Second Schedule to the Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965).

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ENVIRONMENT CONSERVATION ACT, 1989 (ACT No. 73 of 1989)

REGULATIONS REGARDING ACTIVITIES IDENTIFIED UNDER SECTION 21 (1)

The Minister of Environmental Affairs and Tourism has, under sections 26 and 28 of the Environment Conservation Act, 1989 (Act No. 73 of 1989), and with the concurrence of the Minister of Finance, made the regulations in the Schedule.

SCHEDULE

Definitions

1 In these regulations any word or expression to which a meaning has been assigned in the Act has that meaning, and unless the context otherwise indicates-

"activity" means any activity identified under section 21 of the Act;

"alternative", in relation to an activity, means any other possible course of action, including the option not to act;

"applicant" means any person who applies for an authorisation to undertake an activity or to cause such activity to be undertaken as contemplated in section 22 (1) of the Act;

"interested party" means any person or group of persons concerned with or affected by an activity;

"provincial authority" means a competent authority as defined in section 1 of the Act;

"relevant authority" means the Minister, provincial authority or local authority contemplated in regulation 4 (2), (3) or (4), as the case may be;

"the Act" means the Environment Conservation Act, 1989 (Act No. 73 of 1989).

Application of regulations

2(1) These regulations apply in respect of any activity which has been identified in Government Notice No. R. 1182 of 5 September 1997 under section 21 (1) of the Act.

(2) These regulations do not apply in respect of an activity referred to in Government Notice No. R. 879 of 31 May 1996, unless it forms part of an activity that has been identified in Government Notice No. R. 1182 of 5 September 1997.

Responsibilities in terms of regulations

3(1) An applicant-

- (a) must appoint an independent consultant who must on behalf of the applicant comply with these regulations;
- (b) is solely responsible for all costs incurred in connection with the employment of the consultant or any other person acting on the applicant's behalf to comply with these regulations;
- (c) must ensure that the consultant has no financial or other interest in the undertaking of the proposed activity, except with regard to the compliance with these regulations;
- (d) must ensure that the consultant, while complying with these regulations, has-
 - (i) expertise in the area of environmental concern being dealt with in the specific application;
 - (ii) the ability to perform all the relevant tasks contemplated in these regulations;

- (iii) the ability to manage the public participation process contemplated in paragraph (f);
 - (iv) the ability to timeously produce thorough, readable and informative documents;
 - (v) adequate recording and reporting systems to ensure the preservation of all data gathered; and
 - (vi) a good working knowledge of all relevant policies, legislation, guidelines, norms and standards;
- (e) must ensure that the consultant provides to the relevant authority access to, and opportunity for review of, all procedures, underlying data, reports and interviews with interested parties, whether or not such information may be reflected in a report required in terms of these regulations;
- (f) is responsible for the public participation process to ensure that all interested parties, including government departments that may have jurisdiction over any aspect of the activity, are given the opportunity to participate in all the relevant procedures contemplated in these regulations and
- (g) must indemnify the government of the Republic, the relevant authority and all its officers, agents and employees, from any liability arising out of the content of any report, any procedure or any action for which the applicant or consultant is responsible in terms of these regulations.
- (2) If any provision of subregulation (1) is not complied with by the applicant and not immediately attended to, after having been made aware of it by the relevant authority, the application is regarded to have been withdrawn.

(3) The relevant authority must-

- (a) ensure that officers, agents or consultants employed by the relevant authority to evaluate any reports submitted in terms of these regulations have-
 - (i) expertise in the area of environmental concern being dealt with in the specific application;
 - (ii) the ability to perform the evaluation tasks contemplated in these regulations efficiently;
 - (iii) the ability to timeously produce thorough, readable, and informative documents; and
 - (iv) a good working knowledge of all relevant policies, legislation, guidelines, norms and standards;
- (b) ensure that the evaluation and decisions required in terms of these regulations are done or reached efficiently and within a reasonable time, and that the applicant is informed immediately of any delay and is provided with a written explanation for any delay that may occur;
- (c) provide the applicant with any guidelines, as well as access to any other information in the possession of the relevant authority, that may assist the applicant in fulfilling its obligations in terms of these regulations; and
- (d) try to keep the inputs required from the applicant to the minimum that are necessary to make an informed decision on the application, without putting any limitation on the rights that interested parties may have in terms of these regulations.

(4) While working for any applicant in terms of these regulations, a consultant may not work for any relevant authority in terms of these regulations in respect of the same application.

(5) Any interested party who wishes to participate in the public participation process contemplated in subregulation (1) (f) must respond within the time agreed to between the relevant authority and the applicant.

Application for authorisation to undertake activity

- 4(1) Application must be made on a form obtainable from the relevant authority.
- (2) An application must be submitted to the relevant provincial authority for consideration: Provided that an application in respect of an activity contemplated in subregulation (3) or (4) must be referred for consideration as indicated in those subregulations.
- (3) The provincial authority must refer the application to the Minister for consideration-
- (a) where the activity concerned has direct implication for national environmental policy or international environmental commitments or relations;
 - (b) where the environment under threat is demarcated as an area of national or international importance;
 - (c) where the Minister and the provincial authority jointly decide that an application in respect of a specific activity should be considered by the Minister;
 - (d) where a national government department, the relevant provincial authority or a statutory body is the applicant; or
 - (e) where the activity has the potential to affect the environment across the borders of two or more provinces.

- (4) If a local authority has been designated by the Minister in terms of section 22 (1) of the Act to issue authorisation for an activity specified by the Minister, the provincial authority must refer an application in respect of such activity to that local authority for consideration.
- (5) The relevant authority must keep a register of all applications received.
- (6) The relevant authority must inform the applicant whether the applicant must advertise the application, and of the manner in which this must be done.

Plan of study for scoping

- 5(1) After considering the application made in accordance with regulation 4, the relevant authority may request the applicant-
 - (a) to submit a plan of study for scoping for the purposes of a scoping report referred to in regulation 6; or
 - (b) in a suitable case, to submit such scoping report without a prior plan of study.
- (2) A plan of study for scoping must include-
 - (a) a brief description of the activity to be undertaken;
 - (b) a description of all tasks to be performed during scoping;
 - (c) a schedule setting out when the tasks contemplated in paragraph (b) will be completed;
 - (d) an indication of the stages at which the relevant authority will be consulted; and
 - (e) a description of the proposed method of identifying the environmental issues and alternatives,
- (3) The relevant authority may, after receiving the plan of study referred to in subregulation (1) (a) and after considering it, request the applicant to provide additional information that the relevant authority requires to accept the plan of study for scoping.

Scoping report

- 6(1) On being informed by the relevant authority that the plan of study submitted in accordance with regulation 5 (1) (1) has been accepted or on receiving the request referred to in regulation 5 (1) (b), as the case may be, the applicant must submit a scoping report to the relevant authority, which must include-
 - (a) a brief project description;
 - (b) a brief description of how the environment may be affected;
 - (c) a description of environmental issues identified;
 - (d) a description of all alternatives identified; and
 - (e) an appendix containing a description of the public participation process followed, including a list of interested parties and their comments.
- (2) The relevant authority may, after receiving the scoping report referred to in subregulation (1) and after considering it, request the applicant to make the amendments that the relevant authority requires to accept the scoping report.
- (3) After a scoping report has been accepted, the relevant authority may decide-
 - (a) that the information contained in the scoping report is sufficient for the consideration of the application without further investigation; or
 - (b) that the information contained in the scoping report should be supplemented by an environmental impact assessment which focuses on the identified alternatives and environmental issues identified in the scoping report.
- (4) In the event of a decision contemplated in subregulation (3) (1), the relevant authority must consider the application in accordance with regulation 9.

Plan of study for environmental impact assessment

- 7(1) In the event of a decision contemplated in regulation 6 (3), (b), the applicant must submit a plan of study for an environmental impact assessment, which must include-
 - (a) a description of the environmental issues identified during scoping that may require further investigation and assessment;
 - (b) a description of the feasible alternatives identified during scoping that may be further investigated;
 - (c) an indication of additional information required to determine the potential impacts of the proposed activity on the environment;
 - (d) a description of the proposed method of identifying these impacts; and
 - (e) a description of the proposed method of assessing the significance of these impacts.

- (2) The relevant authority may, after receiving the plan of study referred to in subregulation (1) and after considering it, request the applicant to make the amendments to the plan of study that the relevant authority requires to accept the plan.

Submission of environmental impact report

8 After the plan of study for the environmental impact assessment has been accepted, the applicant must submit an environmental impact report to the relevant authority, which must contain-

- (a) a description of each alternative, including particulars on-
- (i) the extent and significance of each identified environmental impact; and
 - (ii) the possibility for mitigation of each identified impact;
- (b) a comparative assessment of all the alternatives; and
- (c) appendices containing descriptions of,
- (i) the environment concerned;
 - (ii) the activity to be undertaken;
 - (iii) the public participation process followed, including a list of interested parties and their comments;
 - (iv) any media coverage given to the proposed activity; and
 - (v) any other information included in the accepted plan of study.

Consideration of application

- 9(1) After the relevant authority has made a decision contemplated in regulation 6 (3) (a), or has received an environmental impact report that complies with regulation 8, as the case may be, the relevant authority must consider the application and may decide to-
- (a) issue an authorisation with or without conditions; or
 - (b) refuse the application.
- (2) The relevant authority must determine the period of validity of the authorisation.

Record of decision

- 10(1) The relevant authority must issue a record of the decision that was taken under regulation 9 (1) to the applicant, and on request to any other interested party.
- (2) the record of the decision must include-
- (a) a brief description of the proposed activity, the extent or quantities and the surface areas involved, the infrastructural requirements and the implementation programme for which the authorisation is issued;
 - (b) the specific place where the activity is to be undertaken;
 - (c) the name, address and telephone number of the applicant;
 - (d) the name, address and telephone number of any consultant involved;
 - (e) the date of, and persons present at, site visits, if any;
 - (f) the decision of the relevant authority;
 - (g) the conditions of the authorisation (if any), including measures to mitigate, control or manage environmental impacts or to rehabilitate the environment;
 - (h) the key factors that led to the decision;
 - (i) the date of expiry or the duration of the authorisation;
 - (j) the name of the person to whom an appeal may be directed as contemplated in regulation 11;
 - (k) the signature of a person who represents the relevant authority; and
 - (l) the date of the decision.

Manner of appeal

- 11(1) An appeal to the Minister or provincial authority under section 35 (3) of the Act, must be done in writing within 30 days from the date on which the record of decision was issued to the applicant in terms of regulation 10 (1).
- (2) An appeal must set out all the facts as well as the grounds of appeal, and must be accompanied by all relevant documents or copies of them which are certified as true by a commissioner of oaths.

Access to information

12 After the record of the decision contemplated in regulation 10 has been issued by the relevant authority, any report submitted for the purposes of these regulations becomes a public document, subject to the rights of the owner of it.